

or engineers on board British ships, and that Board of Trade reports that the examinations are so conducted as to be equally efficient as the examinations for the same purpose in the United Kingdom, and that the certificates are granted on such principles as to show like competency and qualifications as those granted in England and are liable to be forfeited for like reasons. Her Majesty may by Order in Council, declare such certificates to have the same force and effect as those granted under the Merchant Shipping Acts.

On the subject of Reciprocal Free Trade, we deemed it our duty to represent to Earl Granville that it was of the utmost importance to Canada that in the event of a renewal of negotiations between the Governments of Great Britain and the United States with a view to establish reciprocity in trade between those States and the Dominion, no steps should be taken in a matter in which the interests of the people of this country are so deeply involved, without previous consultation with the Canadian Government.

We took the opportunity, whilst on the subject, to bring under his Lordships' notice the Despatch No. 95 of 17th June, 1865, from Mr. Cardwell to Lord Monk, informing His Lordship, amongst other things, that on the subject of the Reciprocity Treaty, the Canadian Ministers than in England had represented the great importance to Canada of the renewal of that treaty, and had requested that Sir Frederick Bruce might be put in communication with the Government of Lord Monk upon the subject, and that the answer conveyed to them was that Sir F. Bruce had already received instructions to negotiate for the renewal of the treaty and to act in concert with the Government of Canada.

We were assured by Earl Granville, that the policy indicated in that despatch would be adhered to, and that nothing would be done in this important matter, unless with the concurrence of and in concert with the Canadian Government.

Respectfully submitted,
GEO. ET. CARTIER
WM. McDOUGALL.

ARTIFICIAL PROPAGATION OF FISH.

We have received a copy of the report of Messrs. WHITCHER and VENNING on Fish Breeding, at Newcastle, Ont. The subject is one of great importance, and has of late months excited much attention, both in and out of Canada. The operations reported on are conducted by Mr. WILMOT, at Baldwin's Creek, a small stream in the Township of Clarke, discharging into Lake Ontario, which was formerly famous for the very great numbers of salmon which visited it, but which, of late, has not contained any; and such, these fishery officers state, is "the history of every once populous water connected with Lake Ontario." They go on to tell us that in 1865 the efforts of the Fishery Department did succeed in snatching from extinction a scanty remnant of the salmon population, which was afterwards investigated by Mr. WILMOT, who conceived the idea of restocking Baldwin's Creek by artificial reproduction. Aided to a very limited extent by the Government, although at first he was entirely unsupported, Mr. WILMOT has been successful, and exhibited to the fishery officers 140,000 well shaped, healthy and active salmon fry, from three fourths of an inch to one and a half inches long. These fry are not hybrids, or doubtful or inferior members of the salmon family, but the true salmon (*Salmo salar*). Mr. WILMOT proposes to take to Ottawa living specimens of the salmon fry so reproduced; also the stuffed male and female salmon from which the

milt and eggs were obtained, together with a pair of grilse presumed to be from the hatch of 1867. We give the following interesting and descriptive extract from this report:

The buildings in which Mr. Wilmot's operations are carried on are durable, efficient and economical. They consist of a hatching house and reception house. The former is about sixty four feet long and some twenty-four feet in width, strongly roofed, and having a stone masonry wall seven feet deep, and so embanked with solid earth as to form a complete underground cellar impervious to frost. Within these walls are placed on trestles, longitudinally, a series of wooden hatching troughs extending nearly the whole length of the apartment, each about twelve inches wide and eight deep, raised three feet from the ground floor. These troughs are laid on a slight decline to facilitate the steady and constant flow of water through them to ensure due aeration. They are fed from a water-tight tank at the head pierced for tin spouts, and arranged to admit the water through filtering screens. This tank is supplied from the canal dug alongside of the main stream, on a small dam across it, which at once gives a head for the canal and turns the salmon into the tail race below, leading them into a commodious reception house adjoining, where they are enclosed and kept until ripe for manipulation. Above the cellar are other useful apartments. The whole establishment is built on a well devised, simple and inexpensive plan. It is calculated for the disposal of between four and five millions of fish eggs.

After the ripened eggs are expressed from the female fish and impregnated by the milt from the male fish, they are placed on grills made by arranging double rows of glass rods in small wooden frames, sufficiently close together for the eggs to rest without falling through. The frames are so disposed in the troughs that a gentle current of water flows constantly over them from the reservoir; and the work of incubation proceeds. Incessant care and delicate and minute attention are necessary to ensure the safety and healthy condition of the eggs, and the gradual development of the embryo fish. The slightest mistake, neglect, or carelessness might frustrate every endeavour, and some trivial accident may thwart the entire process. The hatching out occupies from 150 to 180 days, according to the mean temperature. Most of the eggs laid down by Mr. Wilmot, in November, hatched out on the 24th of April. When the young fish first emerge from the shell they are self subsisted from about six weeks from the oily yolk of the egg in the form of an umbilical sac adhering to their transparent bodies. This appendage having become absorbed by the living organism, the young fish require to be afterwards fed by artificially prepared food. Boiled bullock's liver grated very fine is scattered among them, and they devour the morsels with great avidity.

The outside works at Mr. Wilmot's, intended as receptacles for the brood, consist chiefly of a succession of ponds caused by damming the main creek at different places. In these the fish will be nursed till they attain sufficient strength and size for the lake, preparatory to pursuing their natural instincts—salmon to seek the salt water, white fish and salmon trout the larger water of the lake.

When it is considered that fully seventy per centum of the eggs deposited in this establishment have produced healthy young fish, last year's operations may be safely pronounced most successful. And should these fish pass a lucky season, there is every reason to count on their returning to the vicinity of this stream as adults in such immense numbers as to astonish and delight us with the prospect of a new and abundant source of valuable and nutritious food.

It is worthy of mention here that the large quantity of salmon fry now ready to be

released from the hatching house, is nearly half as great as that raised from last year's deposit of eggs in the famous Stormontfield ponds, on the River Tay, which establishment has been in full operation for upwards of fifteen years.

Mr. WILMOT, we are further told, has made some successful experiments with the ova of white fish, hatching out considerable numbers, and also in producing some very valuable hybrids of salmon trout. Messrs. WHITCHER and VENNING contend that these successes, if followed up, will lead to important public results, as they are capable of indefinite extension. They say that this and like establishments may within three years be made self-sustaining from the sale of fish-eggs and fish for use in the neighboring States; and that the "States of Maine, Vermont, New Hampshire, Rhode Island, Connecticut and New York are now making most vigorous efforts to procure impregnated ova and young fish. They pay high prices, and individuals find it profitable to raise and sell them. There are at present several persons engaged in this business. With the exception however of one person who invested capital in obtaining vivified salmon eggs in Canada, the other parties devote their attention mainly to the breeding and rearing of brook trout and shad. Mr. Seth Green, who lives near Rochester, New York, has amassed wealth by selling eggs and young of speckled or brook trout. He receives \$10 per thousand for the eggs, and \$40 per thousand for the young fish. The spawn and fry of Canadian trouts and white fish are of superior worth, and those of the salmon more than double that value. There would be no difficulty in procuring and hatching millions of egg from various species of fish, out which sales could be made from the surplus after supplying our own waters." The fishery officers go on to say that they consider the question greatly important for the Maritime Provinces, and concludes by observing that Mr. WILMOT's labours should meet with substantial recognition at the hands of the Government. We believe that these efforts can be made perfectly successful and that may be made to confer a great boon on a considerable part of the Continent.

IMPORTANT DISCOVERY OF FUEL.

THE recent discovery of a vein of pure anthracite coal nine feet in thickness is causing considerable speculative excitement at Buffalo Gap, Va., and along the line of the Chesapeake and Ohio Railroad. It has long been known that inexhaustible deposits of iron ore existed in this region; but they were only worked very slightly before the war, on account of the scarcity of the proper fuel. This discovery of anthracite within half a mile of the great line of railway which will soon connect the Ohio with the James by the shortest route is a matter of the greatest interest to Washington, Richmond and Norfolk, all of which cities are now obliged to draw upon Philadelphia for their supplies. It will also stimulate the exploration of the iron mines in that region, and the development of the two deposits will necessarily add immensely to the traffic of the Chesapeake and Ohio and Orange and Alexandria Railways. The former, it will be remembered, intersects the latter at Charlottesville in its progress eastward, and then both use a common track from that point to Gordonsville, whence the Chesapeake and Ohio branches off to Richmond, and the Orange and Alexandria proceeds northward, through Culpepper, Orange and Manassas, to Alexandria. It will be seen that cars laden at the mines can be hauled to Lynchburg, Richmond, Alexandria and Washington, without transshipment of freight.

The work on the Chesapeake and Ohio road westward from Covington is progressing very rapidly to White Sulphur Springs, in Greenbrier county, to which place it will be completed by the 25th instant. In view of all these facts, the importance of this deposit of coal to all the adjacent country can hardly be over estimated.