

(No. 42.)



1864.

T A S M A N I A.

LEGISLATIVE COUNCIL.

REPORT OF SALMON COMMISSIONERS,

1864.

Laid on the Table by Mr. Whyte, and ordered by the Council to be printed,
July 21, 1864.



REPORT of the Commissioners appointed to conduct the Experiment of introducing the SALMON into the Rivers of Tasmania.

To His Excellency Colonel THOMAS GORE BROWNE, C.B., Captain-General and Governor-in-Chief of the Colony of Tasmania and its Dependencies.

MAY IT PLEASE YOUR EXCELLENCY.

In the month of September, 1862, the Commissioners had the honor to report to Your Excellency that, profiting by the important lesson derived from the history of the little box of Salmon Ova embedded in moss, which had been placed in the ice-house of the *Beautiful Star*, as detailed in the extract from Mr. W. Ramsbottom's log appended to their Report dated August, 1862, they had resolved to send Mr. W. Ramsbottom back to England with the least possible delay, in order that he might assist in ascertaining from actual experiment for what periods the Salmon Ova packed in moss, and deposited in some of the ice vaults in England, might be kept in an undeveloped state and afterwards hatched into living fish.

In accordance with this determination of the Commissioners, Mr. Ramsbottom at once proceeded to Melbourne, from whence he took his departure in the steamship *Great Britain*, and reached England in December.

While despatching Mr. Ramsbottom to England for the purpose mentioned, the Commissioners, retaining a lively sense of the zeal and energy displayed by their fellow colonist Mr. J. A. Youl in the first attempt which they had made to introduce the Salmon into the Colony, and then recently brought to an unsuccessful conclusion, addressed a letter to that gentleman, earnestly requesting his continued co-operation in their renewed endeavour to effect this great object; and subsequently committed the direction of all that was to be done in England to the Australian Association, to whom the management of the first experiment had been entrusted, knowing that, as on the previous occasion, it would practically devolve on Mr. Youl, one of its members.

The Australian Association accepted the trust which the Commissioners desired them to undertake, but immediately delegated to Mr. Youl "the sole superintendence of the necessary preparations for the renewed experiment about to be tried." How earnestly and zealously Mr. Youl discharged the duty thus devolving upon him, will appear from our further report of his labours in this patriotic undertaking.

Immediately on Mr. Ramsbottom's arrival in England, the experiments to which the Commissioners have referred, and to the issue of which they looked forward with the deepest interest, were commenced under Mr. Youl's direction, and carried on during the year 1863.

The success of these experiments fully satisfied the expectations of the Commissioners, at whose instance they were undertaken. A large proportion of the Ova that had been deposited in the Wenham Lake Company's Ice Vaults in London, for periods varying from 45 to 144 days, were found at the end of those periods to be still in a state of healthy vitality; and were afterwards hatched into vigorous fish by various pisciculturists to whom they were committed after removal from the Ice Vaults.

In the conduct of these experiments Mr. Youl was zealously assisted by W. Ramsbottom, by his father, Mr. R. Ramsbottom, of Clitheroe, and by the Manager of the Wenham Lake Ice Company, who, on Mr. Youl's application, had generously granted the free use of their Vaults in London, in which they were carried on through their first stage. The result of these experiments constitutes, the Commissioners believe, one of the most valuable discoveries ever yet made in the art of pisciculture, and must ever indicate an important era in its history.

This result was no sooner communicated to the Commissioners, than they came to the conclusion that this was the method by which the Salmon was to be successfully introduced into the waters of Tasmania; and that the expensive, troublesome, and uncertain mode of conveying the Ova in suspended trays, requiring a constant stream of iced water to pass over them, might henceforth be dispensed with.

They were unanimously of opinion that, in the condition of Ova placed in an ample body of ice on board a fast vessel sailing direct to Hobart Town, the Salmon could not fail of reaching their destination in safety. This opinion the Commissioners conveyed to the Australian Association, and was, as far as possible, carried into practical effect by Mr. Youl. That gentleman, however, found on this, as on the previous occasion, that his principal difficulty consisted in finding a vessel fulfilling all the conditions deemed necessary for the successful transport of the Ova to their destination at the Antipodes. One vessel only, the *Alfred Hawley*, was advertised to sail for Hobart Town about the period suitable for the shipment of the Ova, and, although in other respects supposed to be a smart vessel, she was of a tonnage too small to inspire confidence in her making a rapid passage.

With the owners of this ship Mr. Youl entered into and carried on negotiations until it was discovered, in the beginning of January, 1864, that, having only just returned from China, there was no hope of her cargo being discharged, and the preparations necessary for the reception of Ova completed, until too late for their shipment during that season.

In this emergency Mr. Youl acted with admirable promptitude and decision, which saved the experiment from being shipwrecked and delayed until the following year.

The *Alfred Hawley*, and the idea of a direct passage to Hobart Town, were immediately dismissed from his mind, and application made to Messrs Money Wigram and Sons, the owners of the splendid and well-known clipper ship the *Norfolk*, then advertised to sail for Melbourne on the 20th of January, to undertake the conveyance of the Salmon Ova by that vessel.

To this application these gentlemen not only assented with alacrity, but declined to receive any remuneration for the important service which they undertook to perform, desiring only that it might be accepted by the Australasian Colonies as a proof of the interest which they took in the welfare and advancement of these rising communities.

When Messrs. Money Wigram and Sons first intimated their intention of making no charge for the conveyance of the Ova by the *Norfolk*, Mr. Youl had, in a truly liberal and patriotic spirit, undertaken to pay them One hundred Guineas from his own pocket, if they should think fit to receive it, as some remuneration for the occupation of a twentieth part of their noble ship. Of this offer, however, these gentlemen ultimately declined to avail themselves, desiring that the service should be entirely gratuitous. From copies of the letters that passed between Mr. Youl and the owners of the *Norfolk*, given in the Appendix to this Report, the character of this transaction, which reflects much credit on them both, will be fully understood by Your Excellency.

A space measuring fully 50 tons, equal to a twentieth part of the whole tonnage of the *Norfolk*, was thus gratuitously dedicated to the service of the undertaking by her public-spirited owners.

But the value of the service is not to be measured by the mere extent of tonnage occupied for the purposes of this great experiment.

Besides the disturbance of the usual arrangements in the hold of their vessels caused by the erection of the Ice-house, shipowners appear to have entertained a fear that a leakage might take place from the Ice-house and injure the goods stowed below. From these causes, the owners of vessels who have been applied to on former occasions have demanded much higher rates of freight than they would probably have considered adequate under other circumstances.

For the conveyance of the Ice-house and swinging apparatus, with the passage of Mr. W. Ramsbottom, the sum of £500 was paid to the owners of the *Beautiful Star*, whose whole capacity did not much exceed 100 tons. The freight demanded by the owners of another vessel, the *Zealandier*, with whom Mr. Youl had entered into negotiations for the conveyance of the Ova to Hobart Town on her way to New Zealand, was £750; while, for a like service by the *Percy*, a regular Hobart Town trader, no less a sum than £1500 was required. In this last case, however, some derangement in the usual period of sailing from London was involved.

Having thus provided for the conveyance of the Ova to Melbourne by one of the fastest ships in the Australian Trade, and having nearly completed the arrangements necessary for their reception on board the *Norfolk*, whose departure was positively to take place on the 20th of January, Mr. Youl forwarded instructions to Mr. Robert Ramsbottom, the well-known Pisciculturist of Clitheroe, to procure forthwith, from the Ribble, the number of Ova intended to be dispatched to Tasmania. On former occasions Mr. Ramsbottom had never found any difficulty in obtaining whatever

quantity had been required by Mr. Youl; and in the previous year, on the 12th of January, an abundant supply of spawn had been obtained from the Ribble. A week earlier in the present year, dependent on some peculiarities of the season, every fish captured by Mr. Ramsbottom was found already to have shed its spawn in the river.

On receiving this embarrassing information from Mr. Ramsbottom, the same energy that had been called forth by the difficulty of finding a suitable means of conveyance to the Antipodes was displayed by Mr. Youl.

Mr. Ramsbottom, with his son, Mr. William Ramsbottom, were immediately dispatched to the "Dovey" in Wales, and Mr. W. Johnston, another experienced and trustworthy Pisciculturist, to the "Tyne."

At the same time, with much judgment, Mr. Youl published in the *Times* a general appeal to the Proprietors of Salmon Fisheries, and to all who were engaged in or took an interest in the work of Pisciculture throughout Great Britain, to assist in the great experiment then in hand.

That appeal was successful, and was responded to in the most liberal and generous manner by noblemen, gentlemen, and others, both in England and Scotland. Through their kind assistance, and the zeal and activity displayed by the agents employed by Mr. Youl, amongst whom Mr. Ramsbottom of Clitheroe, our Superintendent Mr. William Ramsbottom, and his brother Mr. Restab Ramsbottom, greatly distinguished themselves, the requisite supply of Ova exceeding 100,000 in number, with several thousands of Trout Ova, were ultimately obtained.

In spite, however, of all the energy and activity that had been displayed, these Ova did not reach London until the 18th January; nor could it have been possible to have shipped them all and completed the arrangements in the Ice-house, had not Messrs. Money Wigram & Sons given a further proof of their generosity by detaining the *Norfolk* for one whole day after she was quite ready to set sail.

The history of this anxious part of the undertaking is so well given in Mr. Youl's letters to the *Times*, dated the 6th, 12th, and 21st of January last, that the Commissioners append them entire to their Report.

The Commissioners have learned from a perusal of these letters, and from other communications, how deeply they are indebted to the various parties enumerated by Mr. Youl for the ready and valuable aid afforded by them during a most critical period of the experiment; and they feel assured that, by Your Excellency, the Executive Government, the Parliament and people of Tasmania, their services will be duly appreciated and gratefully acknowledged.

All difficulties having been thus successfully overcome, the Ice-house was finally closed on the evening of the 20th day of January; and the *Norfolk* took its departure on the following day with its precious and novel burden, towards the ultimate fate of which the attention of the whole scientific world, and of all taking an interest in the well-being of the Australasian Colonies, was anxiously directed, accompanied by Mr. W. Ramsbottom, their special custodian and guardian.

On the 15th day of April the *Norfolk* cast anchor in Hobson's Bay, having thus completed her voyage to the far south in the brief space of Eighty-four days.

Mr. Youl had, with much judgment, consigned the Ova to the care of Mr. Edward Wilson, President of the Acclimatisation Society of Victoria, whose zeal in the cause of Acclimatisation is known and appreciated throughout the length and breadth of the civilised world. It was impossible to have committed the charge into abler or more zealous hands.

Before the arrival of the *Norfolk* at Melbourne, Mr. Wilson had applied to the Government of Victoria for the use of Her Majesty's Colonial Steamship *Victoria*, for the conveyance of the Ova from Hobson's Bay to Hobart Town. That application had been liberally and promptly acceded to, and the vessel ordered to be in readiness for the performance of this service the moment the arrival of the *Norfolk* should be announced.

Soon after the *Norfolk* had dropped her anchor she was boarded by Mr. Wilson and other Members of the Acclimatisation Society, in whose presence the Ice-house was unlocked by Mr. Ramsbottom, for the first time since it had been closed in the Thames.

One of the small boxes containing Salmon Ova was then forthwith opened, and to the joy of the anxious observers it was found that a considerable portion of its contents were still in a sound and promising condition.

No examination of the remaining boxes was deemed necessary; but the most energetic measures were immediately taken for the speedy transfer of the Ova, with the remainder of the Ice amounting to about 12 tons, from the *Norfolk* to the hold of the *Victoria*. Strong wooden boxes were prepared, in each of which fifteen of the small original boxes of Ova, covered over with a considerable thickness of Ice, and enveloped in blankets, were securely packed. With commendable foresight these boxes were fitted up so as to admit of their being at once slung on bamboos, and thus carried by bearers from the termination of the navigable portion of the Derwent to the Ponds on the Plenty, a distance of nearly four miles; and this arrangement was, in practice, found greatly to facilitate the conveyance of the Ova over that part of the way.

Thus prepared, eleven boxes containing 170 of the original packages were carefully removed from the *Norfolk* to the *Victoria*, and deposited in a part of the hold least exposed to the injurious action of the machinery, from which they were further protected by placing stuffed pads between the boxes.

The remaining eleven boxes were retained by the Acclimatisation Society, for the purpose of being hatched in Melbourne, without exposing them to the possible accidents and certain delay involved in a second voyage, and to the tremor caused by the action of the screw, from which Mr. Youl, as well as the Commissioners, had apprehended considerable danger to the life of the Ova.

In the presence of a large Ice manufactory, in close proximity to which the hatching box was placed by the Acclimatisation Society, and where could be obtained at all times an unlimited supply of Ice, so essential to the well-being of the Ova, that body possessed an element of success not enjoyed by the Commissioners in this Colony, whose sole dependence rested on the surplus from the Ice-house of the *Norfolk*. The Commissioners, therefore, cannot but regard the retention of a small portion of the Ova in Melbourne as a prudent course, and as affording an additional guarantee against the failure of this great undertaking.

All necessary arrangements having been completed on board the *Victoria*, that vessel took her departure for Hobart Town on the morning of the 18th of April, and dropped her anchor in the Derwent at 3 o'clock in the afternoon of the 20th of that month.

She was immediately visited by the Commissioners present in Hobart Town; and the work of removing the Ova and Ice, now reduced to about ten tons, into a barge provided for their reception, was forthwith begun.

The zeal evinced by Captain Norman, his Officers, and men, soon brought that work to a conclusion; and all was completed in less than six hours.

At 9 P.M. the barge was taken in tow by the little steamer *Emu*, which had been waiting all day ready to start at a moment's notice, having on board two of the Commissioners and Mr. Ramsbottom; and at 1 A.M. on the following morning safely reached the wharf at New Norfolk, where the barge, with its invaluable cargo, was securely moored, and carefully guarded until daylight appeared.

As soon as it was known that the Ova had reached New Norfolk, gentlemen residing in the Town and its vicinity vied with each other in their offers of assistance by their Servants and Teams. At an early hour the barge was towed from the Steam Wharf to the place of detarkation at the Falls, where from 40 to 50 bearers and ten horse teams were waiting to take a part in the transport of the Ova and Ice to the banks of the Plenty.

Five of the large cases of Ova were, without loss of time, landed from the barge; and being slung on bamboos, for which they had been prepared in Melbourne, they were placed on the shoulders of the men selected to carry them, and were, in a space of little more than two hours, safely and without the slightest accident deposited on the margin of their new home. In like manner, and with the same success, the remainder of the cases were brought up from the barge, five at a later period of the same day, and the remaining one early on the following morning.

Some hours after the first portion of the cases had reached their destination, and after some alterations had been made in the gravel of the hatching boxes in the ponds, Mr. Ramsbottom, zealously assisted by one of the Commissioners, Mr. Morton Allport, began the process of unpacking the Ova from the little boxes in which they had been so long imprisoned, and placing them in the limpid stream which had long been awaiting their advent. This operation was continued during the remaining part of the afternoon and a great portion of the night, and actively resumed at the dawn of the following day, in the course of which it was concluded.

This process was conducted by Mr. Ramsbottom in the most careful manner, and in the way which his experience and observation had taught him was least likely to injure the delicate and sensitive Ova.

The layer of moss, over the surface of which the Ova were scattered, was immersed in the gently flowing water of the breeding troughs, by the action of which the Ova, both dead and living, were quickly disengaged from the moss, and quietly settled down on the gravel below.

The removal of the dead Ova was a further, and subsequent, as well as a laborious and delicate task, but was executed with all possible despatch.

After a considerable number of the small boxes had been opened, and their contents examined, it was seen that the condition of the Ova varied greatly in the different packages.

While in some the greater portion of the Ova still retained their vitality and healthy aspect, in others nearly every one had perished.

After some further opportunity of observation, it was perceived by Mr. Ramsbottom and the Commissioners present, that a close and almost unvarying relation existed between the fate of the Ova and the condition of the moss in which they were enveloped.

Where the moss retained its natural green hue and elasticity, there a large proportion of the Ova retained a healthy vitality. Where, on the contrary, the moss was of a brown colour, and in a collapsed or compressed form, few of the Ova were found alive, and all were more or less entangled in a network of fungus.

The Commissioners cannot, therefore, help suspecting that the condition and quantity of the moss in which the Ova were imbedded in each small box greatly influenced their health and vitality. Messrs. Allport and Ramsbottom, by whom the chief part of the Ova were transferred from the packing-boxes to the Ponds, assured the Commissioners that the smallest amount of mortality was invariably found to have taken place in those boxes in which the moss had been most loosely packed, and the Ova subjected to the least amount of pressure.

The Commissioners have already communicated to Mr. Youl their observations and conclusions on this point. By him, and by other Pisciculturists in England, the subject will, doubtless, be duly investigated.

The point involved is one which experience and observation can alone decide.

It is impossible for the Commissioners to say, with accuracy, what was the number of Ova placed in the Ponds in an apparently living and healthy condition. Mr. Ramsbottom had, with some hesitation, estimated them at 30,000, or a little more than a fourth part of the number embarked in the *Norfolk*.

From this number, however, it has since been discovered that a large deduction has to be made on account of those that have been found sterile in consequence of deficient fecundation. A large portion of the Ova of this character have maintained, during the whole progress of hatching, and many of them even still preserve, their brilliant and healthy aspect, but on close examination are found to contain no embryo fish within.

Mr. Ramsbottom has estimated the number of these unfecundated Ova as not less than 16,000. The number of healthy Trout Ova placed in the Ponds is believed by Mr. Ramsbottom not to have exceeded 300; and his opinion is confirmed by the Commissioners present at the opening of the boxes, and other observers.

Immediately before commencing the operation of depositing the Ova in the breeding troughs at the Ponds, blocks of ice were placed in the small stream which flows over them, which had the effect of reducing the temperature of the water from 55° to 44°. This was continued while the ice lasted,—a period of two days,—and was found amply sufficient to carry the Ova safely through the critical stage of transition from the low temperature in which they had previously existed to the higher temperature of the Ponds to which they now became exposed. All danger, however, from this source, if any existed, was effectually prevented by a natural and considerable fall in the temperature which took place in the water of the Plenty before the supply of ice had become exhausted, and which has since remained very uniform, not exceeding 49° nor falling below 39°.

With a view to provide an additional guarantee against total failure, a portion of the Ova were subjected, in accordance with the advice of Mr. Youl, to the process of hatching in an apparatus entirely apart from the Ponds, and consisting of two tubs filled with gravel and supplied with a slender stream of iced water from a large cask with which they were connected.

In this manner a small portion of ice, reserved for the purpose, was found sufficient to maintain the water at a reduced temperature for some time after it could no longer be applied to the larger apparatus connected with the Ponds.

In these tubs, however, no greater success was achieved than in the larger breeding troughs.

The Salmon Ova were deposited in the Ponds on the 91st day from the date of their embarkation on board the *Norfolk*; and, with the exception of the contents of two small boxes of greater age, about the 96th from their exclusion from the parent fish, and thus four days within the period beyond which it has always been represented by Mr. Youl that it would be highly dangerous to delay their immersion in their native element.

The Ova having been thus all deposited in the Ponds, it is unnecessary for the Commissioners to inform Your Excellency that their progress towards maturity was watched with intense anxiety.

Two boxes have been mentioned as containing Ova of a greater age than the others. These had been taken from the parent Salmon about the 6th of December, 1863, had lain for six weeks in the Ice Vaults of the Wenham Lake Ice Company; and were, therefore 45 days old at the time of embarkation in the *Norfolk*, and 136 days when placed in our Ponds.

They had been sent out by Mr. Youl with the special object of further ascertaining for what period the process of hatching might be retarded beyond the natural period.

Of these Ova few were found to have survived, but most of those that were still living already exhibited the eyes and outlines of the fish within.

Among the others of shorter age, and especially the Trout Ova, the same encouraging proofs of development were soon perceived.

On the 4th of May the first Trout made its appearance, followed on the succeeding day by the first Salmon that had ever been seen in Australia, or south of the equator.

The further hatching of the Trout and Salmon proceeded very slowly for some days, but then became more rapid,—especially among the Trout. Among these the process was completed about the 25th day of May, producing upwards of 200 healthy fish.

The hatching of the Salmon was more protracted, and was not concluded until the 8th of June, on which day the last little fish was observed making its escape from the shell.

As they continued to make their appearance from day to day, their numbers were counted by Mr. Ramsbottom with tolerable accuracy up to about 1000, after which it was no longer possible to keep any reckoning.

It is impossible for Mr. Ramsbottom, or the Commissioners, to make even an approximate estimate of the number of young Salmon now in the Ponds. That they amount to several thousands they have no reason to doubt; and, as the mortality amongst the Ova after deposition in the Ponds was very moderate, and quite insignificant among the young fish, there is reason to hope that they may exceed rather than fall short of expectation.

Although the first living Salmon was discovered in one of the troughs containing a portion of the younger Ova, there is no doubt that it was preceded by some hatched from those of the greater age, although, from being concealed under the pebbles, they were not sooner noticed. That they had preceded the others, however, is evident from their superior size, and other marks of greater advancement. From these older Ova not more than 4 or 5 fish have been produced.

The Trout have now entirely lost their umbilical appendages, and receive their morning and evening meals of boiled liver from the hands of their keepers.

The Salmon are rapidly advancing to the same condition.

Having been urged by Mr. Youl not to admit the Trout into the same rivers with the Salmon, the Commissioners have decided in the meantime to place the former in the circular clearing Pond under Mr. Ramsbottom's immediate eye and care, where they will doubtless thrive and multiply, and at no distant period afford the means of stocking all the rivers of the Colony into which it may be considered proper to introduce them.

The great undertaking of introducing the Salmon and Trout into Tasmania has now, the Commissioners believe, been successfully accomplished; and they trust they are not premature or too sanguine in congratulating Your Excellency and the Colony on this auspicious event, which cannot fail at no distant time to exert a very beneficial influence on the interests and resources of the Australian Colonies.

Few countries of the same extent possess more rivers suited to the nature and habits of this

noble fish than Tasmania. A stranger acquainted with the Salmon rivers of Europe could scarcely behold the ample stream and sparkling waters of the Derwent without fancying that they were already the home of the king of fish.

And the Derwent is but one of many other large and ever-flowing rivers almost equally suited to become the abode of the Salmon. When these rivers have been stocked, they cannot fail to become a source of considerable public revenue, and of profit and pleasure to the people.

Where so many have assisted in obtaining this important boon for the Colonies, it is difficult to particularise all those to whom it is indebted for their disinterested services.

The untiring zeal and indefatigable exertions of Mr. Youl stand forth conspicuous, and have been mainly instrumental in bringing the present experiment to a successful issue.

The noble liberality of Messrs. Money Wigram and Sons has been already dwelt on; and those gentlemen, the Commissioners are aware, have received the well-merited thanks of Your Excellency's Government.

To those Noblemen, Gentlemen, and others, who rendered such important and timely aid to Mr. Youl in his arduous labours, the thanks of the Commissioners, and of the whole Colony, are due.

A special vote of thanks has been transmitted by the Commissioners to Mr. Robert Ramsbottom, of Clitheroe, for the untiring interest he has long manifested in the attempts to introduce the Salmon into Australia, of which he has given practical proof by his hearty co-operation with Mr. Youl, and the free use of his practical skill and experience in promoting the success of the experiment.

The Commissioners have felt it to be their duty, with the sanction of the Government, to present pieces of Plate, with an expression of their thanks, to Captain Tonkin, of the *Norfolk*, to Mr. Carpenter, his Chief Officer, and to Captain Norman, of Her Majesty's Colonial Steam Ship the *Victoria*, in acknowledgment of the deep interest displayed by them in the success of the undertaking, and their efforts to secure the rapid transport of the Salmon Ova from London to Melbourne, and Melbourne to Tasmania, upon which their safety in a great degree depended.

This Colony is under deep obligations to the Government and Parliament of Victoria, and to the President and Members of the Acclimatisation Society, for their disinterested assistance.

Towards the expense of the experiment by the *Beautiful Star*, the liberal sum of Five hundred Pounds was cheerfully contributed from the Public Treasury of that Province; and, on the recommendation of the Acclimatisation Society, a similar amount was granted in aid of the second experiment, together with the use of the fine Steam Ship *Victoria*.

The importance of this latter service can hardly be too highly estimated. It supplied a link in the progress of the experiment which had caused the Commissioners much anxiety.

The value and disinterestedness of these services are enhanced by the fact that, at the time they were rendered, the faintest hope only existed that Victoria would be benefited by the success of the undertaking except in a very secondary degree. It is only lately that the idea of acclimatising the Salmon in some of the rivers of that Colony has been entertained; and the Commissioners will hear with much pleasure that this reasonable expectation has been fulfilled.

They rejoice to learn that nearly three hundred healthy young Salmon have been produced from the few boxes of ova left in the hands of the Acclimatisation Society; and it will be their first duty, as some acknowledgment of the generous aid they have received from Victoria, to render every assistance in their power towards the early stocking of the Rivers of that great Colony fitted to become the homes of the Salmon and Trout.

Since the process of hatching was completed, the mortality among the young fishes, both Salmon and Trout, has been very insignificant, and has been almost entirely confined to a small number of the former that came forth from the egg with crooked spines or some other deformity.

They have grown considerably, and present every characteristic of vigorous health.

The Commissioners have no reason to doubt that the young Parr will, in due season, attain to the condition of complete Salmon, fulfil the long-cherished hopes of the Colony, and make an ample return for all the expense and labour incurred in introducing them.

They entertain every confidence that, under the guidance of their unerring instincts, they will, when the proper time arrives, proceed to and return from the sea in safety, and in their journey

will meet with no enemies more formidable than those to which their progenitors have been exposed in the waters of Great Britain.

Notwithstanding the success, however, that has already been achieved, the Commissioners are unanimously of opinion that at least one more importation of Ova should be undertaken without loss of time. It is not probable that the young fish now in the Ponds will produce any Spawn, by which their numbers may be multiplied, until a period of from two to three years has elapsed,—and thus much time will be lost in fully stocking the rivers of the Colony unless a further supply of Ova be obtained.

The whole expense of another importation would not, the Commissioners believe, exceed £800; which, divided among the various Colonies, which they have every reason to believe would contribute towards the expense of another importation of Ova to Tasmania, from which as a centre they will be distributed to the surrounding Colonies at a very trifling additional cost, and without any risk of failure, would prove a very insignificant burden to any of them.

The undertaking can no longer be regarded as an experiment, but as a commercial transaction, to be carried out with results varying only in amount. Considerable as has been the success on the present occasion, the Commissioners believe that the additional experience which has been gained by Mr. Youl in England, and by themselves and their intelligent Superintendent, Mr. W. Ramsbottom, in this Colony, would ensure still more favourable results from a renewed importation of Ova.

Of all the Australian Colonies, New Zealand possesses a climate most nearly resembling that of Tasmania, and the greatest number of rivers that may be supposed fitted to become the habitation of the Salmon.

From Southland the liberal contribution of Two hundred Pounds has been received in aid of the last experiment; but she alone, of all the Provinces in that extensive Colony, has hitherto given any response to the appeal long since made to them.

The Commissioners earnestly hope that Your Excellency's Government will recommend to the Parliament, now sitting, the appropriation of such a sum as will enable them to take immediate measures for the introduction of a further supply of Salmon Ova.

In the Appendix will be found a statement of the whole cost of the last importation.

The Commissioners have every reason to be satisfied with the manner in which their Superintendent, Mr. Ramsbottom, has discharged the important duties of his office. He has amply fulfilled the expectations which induced them to send him back to England in 1862; and since his return to the Colony, the intelligence and devotion with which he has watched and aided the progress of his valuable charge has merited their warmest commendation.

The Commissioners, anxious not to anticipate any expenditure that could be postponed until the success of the undertaking should be fully established, have hitherto refrained from recommending the erection of a residence for the Superintendent in the vicinity of the Ponds.

That work should now no longer be delayed: and they recommend that a comfortable weather-boarded cottage should be built with all possible dispatch for the accommodation of Mr. Ramsbottom and his family.

The thanks of the Commissioners are due to R. Read, Esquire, for his kind hospitality in receiving Mr. Ramsbottom (who must otherwise have lived in a tent) into his house at Redlands.

The salary hitherto paid to Mr. Ramsbottom for his services has been very small, and is, in the opinion of the Commissioners, no longer commensurate with the duties entrusted to him.

On this subject they will further address Your Excellency's Government in a separate communication.

R. OFFICER, *Chairman of Commissioners.*

APPENDIX.

EXPENDITURE incurred in the late successful Experiment of introducing SALMON OVA into Tasmania.

	£	s.	d.
Disbursements in England	685	12	5
Disbursements in Melbourne, Hobart Town, and to Salmon Ponds	300	9	8
	<u>£986</u>	<u>2</u>	<u>1</u>

A. 1.

*Ship and Insurance Brokers, East India and General Agents,
7, Leadenhall-street, 21st January, 1864.*

DEAR SIR,

KINDLY inform us if the freight upon the Salmon Ova is to be made payable here or in the Colony, as we must fill up the Bills of Lading accordingly. The rates are 60s. per ton (measurement) paid in London, and 70s. payable in the Colony.

We are,

Dear Sir,

Your obedient Servants,

M'LEOD, ALLPORT, & MORGAN.

JAMES A. YOUL, *Esq.*, Clapham Park.

A. 2.

Waratah House, Clapham Park, 21st January, 1864.

DEAR SIRS,

MESSRS. Wigram have given me the room for the Ice-house, which contains the Ova, to be supplemented however, if they deem fit, by 100 guineas from my own pocket: the Bills of Lading will, therefore, require no freight charge to be entered in them, except for two boxes containing apparatus gone into the hold, the freight of which will be paid here.

Yours faithfully,

JAMES A. YOUL.

To Messrs. M'LEOD, ALLPORT, & MORGAN.

A. 3.

Blackwall Yard, London, E., 26th January, 1864.

SIR,

WITH reference to your offer to pay us 100 Guineas freight for the conveyance of the Salmon Ova per *Norfolk* to Melbourne, we wish to remind you of the extreme difficulty there is in obtaining permission to build the Ice-house in any ship, owing to the great interference it makes in stowing the cargo and general arrangements of the ship, which is materially increased when it is necessary to ship the Ice-house in a regular passenger ship; consequently, it was only the knowledge of the importance it is to the Colony to introduce the Salmon into its waters that induced us to accede to your request to give you the necessary room in the *Norfolk*.

The interest we feel in the Colony, and in the experiment of conveying Ova to distant places, induced us to afford you the facilities you required; and in the same feeling, we are willing to waive our right to the amount you agreed to pay us for freight, on the understanding that you will communicate this to the respective Governments of Melbourne and Tasmania, and in so doing convince them of the importance we attach to the well-being of those Colonies, and the hope that we have that our endeavours for their general benefit will not be overlooked in the general arrangements they may respectively make.

Hoping the experiment may be successful,

We remain,

Your obedient Servants,

MONEY WIGRAM & SONS.

J. A. YOUL, *Esq.*

SALMON TO AUSTRALIA.

To the Editor of the Times.

SIR,

WHEN people are in distress the most effectual means of getting relief is an appeal to the public through your columns, which I believe every sane man who has the time and opportunity reads; and as I have just now most unexpectedly met with a great difficulty in my endeavours to carry out a national undertaking, in which I have no pecuniary interest, I trust you will give me the desired aid.

After two attempts to introduce Salmon into Australia, the last of which failed from the unsuitableness of the vessel in which I was compelled to place the Ova, at the request of the Government of Tasmania I have undertaken the charge of making a third experiment this year; and by the noble generosity of Messrs. Money Wigram & Sons, the eminent Shipbuilders of Blackwall, who have given me room in one of their best and fastest ships, the *Norfolk*, to sail on the 20th inst., the greatest difficulty I have had to success—a good ship—has been overcome.

I had nearly completed all my arrangements on board for the reception of the Ova, when to my great dismay this morning I received a note from Mr. Ramsbottom, of Clitheroe, whom I have always employed to obtain the Ova for me, saying that every Salmon he had caught in the Ribble had already spawned. What was he to do? On the 12th of January last year he obtained plenty of spawn from this stream, and I had depended on getting my supply from it again this year.

I therefore directed him to start off immediately to North Wales to try and get some Ova from the Dovey, where on two previous occasions in February he obtained large numbers for me. I have also sent Mr. William Johnston to Newcastle-on-Tyne to endeavour to get some Salmon from that river.

I am, however, so pressed for time that I take the liberty of appealing to the proprietors of the Dovey and Tyne to be so kind as again to afford to Mr. Ramsbottom and Mr. Johnston all the assistance in their power to enable them to take Salmon, as well as to any of your readers who may be in a position to help me with unspawned Salmon, so that I may not lose the only chance I ever had of fairly trying to get this noble fish out to Australia—viz., a roomy, fast-sailing, first-class ship.

I am, Sir,

Your obedient Servant,

JAMES A. YOUL.

Waratah-house, Clapham-park, January 6.

SALMON OVA TO AUSTRALIA.

To the Editor of the Times.

SIR,

I BEG leave to return my best thanks to those noblemen and gentlemen who so promptly acceded to my request made through your columns for permission to take unspawned Salmon out of their rivers for the purpose of transmitting the Ova to Australia. I have also to thank Mr. Ffennell, the Chief Commissioner of Salmon Fisheries for England; Mr. John Morrison, agent for New Zealand; Mr. Frank Buckland, Mr. Sackville Phelps, of Machynlleth, North Wales; Mr. Edward Glynn, of Newcastle-on-Tyne; Mr. Richard Gibson, of Hexham; Mr. Patrick Clay, of Berwick-on-Tweed, &c., for the personal aid they have given me; and to Mr. Thomas Ashworth for his generous offer of Ova from his own breeding-ponds at Galway, which, however, I am afraid to accept, as they have been for some time deposited.

I am, Sir,

Your obedient Servant,

JAMES A. YOUL.

Waratah-house, Clapham-park, January 12.

P.S.—Mr. Ramsbottom has caught a good many fine unspawned Salmon, but, the Ova not being ripe enough to take, they were returned to the stream again. No Ova have yet been obtained for me.

SALMON AND TROUT OVA FOR AUSTRALIA.

To the Editor of the Times.

SIR,

I HAVE received a great many letters from gentlemen offering assistance to obtain Salmon Ova, but my being so much occupied on board the *Norfolk* has prevented me from answering them. I think the most grateful return I can now make to those who have evinced such deep interest in the undertaking will be to give a very brief account of our proceedings; but, before doing so, I have also to tender my thanks to those gentlemen living near the Tyne, the Tweed and Ettrick, the Ribble, the Teme and Severn, and the Dovey Rivers, who not only gave permission to those employed, but energetically aided them in obtaining ripe fish from these streams.

Notwithstanding all the efforts made by the fishermen, we were unable to obtain a single ripe fish so long as the severe frost lasted, which appears to have prevented the spawning fish from leaving the sea and ascending the tributaries of the larger rivers to deposit their spawn.

This bears out the opinion expressed very recently by Mr. Frank Buckland, "that the Salmon is a very knowing fish," and would not, therefore, quit the estuaries so long as the spawning beds were frozen and unfit for the reception of the Ova.

At one time I nearly despaired of success, as the ship was positively to leave the Docks on the morning of the 20th. Up to the evening of the 14th no Ova had been obtained, but within 24 hours of that time the fishermen employed in Scotland, Lancashire, Worcestershire, and Wales simultaneously obtained ripe fish, full of spawn, which had evidently ascended the rivers a few days after the breaking up of the frost. It is a very singular coincidence that these men, who had not the slightest communication with each other (their orders being simply to come up to London by first train as soon as they had obtained 20,000), all arrived laden with Ova between 5 A.M. and 10 A.M. on Monday, the 18th instant.

The East India Dock Company having kindly placed at my disposal a large space in one of their sheds within a few yards of the *Norfolk*, I had beforehand made such preparations as enabled me to pack and place safely in the ice-house by 4 P.M. all the Ova obtained.

The boxes in which the Ova are packed are made of inch pine, 11 $\frac{3}{4}$ inches long, 8 $\frac{1}{2}$ wide, and 5 $\frac{1}{2}$ deep, perforated with holes top, bottom, and sides, to allow the water from the ice as it melts to flow into the boxes, and percolate through the moss and Ova inside.

The manner of packing is as follows:—A couple of handfuls of charcoal are spread over the bottom of the box, then a layer of broken ice, after this a bed or nest of wet moss is carefully made and well drenched with water; the Ova are then very gently poured from a bottle which is kept filled with water; the box is now filled up with moss, and pure water poured upon it, until it streams out from all the holes; another layer of finely pulverized ice is spread all over the top of the moss; the lid is then firmly screwed down. As soon as this process is completed it is most desirable, in my opinion, that the boxes should be placed in immediate contact with ice. One hundred and sixty-four boxes, containing above 90,000 Ova so treated, were firmly packed at the bottom of the ice-house, covering the entire space. Upon these a solid mass of ice was piled, to the height of 9ft., so that as long as any ice remained the Ova would derive benefit from it. Sixteen more boxes were placed in other parts of the ice-house, making a total of 181 boxes, containing about 100,000 Salmon and 8000 Trout Ova.

I have to thank Admiral Keppel, of Bishopstoke, for a handsome present of 1000 Trout Ova, which I received through Mr. Frank Buckland, and which were stowed at the bottom of the ice-house. I also received from Mr. Francis Francis two separate lots of Trout Ova, which I placed in the centre of the ice-house.

I think it is due to Messrs. Money Wigram and Sons to state that, had they not most courteously delayed the departure of their vessel for one whole day—viz., from the morning of the 20th to the morning of the 21st, on my sole account, and given every facility for getting the ice on board, it would have been impossible for me to complete the arrangements for the transmission of the Ova; in proof of which, although every exertion was made, the last block of ice was not on board until four o'clock yesterday afternoon. The total space occupied by the ice-house amounts to nearly 50 tons, 1-20th of the burden of the noble ship, a princely gift which I trust the Australian Legislatures will suitably acknowledge.

In conclusion, I feel confident your readers will most cordially join with me in wishing the good ship *Norfolk* a safe and speedy voyage, and in hoping that these precious little globules may retain their vitality in their damp mossy bed until they arrive at the sunny clime and golden shores of Australia; so that when placed in their native element they may come forth leaping with delight in the limpid waters of the beautiful river Derwent, notwithstanding the very cold reception they have met with from your greatly obliged and obedient Servant,

JAMES A. YOUL.

Waratah-house, Clapham Park, January 21.