

THE FISH-INTEREST OF THE DOMINION.

HON. A. J. SMITH.

THE HON. ALBERT J. SMITH, Minister of Marine and Fisheries, accepted this Department at the change of Ministry, in 1873. He had held office in his native province of New Brunswick for several years, and has distinguished himself in many official missions anterior to the union of the Provinces. A successful member of the New Brunswick Bar, he has amassed considerable wealth, much of which is invested in real estate, ships and commerce. Being a man of independent means and not anxious for the cares of office, he has refused such dignified positions as that of Lieutenant Governor of New Brunswick, the Chief Justiceship of that Province, and the Ministership of Justice for the Dominion. These circumstances alone evince high estimation of his integrity and ability as a public man. The prime necessity of confiding our marine and fishery interests to a representative from the maritime section of Canada, has doubtless exercised a controlling influence in inducing Mr. A. J. Smith to accept his present portfolio. The Department which he now controls came into existence under the management of his predecessor, Hon. P. Mitchell, to whose energy and activity it is mainly indebted for its present efficient condition and great usefulness. Mr. Smith retains popular confidence by the impartial and conscientious character of his administration of the affairs of this important bureau, assisted by his talented Deputies Mr. Wm. Smith, Deputy Minister, and Mr. Wm. F. Whitcher, Fisheries Commissioner, and an efficient staff of inside and outside officers.

SAMUEL WILMOT, ESQ.

SAMUEL WILMOT, Esq., whose portrait appears in our columns in connection with the subject of "Fish Culture in Canada," is a native Canadian, having been born in the Township of Clarke, in the Province of Ontario. He is the youngest son of the late Major Samuel Street Wilmot, and grandson of Captain Lemuel Wilmot, formerly of the Loyal American Regiment, who settled in New Brunswick at the close of the American Revolution. Major Wilmot emigrated to the old Province of Upper Canada previous to the war of 1812, and took part in the battle of York and other engagements where he obtained his commission as Major in the militia force. He also held a seat in one of the first Parliaments of the Province. Being by profession a Provincial Land Surveyor, he was for many years in the employ of the Government as valuator of Crown and Clergy lands. The Wilmot name is a familiar one in New Brunswick, where many of the family have held the highest public positions. The subject of this notice is a near relative of Ex-Governor Wilmot and Senator Wilmot of that Province.

Mr. Samuel Wilmot has been actively engaged in public matters where he resides, and for upwards of thirty years a local magistrate. He has also been an active member of the municipal institutions in his district, having held the office of Warden of the United Counties of Northumberland and Durham, and is now Reeve of the Township of Clarke, to which position he has been elected by acclamation several successive years. He has also interested himself in agricultural movements in the country, and has been selected for a second term of three years a member of the Council of the Board of Agriculture and Arts of Ontario. His attention of late has been more particularly turned towards the practical application of the science of Fish-culture, in which calling he has been more than ordinarily successful, and has earned for himself well-merited notoriety in Canada and the United States. From a very small commencement in artificial fish-breeding—originated by himself in his private residence at Newcastle, Ontario—the science of Pisciculture, through his personal enterprise and official zeal, has become an established governmental industry in Canada. His exertions were acknowledged in 1873, by the Société d'Acclimatation of France, by the presentation of a silver medal, which was forwarded to him by the Government of that country for his efficient labours in this department of practical science. Mr. Wilmot now holds the office of Chief Superintendent of Fish-Culture for the Dominion of Canada.

WILLIAM FREDERICK WHITCHER, ESQ.

MR. WILLIAM FREDERICK WHITCHER, Commissioner of Fisheries, is widely known as an indefatigable official who devotes himself in an especial manner to the protection and increase of Fish and Game in this country. He is third son of the late Lieut.-Colonel Charles Whitcher, a Paymaster and Purser in the Royal Navy, who on retiring from active service emigrated to Canada in the year 1815, after marrying a sister of the late Hon. William Bowman Felton, of Belvidere, Ascot. Col. Whitcher resided at Sherbrooke, and held the offices of Sheriff of the St. Francis District and Grand Voyer, during twenty-six years. His eldest son, Mr. C. W. Whitcher, is now Deputy Sheriff of that district. Mr. W. F. Whitcher has been in public service for thirty years. Recognizing the great worth of the Canadian Fisheries, and appreciating the dangers to which they were exposed for lack of organized and authoritative supervision, Mr. Whitcher has laboured with tireless enthusiasm amidst many formidable discouragements to bring them under systematic control, and thereby to protect, increase and develop them. The

Government of the day having gradually realized the significance of such a patriotic purpose, has adopted executive and legislative measures to arrest the decline of these valuable resources; and already the Fisheries of Canada are restored to a hopeful state of productiveness. This gratifying result undoubtedly owes much to the moderation and perseverance no less than to the practical knowledge and personal diligence which have marked the services of the Commissioner of Fisheries. The annual reports of this officer and of his outside assistants are replete with interesting information and useful suggestions. The most recent of these reports gives the total money value of the annual produce of the Fisheries of Canada at about *eleven and a half millions of dollars*, besides the additional value of a large quantity of fish used as food in the various fishing districts. This sum represents an industrial and commercial business ranking next in value to our agricultural interest.

Mr. Whitcher is deservedly held in grateful esteem amongst salmon anglers for his successful endeavours to restock the salmon rivers, so as to afford an abundance of this ennobling sport, while at the same time augmenting the catch of salmon on the coasts and in the estuaries.

Quick to perceive the advantages of multiplying edible fishes in the greatly increased ratio attainable by artificial means, Mr. Whitcher advocates an extensive scheme of fish-culture as practised by Mr. Samuel Wilmot to be applied throughout the Dominion. His reports favor the idea of substituting by degrees this prolific system of fish-hatching for the slower and more uncertain methods of reproduction through natural facilities. "These latter," he writes, "involve numerous difficulties in dealing with the pressing necessities of our fishing population, the changed nature of our breeding streams, and the peculiar circumstances of our manufacturing industries: all of which naturally operate as a cumulative sort of hindrance to improvement. The substitution of a powerful reproductive system would, in some measure, obviate the necessity for enforcing many of the obligations on fishermen and manufacturers which are felt to be more or less burdensome and unpopular. If this change can be successfully worked, the probable and speedy result will be a very great increase of fish food in our markets and live-livelihood amongst the fishing communities, unaccompanied by most of the drawbacks which attend the present restrictions on this precarious calling necessarily imposed by the fishery laws."

The intrinsic value of the Canadian Fisheries is no doubt greatly enhanced by their importance as a national possession. It is to this larger view of their permanent welfare that Mr. Whitcher's attention appears to have been frequently directed. We find him also identified in all its phases and stages with what is known as "The Fisheries Question." The papers furnished by him in connection with the Headland Dispute exhibit a studied acquaintance with this subject, as affected by international law, and explain the special applicability and importance of a broad definition of exclusive maritime right in the case of Canada.

The extremely difficult position of Canada as regards a critical controversy involving matters of vital concern to her actual peace and future prosperity as a colonial dependency carried on between the Imperial Government and the United States, is not generally understood. Certain disputed treaty stipulations have always tended to make the "Fisheries Question" between Great Britain and the United States, particularly embarrassing. The petulant abrogation by the United States of the Reciprocity Treaty of 1854, about twelve years ago, revived these disputes; and when it became imperative for Canada, upheld by Great Britain, to enforce a defensive policy in assertion of her own rights and in support of her own interests, a time of anxiety and trial ensued which happily passed away without collisions, although several very narrow escapes occurred. We have reason to believe that the vigorous and popular course pursued by the Government of Canada was practically entrusted in the carrying out of its details to Mr. Whitcher; and that, animated by an equally patriotic and prudent sense of the responsibilities of the situation from both Imperial and Colonial considerations, he manifested vigilance and discretion of the highest moment. The fact that for three eventful seasons Canadian cruisers were employed and made numerous seizures of American fishing vessels without any mishaps occurring, sufficiently proves that the business was well-managed, and was also performed by those engaged with commendable discipline and judgment.

Mr. Whitcher accompanied the Right Hon. Sir John A. Macdonald to Washington in 1870, and was present during the negotiations resulting in the Treaty of Washington. The unlooked-for expedient respecting the Fisheries which was then adopted, has never been favorably viewed by Canadians. This dissatisfaction is probably caused quite as much by the unsatisfactory condition in which controverted points are still left, and the questionable feature of a bargain which resembles strongly an involuntary concession not altogether consistent with Canadian sentiments, as by the inadequacy of the equivalents provided for by the treaty. Public disfavor towards the negotiators of this part of the Washington Treaty has not yet sensibly abated; nor is it likely to do so until the con-

clusions of the approaching Commission at Halifax are developed. If these consequences shall be such as to establish the wisdom of the British element of the High Joint Commission in eliminating the Fisheries Question from the perilous complications which attended the unsettled Alabama Claims, and referring it to the dispassionate adjustment of a tribunal composed of distinguished and honorable men, the country may after all be disposed to reconcile itself, in this particular at least, to the unpalatable dish of diplomacy served up for Great Britain and Canada at Washington, in 1871. The selection of Sir A. T. Galt as British Commissioner combines such Imperial and Colonial guarantees as should inspire Canadians with a lively confidence in the trust. Sir Alex. Galt is a Canadian statesman of refreshing probity, enlarged views and consummate skill. The present Ministry has made an eminently judicious choice of a nominee which certainly affords unmistakable proof of their desire to achieve success on behalf of Canada. The British Cabinet has been likewise happy in the appointment of Mr. Francis Clare Ford as Imperial Agent, of whose ableness and earnestness we hear most assuring accounts. The Counsel engaged on behalf of Canada, Messrs. Doutre, Thomson, Weatherber, and Davies, are men of professional distinction, who will perform their duties in a spirit of intelligent patriotism. The advisory support which they may expect from their official relations to the Minister of Marine and Fisheries, himself an able lawyer of an equitable and judicial disposition, will strengthen their hands considerably. We are not aware in what capacity Mr. Whitcher is attached to the Halifax Commission, but the country would be gratified to learn that his thorough devotion to Canadian interests receives at this juncture some appropriate recognition.

FISH CULTURE IN CANADA.

The propagation of fish by artificial means is a science to which particular attention has been given in many of the leading European Governments, and which latterly has been brought prominently before the people of Canada and the United States, and is to be considered as a valuable adjunct to the natural methods of fish-breeding.

It is but a few years since this new industry was inaugurated in Canada; but the rapid strides which it has made in the successful experiments carried on at Newcastle, in Ontario, by Mr. Wilmot, together with the practical results which have been brought about in relation to this interesting procedure, has given it great popularity with the Canadian public, and it has been also thus far somewhat liberally acknowledged by the fostering patronage of the Government.

A very general desire now pervades the minds of the people of Canada to encourage by every possible means the advancement of this practical science; and also to obtain such general information in relation to the *modus operandi* of fish-culture as can be intelligibly given. With this view as public journalists, our artist was despatched to the Government Fish-breeding Works at Newcastle, Ontario, in order to be an eye-witness of the operations engaged in there, and take sketches of the buildings and grounds in connection with the establishment; and also delineate as minutely as possible by pictorial drawings the internal arrangements of the breeding-rooms, and the apparatus used in the practice of artificial fish-breeding.

The result of this visit has been that we are now enabled to present to our readers a series of pictures which will give a comprehensive idea of this national enterprise, and from which we trust the public will derive general information and useful knowledge.

Our pictorial illustration includes in it eleven drawings, each representing different sketches of the outside premises and grounds, as well as views and plans of the interior arrangements of the buildings, as are more particularly adapted for the work. These drawings will be found numbered from one to eleven, for more ready reference.

No. 1 is a panoramic view of the buildings and grounds, and of the surrounding country. The building to the left of the picture, on the edge of the stream, is the Government Fish-Breeding Establishment, with its long, low reception house alongside; just here a permanent weir or barrier is thrown across the stream which prevents the upward passage of the salmon. Being thus stopped on their progress up the main channel, they are attracted by the rapid outflow of water coming through the reception house, and rushing up the current they pass through an ingeniously-contrived triangular-shaped weir (No. 3), and become entrapped within the house where they are kept confined till they become ripe for spawning. From this building the stream runs along the side of the picture downwards a distance of some two miles, where it empties into Lake Ontario.

Beneath the two large clumps of evergreen trees in front on the hillside and the main stream, the several nurseries and retaining ponds are shown, dotted here and there with miniature islands. In some of these ponds the parent salmon are retained for a while to recuperate after the exhaustion produced by spawning; others are used as nurseries in which the young fry are kept for a time just after they are hatched out, and have absorbed the umbilical sac.

The small building to the extreme right of

the view was the old or original reception house, but it is now used as the gateway and general outlet from the ponds. On the extreme left, just above the main building, is an old mill with its raceway and mill pond beyond. From the higher elevation of this large reservoir a sufficient head is obtained to force through an underground pipe a large flow of water into the first and second apartments or breeding rooms; thus giving a constant and sufficient supply at all times for the hatching troughs.

The premises and ponds cover some ten acres of land; two public roads lead from the grounds, one at each extremity of the picture, and converge together at the Village of Newcastle, about three-quarters of a mile distant, where an important station of the Grand Trunk Railway is located. The Town of Bowmanville is situated about four miles to the west, and the Town of Port Hope seventeen miles to the east. On the summit of the hill is the farm and private residence of Mr. Wilmot, the originator and founder of this institution.

No. 2 is a ground plan of the premises with the location of the buildings and ponds as described in the panoramic view No. 1.

No. 3 shows the inside arrangements of the reception house for entrapping and penning up the parent salmon. The fish enter this building through the triangular-formed weir, and become imprisoned in the first or large compartment. They are afterwards transferred as represented by the assistant dipping them out with a small net into the smaller pens above. The males and females are then separated and placed in different pens; in this way they remain quiet, and are more easily retaken at the time when they become ripe for laying their eggs. When mature a dozen or more of these fish at one time are again caught with the hand net, and carried (only a few feet) to the tanks, arranged for their safe keeping at the right hand side of the breeding-room, lower flat, No. 4, where the workmen are engaged at their work.

No. 4. Here the process of taking the ova from the fish and impregnating it is carried on; this is done by lifting from the tank a ripe female fish and holding her over a vessel securely, and gently pressing her body with the hand when the eggs will flow freely from her. (See figure No. 5). After this operation is performed, she is liberated by dropping her into a raceway running from the room, down which she quickly swims into the pond marked A on the ground plan No. 2. A male fish is then taken from another tank, and operated upon in like manner as the female, the milt extruded from him is mixed with the eggs by a gentle stirring with the hand; this causes immediate impregnation. The ova are then dipped out of the pan with a small ladle, and put into a measure made to contain one thousand eggs; from this they are spread evenly on the hatching trays. (See apparatus plate No. 6.) These trays are made two feet long and ten inches wide, with a division in the centre, and hold four thousand eggs each; when filled they are carefully laid in the breeding troughs shown in figures 4 and 7. After the ova are thus deposited they are closely watched, and regularly cleaned from all sediments or other impurities which may settle upon them during the process of incubation.

The eggs are of a clear salmon color, but should any prove to be unfertilized, or become injured in any way, they change their appearance to an opaque white, when they are picked out with forceps and cast away, thus preventing the remaining ova from becoming contaminated. At the time of our artist's visit a million and a half of these vivified eggs were deposited on the hatching trays in these rooms.

No. 4 and 7 explain the manner in which the breeding troughs are distributed in the rooms. In the lower flat they are placed lengthwise, in the upper room crosswise of the building. Six of these are laid side by side with intervening aisles two feet wide for the convenience of the workmen in picking and washing the eggs. The troughs are each supplied with a constant flow of living water from the tanks which are fed from the raceway above, and are regulated in quantity by wooden taps as shown in the cut. In the lower flat a series of aquaria are shown; they are placed alongside the wall and contain young salmon and other fish which are kept for observation and also for exhibition to the numerous visitors who frequent the institution.

No. 8 represents the upper story of the building, which, after taking from it office rooms, leaves a large commodious apartment used as a museum in which are collected a number of specimens of fish of various kinds and other animals. This natural history depository is only of a few months' existence, yet it comprises numerous specimens of the salmon family and other fish, prominent amongst which are the large ones shown in the plate: the one on the right is a sturgeon weighing 280 lbs.; the one on the left is the *Tunny* or giant mackerel—its weight when alive was upwards of 600 lbs.—a Greenland shark ten feet long, an immense moose deer, male and female caribou, a bear, and other animals; also an alligator ten feet long. All of these specimens present a life-like appearance, and are artistically mounted.

No. 9 shows the front and side elevation of the fish-breeding house proper; its dimensions are 64 feet in length by 22 feet in width, with a cellar or lower flat built of stone, and two frame stories above ground. The building presents a handsome and commanding appearance externally; and the arrangements inside are conve-