for them. I have seen an estimate from a gentleman in England, who has been most successful in sending trout-ova to a southern colony: he thinks salmon ova could be delivered on board one of the large Australian steamers at from £3 10s. to £4 10s. per thousand, with a guarantee that not less than 80 per cent. were vitalized.

The Commissioners' expression of opinion in favour of English salmon (*S. Salar*) is supported by the very marked preference given by the Canadian Commissioners to the *Salmo salar* over the Californian salmon, although, if the merits of the latter were considered to entitle them to receive equal attention with the former, an abundant supply of Californian ova could be easily obtained.

I have the honor to suggest that the Government should refer to the Canadian Fisheries Commissioners' report. It no doubt contains much valuable information.

I have, &c.,
J. A. R. Menzies,
Chairman, Southland Salmon Commissioners.

The Hon. the Colonial Secretary, Wellington.

Enclosure in No. 1.

Fish-culture in Canada.

The advantages which may be derived from the artificial breeding of salmon and trout have been generally recognized for a good many years past, and establishments have been fitted up for the purpose of fish-hatching in various parts of the country. The terrible risks which the young fry, bred in the natural way in our rivers, run from their numerous enemies are, in a great measure, avoided by the artificial method, and we can succeed in rearing smolts from at least three-fourths of the vitalized eggs placed in the breeding-troughs, whereas, if these eggs had been exposed to the dangers of the river, probably at least three-fourths of the fry produced from them would never have reached the smolt stage. There seems little reason to doubt that the productiveness of the Tay has been increased by the smolts from the Stormontfield Ponds, and that the late successful season on Lochleven was in some measure owing to the number of young trout-fry put into it by Sir James R. S. Maitland, who has established extensive and admirably managed breeding-houses and fish-ponds at Craigend, near Stirling. The Canadians, however, seem to appreciate much more strongly than we do the great benefits which may accrue to the fisheries by breeding salmon, trout, and various other fish by artificial means; for we find, from the elaborate report by the Commissioner of Fisheries for the year ending December, 1877, and its various appendices, that the Canadian Government has seven breeding establishments in the different provinces of the Dominion, upon which about £5,000 was expended during the fiscal year ended 30th June, 1877. It has likewise a staff of 601 fishery officers of various grades, and a steamer for the protection of the fisheries in the River and Gulf of St. Lawrence.

The fish-breeding establishments in the Dominion of Canada are at Tadoussac, Gaspé, and Retisgouche, in the Province of Quebec; at Bedford-Basin, in the Province of Nova Scotia; at Miramichi, in the Province of New Brunswick; and at Sandwich and Newcastle, in the Province of Ontario. Mr. Wilmot, the superintendent of these establishments, informs us, in his interesting and valuable report, that the number of vitalized eggs contained in them in 1877 amounted to no less a number than 36,694,000, to which may be added the number of salmon-fry distributed to different rivers and waters from them in former years, amounting to 28,515,000, making a grand total of eggs and fry up the end of 1877 of 59,209,000. In the spring of 1877 5,451,000 fry of the *Salmo salar* were distributed from these establishments; 7,000 fry of the Californian salmon; 99,000 of the fry of the speckled trout; and no fewer than 7,000,000 of the fry of the whitefish (*Corregonus albus*). Besides this, the number of eggs laid down in the autumn of 1877 was as follows: *Salmo salar*, 6,004,000; Californian salmon, 40,000; salmon-trout, 1,000,000; speckled trout, 150,000; whitefish, 23,500,000. This whitefish, we are told, is being bred so extensively in order to supply the great falling-off in its take in Lake Ontario and Lake Erie. The Californian Salmon (*Salmo quinnat*), which Sir Samuel Wilson has succeeded in introducing into Australia, and which, we believe, has also been introduced into New Zealand, has been successfully acclimatized in some of the Canadian streams and lakes connected with the Atlantic. It was first brought across the continent from the Pacific coast in 1873. In July, 1877, several of these salmon were netted in Lake Ontario, near the estuary of Wilmot's Creek. Mr. Wilmot makes the following remarks with regard to the way in which these salmon thrive in fresh water, which will scarcely meet with the approval of those who consider that a residence in the salt water, for at least part of each year, is essential to the proper growth and development of the salmon: "These salmon," he says, "give interesting data for the naturalist and the study of physiology. They furthermore practically prove statements hitherto advanced by myself, that the salmon of the sea can be acclimatized and made natives of the fresh-water lakes, and that it is not indispensably necessary for salmon to go to the salt water; large bodies of either fresh or salt water, with an abundant supply of food, is all that is requisite to give them growth and reproducing powers; and that the procreative qualities of the male salmon are usually developed at an earlier stage than the female, the former invariably commencing their migration up the rivers for spawning purposes one year in advance of the latter: hence the indisputable fact of grilse taken in the rivers being always males."

There seems to be at present no annual close time applicable to the rivers in British Columbia, which in 1877 yielded about three and a half millions of pounds of tinned and pickled salmon; and there appears a possibility that wasteful and improvident modes of fishing may exhaust the resources of even these richly-stocked waters. We are glad to see, therefore, that Mr. Wilmot, in his report on the Government breeding establishments, strongly recommends the institution of an annual close time, and its stringent enforcement in British Columbia. The following are his remarks on the subject, and on fish-culture generally: "The general progress of the science of fish-culture is extending very