

XVIII.—*On the Attempt recently made to introduce Salmon and Trout from England into Tasmania, by shipment of Spawn.* By J. L. BURNETT, Esq. [Read 14th July, 1852.]

AT the instance of His Excellency Sir W. Denison, an attempt has recently been made to introduce Salmon and Trout into Van Diemen's Land, which, although not successful, has established the fact, (before doubted), that by means of spawn these fish can be brought from Europe to this Colony.

I will describe the arrangements made for this first experiment, and then endeavour to point out wherein they have been, in my opinion, defective.

About 50,000 ova of Salmon and Trout were placed in a large oval tub or vessel, with a false bottom, 4 feet 6 inches by 3 feet 4 inches, 1 foot 8 inches deep, double-sided, made of wood, cased in lead, and capable of containing 60 gallons of water, besides the requisite quantity of gravel.

On the 31st of January, 1852, the tub was shipped on board the *Columbus*, in London, and slung just under and on one side of the fore hatchway; with directions that every six hours a fresh supply of six gallons of water should be added, by means of a funnel inserted in a tube entering below the false bottom—the old or original quantity, (or the greater portion of it), being drawn off by a stop-cock, placed for that purpose in the upper part of the tub; and that the six gallons of water were to be supplied six times a day as the vessel approached the Equator, making 36 gallons in the twenty-four hours, and to be again reduced

in the cooler latitudes to the original quantity of twenty-four gallons per diem.

Mr. Boccius, the gentleman entrusted by the Government at home to procure the spawn, and make arrangements for its shipment and care during the passage, had fixed the 15th and 20th of April as the periods at which the ova of the trout and salmon would respectively be hatched. But it appears from the report of the Captain and passengers, that the change took place so early as the 1st of March, when they were in latitude $14^{\circ} 30'$ north, longitude $26^{\circ} 00'$ west. They say that from that day forward, for above a fortnight, they observed two descriptions of fry attached to stones, gravel, and the sides of the tub, apparently in a half torpid state, which they then lost sight of, from the water becoming thick and putrid; the weather at this time being intensely hot, with nearly a vertical sun.

As the ship approached the colder latitudes, the water gradually cleared, but no symptoms of life appeared in the spawn tub; and when the vessel arrived here, Dr. Milligan and I carefully examined first the water in the tub, and then the gravel, but without finding any traces of either spawn or fish.

The water, I may observe, was impregnated with a considerable quantity of rust, which, as the tub was of wood, must have originated in the iron tanks in which the supply for the fish was contained.

These tanks were coated with a description of varnish, which Mr. Boccius supposed would have prevented rust; but, from some cause or other, it did not answer this purpose.

Now as to what appears to me to have been defective in the plan adopted:—

First.—The spawn which was taken,—the Salmon on the

9th, the Trout on the 26th of January, and which, in consequence probably of the excessive heat, came to life forty-six days before the time reckoned upon by Mr. Boccius, should, I think, be shipped at least six weeks earlier, and thus insure a colder climate for the breeding out; for Mr. Boccius, under whose able directions the experiment has been made, does not seem to have given sufficient value to the effect of the artificial heat to which the spawn would be exposed in the hold of a ship.

Second.—It appears to me that the tub would have been better placed on deck than under the fore-hatchway, where the heat at all times, especially in the tropics, must have been very much greater: such arrangements might easily have been made as to have secured for the spawn tub on deck a considerable current of air, with ample protection from the sun and from salt water in bad weather.

Third.—The quantity of spawn, I think, was also far too great for the size of the tub in which it was placed; for, had it all come to life, the fry could not possibly have found space sufficient to exist in, and had a portion only bred out, as appears to have been the case in the present instance, provision should have been made for their removal into a separate tub of fresh water, so as to prevent the decomposed matter of the dead spawn and young fish from proving injurious to the living fry.

Fourth.—Had the fry arrived, it is a matter of considerable doubt in my mind whether the rivers at this season of the year (June), would have been in a proper state to receive them; because, swollen as they are, the fish would in their delicate state have had to contend against too great a current or fresh; which, however, would not be the case were the spawn shipped, as I propose, in the early part of December. The fry would then, in all probability,

reach this colony about March, and before the winter rains set in.

Fifth.—I would suggest that the experiment be tried with several tubs. A *small* quantity of spawn in each—some to be placed below deck and some above; and I would also recommend that at the same time a few *smolt* should be shipped in separate tubs; it being a fact known in this Colony, that the *white* salmon of the Mauritius were originally conveyed thither in this way from China.

Sixth.—And in case the effect of the tropical heat might be such as to hatch the spawn, *whatever its age*, at the *same time*, I would further suggest, as a preventive, that the temperature of the water in which it is placed should, if practicable, be regulated by means of ice.

Seventh.—From enquiries which I have made, the greatest interest appears to have been taken in the experiment, not only by the master of the vessel, but by all on board.

The directions of Mr. Boccius seem to have been carefully attended to, and that the result would have been successful I have little doubt, but for the reasons which I have assigned. The rust of itself would, I think, have been sufficient to destroy life very shortly after the hatching of the spawn.

In conclusion, I would observe that Captain Smith, of the *Columbus*, who deserves great credit for the attention he has bestowed upon the experiment, is satisfied that the fish can be introduced into this Colony by means of the spawn, and that were another opportunity afforded him of making the attempt it would prove successful.

(Signed) JAMES L. BURNETT.