DOMINION

BRITISH COLUMBIA FISHERIES COMMISSION

1905-1907

REPORT AND RECOMMENDATIONS

WITH ADDENDA AND APPENDICES.

COMMISSIONERS:

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Mr. J. C. BROWN, New Westminster.
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DOMINION FISHERIES' COMMISSION FOR BRITISH COLUMBIA, 1905-7.

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DOMINION FISHERIES COMMISSION FOR BRITISH COLUMBIA.

VICTORIA, BRITISH COLUMBIA, July 24th, 1907.

To the Honourable L. P. BRODEUR,
Minister of Marine and Fisheries,
Ottawa.

SIR,—In submitting the following report and recommendations upon the fisheries of the province of British Columbia, we, as commissioners (appointed by order in council, approved by His Excellency the Governor General on July 22, 1905), who have appended our names hereto, cannot disguise from ourselves the fact that the scope of the inquiry entrusted to us, and the detailed instructions attached to the said order in council, cover an unusually extensive field of investigation, and the questions which we were officially charged to inquire into, and report upon, are of great magnitude and of exceptional complexity. They concern not only the prosperity of vast commercial enterprises, and the conservation of almost unparalleled natural resources in marine and fresh water areas, but they trench upon matters intimately associated with the intricate connections of capital and labour, and the momentous interests bound up with international relations and rights.

The order in council (July 22, 1905) sets forth, that 'urgent requests have from time to time been received, during the past twelve months, from influential and representative parties interested in the great fishing industries of British Columbia, urging the necessity for a commission to make an investigation into the present state of the Canadian fishing industries on the Pacific coast, especially the salmon fishing and canning industries of Vancouver island and the mainland adjacent to Juan du Fuca strait and the Strait of Georgia.

'From the information laid before the Minister, a crisis in the great salmon industries of British Columbia has been reached, and a full inquiry is a matter of great urgency and importance. Owing to the fact that the main schools of salmon passing from the sea to the Fraser river and certain other British Columbia rivers for propagation purposes traverse a portion of the coast of the state of Washington, United States, where a system of protective regulation comparable to the Canadian system is not carried out, the Fraser river salmon industry has been seriously injured, and great losses have resulted.'

The order in council proceeded to state that the following should compose the commission:—

Professor EDWARD E. PRINCE, F.R.S.C., &c., Ottawa, Dominion Commissioner of Fisheries and General Inspector of Fisheries for Canada, Chairman.

CAMPBELL SWEENY, Esq., Vancouver.

JOHN CUNNINGHAM BROWN, Esq., New Westminster.

RICHARD HALL, Esq., Victoria.

Rev. GEORGE W. TAYLOR, F.R.S.C., Wellington, Nanaimo.

JOHN PEASE BABCOCK, Esq., Provincial Fisheries Commissioner, Victoria.

These duly appointed commissioners were instructed to hold sittings and to take evidence in Victoria, Vancouver, New Westminster, Nanaimo and other places in British Columbia, and make full inquiry into all matters affecting the fisheries and to arrange for conferences or meetings with authorized representatives from Washington State, United States, at such places in the United States or British Columbia as might

be determined, and to make such report and recommendations as would enable the honourable the Minister to submit for His Excellency's approval regulations for the preservation, protection and development of the fishing industries of British Columbia.

The instructions appended to the order in council creating and constituting the commission directed the carrying out of the following arrangements, viz.: (1) Sittings at Victoria, Vancouver and other centres, for the purpose of taking evidence from canners, fishermen, and other interested parties. (2) Visits to Fraser River canneries, and other fish-preserving, freezing and curing establishments, and to fishing grounds in the Gulf of Georgia and Puget Sound. (3) Conferences with United States representatives, appointed by the State of Washington, and if possible visits of both Canadian and United States representatives to selected canning centres, and to fishing grounds on both sides of the international boundary line. (4) Preliminary examinations or surveys of the fisheries, river and deep-sea, in the province north and west of the Fraser river, including Vancouver Island waters. This work to be carried on by small committees of the commission, as far as possible simultaneously, in order to expedite the collection of information from these various areas. (5) Concluding sittings, for the review of evidence, for considering the sub-committee's reports, and for framing recommendations to be submitted to the Honourable the Minister of Marine and Fisheries.

MATTERS TO BE INVESTIGATED.

Amongst the matters specified for the commission's investigation were:—

I. Salmon industry.—Close seasons; mesh, depth and length of nets; limitation of netting in Fraser river and estuary; conditions in granting of leases and licenses, with special reference to Japanese and Chinese exclusion; limitation of amount of gear; areas for pound-nets or trap-nets and other nets; limitation of canneries and suggested abolition of canners' fishing licenses.

II. The offal and dog-fish question, including the use generally of fish for the manufacture of oil and fertilizers.

III. Trout and angling questions.—Close seasons for spawning fish; open seasons for angling, trolling, &c.; restrictions as to legal size of fish to be taken.

IV. Sturgeon fishing, protection and restoration of the industry.

V. Hecate Straits and foreign fishing operations.

VI. Sea fisheries of the north.—Halibut industry; herring fisheries; abuses *re* bait, fish offal, &c.; skill or black cod and true cod; sardine, anchovy and oulachan, oyster, abalone and crab fisheries; best methods of developing sea fisheries; restrictions, suggested leases and licenses.

Respecting the last-named group of matters to be investigated, the departmental instructions advised the commission to arrange for their reference to a sub-committee of such members as have special experience in deep-sea fishery questions, and a technical knowledge of deep-sea fish, edible mollusks, crustacea, and other marine invertebrates.

SESSIONS OF THE COMMISSION.

The actual work of the commission commenced with preliminary executive sittings, on September 19, 1905, when the commissioners were called together in Victoria, and continued in session for two days arranging the programme of work, dates of the series of sittings, conferences with the State of Washington representatives, and certain special inquiries *re* the herring industry at Nanaimo, and the limits of fishing operations for salmon on the Fraser river. The commission adjourned to resume its work in Victoria, on November 7, at 10 a.m., and on that date commenced two days' sessions deciding the various points to be given chief attention at the public sittings to commence a week later. The Washington State Special Commission had communicated their desire to hold a conference with the Canadian Commission in Seattle

on November 9 and 10, and the sub-committees, viz., Mr. J. C. Brown and the secretary, and the Rev. G. W. Taylor, gave in their reports, the former placing before the commission the results of an inquiry on the Fraser river, especially above Westminster bridge, and the last-named commissioner presenting a report on certain aspects of the herring industry. The commissioners crossed from Victoria to Seattle and sat in private session with the Washington State representatives in the great reception room, Butler House. A most valuable and lengthy discussion took place at the two days' conference, over which by the unanimous vote of both commissions, Professor Prince, Dominion Commissioner, was elected chairman. Such progress was made that the United States representatives expressed their desire to hold a further conference in British Columbia in the year 1906. The Canadian commissioners were received with great kindness by the Washington State commissioners, and characteristic hospitality signalized the visit to the city of Seattle. The opening public sessions of the commission were held in the centre of the Fraser river fishing industry, viz., New Westminster, on November 14 and 15, 1905. By kind invitation of the Mayor and city council, the sittings took place in the spacious city council chambers, and owing to the very large and representative attendance of fishermen, canners and the public, the accommodation was taxed to its utmost, and great interest was evinced in the proceedings. The further sittings continued as follows: November 16 and 17, Board of Trade Rooms, Vancouver; 21st and 22nd, Board of Trade Rooms, Victoria; 23rd and 24th, Court House, Nanaimo; 27th, Provincial Agent's Offices, Duncans, Cowichan River; December 6, Council Chambers, New Westminster.

In addition to these eleven public sittings, which were in many cases very lengthy, and at which one hundred and twelve witnesses were heard and most valuable detailed evidence from the leading fishermen, canners and representative men was elicited, there were held a number of private executive meetings, viz., on November 7 and 8 at the Driard Hotel, Victoria; November 18, Vancouver Hotel, Vancouver, and December 8, at the same place, when several departmental officials gave important evidence to the commission, and a full discussion of salient points took place, resulting in the drawing up of certain interim recommendations which were duly forwarded to Ottawa. The commission adjourned on December 8, to meet again in 1906, on such date as might be convenient and suitable.

Executive sittings were resumed in Vancouver on June 20, 1906, when arrangements were completed for making a tour of the United States traps and canneries in Puget sound and the trap-nets in British Columbia waters, west of Discovery island, near Victoria. This tour in company with the members of the Washington Special Fish Commission, from Bellingham to Anacortes, and by Rosario straits to Point Roberts and Blaine, yielded much valuable information, and the visit immediately thereafter to the British Columbian traps in Fuca straits put the British Columbian commission in possession of the actual facts relating to fishing localities and fishing operations. During this tour it was arranged that the further proposed international conference should be held in Vancouver. A Committee of the Commission, at the request of the honourable the Minister made an inspection of the salmon canneries of the Fraser River, with a view to noting the cleanliness and sanitary aspects of these establishments. A report of a very favourable nature was forwarded to Ottawa on July 24, 1906. At a conference, on September 19, in the Board of Trade rooms, Vancouver, the members of the British Columbian commission made a formulated statement of views and recommendations which a majority of the commissioners felt prepared to adopt, providing that the Washington Special Fish Commission had some adequate recommendations to make to the Washington State legislature with a view to the mutual preservation of the sockeye salmon supply in contiguous waters. The main contention of the Washington State representatives was that the weekly close time for sockeyes of thirty-six hours in their waters was rendered ineffective by excessive gill-net fishing carried on in the Fraser river above New Westminster bridge, (a distance of thirty-eight miles). The Washington Special Fish Commission stated

their willingness, as far as they could, to secure the continuance of the thirty-six hours close time, each week, in their waters. At this second international conference held on September 19, 1906, in the Board of Trade rooms, Vancouver, a final interchange of views took place, with the result that definite conclusions were arrived at. The conclusions of the Washington commission were embodied in their report laid before the State legislature in session in Olympia from the middle of December to March. The recommendations of the British Columbian Fishery Commission, tabulated in an interim report, were forwarded to Ottawa early in October. It included a minority report on points upon which the commission could not come to a unanimous decision.

INTERIM REPORTS AND RECOMMENDATIONS SUBMITTED.

The commission has presented interim reports and recommendations on the subjects specified, and on the dates named as follows:—

September 21, 1905.—Recommendation that the order in council authorizing the closure of the sockeye salmon fishing for 1906, and dated February 3, 1905, be rescinded.

December 8, 1905.—Interim report unanimously recommending the measuures briefly summarised as follows:—

1. That in the interest of the British Columbian fisheries a satisfactory adjustment of the differences between the Dominion and Provincial governments be as far as possible hastened.

2. That the territorial or non-territorial character of Hecate Straits waters be declared as soon as possible. If these waters are held to be Canadian then foreigners are fishing there illegally.

3. That immediate measures are necessary to limit the number of canneries on Rivers inlet, Skeena river, &c., or the fisheries there will be in danger of depletion. The inspector (Mr. Williams) should be instructed that the number of boat licenses at present be: Rivers inlet, 550; Skeena river, 800; Naas river, 200.

4. That a more efficient patrol of British Columbian waters be arranged in order to suppress the existing extensive poaching.

5. That a survey of the fishing grounds in British Columbia be carried out under the present Biological Board of Canada.

6. That all natural and artificial obstructions be reported on and removed from British Columbian salmon rivers.

7. That the present snag-boat be transferred to Naas river, and a more powerful snag-boat take its place on the Skeena river.

8. That the prohibition of the export of fresh herring from British Columbia in 1905 and 1906 be withdrawn.

June 26, 1906.—Recommendation that the salmon fishing and salmon canning industries be exempted from the Lord's Day Act.

Recommendation that gross violations of the fish offal pollution prohibition in the Fraser river be effectively dealt with by law. Also that recommendations Nos. 1, 2 and 5 of the interim report, December 7, 1905, be speedily carried out.

July 24, 1906—Report on sanitary conditions in Fraser river salmon canneries

August 17, 1906.—Recommendation that the order in council dated August 23, 1904, which prohibited all salmon fishing between August 25 and September 15 (excepting with nets of seven inches mesh) be amended so as to allow trap-nets west and south of Discovery island, and gill-nets to take cohoes during that period in 1906.

September 20, 1906.—Recommendation that in view of the attitude of the Babine Lake Indians, in resisting fishery officers in the execution of their duty, a small force of militia or mounted police should be sent to the scene of the trouble.

October 2, 1906.—Interim report which recited the work accomplished by the commission up to the date of the report. It concluded with a series of recommendations which are summarized below, and added some suggestions regarding the proposals of

the Special Fish Commission of Washington State, also given below in brief form. A minority report, it may be added, was appended signed by Mr. John C. Brown, a member of the commission, detailing his objections to certain conclusions of the majority of the commission.

The following were the recommendations of the Majority Report:—

1. That the maximum depth of salmon nets in Fraser river and Straits of Georgia be 60 meshes.

2. That the maximum length of salmon nets in the same fishing area be 150 fathoms.

3. That Westminster bridge be a fishing limit on the Fraser river, above which actual residents only be licensed to fish for sockeye salmon, and that the two following conditions be carried out:—

(*a*) The license for which residents on either side of the river above Westminster bridge shall be eligible, shall bear the words conspicuously stamped across its face 'License valid between New Westminster bridge and Mission bridge.'

(*b*) Parties known to the inspector or fishery officers as British subjects *bona fide* residents in the limits named above for not less than six months prior to issue of license shall alone receive such license.

4. That in the 'fourth' or 'big' years the present weekly close time, 6 a.m. Saturday to 6 p.m. Sunday, shall be carried out from Fraser river mouths to Mission bridge; but in the intervening three 'off' or 'poor' years a longer weekly close time of 60 hours (6 a.m. Saturday to 6 p.m. on the Monday following) be enforced in the limits just specified. Outside the mouths of the Fraser river the present weekly close time to continue.

5. That the patrol service on Fraser river be improved by adding two or more speedy patrol launches.

6. That each salmon trap shall be effectively closed during the weekly close time, or other close time, by means of a small-meshed apron, as provided by Washington State laws for the contiguous United States waters.

7. That a specified fine of $250 be enforced for trap violations, as also provided in Washington State waters adjacent.

The commission concurred with the Special Fish Commission of the State of Washington in certain proposed measures applicable only to the United States waters contiguous to the British Columbia waters, viz.:—

1. That a trap owner, in the United States waters referred to, may retain his trap-site if he builds or operates a trap upon it for at least one season out of four; but that an increased fee be imposed for those years in which the trap is not operated.

2. That the superior courts of the State of Washington should try cases of violation of the trap regulations in that State.

3. That a close season for sockeye salmon in Washington State be enforced from August 20 to September 10.

4. That in Washington State a distinct and adequate appropriation is desirable and necessary to effect the enforcement of the fishery laws.

5. That the minimum penalty for trap violations be $250, as smaller fines are held not to be deterrent. This would result in uniform minimum penalties for trap-net offences in the contiguous United States and British Columbia waters.

It may be added that the minority report signed by Mr. John C. Brown, commissioner, objected mainly to the longer close time (60 hours) in 'off' years recommended for the Fraser river by the majority of the commissioners. The grounds taken briefly stated were:—

1. It discriminates against British Columbia fishermen to the advantage of the Puget Sound (United States) fishing interests, without compensating return.

2. It favours the Japanese as against the white fishermen, and would make the business of the latter unprofitable.

3. The reverse proposal would be more valuable, viz., a longer weekly close time outside the Fraser river.

4. It was not considered by the commission until a late stage, and no evidence could be taken on it.

It is necessary to add that the desire, widespread in British Columbia, for friendly conferences with the Washington State authorities, with a view to the establishment of protective fishery laws on both sides of the international boundary line in the straits of Georgia, Puget Sound, and the straits of Juan de Fuca, has been satisfactorily met, and legislation has resulted in the State of Washington.

The mutual conferences, of an international character, which were held in Seattle and in Vancouver were followed by the passing of an Act by the State legislature, at Olympia, on March 6, of the present year, in which clauses provide for the prohibition of salmon fishing, excepting with hook and line, from 6 p.m. Friday to 6 a.m. on Sunday in each calendar week, and the prohibition of sockeye fishing from August 25 to September 15, in each year. It has also been enacted that all pound-nets or fish traps in the waters of Puget Sound shall be closed by an apron preventing the entrance of salmon into the heart or pot, by this means securing the observance of the weekly close time. Further, a fine of not less than $250 and not more than $1,000, or imprisonment for 25 days minimum, or one year maximum, was specified as the punishment for violation of this last-named enactment.

As the Washington State realized that Canadian regulations may be authorized by the Government at Ottawa at any time under section 54 of the Dominion Fisheries Act, chapter 45, Revised Statutes of Canada, 1906, and be made effective immediately after its authorization, the legislature at Olympia, in the last section of their Act, declared that 'An emergency exists, and this Act shall take effect immediately.'

SUMMARY OF SUBJECTS DEALT WITH.

The recommendations of this commission may be briefly tabulated and summarized as covering the following industries and important fishery problems:—

General Subjects—

Foreign fishing vessels in territorial waters.
Use of fish for manure and oil.
Observance of weekly close time for fish.
Increased fine of $250 to be provided.
Purse seines to be used for salmon fishing only.

Salmon Industry—

Fraser river.
Northern rivers and inlets.
Vancouver Island rivers.

Inshore Fisheries—

Herring.
Cod.
Rock cod.
Oulachon, smelt, &c.
Sturgeon.
Pilchard, &c.
Black cod.

Deep-sea Fisheries—

Halibut.
True cod.
Black cod or skill.

Shell Fish Fisheries—

Oyster.
Clam.
Abalone or ear shell.

Crab Fishing, etc.—

Crabs.
Prawns, &c.

River and Lake Fisheries—

Settlers' and farmers' fishing operations.
Angling and sport fishing.
Indian fishing claims.

Whaling Industry—

Licensed whale factories.
Whale supply.
Protective measures.

Miscellaneous Fishery Matters—

Fish offal and inspection of canneries.
Utilisation of dog-fish and other oil producing fish.
Territorial jurisdiction on Pacific coast.
Obstructions on rivers, &c.
Improved river and sea police patrol.
Fishery leases.
Fishing and canning licenses.
Trap-net question.
Oyster and clam leases.
Steam trawling question.

Hatcheries and Improvement of Fish Supply—

Extension of fish culture.
Planting of lobsters and eastern oysters.

It was intended that, as Appendices to the present report, there should be added papers of a somewhat technical nature dealing more elaborately with special aspects of the fish and fisheries of British Columbia, and the large collection of fishes, and mollusks and other invertebrates obtained by the scientific sub-committee during its cruise to the northern waters of the province on the Canadian government cruiser *Kestrel*, was to have been fully treated. The nature and extent of the collection of specimens from various fishing localities precludes the inclusion of a report upon them, as the detailed account is only partially completed, and can be more appropriately published in the forthcoming number of the 'Contributions to Canadian Biology,' issued under the direction of the Biological Board of Canada.

It has been deemed inadvisable to delay this report further to allow of the appearance as appendices of such reports, and the technical investigations will therefore appear in separate form as indicated.

SALMON INDUSTRY.—RECENT CHANGES.

Of the British Columbian salmon industry so much has been written that it is necessary in this report only to refer to certain salient facts which have done much in recent years to change the character of the industry. Machinery has been more and more largely introduced. Recently, indeed, each successive year has seen some important improvements, but the installation of machinery this year is in advance of

that of any other season. It may now be claimed that after the fish leaves the boat from which it was captured, all handling of it ends then and there.

After it is thrown up on the wharf by the fisherman it is handled thenceforward practically solely by machinery and the arrangements for so doing are very perfect.

One might visit a great many factories or similar institutions in any part of the world without finding such a fine array of machinery as in the British Columbian canneries. Each machine is evidently the result of careful study by men fully aware of the necessities of the business. The salmon are, by recent methods, taken from the boat by a huge conveyor which conveys them to the inside of the building and dumps them down on the floor, where the operator is waiting, standing before the huge machine known as the Iron Chink. This name arises from the fact that the machine will easily perform the work of many Chinamen. No longer will it be necessary to have line after line of industrious Chinamen or Indian operators standing before their benches waiting with knives ready for the fish. They formerly cleaned the fish, but the Iron Chink does that part of the work. Fitted, as it is, with an intricate arrangement of knives and cutters, the machine takes the fish as they come from the water, and rapidly cuts off the head, fins and tail, and cleans the entrails out. This is done very rapidly, so rapidly that thousands of fish each hour will pass through.

Each salmon is then taken to the big revolving cutter, which cuts it into slices ready for the tin. It is then carried on trays, fresh and clean, to the canning benches, where it is carefully placed in the cans. Passing down a long belt, the can is covered and finally soldered, all by machinery, and thoroughly cleaned. Passing still further down it is cleaned again, and then taken over to the test tanks. These are capacious tanks of water where the cans are submerged, and, should they exhibit the slightest defect in sealing, as shown by bubbles, they are at once taken out. The cans are then taken to the retorts, first passing through another cleaning process, and there, after being tested, are put into the large retorts or ovens and allowed to remain an hour at a high degree of heat. As they have previously passed through about 150 degrees this cooks the fish thoroughly. The cans are then ready to be labelled.

But to reach the room where the labels are put on, the cans must go through another cleansing process ,this time being finally cleaned and sprayed. They then pass to the rooms where they are labelled by machinery, and are ready to be packed in strong wooden cases and sent out.

It will be seen that the fish are kept thoroughly clean by this process, and more and more improvements, it may be added, are being constantly introduced to ensure cleanliness.

Other changes, however, affect less the northern waters than the Fraser river, which, it may be justifiably claimed, still maintains its position as the leading fishing centre of the province, while the river certainly ranks as one of the most productive, if not the most productive of the world's salmon rivers. Within the last fifteen or sixteen years there has grown up an enormous salmon industry in the adjoining State of Washington, the most valuable part of which industry depends upon the supply of sockeye salmon bred in Canadian waters, and which are captured when returning to their native resorts at the headwaters of the Fraser river. This immense tax upon the productive capacity of the river, when added to the enormous scale of the sockeye salmon industry, already developed on the Fraser river, signifies that the strain is wholly abnormal. It is doubtful if even the Fraser river with its amazingly extensive, almost illimitable, spawning grounds, can resist decay and depletion. Such decay, in the opinion of many well-informed authorities, has already begun, and the signs of depletion have, in some recent years, appeared incontrovertible. The words of the Hon. A. C. Little, published in 1890, may be appropriately quoted in illustration of the momentous change in the Fraser river salmon conditions by the growth of a vast United States industry in the waters through which the migrating schools of fish pass to reach the Fraser river:—

'In no district of the world has there been such a remarkable development in the fisheries industry as has taken place on Puget Sound during the last ten years. In fact, the greatest amount of this increase is shown in the reports of the last five years. Ten years ago the only cannery of any importance on Puget Sound was one owned by Geo. T. Myers, of Seattle. There had been attempts to establish other canneries in different parts of the Sound, none of which had proved successful in a financial way, and all had been practically abandoned. During the last decade, however, important discoveries were made as to the channels of the lower Sound and Gulf of Georgia, through which pass the well known sockeye of the Fraser river. The parties who established canneries at Point Roberts and Semiahmoo—afterwards merged into the Alaska Packers' Association—were the first to take advantage of this information. Since that time, however, remarkable developments have taken place, and on Puget Sound to-day there is a total of eighteen canneries having among their number the largest fish canning establishment in the world.

Since these words were written the pack of the Puget Sound canneries has increased as follows:—

1898—	35[illegible],000	cases,	including sockeyes.....	244,000
1899—	851,300	"	"	497,700
1900—	402,048	"	"	228,704
1901—	1,363,297	"	"	1,105,096
1902—	543,591	"	"	339,556
1903—	464,014	"	"	167,211
1904—	286,630	"	"	123,419
1905—	1,047,295	"	"	837,122
1906—	435,668	"	"	182,241

The locations of the Sound canneries are very favourable for carrying on their business at the least possible expense, being well distributed over the entire district.'

Not only is this vastly increased strain upon the Fraser river salmon supply a serious consideration, but the salmon packed at the Point Roberts' canneries and other establishments, especially the sockeye salmon, enter into keen competition with the sockeye salmon packed by Fraser river canners. The situation is one which makes the outlook, for all concerned, very serious, and calls for measures which shall ensure the continued plenitude of salmon in the river, and their ascent in sufficient numbers to the upper waters.

The development of an enormous salmon canning industry in Alaska, especially during the last twelve years, has also had its effect upon the British Columbian salmon business, especially as a considerable proportion of the pack consists of sockeye salmon. These sockeye salmon, captured in the extreme northern waters of the Pacific coast, are regarded as inferior in colour and other respects to the best sockeye salmon of British Columbia, especially the Fraser river fish. This opinion was very prominently expressed in the well-known case of Reed, Murdock and Co. *versus* the Alaska Fisherman's Packing Co., tried in Astoria, Oregon, in February, 1902, when the best Alaska salmon, including Alaska sockeyes, were pronounced as not equal to the sockeye salmon, known as such in British Columbia. The Dominion Commercial Agent, in Manchester, England, expressed the view prevalent amongst English buyers, when he said, in his recent report (March 16, 1907), 'The substitution of Alaska for British Columbia salmon is still continued on the English markets . . . . . The tins in question are labelled merely British Columbia salmon, and are being bought at 17 shillings to 17 shillings and sixpence per case. They are put into competition with genuine British Columbia salmon at 22 shillings and 23 shillings and sixpence. The Alaska fish, which is substituted, however, is not at all the same quality.'

DEPENDENCE OF WASHINGTON STATE SALMON INDUSTRY ON FRASER RIVER.

The canners and others interested in the salmon industry of Washington State fully admit their dependence upon the fine Fraser river sockeye, and it was peculiarly

gratifying to this commission to observe, in their friendly conferences with the Washington State representatives, the genuine desire to meet the situation by legislating as far as possible concurrently on both sides of the boundary line, in order to secure uniformity, and proper effectiveness in the laws for the conservation and perpetuation of the salmon supply. 'There was a time,' said a Puget Sound packer, 'when there was a feeling between the packers on either side of the line. There was at that time a feeling that the native habitat of the sockeye salmon was the Fraser river and its tributaries, and the feeling obtained that because it was its native habitat, the packers on the other (Canadian) side, had a peculiar claim to them, and the packers on this (Washington State) side were taking something that really belonged on the other side of the line, and that, to some extent, did not really belong to them. I think that feeling, however, has been dissipated, and I believe every man engaged in the business in the State of Washington desires that means be taken to perpetuate, and re-establish, and rehabilitate the business.' These are the serious and weighty words of one of the most prominent men deeply concerned in the welfare of the Washington State salmon industry, and the result of this feeling for common action has been the recent Act passed by the Washington State legislature already referred to.

DIFFICULTIES CONFRONTING BRITISH COLUMBIA SALMON INDUSTRY.

Apart from this feature, of an international nature, the salmon industry has been affected by other modifying influences of which at least five have been of the most potent nature in adding to the difficulties surrounding the business. They are:

(*a*) The large increase in the number of canning establishments, and the expansion in capacity of individual canneries.

(*b*) The development of freezing, salting and curing as methods of preserving British Columbian salmon, including the sockeye salmon, as well as other kinds, formerly neglected or regarded as of small commercial importance. These expanding industries have increased the demand and raised the price of salmon, which the canner cannot now obtain at former rates.

(*c*) The increasing scarcity of labour, not white labour, which was formerly the mainstay of the fishing and canning industry, but all kinds of labour, Indian, Chinese, &c.

(*d*) The fluctuations in the runs of salmon which ascend the various British Columbia rivers, especially the Fraser river, although 'big' years and 'off' years occur on all the salmon rivers of the province, such as the Skeena, Naas, Rivers Inlet, &c., as is shown by the following striking variation in the number of cases of salmon of different kinds packed in the localities named:—

	1906.	1905.	1904.	1903.	1902.	1901.	1900	1899.	1898.	1897.	1896.
Fraser River	210,486	577,136	128,903	267,125	327,095	990,252	316,722	510,383	236,101	89,159	356,981
Skeena River	162,429	111,083	151,889	93,089	151,875	126,062	128,529	108,026	81,231	65,935	109,149
Naas River	32,731	32,725	19,685	2,100	23,218	14,790	18,238	19,11	18,963	20,847	14,669
Lowe Inlet	7,921	8,056	10,781	10,196	7,558	6,451	10,831	10,112	10,312	10,099	10,395
Rivers Inlet	122,878	83,12.	91,292	69,39	70,293	93,810	75,103	71,479	101,711	10,207	107,684

(*e*) The great influx of Japanese labour, especially in the actual fishing operations, i.e., the capture of fish in the river or the entrance waters outside.

With reference to these modifying causes which have changed the aspect of the salmon industry in the province, it will be of value to dwell a little more in detail upon some of them, with a view to the better understanding of the matter, and of appreciating the force of some of the recommendations which follow, or of facilitating future remedies, where it does not seem possible to devise satisfactory remedies now.

THE FLUCTUATIONS OF SALMON SCHOOLS.

The fluctuations indicated in the table given show a certain periodicity, a periodicity which dates back for a hundred years, seasons of abundance and of scarcity having been noted ever since records of the Fraser river salmon have been kept.

'Since the first settlement on the upper waters of Fraser river by the North West Company, in 1806, and from its occupation after the coalition with that Association of the Hudson's Bay Company, in 1821, up to the present time, the periodical scarcity of salmon in this river, alternating with periods of enormous abundance, has been constantly noted,' wrote an authority in 1880. 'It is hard to conjecture the causes which influence this mysterious alternation. So far as observation has gone we are justified in concluding that the periodical recurrences are in cycles of four years. Under this rule—if indeed it be a rule—a heavy run may be anticipated for the coming season, and that immediately succeeding, since the cycles dating from 1877 and 1878, years of great abundance, will be then be completed. Correspondingly ,the two succeeding seasons will probably show ,a comparative deficiency. The number of young fish descending to the sea in each succeeding summer, to reascend after attaining maturity, would necessarily depend greatly on the number of fish which reached the spawning beds during the preceding autumn. The obvious inference under all the circumstances of this hypothesis will be, that a period of four years is necessary for the salmon to reach maturity before they finally ascend to spawn.'

There has been much discussion as to the alleged decrease of salmon ascending in the 'big' years, and a feeling of alarm has arisen, owing to supposed signs of permanent lack of fish. The cutting off and wilful destruction of countless spawning fish at the Quesnelle dam, season after season, some years ago, must have had a serious effect, if, as is claimed, the Quesnelle spawning grounds supplied 25 per cent of the Fraser river fish. With its vast extent of headwaters, the Fraser river has possibilities of recovery beyond almost any other known river, if proper protective measures be effectively carried out.

SCARCITY OF LABOUR.

The scarcity of labour is one of the most serious difficulties facing the important salmon industry. The Indian labour was always somewhat variable and uncertain, and in some years has been very difficult to secure, while white labour, having been drawn off to other fields, due to the great activity of railway extension, expansion of the lumbering, mining, fruit-growing and other industries, is practically not to be had to the extent that the growing fisheries require. Salmon fishing has always been an uncertain field for the worker, and in poor years the catches of individual fishermen, while remunerative, have often been very small, and the period over which the fishing extends is too short (six to ten weeks for the main runs) to justify men with steady work forsaking such work for temporary river fishing. Inspector A. C. Anderson twenty-five years ago reported on this scarcity:

'There has been, as you will perceive, a very large increase on the yield of the preceding season; arising from the extension of the fishing industry, partly, and partly from the copious run of salmon upon the Fraser, which this year enabled the canners there to secure a quantity of that fish far in excess of any previous year. From all sources there appears, in the important article of canned salmon, a total of 177,276 cases, as against 61,849 in 1880, an increase of 115,427 cases (each containing four dozen one-pound cans.) The canneries upon the Fraser, however, nothwithstanding the abundance of fish, were not worked up to their full capacity owing to the deficiency of labour, arising from the increased demand for railway and other purposes. Hence, too, the cost of putting up the fish was somewhat increased.'

And last season (1906) the canners had grounds for serious apprehension that the labour which might be available, would probably fall very much below the needs of the industry. Notwithstanding the abnormally high price that salmon on the fish-

ing grounds were likely to reach, the great demand for labour in other industries rendered the situation serious, as may be judged from the following statement in the British Columbia press, in June, 1906:—

'With a small catch in prospect the prices to be paid for fish must be high, the law of supply and demand figuring in the matter to a nicety.

'Some canners who desire to have the price scale fixed at an early date are urging that many men who would be likely to fish on the river if they knew the price, are now going into the woods logging and bolt-cutting, and once settled down at those occupations they may not feel inclined to come out to go fishing.

'To date canners have not been in receipt of any inquiries from fishermen relative to the leasing of nets and boats for the season.'

JAPANESE INFLUX INTO BRITISH COLUMBIA.

The great influx of Japanese has been a matter of complaint amongst the white fishermen. Indeed the Westminster city council charged, in a memorial presented to the commission on December 5, 1905, that the canners are exploiting the salmon fisheries of the country 'by the aid of oriental labour,' and that a determined effort has been made to discriminate against white fishermen in favour of Japanese.

The question is one of some international moment, and a delicate matter upon which to urge any stringent steps; but if white labour, as is claimed, can be secured, the canners will not be under the necessity of encouraging the labour objected to by the fishermen. It is, indeed, a matter in which the action of the employers of labour themselves can be made most effective. A cessation of the demand for Japanese fishermen by the canners would at once stop the influx, and would benefit and encourage white fishermen.

Chinese labour has for many years been an important feature in the canning establishments. While the Japanese have devoted themselves to the capture of fish, to fishing proper, the Chinese have been engaged chiefly on the wharfs and at the gutting and cleaning tables, or at the retorts and at the work of soldering and testing cans, and placing them in the wooden cases. The increase of the poll tax to $500 has had a marked effect upon the Chinese labour supply in the salmon industry. This raising of the fee in 1904 from $100 to $500 has stopped the intrusion of Chinese, and the places of those who died or returned to China permanently have not been supplied. Farmers, fruit-growers, householders and all who relied upon Chinese labour, more especially salmon canners, have been inconvenienced by this shortage. The rate of wages has increased three-fold, and as white labour is scarce, the difficulty is a most momentous one. The Fraser River Canners' Association, in a memorial dated August 6, 1906, dwelt upon this crisis, pointing out that the British Columbia canners were at a most serious disadvantage as compared with their competitors, the salmon canners in the United States, for in Puget Sound, Oregon and California the large population enables the canneries to more easily supply their requirements. The memorial urge that if this Fishery Commission found the effects of the increased tax to be as stated, 'such representations be embodied in the report as will induce the Dominion government to lower the rate to the former figure, viz., $100.'

GROWTH OF BRITISH COLUMBIAN FISHERIES, STATISTICS, &c.

While the terms of the order in council and of the instructions appended thereto are comprehensive and inclusive, the commission found it impossible to confine its investigations to the specified lines of investigation, and to those alone. Other matters of necessity were pressed upon the commission for investigation, thus increasing the scope of its work, but adding to the value, it is trusted, of the results accomplished.

The growth and development of the fisheries of British Columbia, especially the salmon and halibut fisheries, are remarkable in many respects. As compared with lumbering, mining, and other great industries of the Pacific coast, the commercial utilization of the resources of the waters, marine and inland, is of comparatively recent date. The native Indian tribes have more largely than any other aborigines, unless we except the Arctic tribes, subsisted upon fish, and the salmon, trout, sturgeon, halibut, herring, anchovy, clams, oysters, crabs, sea-weed and other marine products have from time immemorial been used by them for food. But the commercial exploitation, and the systematic pursuit of the fisheries, date back for a very short period. Even now a genuine fishing population, and fishing firms devoted exclusively to the fishing industry, as on the Atlantic or European coasts, are largely lacking, the fishermen and the packing firms being for much of the year engaged in other industries.

'In speaking of the fisheries of British Columbia one may almost be said to be speaking of something which has no existence,' said a prominent authority in Victoria, writing 30 years ago, 'with the exception of a few factories for putting up salmon in 1-lb. and 2-lb. tins on the Fraser river, and one or two whaling enterprises of a few years standing, no attempt whatever has been made to develop the actually marvellous resources of the province in the way of fish.' It is true that for more than half a century previously the Hudson's Bay Company had extensively packed salted salmon, and shipped them in barrels to Australia, the Sandwich Islands, and other countries, but there was no general utilisation of the fishery resources.

'In some seasons,' said Inspector Anderson, in his report for 1871, 'between 2,000 and 3,000 barrels are provided, the fish procured by barter from the natives, but,' he adds, 'for some years private fisheries have been established, where large quantities are annually cured, and recently an establishment for preserving fish in cans for exportation has been started and promises to be very successful. The chief markets are South America, Sandwich Islands and Australia.' So long ago as 1862 a Columbia river packer had put up salmon on a small scale; but the Fraser river salmon were until 1872 sent to market salt-cured. A very large quantity was salted at Fort Langley, fifteen miles above New Westminster, and these were not only used for local consumption, but sent to the more remote posts of the Hudson's Bay Company, 36,000 of these Fraser river fish being cured at Fort Langley in 1836, and similar packs of dried salmon were put up at other posts on the river. In 1869 Captain Stamp packed salmon in cans or 'tin boxes' the report of 1870 states.

Besides that cannery one other large fishing establishment existed on the Fraser river. The firm of Messrs. Findlay, Durham & Brodie were the first to enter seriously into the canning business, and in 1873 they marketed over 100 tons of canned Fraser river salmon. A smaller cannery on the river packed about 80 tons, so that in the year named (1873) the official reports by Captain James Cooper state that 195 tons were packed in '1-lb. tins.' At first, 100 of these 1-lb. tins were packed in a wooden case, and 22 cases weighed one ton. In addition there were shipped from the Fraser river 4,000 barrels of pickled, or salt salmon. The success of these early ventures induced other firms to develop the industry, prominent amongst the few first pioneers being Messrs. J. H. Todd & Sons, who, like Messrs. Findlay, Durham & Brodie, are still largely engaged in the salmon business. Messrs. Rithet, Mr. Alex. Ewen and others also developed the important enterprise.

The following table gives at a glance the growth of the British Columbia canning industry:—

RELATIVE British Columbia Packs with Numbers of Canneries Operating each year on the Fraser, Skeena and Naas Rivers, Rivers Inlet and other points.

Year.	Canneries.		Total Number Operated.	Total Cases Salmon all Grades.
	Fraser River.	Other.		
1873	2	.....	2	8,580
1876	3	.....	3	9,847
1877	5	1	6	67,357
1878	8	2	10	113,601
1879	7	2	9	61,093
1880	7	2	9	61,849
1881	8	4	12	177,276
1882	11	7	18	235,061
1883	13	11	24	196,292
1884	6	11	17	141,239
1885	6	3	9	108,517
1886	11	6	17	161,264
1887	12	8	20	204,083
1888	12	9	21	184,040
1889	15	12	27	414,294
1890	15	16	31	408,978
1891	11	14	25	314,593
1892	11	16	27	228,470
1893	21	16	37	590,229
1894	20	12	32	494,371
1895	21	16	37	566,395
1896	27	18	45	601,570
1897	35	19	54	1,008,065
1898	35	16	51	484,161
1899	40	17	57	702,437
1900	41	23	64	585,413
1901	49	24	73	1,236,156
1902	42	24	66	625,982
1903	35	24	59	473,547
1904	23	26	49	465,894
1905	40	22	62	1,167,460
1906	.....	.....	.....	620,460

Since the Pacific industry commenced, on the Sacramento in 1864, it has developed marvellously, as is well evidenced by a survey of the salmon packing returns for the whole Pacific coast. The following table shows its growth since the early '60's, and the total column on the right includes the British Columbia pack given in the table immediately preceding:—

TOTAL PACIFIC SALMON PACK, 1864 TO 1906.

Year.	Columbia River.	Sacramento River.	Outside Rivers.	Alaska.	Puget Sound.	Total.*
1864	.....	2,000	.....	.....	.....	2,000
1865	.....	2,000	.....	.....	.....	2,000
1866	4,000	.....	.....	.....	.....	4,000
1867	18,000	.....	.....	.....	.....	18,000
1868	28,000	.....	.....	.....	.....	28,000
1869	100,000	.....	.....	.....	.....	100,000
1870	150,000	.....	.....	.....	.....	150,000
1871	200,000	.....	.....	.....	.....	200,000
1872	250,000	.....	.....	.....	.....	250,000
1873	250,000	.....	.....	.....	.....	250,000
1874	350,000	2,500	.....	.....	.....	352,500
1875	375,000	3,000	.....	.....	.....	378,000
1876	450,000	8,300	25,600	.....	.....	493,747
1877	460,000	21,500	24,800	.....	.....	573,687
1878	460,000	36,500	30,000	8,159	.....	648,260
1879	480,000	31,000	30,000	12,530	.....	610,924
1880	630,000	51,000	37,200	6,539	.....	786,039
1881	551,000	181,200	48,500	8,977	.....	965,352
1882	541,300	200,300	49,000	10,244	.....	1,055,905
1883	629,400	160,000	38,000	36,000	.....	1,106,400
1884	656,179	81,450	41,350	54,000	.....	971,924
1885	524,530	48,500	51,750	74,850	.....	806,495
1886	454,943	39,300	131,100	120,700	.....	909,047
1887	373,800	36,500	195,400	190,200	.....	997,890
1888	367,750	58,000	154,000	427,372	.....	1,142,722
1889	325,500	66,666	199,068	709,347	.....	1,714,981
1890	433,500	35,006	67,117	688,332	.....	1,633,419
1891	390,183	4,142	66,805	789,294	11,500	1,570,737
1892	481,900	4,600	144,200	461,482	15,000	1,325,979
1893	425,200	23,336	119,660	645,545	66,500	1,870,470
1894	511,000	28,463	118,500	678,501	67,933	1,898,867
1895	617,460	24,000	264,300	619,379	52,000	2,090,016
1896	463,621	13,387	115,400	958,700	248,200	2,397,608
1897	552,721	42,500	68,683	969,950	423,500	3,072,731
1898	473,230	28,000	78,600	956,979	417,700	2,409,009
1899	340,125	33,550	82,432	1,098,833	871,500	3,138,040
000	313,417	34,000	106,300	1,534,745	478,742	2,994,485
1901	248,491	17,500	123,326	2,034,595	1,380,590	5,040,961
1902	367,241	14,043	134,190	2,554,423	563,307	4,259,186
1903	339,366	8,200	69,336	2,251,085	470,271	3,606,411
1904	423,073	19,698	164,971	1,953,746	296,272	3,323,654
1905	410,041	1,314	141,850	1,885,316	1,061,835	4,667,816
1906	.....	.....	.....	.....	.....	4,675,000

*Inclusive of B. C. pack as shown in preceding table.

FRASER RIVER CANNING INDUSTRY.

STATEMENT showing Capital invested, Labour employed, Running Expenses and Output of Fraser River Canneries, on the Fraser River, for the years 1898 to 1905, inclusive, prepared for the British Columbia Fisheries Commission, under the direction of Mr. J. C. Brown, Commissioner.

(The cannery statistics were compiled by Mr. W. D. Burdis, Secretary Fraser River Canners' Association. The remaining information is from official records.)

CAPITAL INVESTED AND OPERATING CHARGES.

—	Canneries Installed.			Canneries Operated.		Capital Account.							Packing Charges.					
	No. of plants.	No. of lines.	Daily capacity	No. of canneries operated	No. of canneries idle.	Capital invested in land, buildings and machinery in plants 'operated.'	Capital invested in land, buildings and machinery in plants 'idle.'	Capital invested in boats and nets.	Capital invested in steamers and scows.	Total permanent capital invested.	Average value of independent boats and nets.	Total investments.	Paid for fish to fishermen.	Paid to Chinese contractors.	Paid white labour in cannery.	Value of tin plate, &c.	Paid for power, light, &c.	Totals.
			Cases.			$	$	$	$	$	$	$	$	$	$	$	$	$
1898....	42	44	52,800	35	7	931,500	96,000	572,000	175,000	1,774,500	55,600	1,830,100	614,642	143,416	140,000	332,931	27,300	1,258,289
1899....	47	49	58,800	41	6	1,097,500	96,000	637,000	205,000	2,035,500	55,600	2,091,100	1,441,149	269,014	164,000	624,497	30,800	2,529,460
1900....	48	50	60,000	41	7	1,078,500	134,000	650,000	205,000	2,067,500	55,600	2,123,100	759,652	177,252	164,000	411,478	30,800	1,543,182
1901....	49	52	62,400	49	....	1,230,500	.....	676,000	245,000	2,151,500	55,600	2,207,100	1,376,984	535,493	196,000	1,243,110	36,400	3,387,987
1902....	48	51	61,200	42	6	1,095,500	116,000	663,000	210,000	2,084,500	55,600	2,140,100	647,648	183,173	168,000	425,223	31,500	1,455,544
1903....	36	43	51,600	35	1	1,073,500	23,000	559,000	175,000	1,830,500	55,600	1,886,100	398,432	132,810	140,000	308,310	30,800	1,010,352
1904....	35	42	50,400	23	12	799,000	277,500	546,000	115,000	1,737,500	55,600	1,793,100	309,367	72,185	92,000	167,573	22,400	633,525
1905 ...	40	49	58,800 (1)	40	....	1,209,500	camp7,000	637,000 (2)	200,000 (3)	2,053,500	55,600 (13)	2,109,100	1,263,076 (10)	491,196 (12)	160,000 (11)	1,140,276 (4)	34,300 (5)	3,088,848

DETAILS OF OUTPUT, LABOUR AND WAGES.

—	Packs of Respective Years.			Prices per fish paid fishermen.	Average earnings per boat.	Number of Licenses Issued as per Official Returns.				Employees in Canneries, including Steamboats and Camps.				Amounts paid white labour in canneries.	Approximate number of fish caught and cleansed.
	Sockeyes.	All others.	Totals.			Whites.	Japs.	Indians.	Totals.	Whites.	Chinese.	Indians.	Totals.		
				Cts.	$ cts.									$	
1898	Not separated.		256,101	Av. 20c.	167 75	2,032	782	850	*3,664	390	2,340	936	3,666	140,000	3,073,212
1899	Not separated.		480,383	Av. 25c.	418 23	1,905	919	621	*3,445	440	2,640	1,056	4,136	164,000	5,764,596
1900	172,617	143,905	316,522	Flat 20c.	201 65	1,771	1,655	341	3,767	440	2,640	1,056	4,136	164,000	3,798,264
1901	928,669	27,570	956,239	Av. 12c.	389 74	1,306	1,804	423	3,533	520	3,120	1,248	4,888	196,000	11,474,868
1902	293,477	33,618	327,095	Sldg. scale 16½c	260 62	1,184	924	377	2,485	450	2,700	1,080	4,230	168,000	3,925,140
1903	204,846	32,316	237,162	Av. 14c.	127 70	1,285	1,499	336	3,120	440	2,640	1,056	4,136	140,000	2,845,944
1904	72,688	56,215	128,903	Flat 20c.	139 10	1,218	776	230	2,224	320	1,920	768	3,008	92,000	1,546,836
1905	837,489	39,647	877,136	Av. 12c. (6)	454 83 (8)	1,398	1,042 (7)	337 (7)	2,777	490	2,940 (9)	1,176 (9)	4,606	160,000 (11)	10,525,632 (14)

*Approximate.

1. The 'daily capacity' of canneries has been estimated at 1,200 cases per line.

2. The amount invested in boats and nets (by canneries and fishermen working regularly for them) is based upon an average of 60 boats and 70 nets per line; boats valued $100 and nets $100 each.

3. The amount invested in steamers and scows is calculated at $5,000 per cannery, including coal or wood and stores.

4. The amount expended for tin plate, solder, copper, salt, acid, charcoal, lacquer, boxes, &c., is calculated at $1.30 per case of all shapes.

5. The cost of power, light, taxes, and incidental expenses, other than wages, is calculated at $700 per line.

6. The prices paid for fish to fishermen is stated exactly in respect to years when flat rates or sliding scale governed. Other years averaged.

7. The number of fishermen employed is equal to the number of licenses issued in each year by the Dominion Fisheries Inspector in New Westminster; an equal number of boat pullers must be added to give total number of men employed in fishing.

8. The average earnings of fishermen employed is calculated on the number of cases packed in each year, at the price per fish paid, and the total amount so paid for fish is divided by the number of fishermen employed. The estimate provides for 12 fish per case. These earnings only apply to the canning season, covering six weeks. The fisherman (or boat) would share the earnings with the boat puller, though numbers of fishermen fish their net alone. These figures do not provide for one-third of the earnings being paid over to the cannery, in cases where the boats and nets, or either, and licenses are provided by the cannery.

9. The numbers of hands employed in the canneries have been calculated at 10 whites (including steamboat and camp men), 60 Chinamen and 24 Indians per line.

10. The amounts paid out for fish are calculated at 12 fish per case, at the prices paid during the respective years.

11. The amounts paid out for white labour in canneries is calculated at 10 men per cannery, including steamboat hands and camp men, at a wage of $400 each per season.

12. The amount paid to the Chinese contractors is calculated at an average rate of 50 cents per case, out of which the Chinese and Indian labour was paid. The proportion of Indians will vary from one-third to one-half of the hands employed on the work.*

13. The investments of 'independent fishermen' have been calculated on the total number of licenses 'called for' by the 'lines' operated 1898-1905, inclusive, at 60 boats per 'line', equal to 22,800 licenses, which deducted from 25015, the actual number issued, leaves 2215 surplus, or an average of 278 'independent' licenses per annum, which at a valuation of $200 per boat and net equals $55,600 per annum, as the 'independent' fisherman's investment.

14. The number of fish estimated to have been caught and cleaned is calculated at 12 fish to the case.

DEVELOPING MARKETS FOR FISH.

With the development of new fisheries it is becoming evident that markets must be found for the products, increasingly varied, which the British Columbian waters are being made to yield, and many of which are at present little utilized. Japan has taken many products for which there appeared small demand elsewhere. Australia, New Zealand, the Orient, South America, especially Chili, and above all that best of markets, most eagerly sought for by all trading nations, the British Islands, not to mention Germany, France, Italy and other European countries, offer markets for fish products, which cannot all be sold in Canada.

*In the case of the Northern canneries the proportion of Indians will be greater.

The rapid development of the mild-cured salmon industry illustrates the possibility of developing new lines of the fish business. It must be remembered, however, that the Canadian shipper should sufficiently safeguard himself against undue charges or unjustifiable losses due to the greed or the carelessness of agents receiving, or parties handling the products at their destinations. The commercial agent for Canada at Sydney, New South Wales, reporting on the losses sustained last October by Canadian shippers of salt salmon because of the excessive charges made for marketing the fish sent from British Columbia on consignment, said that the loss was directly due to neglect in the selection of consignees who understand the conditions and requirements of the trade. Capable and responsible receivers alone can ensure success. The same applies to the English markets and to the disposal of fish products in Europe generally. The ordinary channels of trade often present obstacles to the introduction of fish products.

The attention of Canadian shippers of whole salmon should be drawn to the fact that from November until the end of February, prices in London rule very high and the fish are very scarce. In order to overcome this scarcity and consequent high prices, a scheme has been inaugurated whereby the chief centres of Great Britain can be supplied by shipments in a refrigerated condition from Siberia. The Amur salmon are stated to equal in size and quality the Canadian fish. The exports of salmon from Canada to Great Britain in November, 1905, amounted to 90,853 pounds, valued at $7,119, or an average price of 8 cents per pound. The wholesale price of Scotch and Irish salmon in November is often 54 cents (2s. 3d.) per pound. If more attention were paid to the English market a very much larger volume of business could be secured.

The exportation to Japan of quantities of dry salted herring, i.e., herring very slightly salted and roughly put up in a somewhat uninviting condition in large wooden cases is notable. The process of putrefaction owing to total lack of gutting and cleaning, and care in packing, as well as inadequate salting, has really begun before the fish leave the British Columbian wharfs, and by the time of their arrival in Japan these so-called cured herring must be in a condition of advanced decay. Good grades of cured herring are, however, far more remunerative.

When it is noted that New York, in 1904, imported no fewer than 43,000 barrels of Scottish herring and nearly 7,000 barrels of herring from Ireland, it is clear that properly cured British Columbia herring should be able to find a market too. The annual importation of cured herring from Scotland is very large, as the following figures show:—

1900—31,000	barrels	imported into New York.
1901—36,000	"	"
1903—40,000	"	"
1904—43,000	"	"

The price realized was, as a rule, $10 per barrel; but owing to the mixing of different qualities of herring in certain barrels in 1904 some of the shipments did not bring more than $5 per barrel. The rapidly developing Northwest provinces of Canada must soon be supplied with these fish, for which the demand is enormous where German, Russian, Austrian and other immigrants settle, who use these fish in an uncooked condition, with green pickled vegetables ('sauerkraut,' &c.).

DESIRABILITY OF GOVERNMENT BRAND.

BRANDING OF SALMON.

For many years the opinion has been expressed that a government stamp upon cans or cases of British Columbian salmon would be of advantage, and would guarantee to purchasers in Britain and elsewhere that they were not inferior or foreign-packed. There are practical difficulties in the way of carrying out any plan so far proposed, and it appears to be doubtful whether existing laws would prevent the fraudulent imitation, on canned salmon, offered for sale in the British markets, of the stamp or brand suggested. The necessity of some official stamp was recognized long ago—indeed when the British Columbia canners in 1878 volunteered to pay a tax to the Dominion Government of 8 cents per case, this enlightened and unselfish proposal included the stamping of the cans or cases as an official guarantee of quality and legality. The stamping of the letters B.C. on every can of salmon put up in the province has been suggested, as it is the Alaska canned salmon, carelessly put up and sold at a lower price than the British Columbian product, which is the main cause of the injury. As a principal organ of the fish business recently said:—

'It has been the custom of jobbers to have their orders filled with salmon in unlabelled cans, so that when the Alaska tins reach him, the jobber gives them a high-coloured label with a big fish, a mountain and a river and an adjective or two over the word salmon. But you will look in vain for the words British Columbia or the letters "B.C." for these would render him liable to prosecution.'

In March, 1907, J. M. McNamara, Canadian commercial agent at Manchester, England, wrote to the Trade and Commerce Department, Ottawa, that 'the substitution of Alaska for British Columbia salmon is still continued on the English market, and is proving a great loss to Canada. The tins in question are labelled merely British Columbia salmon, and are being bought at seventeen shillings to seventeen shillings and sixpence per case. They are put into competition with genuine British Columbia salmon at twenty-two shillings and twenty-two shillings and sixpence. The Alaska fish, which is substituted, however, is not at all the same quality, and not put up under clean conditions. When last season's small British Columbia pack is marketed at the high prices now offering, it will be a still more serious thing to have this fraud kept up, and it is of the utmost importance to canners that their tins should be branded before leaving their control.'

The reputation of British Columbia salmon has always been high, and deservedly so. There are four reasons for this high repute:—

(1) The freshness of the salmon, which is canned soon after its capture, instead of being conveyed, as in Alaska, for long distances.

(2) The excellent colour of the flesh—richer and more appetizing than that foreign salmon.

(3) Care in uniform packing, and rejection of inferior kinds of salmon.

(4) Abundance of fresh water and cleanliness in the canneries.

A prominent United States authority so long ago as 1894 referred to the high repute and the fine quality of British Columbian salmon, and admitted that 'Fraser river fish are crowding the Columbia river and Chinook brands out of the English markets.' The low price of the American brands of canned salmon has done much to injure the established British Columbian brands, and the allegation that the Chicago meat-packing scandal was mainly responsible for the less eager demand for British Columbian canned salmon is not correct. As a journalistic writer declared in December last: 'American canners are selling more salmon in England this year than ever before, and at a lower price than Canadian brands.'

The proposal to stamp every can of British Columbia salmon with the letters 'B.C.' presents difficulties, while, unless the Merchandise Marks Act in Britain pro-

vided a penalty against such letters appearing on foreign and inferior salmon, the British market would be imposed on with impunity. Buyers object to any marks on the individual cans, and the letters 'B.C.' are easily affixed to foreign cases of fish. We venture to recommend a modified measure, viz., the marking of cases, which will afford some assurance that the salmon marked are from British Columbia.

The matter of accurate reliable branding or labelling of canned salmon has often been a subject of discussion amongst commercial men interested in the Pacific fisheries. In 1905, the Vancouver Board of Trade gave it some attention, in view of the allegation that canned salmon sent to Australia had been fraudulently labelled. The *Pacific Fisherman* at the time declared that the matter was one deserving serious attention, and it continued: 'The fact appears that Skeena river salmon holds a high position in the Australian market. As a result, fish from other rivers in northern British Columbia—of inferior quality—is being shipped to Australia labelled as Skeena river salmon, this, of course, injuring the reputation of the real article and damaging the British Columbia genuine product in that market.'

But the danger is a much more serious one than that just stated. It is the substitution of fish not caught in the waters of the province at all, and in most cases canned outside British Columbia and sold as the British Columbian product, which calls for a rigid system of branding fully protected by law.

The use of other fish than salmon, which, it is alleged, has been practised by some canners outside Canada, has not, and indeed could not, be practised in Canada, as the markets in which Canadian salmon is sold insist upon a high grade, and make a thorough test of the packs before purchase. Recent paragraphs such as the following, therefore have no application to the British Columbian salmon industry:—

'There are rumours current that cheap grades of salmon are made from carp and other large fish taken from the rivers and lakes of the Middle West and Canada and sold to the trade as genuine salmon.'

The bones of the carp and similar fish are so hard and so very numerous, that these fish are wholly unsuitable for canning, and no reputable market would accept such fish for the British Columbian salmon, which have very few bones, these being of a soft and chalky nature when cooked, and the meat of the best table qualities.

BRANDING OF HERRING.

What has contributed most to expand the pickled herring industry in Scotland has been the adoption of an efficient Crown inspection and the official branding of cured herrings, and the barrels in which they are packed and exported. This system, which in the beginning it was found necessary to make compulsory, in order to become effective has, after being in operation a number of years, or long enough for the people to acquire the desired knowledge and become accustomed to curing a superior article, been made voluntary, but the bulk of the curers and exporters still make use of the official inspection and branding system, as they find it to their own advantage. The fee charged for inspection and branding has in a large measure helped to pay the necessary officials' salaries, and although a little money by the adoption of this system has gone directly out of the pockets of the curers and exporters, much more money has indirectly come into their possession in the shape of better prices and increased demand, which would hardly ever have taken place, had not this system been adopted. This system has created an improvement in the cure of Scotch herring, which would never have taken place so universally had it been left to the fishermen or curers own judgment to put up the herring as they chose; and this universal improvement and evenness in the quality and cure, guaranteed by the official crown-brand, has again established confidence among their customers, and led to a steadily increasing demand for Scotch herring, and to the establishment of new and profitable markets.

The Scottish Regulations are very elaborate and complex, and the inspection more rigid than would be possible in a vast territory such as British Columbia. Between eighty and ninety special provisions are set forth in the regulations for herring branding issued by the Fishery Board for Scotland. Such a complex mass of rules and regulations would not only be irksome, but detrimental to the development of the industry, and owing to the extent of coast to be supervised, would be absolutely impossible of enforcement. Most minute requirements are enforced re the quality of wood, thickness, and breadth of staves, details of the barrel top and bottom, hooping, tightness and capacity. The mode of inspection, marks on barrels and half-barrels, quality of fish, mode of cleaning, packing, salting, filling up, arrangement of barrels for officer's inspection, mode of inspection, rules for rejection and approval, with particulars as to the eight different brands stencilled officially on the barrel, and elaborate details as to penalties, &c., are all explained in a small publication of 22 closely printed pages; but would be unworkable and, indeed, detrimental, if attempts were made to carry such out in a young and struggling industry like the British Columbian herring industry. The recommendations made at the close of this report throw much responsibility upon the packer himself, and render unnecessary the 'red-tape' and over-elaborate scheme devised by fishery officials and members of fishery boards in Britain.

UTILIZATION OF FISH OFFAL, ETC.

The fish waste from the canneries and halibut fisheries, has hitherto been largely unutilized. Several fish fertilizer factories have operated on the Fraser river and further north, but the immense quantity of 'gurry' annually produced has never been effectively treated. More than 1,000 tons of fish guano are produced, at present, each season, valued at nearly $32,000. The Dominion government last year voted $10,000 as a guarantee to parties against loss, if the Fraser river offal were utilized by them, and guano production on a large scale has been undertaken in consequence. Certain Japanese and other firms captured herring in immense quantities, but as the use of food fish for manure is discouraged in Canada that branch of the fertilizer industry collapsed a year ago. The herring taken at Nanaimo for guano sold for $3.50 per ton f.o.b. on the scows, whereas the same quantity of fresh herring, cured and barrelled for the pickled fish markets, would realize $40 to $80 or even $100 per ton. Apart from herring, there remain vast quantities of non-edible fish and much fish offal, which offer opportunities, by modern mechanical methods, of successful exploitation.

The American Process Company's method has been generally adopted on the Atlantic coast, and while many by-products of value are lost, it is rapid, economical and in many ways satisfactory in its results. It is simple and the cost of operating is low. It is a continuous process and the material passes from the hopper to the dryer without interruption. In the drier it becomes 'fish scrap' ready for treatment as guano.

The fish is placed in the hopper in a crushed or broken fresh state whence it enters the rotary feed and is pressed into the digester, where moving jets of steam act upon it as it slowly moves towards the discharge, being cut up and thoroughly digested as a mixture of liquids and solids. The cooker is of the direct steam type, the material being moved along by a screw conveyor inside a steel cylinder, and is cut up, agitated and carried forward. The material makes its exit by a special device which prevents the escape of steam. The feed, digester proper and discharge are driven by sprockets and chain-belting moving at a low, safe speed. After being cooked and digested and so thoroughly penetrated by the steam that the oils and fats can be removed by drainage more effectively than by any other system, the material passes to the press. The press consists of a horizontal tapered screw working in a hollow shaft. The decrease in size of the screw and its curbs causes pressure and the material is compelled to

progress towards the small end of the press. Drainage of oil and water is both internal and external, the spaces between the slats of the curb allowing most drainage, supplemented by drainage holes in the shaft. At the end of each shaft is a special packed box, with a movable diaphragm and perforations in the shaft allowing of increase or decrease of steam in a part or in all of the press. The drier is a steel cylinder provided inside with longitudinal shelves. It is on a gentle slope and rotates by chain-belting, while the pressed material and the furnace gases enter the cylindrical shell at the higher end. The wet material on the bottom of the drier is lifted to the highest point by the rotation and is showered through the hot furnace gases. This is repeated all the way down until the scrap is thoroughly dried and is discharged in thick snake-like masses at the lower end. The heat is generated in a furnace, and the whole process is practically closed up and continuous and there is no loss of ammonia. An average size of apparatus handles about thirty tons per day.

During the last twenty-five years various enterprises have at times been started dating from the time of the well-known 'Ark,' a floating guano factory, operated by Mr. J. Spratt, in Burrard Inlet, but none of them had complete success. A large establishment on Lulu Island has for nearly twenty years been carried on with varying results. It has been recently reorganized and has a guarantee from the Dominion government against possible business losses up to $10,000. This scheme will, it is hoped, become a permanent and, ere long, extremely profitable enterprise, so that the Fraser river waters may no longer be polluted by a deposit of twenty to forty thousand tons of salmon offal every year. The oil and the guano are likely to find a ready market. It has been recently reported *re* this establishment that the season of 1906 'had been rather a light one at the oilery on account of the shortage of fish. The oilery is a growing industry and a very useful one from many standpoints. Where a few years ago all the offal from the canneries was either dumped into the river or taken out into the gulf and deposited, it is now collected in properly constructed scows and every vestige of it is used up. The fish oil is in great demand by tanners, and during the past year 1,500 barrels of the product have been exported to England to one of the large tanneries there. Oil is also made from the dog salmon and last year 620 tons of oil were manufactured from herring refuse.

'The remainder of the bones and flesh after the oil has been extracted, is converted into guano, for which there is a great and growing call on account of the great fertility it gives to the soil. In addition to enriching the earth for the next crop, it builds up—has a continuing effect—whereas the chemical fertilizer which is so much used is said to have an after effect of vitiating the soil. For the guano, the manager stated, there was a ready market in Japan for all the oilery could produce. This year they have shipped 1,500 barrels to Japan, and where a few years ago they had a hard problem to dispose of their guano at $22.50 a ton, they now have no trouble in getting $30 a ton.

'There are three steamboats and a corresponding number of scows owned and operated by the oileries, and during the busy part of the season an extra boat is chartered and placed on the North Arm run. The oileries' buildings are located on a good sized island not far from Ladner, and the buildings are kept as clean as it is possible to keep such places. The oil after it has been boiled down and refined is a bright, clear yellow, and is not offensive to the nasal organs, as many might suppose. The business is under the active management of Mr. Williamson, while G. F. E. Kinnell is at the head of the company.'—(*Pacific Fisherman*, November, 1906.)

HECATE STRAIT.

This strait has always been regarded as British Columbian waters, and no fishing operations by parties not British subjects were carried on there until about fifteen years ago. As soon as it was realized that the halibut banks between Queen Charlotte islands and the mainland coast were being marauded by foreign vessels, an

order was issued by the Minister of Marine and Fisheries at the time, warning all fishing vessels, not flying the British flag, out of these waters. The wire conveying these instructions to the officer in command of the Dominion cruiser *Quadra* is dated April 18, 1896.

Hecate strait, extending from 52° north latitude to Dixon Entrance, is 95 miles wide at the southern end and 24 miles across at the northern end. It communicates with the 'high seas,' or open ocean, by a wide entrance between Cape Scott, north end of Vancouver island, and Cape St. James, at the southern extremity of the Queen Charlotte island group. It is defined by land and by waters wholly British, and is included in one parliamentary constituency, viz., the Comox-Atlin constituency. It is a continuation of the narrow channel, the Strait of Georgia, Johnstone straits and Queen Charlotte Sound, a channel separated from United States waters by the boundary line defined October 21, 1872 by the German Emperor, as arbitrator under the Treaty of Washington,* and it ends in the waters of Dixon Entrance, declared to be British waters under the Alaska Boundary Award of October 20, 1903.

The strait (Hecate strait) lying between two boundary lines defined by international treaties, and inclosed within the limits of a constituency, which sends a member of parliament to the House of Commons in Ottawa, has been recently claimed to be 'high seas,' non-territorial, and open to all the world, as though a three-mile limit or some narrow territorial limit had been defined and admitted. In the Strait of Georgia there is no three-mile limit. The whole of the waters north and east of the imaginary boundary line (formed by the 49th parallel and its continuation in a south and west direction, as described above) separating the contiguous Dominion and United States waters, are Canadian territorial waters. Any foreign vessel found fishing on the Canadian side of this boundary line is guilty of poaching, and is liable to seizure, fine and confiscation without reference to any three-mile limit. This liability to seizure, &c., applies to the waters north of the boundary line for an undefined distance. Similarly the northern boundary defined by the Alaska Boundary Award, October 23, 1903, defines British limits south, until the nearest land is reached in a direct line as the crow flies. These waters are, indeed, so essentially inclosed geographically that the very existence of Hecate straits was unsuspected by early Pacific navigators, and so famous and indefatigable a discoverer as Captain Cook, who explored the northern portions of the Pacific ocean, during the early part of the year 1778, passed outside Queen Charlotte islands without observing that an inshore area of great extent lay inside the sheltering land now known as Queen Charlotte islands. When the United States claimed that Behring sea was not the open ocean, but a *mare clausum*, there existed the fatal difficulty that several countries bordered upon it, whereas Hecate strait its is wholly in British Columbia n' orde s s ut off by Queen Charlotte is ands from the Pacific ocean, and included, as already pointed out, in the constituency of a member of the House of Commons at Ottawa.† The waters are territorial Canadian waters, from which United States and other foreign fishing vessels are legally excluded. No point can be named south of this line until the 49th parallel is reached, where a foreign poacher cannot i e legally seized when found fishing or preparing to fish. As Hall, the well-known authority on International Law, states, 'under the Protocol of 1873, the boundary, after passing the islands which had given rise to dispute, is carried across a space of water thirty-five miles long by twenty miles broad and is then continued for fifty miles down the middle of a strait fifteen miles broad until it touches the Pacific ocean midway between Bonilla point on Vancouver's island and Tatooch island lighthouse on the American shore, the waterway being there ten and a half miles in width.'

And he lays stress on the position established, of which few instances occur in the history of international conventions:

* The Protocol was signed in 1873 at Washington, D.C., carrying out the arbitrator's award.

† Queen Charlotte Islands, says a recent geographical work published by Rand McNally, Chicago and New York, 1905, 'are merely the outer fringe of the Cordilleran belt, in which the whole of British Columbia is comprised.' (New Indexed Atlas, p. 36.)

'The power of exercising control is not less when water of a given breadth is terminated at both ends by water than when it merely runs into the land and the safety of the state may be more deeply involved in the maintenance of property and of consequent jurisdiction in the case of straits than in that of gulfs. Of practice there is a curious deficiency; but there is one recent case from which it would appear that both Great Britain and the United States continue to claim as territorial the waters of a strait, which is much more than six miles in width. By the treaty of Washington of 1846 it was stipulated that the boundary between the United States and British North America should follow the forty-ninth parallel of latitude to the middle of the straits separating Vancouver island from the continent, and from there should run down the middle of the Strait of Fuca to the Pacific.' Thus the waters inside or east of Queen Charlotte islands, and Vancouver island, and extending from the Alaska boundary line (from Cape Muzon via Cape Chacon to Portland canal or channel) on the north, to the 49th parallel and its southerly and westerly continuation on the south, are territorial under the treaties and decisions named. In these waters occur the most valuable halibut and salmon resorts in the world, and no measures should be neglected to preserve them, and to prevent their threatened depletion by foreign poachers.

OBSTRUCTIONS ON RIVERS.

In our Interim Report dated December 7, 1905, we recommended the removal of obstructions to the ascent of salmon in certain specified cases. It is highly satisfactory to know that on the North Fork of Quesnelle river, a scheme for removing extensive rock obstructions will be, if possible, completed this season, thus opening up an extensive spawning area from which the valuable sockeye schools have been shut off. Copper river obstruction on the Skeena river is also, we are pleased to know, to be removed without delay; but there are many important obstructions still requiring attention. On the Naas river, the Tsiax tributary has long been blocked, and furnishes an urgent case for attention; but there are many other cases, and we cannot too strongly urge that wherever these natural or artificial obstructions exist, they should be removed without delay.

BETTER POLICING.

The better policing of the rivers and deep-sea fishing areas has been already strongly urged in the commission's previous recommendations, and requires no further reference, excepting to point out that canners, fishing firms and fishermen are all agreed that a strict and perfectly fair enforcement of the regulations is impossible unless increased patrols are authorized and further protection vessels added to the Fishery Patrol Service. Speedy launches are needed on such rivers as the Fraser, Naas, &c., and inlets like Rivers inlet, Lowe inlet and adjacent fishing grounds, or the weekly close time and other vital prohibitions will be ignored, and permanent injury to the fish supply be done. The upper waters also require at the spawning seasons bodies of guardians to keep a constant patrol, and ensure the protection of the areas where the eggs are deposited.

LEASES AND SUB-LETTING OF FISHING RIGHTS.

This commission in its Interim Report urged that the granting of exclusive leases was on general grounds most undesirable, and much evidence was laid before us that the leased privileges in certain notorious cases were either offered for sale (and were obtained simply for speculative purposes) or the rights were farmed out or sub-let. Legitimate applicants for fishing privileges were, it was alleged, refused and could only exercise their vocation by paying a premium, or royalty, and renting from the lessees the fishings held by such lessees, and not utilized by them. One lease, it was stated, was held for many years, seven or eight years, without any steps being

taken by the lessee to develop the fisheries held under the lease, and the only action taken was to persistently offer at a high figure the exclusive rights granted by the Department. No such leases, in the opinion of the commission, should be granted in future, and lessees who transfer, sub-let or otherwise misuse their privileges, should be deprived of such leases.

SALMON LICENSES.

It is unnecessary to dwell at length upon the matter of the issue of licenses. That some limitation is wise is admitted by most parties engaged in the industry, and the recommendations we make respecting licenses and the conditions upon which they should be granted, are sufficiently indicated in their proper place. The question of confining the licensees' privilege in the case of gill-nets admits of discussion. With trap-nets and drag-seines the case is different, but strong reasons have been urged why a gill-net license granted in one inspection district should be valid in the two other British Columbia Fishery Districts. The main difficulty is that inspectors would be unable in many cases to ascertain if strangers coming into their districts were the true owners of such licenses. Thus violations of the law, by illegal transfer would be encouraged, and the obtaining of licenses by unqualified persons (an evasion of the regulations which is already a cause of much complaint) would be rendered easy.

In connection with the question of roving fishing licenses is that also of roving or moving canning establishments. The matter was not brought up in evidence given before the commission, but the view of the commission is here placed on record having regard to the following announcement of a project of this nature in the adjacent waters of the State of Washington:

'A cannery scheme novel to Puget Sound is to be projected by a canner of Paulsbo, Wash. This packer is mounting a cannery plant on a scow, and during the fishing season will can salmon and other fish, having his floating plant immediately adjacent to the fishing grounds.'

The commission is decidedly in favour of discouraging or rather of prohibiting such roving fishing or packing establishments. If a system of registration or of licensing canneries were carried out, the danger could of course be readily obviated.

We are of opinion that it would facilitate the issue of licenses and aid fishery officers in excluding ineligible applicants if a printed application form were adopted on the lines of the form adopted in the State of Washington shown below. Such form would require to be filled in and sent to the inspector before the license was issued.

Copy of Form authorized in the State of Washington.

No. .....

Application for.....License.....District.

To the Fish Commissioner of the State of Washington:

I hereby make application under the provisions of the law licensing salmon catching appliances, approved March 16, 1897, for one.....license, the same to be operated in the.....district and located as follows:*.....
.....
.....

(Sig.).....

* NOTE.—The applicant for this license will understand that the object in requiring him to state about where he proposes to operate his salmon catching appliances is simply that the fish commissioner may have a general idea of the location of all licensed appliances, and must not be construed as meaning that the license granted on this application is issued for any particular site or location, for on the licensee rests all the responsibility of locating the appliance.

. . . . . 19. . .

I,. . . . . , being first duly sworn, state on my oath that I am a citizen of the United States, or have declared my intention to become such one year prior to the making of the above application, and have been for one year prior to making of said application a resident of the State of Washington; that I have carefully read and am familiar with the law licensing salmon catching appliances, approved March 16, 1897; that the license I am applying for will not make me the holder of more than three fishing licenses of any description; that I am in every way qualified to receive the license above applied for, and that my post office address is. . . . . .

. . . . . .

Witnesses: (Sig.). . . . . .

. . . . . P. O. . . . . .

. . . . . P. O. . . . . .

Subscribed and sworn to before me this. . . day of. . . . . 19. . . .

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TRAP-NETS AND SEINES.

Trap-nets for salmon were first legally permitted in British Columbian waters in 1894. In one locality, by an order in council dated March 20, 1894, limited trap-netting was sanctioned in order to place certain parties on an equality with the trap-net owners in Washington State. The main grounds on which this action was taken were (1) the schools of salmon were supposed to swing far into Boundary bay before passing round Point Roberts on their way to the Fraser river, and these Canadian traps would intercept them first; (2) it was claimed that the salmon would be secured much more cheaply; (3) the catches would be vastly greater than by gill-nets; (4) the catches would be more regular and reliable. It was indeed of the nature of a retaliatory measure. The terms of the order in council were:—

'On a report, dated March 14, 1894, from the Minister of Marine and Fisheries, stating that salmon fishing with pound-nets is carried on by United States citizens at Point Roberts, a piece of land situated about nine miles south of the mouth of the Fraser river, British Columbia, and that application is made on behalf of Canadian fishermen for permission to use similar nets in Boundary bay.'. . . . . .
. . . . The order in council proceeded to state that the Minister was authorized to issue licenses to fish with pound-nets, for salmon, in the waters of Boundary bay, south of the mouth of Fraser river, to British subjects, who are the actual owners of the fishing gear and plant used in fishing, and are residents in British Columbia.

'The Boundary bay trap-nets were not a pronounced success on the whole, and the inroads upon the Fraser river salmon by the United States fishermen continued to increase, until in 1901 the catch actually exceeded that of the Fraser river fishermen, the policy of the department was altered, and trap-nets were permitted by order in council of May 2, 1904, rescinding S. 5 of the order in council of March 3, 1894 (prohibiting all nets other than drift-nets for catching salmon), and providing that trap-net licenses and purse-seine and drag-seine licenses might issue to eligible applicants, one trap-net, purse-seine or drag-seine license to a fisherman, or four trap-net, four purse-seine, or four drag-seine licenses to a company, firm or person for each cannery or other establishment specified. No fresh salmon from trap-nets could be exported

for canning, and net locations should be 250 fathoms, at least, apart, and license should be cancelled unless the privilege were exercised within one year. Fees, length, mesh, &c., were specified. It may be added that the Boundary bay traps were exempted from observance of the weekly close time to put them on equal terms with the adjacent United States trap-net operators, just as the salmon traps west of Gonzales point, near Victoria, have been excepted from certain restrictions.

The use of drag-seines has aroused, at various times, much discussion. By order in council dated November 7, 1890, the use of seines for salmon was prohibited; but in certain clear waters, as at Alert bay, Namu harbour, Clayoquot Sound, Smith inlet, and other localities, it was claimed that salmon could not be taken in any quantities suitable for the requirements of canneries, unless drag-seines were permitted. The prohibition was withdrawn, and for the last twelve years seine licenses have been issued in a number of widely separated localities. Opinions vary as to the wisdom of permitting drag-seines, unless in very limited areas, and under special restrictions (longer weekly close time, large mesh, &c.), as it is known that abuses are easy, schools may be wholly exterminated, and young fish, moving in the shallow seining grounds, be inclosed and hauled ashore dead or injured fatally.

OYSTER AND CLAM BED LEASES.

Both on the Atlantic and Pacific coasts oyster licenses (annual) and leases (for a term not exceeding nine years) had been granted by the Dominion government until the Fisheries' Judgment in 1898. This famous Fisheries' Decision introduced an element of uncertainty and seemed to transfer the property in oyster areas to the provincial governments, excepting such areas as were in public harbours. This exception increased the uncertainty of the whole matter, as oyster beds occur most frequently in the estuaries and mouths of rivers, and it was admitted by the counsel of one of the most important fishing provinces in the Dominion, that the province referred to possesses harbours from end to end, 'it is,' he said, 'filled with harbours.' Practically every harbour in question is the mouth or estuary of a river, but said the counsel: 'Every harbour in Nova Scotia is a public harbour,'* an admission which seemed to imply that all oyster beds in Nova Scotia are the property, not of the province, but of the Dominion. There are, indeed, insuperable difficulties inevitable under a divided fisheries administration; but it appears advisable simply to consider in what way the oyster fisheries can be best conducted for the benefit of the public, whether by one authority, or by two authorities independently, or by two authorities conjointly. Annual licenses on public beds are fair to interested parties; but leases for terms of years can alone save beds from depletion. Hence the Dominion government has for many years granted areas of ground covered with water, or foreshores where no oyster fishery exists, and leases have been issued on application and on payment of $1 per acre per annum, payable in advance, the applicant paying all charges for obtaining plan and surveys, &c. The forms of application are as follows, with regulations to guide surveyors in preparing plans and descriptions for applications for oyster fishery licenses.

APPLICATION FOR OYSTER FISHING PRIVILEGES.

To.....

.....189

The undersigned hereby applies for a license of oyster fishery privileges at..... in the county of....., province of....., covering the following limits, as shown on a plan of survey accompanying the present application:—

* Official report—Jurisdiction over fisheries, Privy Council, No. 8 of 1897, London, p. 227.

(Here insert description of limits, by metes and bounds, showing connection with previous surveys made, or with some well-defined boundaries on shore. All surveys to be made by a duly licensed surveyor, in accordance with the printed regulations issued by this department.)

Signature of applicant or applicants.....

REGULATIONS to guide surveyors in preparing plans and descriptions for applications for oyster fishing licenses.

(1.) All surveys of oyster license limits are to conform to the largest scale admiralty chart published, of the harbour or locality to which the application refers. Such chart can be seen on application to the fishery overseer of the district in which the limits are situated.

(2.) Boundaries are to be fixed by reference to well-defined objects marked on the charts, or by any surveyor's boundaries already existing, but in these last cases the surveyor's boundaries must be defined for platting on the chart by reference to points marked on the chart, so that they can be accurately located by the officers of the department from the surveyor's description.

(3.) Where surveys are bounded by lines, these lines must be due astronomical east and west and north and south lines.

(4.) The extremities of any lines, or other boundaries, when on land, must be marked by monuments in accordance with the law governing land surveys.

(5.) The boundaries of lots, when in water, must be so defined that they can be easily located at any future time. Satisfactory definitions would be two cross ranges on land, separated by an angle of at least 60 degrees, with the objects in range defined on plan, or at least three sextant angles, each of not less than 40 degrees, measured to four prominent objects on shore shown on the chart. Compass bearings alone, unaccompanied by any other check, will not be accepted.

(6.) A plan of the survey must be furnished, which is to be made on the basis of the admiralty chart of the locality, as above mentioned, either on the same scale or some multiple thereof, or it may be platted upon a printed copy of the chart. On the plan, all boundaries, distances, bearings and connections, with reference points, must be distinctly shown, and an error, clerical or otherwise, will condemn the whole survey.

(7.) The plan must be accompanied by a description giving the metes and bounds of the lot and its area in acres, in such terms as would, in the case of an ordinary land survey, be held in a court of law to be a legal description for a title deed.

(8.) In the event of previous surveys having been made in the same locality, the plan is to show the nearest boundaries of such surveys, and their relation to the new survey.

After the application and plans are complete they are submitted to the inspector of fisheries for transmission to headquarters, with his report of the area in question, and if approved of by the department, a form of license is made out in the applicant's favour for a period of nine years, on a form similar to the following:—

OYSTER AREA FISHERY LICENSE.

No.....

Dominion of Canada,

Province of.....

Special Fishery License issued under authority of Sec. 21 of the 'Fisheries Act.'

18....

The herein named....., resident of..... county of....., in consideration of the payment of the annual sum of.....dollars, is hereby licensed for the term of.....years, to plant and form oyster beds and to fish for oysters within the following waters, that is to say:—

(Full description of limits given.)

A number of conditions binding the lessee to carry on oyster culture, to interfere with no other adjacent beds, to give up possession if required, on the expiry of the lease, and to observe the regulations in force, are appended. The annual lease, it may be added, is issued under the following conditions as authorized by order in council, dated 28th day of December, 1893:—

1. No person shall fish for or catch oysters without a lease or license from the Minister of Marine and Fisheries.

2. The owner, person or persons interested in a fishing boat employed in the oyster fishery shall cause a memorandum in writing, setting forth the name of the owner, person or persons interested, to be filed with the local fishery officer, who, if no valid objection exists, may, under instructions from the Minister of Marine and Fisheries, issue a fishery license for the same, and any boat or fishing apparatus used without such license shall be deemed to be illegal and liable to forfeiture together with the oysters caught therein, and the owner or person using the same shall be subject to the penalties prescribed by the Fisheries Act. We make recommendations *re* oyster leases, &c., at the close of this report.

STEAM TRAWLING.

In European seas no question has stirred up more widespread feeling than that of steam trawling. The fishing population generally have been opposed to this fishing by 'steam machinery.' It was alleged that (1) spawn is destroyed on the bottom (2) feeding grounds are ruined; (3) the fish are injured and spoiled for market; (4) the fish are exterminated owing to its deadly character. The destruction of spawn was shown by Professor McIntosh, and other eminent scientific men, to be impossible at any rate by the beam trawl, as the eggs of most valuable food fishes are not attached to or deposited on the bottom, but float near the surface, or at a considerable height above the floor of the sea. Trawling, especially the use of the otter trawl, is the main means of supplying the great markets of Europe. Hull, Grimsby, Leith, Aberdeen and other British fishing ports are great centres of the trawl fishery. In one day in October, 1906, no fewer than 60 steam trawlers entered the fish dock basin, Grimsby, England, laden with fish. Their cargoes filled 251 railway cars. The fish were shipped to the London and provincial fish markets, and the supply seems to be so inexhaustible that from year to year the catches continue to increase, though the fleets are more enterprising and venture to areas far more remote than those fished 20 years ago.

No further restrictive regulations appear to be called for at present than those provided by a close season such as we recommend for halibut, though a minimum size limit for certain fish may be desirable with the increase in the extent of trawling that may take place in a few years.

It has been urged that within a distance of three miles from shore steam trawling should be prohibited, and that in any case the hand-line fishing will be seriously injured by these more destructive modes of fishing. It must be borne in mind, however, that steam methods are more effective than the old hand methods, and unless it can be shown that spawn, spawning areas, food and food supplies, small immature fish, &c., are injured by the trawl, there is not sufficient justification for curtailing the most recent and efficient methods of supplying the great markets of the world. Railroad trains were not prohibited because the old stage coach was bound to suffer injury. Further, trawling cannot be carried on extensively on 'rough ground' and on much of the Pacific coast the trawl would be damaged or lost if used. The matter is one to be decided after some years of experiment, in which work of experimentation the Biological Station will be able to render valuable aid.

EXPORT OF CERTAIN FISH.

Under the heading of 'herring fishery' we express our views on the matter of exporting these valuable fish, but the matter of salmon export has been prominently placed before us. The trap licensees are prohibited by section 6, regulations dated May 2, 1904, from exporting, for canning or manufacturing purposes any salmon captured in their nets. A similar prohibition was strongly urged to prevent the sale by salmon fishermen of salmon to United States buyers to be canned in Washington State.* One of the most prominent canners in the province thus clearly stated his views:—

'The Americans should not be allowed to invade our waters and buy fish from our fishermen, after we (the canners) have made our fishermen all sorts of advances and practically in most instances actually own most of the fishing gear that the fishermen are using, and besides have written agreements with most of the fishermen that they will only dispose of their fish to the particular cannery for which they have engaged to fish. Outsiders such as the Americans can afford to actually pay a higher price for the fish than the *bona fide* Fraser river canners who have already incurred the expense of outfitting these fishermen with fishing boats, money advances, and gear of all sorts, provisions, &c., &c.

'The position this passing season (1904) has been that when the Americans found they were going to have a short run on Puget Sound, they simply came over to the Fraser river, and by paying cash to our fishermen they bought fish which really belonged to the Fraser river canneries; really bought stolen property.'

On the other hand the fishermen as a whole consider that, in fairness, no canner should be permitted to import any fresh salmon from outside the province for the purpose of being canned or manufactured.

GENERAL REVIEW OF FISHERIES.

TROUT AND ANGLING.

While the commercial aspects of the provincial fish and fisheries claim the primary place in the commission's work, the game fish and angling questions, which are prominent in the public mind, are of importance, and were given attention at the sittings of the commission. Some of the finest angling rivers in the world are in British Columbia, and such species as the Rainbow, Blackspotted or Red-throat, and the Dolly Varden trout have a reputation amongst anglers which extends all over the empire. From England, from New Zealand, Australia, and India, sportsmen have come attracted by the game fish of the waters of British Columbia. The Steelhead must also be included in the list of game fish, while the Quinnat or Spring salmon and the Cohoe afford at certain times of the year excellent sport. Most of the Pacific salmon spawn in late summer and fall, though it is claimed that there are two periods in the case of the Quinnat, viz.: March and April as well as August and the immediately succeeding months. The Steelhead mainly spawns in February, March and April. It has been urged upon the commission that all netting for trout should be prohibited above tidal limits, that the present close season should be altered so as to begin earlier and end later, and that spearing, dam obstructions, and other injurious practices, should be vigorously dealt with. One great difficulty in connection with the protection of the trout is the fact that the Steelhead fishing is best when trout fishing should be forbidden. For example, in the waters of Goldstream, Vancouver Island, Steelhead afford fine fishing from November until March, in spite of the excessive and illegal netting carried on by the Cement Works' employees and others. The Koksilah river

* The extent of this export to American canners is indicated by this official statement, dated Bellingham, September 28, 1904: 'Between $7,000 and $8,000 duty have been collected on salmon shipped from the Fraser river for American canners this season.'

has also been netted excessively, and the Chemainus river has been really destroyed, though its angling possibilities were always regarded as limited. In the Big and Little Qualicum rivers the spring and fall angling is excellent. Comox or Courtenay river and Englishman's river furnish splendid spring salmon fishing, while trout also are plentiful, but the Cowichan river surpasses all, for from the middle of November until April, Steelhead fishing is good; from the middle of September till the end of November, Cohoes afford good sport, and spring salmon are in fine game condition from early in the year until June or July, and there is also a fine September run. The small Spring Salmon or Quinnat grilse, 5 to 12 lbs. weight, add to the game possibilities of this fine river from April onwards through the spring and summer. The Indian weirs are dealt with in another part of this report, but their effect upon the Cowichan river can hardly be questioned, while spearing, netting and dynamiting it is alleged have worked further destruction. Five cart loads of salmon are stated to have been nefariously taken on a single occasion from this river and sold in Victoria or peddled through the neighbouring country. The absence of sockeyes has been often animadverted upon, though a few have occurred at intervals, yet the water is so low from July on into August that the schools have little inducement to select the Cowichan river in spite of the fact that the fine lake at the head and its numerous tributaries seem to be favourable. Lastly, Campbell river, owing to its world-wide reputation amongst anglers, must be mentioned. It is really estuary and sea-fishing, in the wide channel between the mainland and Valdes island (from Duncan Bay to Cape Mudge) below Seymour narrows, that is pursued by the Campbell river anglers, though the spring salmon after they enter the river have provided fine angling. In July, August and September, the estuary fishing in the sea water channel is magnificent, the fish being large, strong and of superb game qualities.

On the mainland the trout streams, which as a rule find outlet into salmon rivers and salt water inlets, are numberless, and from the Yukon boundary to the 49th parallel furnish ideal sport. Near large cities like Vancouver these trout streams are of inestimable value both as attractions for visitors and as means of recreation to residents, but the opinion prevails that overfishing, and especially illegal destructive methods have depleted them, some being ruined almost beyond recovery. This decline has occurred within 10 or 12 years, as formerly anglers had great sport in such streams as the Capilano, Coquitlam, Chehalis and similar rivers, Seymour creek, &c.

The following suggestions have been urged upon this Commission.

1. Prohibition of the sale of trout (exclusive of Steelheads and Great Lake trout, *Namaycush*.)
2. Close season November 1 to March 25.
3. No netting for trout to be permitted.
4. No trout under a length of 6 or 8 inches.
5. Include and extend artificial hatching of trout.
6. Twenty fish, or 10 lbs. weight to be the maximum day's catch.
7. Institute a license for all anglers, visitors and residents.

HALIBUT.

The halibut of British Columbia have an enviable repute. If not quite equal in whiteness and firmness to the Icelandic and North Sea fish, they are less overgrown and of finer texture. They do not reach the dimensions of European halibut, a length of five to six feet and weight of 250 pounds being exceptional, whereas much larger example are common in the German ocean and formerly in demand in the London markets. The waters between Queen Charlotte islands and the mainland, especially off Rose Spit, and off the west shore of Banks island, were at one time veritably overcrowded with halibut. They literally 'paved' the bottom of the sea; indeed, in 1893, a fishing tug secured 180,000 pounds of fine halibut in the short space of seven hours.

Catches of 150,000 or 160,000 pounds are recorded on some trips every season. Thus, a United States newspaper early last year (1906) said: 'The fishing steamer *Kingfisher*, of the New England Fish Company, has returned from the northern halibut banks with 160,000 pounds of halibut. The fish were of the average size and were caught mostly in deep water. Eighty tons of fish at this time of the year, when storms are ever frequent on the waters, is an exceedingly good catch, and the *Kingfisher* is nearing the standard set by the *New England*, which has been leading the other steamers all summer and fall. The fish were caught in Dixon entrance and on Virago sound. Strong gales from the southeast, alternated with heavy rains, and throughout the trip the steamer experienced exceedingly boisterous weather.'

There is a competition amongst these boats to secure the largest catches of fish during the shortest trip, and the Vancouver *World*, August 18, 1906, gave prominence to this in the following notice:—

'*Wins Pennant.*

'Bringing 170,000 pounds of halibut, and having won her first laurels on this coast by beating the *New England* by several hours over a thirty-mile course, the crack fishing steamer *Manhattan*, of the New England Fish Company, arrived in port this morning from the northern fishing grounds, in the vicinity of Goose island. That the new steamer was a faster boat than the steamer *New England* was well known to both captains before a race was declared; but yet there remained a desire to challenge the merits of the *Manhattan's* claim to laurels she had not yet won. Both steamers obtained their catches in different localities, but finished fishing about the same time. Having more dories to operate, the *Manhattan* was a little late in starting home.'

The *New England*, it may be added, secured on this trip 160,000 pounds of halibut. But the largest catch on a single trip was in 1903, when a steamer secured 225,000 pounds of halibut. Other boats, like the steamer *Edith*, which has long been notorious for its effective fishing on the British Columbia banks, secure remarkable catches at times. In November, 1906, a newspaper notice states:—

'The steamer *Edith*, of Tacoma, belonging to the International Fisheries Company, returned to that city on Thursday last from Hecate straits with four cars of halibut. She reported good weather on the banks, but fish none too plentiful. The Tacoma papers announce that the *Edith* sailed Saturday for Dixon entrance.'

The catches of a single month are almost incredible, when the weather and other conditions are favourable. In January, 1904, the following was the record:—

		Pounds.
Jan.	3—Str. *New England*, New England Fish Co., Vancouver	130,000
"	3—Str. *Kingfisher*, New England Fish Co., Vancouver	113,000
"	15—Str. *Kingfisher*, New England Fish Co., Vancouver	85,000
"	16—Str. *Unican*, Columbia Cold Storage, New Westminster	25,000
"	17—Str. *New England*, New England Fish Co., Vancouver	175,000
"	19—Str. *Columbia*, New England Fish Co., Vancouver	75,000
"	28—Str. *Kingfisher*, New England Fish Co., Vancouver	112,000
"	29—Str. *New England*, New England Fish Co., Vancouver	165,000

The waste of fish owing to their being too large or on account of their being too small has been enormous. A weight of 20 to 60 pounds is now general, but ten or twelve years ago a large number of halibut weighed 140 pounds,* and so crowded were the waters fished that the baited hooks scarcely reached the bottom before the fish took them. As a rule the sides of the fishing tugs had to be built up with boards in order to

* Dominion Fishery Inspector A. C. Anderson, in his report for 1875, says: 'The neighbourhood of Queen Charlotte Islands appears to be specially affected by these fish, and specimens weighing 200 pounds or more are not unfrequently caught there. . . . In San Francisco. . . . commanding 50 cents per pound. Mr. George Blenkinsop informs me that he has seen fish caught off the north end of Queen Charlotte Islands weighing from 500 to 600 pounds.'

retain the excessive catches so easily and rapidly made. The halibut are scattered all over the strait, but regular migrations have been noticed, and where the waters of Dixon entrance meet the currents, moving from the south through Hecate strait, and food appears abundant, the fish thickly congregate there. The fish often move into very shallow water, and far up the deep inlets such as Gardner, Bute, and other inlets, the Indians from time immemorial have been in the habit of taking them. Along the west shore of Vancouver island halibut are plentiful, indeed, in the coast waters of the province generally these esteemed fish are captured. Further north in the Alaskan waters halibut occur, but in diminished numbers, while the once prolific areas northwest of Cape Flattery have long been 'played out,' a few small sailing vessels from Seattle still, however, obtaining catches there. As an experienced fisherman told the commission, the bank south of Cape Flattery has very few fish now. It is nine miles from the United States shore and eleven miles from the British Columbia shore, but is pretty well depleted. The quality of the fish, too, was always regarded as inferior to the fish from the British Columbia banks in the north. 'Many of these fish,' says an experienced man, 'are so soft and flabby that they will not stand freezing.' To the north of British Columbia the same fisherman says the fish deteriorate. 'To the north of us, in Wrangle narrows, the halibut are also flabby and stringy and unfit for market. . . . British Columbia has about the only firm and good marketable halibut on the Pacific coast.'

Besides the fleet of New England Fishing Company's halibut tugs, there are a number of independent steamers engaged in halibut fishing, operated by Canadian firms and using the otter trawl.

The steam vessels, 130 to 150 feet in length, which resort to the northern banks, have 10 to 14 dories, each carrying two men, and these fish within a radius of seven or eight miles. From 7,000 to 10,000 lines of 'trawls' are used, and the snoods are from three to six feet long, and salt or fresh herring is the bait mainly used.

The method of fishing for halibut from schooners is practically the same as on the eastern coast. With few exceptions, halibut men are eastern men, who formerly, when the fish were plentiful, operated out of Boston and Gloucester. The schooners are smaller and carry fewer men than the eastern boats. On the small schooners generally five or six men constitute a crew. When the banks are reached the schooner is hove-to, and all hands prepare for work. First the dories are launched and the buoy lines lowered. This line is usually about 150 feet long, and has an anchor attached to the end. This anchor is lowered until it reaches the bottom and then the trawl lines, usually three in number, are lowered over the side of the boat. These lines are generally about 1,800 feet long, and are joined together so as to make one continuous line. Side lines, about six feet long are attached to these trawl lines, and are placed about three or four feet apart. These lines have hooks and bait (usually herring) attached, and are so placed as to rest on the bottom. The trawl lines are lowered over the end of the dory, and great skill is used in placing the trawl so as to cover as much ground as possible and yet not get the lines crossed and tangled. To lift the trawl the buoy line with the anchor attached is taken in first and then the trawl. Sometimes a small windlass is used to lift these. The fish are hauled to the top of the water, hit on the head with a club, unhooked and thrown into the dory. Many other kinds of fish besides the halibut are hooked by the trawl, but, with the exception of the 'black cod,' none are considered of value. The least desirable of them all is the dogfish. This fish belongs to the shark family, weighs from 8 to 20 pounds, and, with the exception of the oil in its liver, is of little commercial value.

When a boat is loaded it is hauled alongside the schooner and the cargo transferred. When the bed is small, sometimes the whole crew will fish from the sides of the boat. The fish are hauled aboard and stacked up. At night the whole crew take up the work of cleaning the fish and packing them in the hold with ice. The boat is then headed for port and the crew put to work overhauling the gear, &c.

The method of fishing from steamers varies from the above but little. The fishing grounds fished by these are in Dixon entrance, though sometimes in the spring the

anks off Cape Flattery and Vancouver island are fished. The trip up to Dixon entrance usually takes from two to three days. A steamer generally makes the round trip in from six to seven days. Fishing from a dozen dories, over eighty miles of line is used. On arrival at the grounds the dories are placed in position by the steamer and the trawls set from each dory. A dory carries from two to three trawls, each about three miles in length. From these lines radiate short lines to which are attached the bait. After a sufficient time has passed to give the fish a chance to become familiar with the bait the lines are hauled in and the fish clubbed on the head and dumped into the boat. The steamer seeing a boat loading, runs alongside and the fish are transferred aboard. Sometimes a full load is taken in one day, but generally two days are needed to get a good catch. Sling nets are placed in the dories when they leave the boat so all that is necessary to do to transfer the fish is to catch the net to a line aboard ship and heave away with the donkey engine. With the steamers, the time to quit fishing is generally set at about three o'clock. Then all hands are called aboard and the work of cleaning the catch is commenced. Force pumps give abundance of salt water, and everything is arranged to facilitate the work. As rapidly as the halibut are cleaned, they are put between layers of crushed ice in the hold of the vessel, a floor being laid over each tier to prevent the crushing of the fish.

From the middle of September to the middle of March is the principal fishing period, but in May and early June many large halibut move into inshore shallows, especially on the east side of Graham island. There the Indians have long been accustomed to take them.

It is generally agreed amongst experienced fishermen that the British Columbia halibut banks have seriously deteriorated during the last ten or twelve years, and it is absolutely essential that some measures be adopted to save the halibut supply from exhaustion, a fate which has befallen the banks of western and northern Europe and of the Atlantic shores of Canada. The halibut appear to leave the inshore waters to a large extent in August, and they remain in deep water until late in the fall, though the deep inlets and sounds of the British Columbian coast are so favourable for food and other attractions for the halibut schools that these fish may be taken at any time of the year. From the evidence received by the commission, and from other testimony, it appears that the roe or spawn is in a state of active development late in the year (in December)* and that it continues to advance towards maturity during the early months of the year until the end of March, when the spawn is ripe and ready for scattering in the water. The eggs are buoyant and float near the surface, and the newly hatched young, which are, according to specialists, delicate transparent worm-like embryos, rather more than half an inch in length, swim in countless hosts within a foot to six feet of the surface of the water in areas like Hecate strait and Dixon entrance, sheltered to a large extent from the storms of the open ocean. The most urgent measure, as well as the most effective, is the rigid enforcement of a close season, from Dixon entrance on the north to the international boundary in the Straits of Georgia and Juan de Fuca. The bays and sounds and all the water bordering the west coast of Vancouver island must also be included. A close season of four months in each year from December 1 to March 31, will rapidly restore the threatened halibut supply, and enforced in the limits named it will include all the 'banks' or spawning resorts in Hecate strait, &c., on to which the halibut move from the open ocean outside.†

That halibut banks formerly abundantly supplied with fish are now depleted and unproductive is generally admitted. The *Pacific Fisherman,* in September 1906, called attention to this serious state of things and said:

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* Capt. Newcomb spoke to the commission of halibut in spawn in October, no doubt referring to the appearance then of opaque white eggs in the female.

† This, it is needless to say, is a far less drastic measure than that declaring a close season for fur seals north of the 35th degree of north latitude and east of the 180th degree of west longitude. The decimation of a valuable food fish even in the open ocean is decidedly *contra bonos mores.*

'A recent close inspection of the northern halibut banks, from Rose Spit at Dixon entrance as far south as the banks of Cape Scott, Vancouver Island, has revealed the fact that many of the grounds have been depleted.

'Banks which half a dozen years ago were bountiful in their yield of halibut at all times of the year were found as free of fish as a billiard ball is of hair. Other banks known to have been fine fishing grounds in the past where large fish were numerous were found to carry nothing but the smallest of fish.

'It has been argued that at certain seasons of the year the halibut migrates, alternating between deep and shallow water, according to the breeding and fishing possibilities, and this line of reasoning is advanced to account for the scarcity of fish on well-known old-time producing banks. On the other hand, some experts declare that this argument is nothing but a fallacy, and that steadily the Canadian banks are being rendered valueless largely through the activity of the many fishing steamers.'

One halibut fisherman declared that four years ago halibut were plentiful all over Hecate strait. 'It is getting so now they are not all over the strait,' he said; 'they are getting fished out. There is a difference between four years ago and two years ago. They are diminishing. Any time, some years ago, one set in Hecate strait on a good day would be enough for any boat. To-day you have to chase around there to pick up any at all.' This depletion is due, not merely to large takes brought to market, but to the absolute waste of fish. 'We have halibut,' said Captain Holmes Newcomb, 'from Cape Flattery to Icy strait and Sitka. You can catch halibut anywhere you like. At the same time, when you come to take twenty to twenty-five thousand tons of fish off these banks every year, that must reduce them.'

The poaching carried on by foreign fishing vessels, illegal use of harbours, criminal waste of fish,* evasion of customs and coasting laws, cattle-stealing and crimes against natives and white settlers, have formed the subject of complaint for the last ten or twelve years. In 189 a well-known resident in northern British Columbia wrote:

'Numerous American vessels have resorted for years, not only to this strait, to fish for halibut, but also to the adjacent waters of Browning entrance, Edye passage and Brown passage. . . . . .

'To my own certain knowledge six American schooners loaded halibut between Edye passage and Rose Spit in the year 1888. I myself passed close alongside two of these in that year which had halibut buoys out all around them. Neither of them had a name painted on her nor her port of registry marked, as I looked very carefully to see as I then intended to report the matter. The number of vessels has increased each year since then until this season, I am credibly informed, no less than fifteen American schooners have loaded between Goose island and Rose Spit. These fishermen do not handle the halibut as our own people do; but simply flitch them and salt them in the hold, some delivering their cargoes in Seattle and others in San Francisco. They destroy almost as many fish as they carry away, as all halibut caught weighing less than twenty-five pounds are thrown away.'

And he added the following words in reference to a grave abuse very generally alleged:

'There is no doubt also that these schooners are constantly violating the customs laws by trading with our Indians, and it is said that a good deal of the whisky which the natives along the coast procure comes from this source.'

Moreover, owing to the nearness to the Alaska coast of many fine British Columbia halibut banks, small United States vessels have long made a practice of operating off Queen Charlotte Island harbours and taking across to Ketchican, Alaska, which is only 60 miles from Massett inlet, halibut valued on an average at 25 cents each in British Columbia, but selling for $2 in Alaska. As larger vessels cannot enter many of the small Canadian harbours, small vessels do so and either fish themselves or buy from

* Mr. Chas. Harrison, of Massett, assured the chairman of the commission that halibut under 40 pounds were thrown away dead in quantity as unsuitable for salting.

the Indians. A resident on Queen Charlotte islands stated in a letter that on May 23 last, 'a 15-ton schooner hailing from Cape Chacon is waiting to cross by a favourable wind to Virago Sound, Graham island, as she had been fishing near Skidegate in Cumshewa inlet, but found practically no halibut.' Certain banks are, however, pre-eminent as furnishing in past seasons steady supplies of halibut. In spring and summer much fishing has been done off Cape Scott; and further, the strait (Hecate strait) and the waters of Goose island have been remarkably productive, but most of the halibut fishing vessels claim to have made their best catches around Banks island, enormous catches having been taken in a fine bay close to the entrance to Principe channel. On the opposite shore of the strait south of Skidegate, much fishing has been carried on off Crumshewa inlet. Further north, however, the waters inside and outside Rose Spit, the northeast point of Graham island, Q.C.I., have been continuously fished, the area opposite Massett being one of the most productive grounds in Dixon entrance, though further west in Virago Sound, really a narrow inlet, large takes of halibut have been secured. From Goschen island north to Dundas island halibut banks occur most of the way within a short distance of shore, including Brown passage, Edye passage and Browning entrance, indeed the greater part of the winter fishing alleged to be carried on in Alaskan waters is not carried on in Alaska at all, but south of the British boundary line (C. Muzon and C. Chacon to Wales island) in the portion of Hecate strait between Banks island and Graham island, and from the southern end of Dundas island to Rose spit, the fleet lying under Rose Spit in the winter nights when southeast gales blow with terrific force. Good shelter is afforded just under Tor hill, but the number of harbours and inshore anchorages used by the halibut boats, almost without exception trespassing foreigners, is legion. Fishing is not carried on in stormy winter weather south of Bonilla island. Every season new banks are discovered, and the whole coast of British Columbia shows fine halibut resorts. Indeed a fine bank between Ucluelet and Clayoquot on the west shore of Vancouver island is said by a competent authority to rival the best banks in Hecate strait. From Captain Cook's time the natives have fished on these banks, and small fishing vessels have operated in a desultory manner.

Amongst other harbours habitually resorted to by foreign halibut vessels and used illegally for gutting and cleaning fish, baiting and preparing gear, &c., are the following: Dundas Island harbour, used largely by Tacoma boats, who actually fixed up and maintained a light for their use, also on Stephens island, where a Tacoma firm erected a light; and Goschen harbour, which is not on Goschen island, but on the large island, Porcher island, adjacent; the small harbour which is practically land-locked on Banks island; Bull harbour, on Hope island, is a favourite resort for shelter, and the small secluded harbour on Goose island.

The islands off Cape Scott afford shelter at night for boats fishing in the neighbouring waters, where operations can only be carried on in fine weather, the gales from the open Pacific ocean being terrific. Off Massett, under Tor hill, and in Virago Sound harbour, as well as near Skidegate, the halibut boats secure shelter by trespassing close inshore. That Canadian harbours are used is admitted by leading foreign fishing firms. 'Canadian harbours are used to a slight extent,' was the inadequate admission of one prominent Tacoma fish merchant. Captain Newcomb and other witnesses before the commission showed that this use of harbours was constant, systematic, and essential to a successful prosecution of halibut fishing in northern British Columbian waters. When asked about these foreign vessels running into harbours to clean and store their fish: 'They may fish outside, but do they go into the harbours to clean their fish? Perhaps, if that is the case, they could not successfully carry on their business if that were put a stop to?' Captain Newcomb replied, 'That is quite correct; I am quite sure of it.' Question: 'They go into the harbours?'—Captain Newcomb: 'Yes, they do. I have been up there in the harbours with them. As soon as they see the cruiser along that upper coast, there are dozens of halibut boats, and if I follow one the rest go into different harbours.' Captain Newcomb also said: 'Close

our harbours to the Americans—I'd almost guarantee in two years to put them out of business. Either that or they'd have to come here and use British bottoms. It is impossible to fish and take care of the fish without entering a port. . . If there is any roll at all, they can't take care of the fish, so they have to run into harbours.' The Vancouver Board of Trade in their memorial dated November 16, 1905, laid before the commission, emphasized that point, urging the alteration of the statute whereby 'foreign vessels would be prohibited from making use of Canadian harbours for any other purpose than solely as harbours of refuge when, under stress of weather, such vessels cannot remain on the fishing grounds. The American ports are too far distant from the halibut grounds for any vessels except those under the Canadian flag to successfully prosecute their calling on these banks.'

During the five years from 1898 to 1903 the total catch on the whole Pacific coast of halibut increased five-fold, and exceeds eight times the catch of halibut on the Atlantic shores of North America.

British Columbian halibut are five times the value of the Atlantic halibut, according to the official figures, which are doubtless under-estimated (the British Columbian halibut, $664,090; the Atlantic, $120,500, the British Columbian halibut compares, indeed, in value with the Atlantic haddock, $650,000, or mackerel, $750,000).

Much complaint has arisen owing to the difficulty experienced by Canadian halibut companies from the methods and the rigorous competition of the New England Fish Company. It is plain that as the company has been granted very special concessions, the company should be required to adhere strictly to the original conditions viz.: using British bottoms and employing crews of British subjects, which conditions were in the first instance scrupulously observed. The difficulties have been referred to in the evidence and in numerous documents laid before the commission.

The following, from an important commercial organization, sets forth the facts as alleged, and suggests that a retaliatory measure, or some form of rebate, be adopted to enable Canadians to utilize on fair terms the rich resources of the British Columbia halibut banks:—

'Abundant catches of fish were readily made, but when we came to selling them it was a different matter. We found the market for these fish was and is in the Eastern States, and that owing to the duty of one cent per pound . . . we were unable to land fish either in Boston or Chicago at a profit, and even the Canadian markets were denied us, owing to the fact that with the small duty, one-half cent per pound, which Canada imposes, large American companies were able to beat us even in our own country. . . . We have to-day, in cold storage, here in Vancouver, 300,000 pounds of frozen halibut, of which, so far, we have not been able to sell a single pound, for the simple reason that the American boats are bringing in large quantities from the banks, and with one cent per pound against us, no one will buy. It is a well-known fact and notorious in British Columbia that Americans are deriving all the benefits of these rich fishing grounds. . . . As a right to Canadian fish companies, we ask that all American ships be denied the privilege of our harbours to carry on the fish industry in Hecate strait, or failing that, that the duty of one cent per pound be rebated by the Dominion government on all shipments of halibut from British Columbian ports.'

The American companies do not object to a license system as on the Atlantic coast; but we do not favour that. In the interests of the halibut fish supply, we make a recommendation which will be beneficial if adopted; but it is difficult to make further recommendations in view of the fact that certain international contentions regarding the waters frequented by the main schools of halibut are still unsettled.

OULACHON.

That the oulachon has not become a recognized fish in the best markets is a matter of surprise to most people who have learned to appreciate its rich and palatable qualities. It is a small fish, about the size of the smelt, and from the Naas river in

the north to the Fraser river in the south, it occurs in great abundance from early in March to the middle of April. It is numerous at points on the west coast of Vancouver Island, as off Ucluelet, Barclay sound. The schools entering the northern estuaries, especially the Naas, are incredibly vast. They crowd in so thickly that the Indians from an early period have been accustomed to make large catches by a very rude and, at first glance, inadequate method. Taking a pole about 10 feet in length, they insert nails, set about an inch and a half apart, and projecting like the teeth of a comb. Putting this implement over the side of his canoe, the Indian draws the pole quickly through the dense school of moving oulachon, and with a backward sweep, impales a number of the fish, which he shakes off the sharp teeth into the canoe and then repeats the operation. In two or three hours it is usual to secure in this simple fashion a boatload of these esteemed fish. Seines are in some localities used and small meshed gill-nets.

Like the smelt, the oulachon soon loses its delicate flavour, and when cooked and canned the flesh drops from the bones, so that it presents, when the can is opened, a jumbled, uninviting appearance. In a freshly caught condition it is a most delicious fish, and when salted, or rather pickled, it is after boiling, a very toothsome article of diet, being most digestible and nutritious. Indeed the flesh of the oulachon is stated to be as restorative to the wasted human system as cod-liver oil. Related as the oulachon is to the trout and salmon, it has few bones and the flesh is solid and flaky. When cooked the flesh is easily removed by passing a fork along each side of the backbone and on that account it is more convenient for table use than most small fishes.

The oil, which is so abundant in the tissues of the oulachon, has very superior qualities and might be made commercially important. The flesh is so permeated with the oil that it is commonly called the candle fish, and by simply inserting a piece of pith through the axis of the fish, when dried, it may be used as a candle or torch, the pith burning like the wick of a well-filled lamp. The Indians merely press vast numbers of the fish into a wooden vat or barrel and allow the oil to ooze out by sheer pressure. It rapidly turns rancid and is most offensive in odour, but is highly relished by the Indians and all along the British Columbian coast oulachon oil is a highly esteemed condiment. The Haida Indians who are unable to secure supplies of this fish on Queen Charlotte Islands are accustomed to cross over to the Naas and Skeena rivers, where they barter their halibut and other products for the much-prized oil. The oil is consumed with seaweed, berries, dried fish-roe, and indeed, with every form of food. White settlers who have lived long upon the coast acquire a relish for this crude oil preparation, but a refined and clarified oil would be an attractive and merchantable article, if it were placed upon the market.

Thirty years ago an industry was started for manufacturing oulachon oil. Mr. Robertson, the pioneer in the enterprise, located on the Naas river and purchased the fish from the Indians, or paid them $1.25 per day to catch the fish. P--- somewhat crude steaming apparatus he extracted the oil. During March, 1877, he prepared a large quantity of the oil which he sold to the Indians in various parts of the province at $1 per gallon. It found such a ready market that he could not carry out his intention of originating an export trade; none remained to export.

When the enormous schools of migrating oulachon crowd in solid masses into narrow estuaries to reach their spawning resorts, a short distance up from open sea, they are destroyed by every possible enemy, seals, porpoises, sea-birds, even bears and land animals eagerly strive to secure and devour them.

The spawning habits of this species have not been sufficiently investigated to permit of framing regulations for preventing the undue destruction of these fish, which in some areas, Rivers inlet, for example, are said to have decreased seriously in quantity. They are irreguluar and erratic in their occurrence and numbers, yet there appears no sufficient reason why they should not be as regular and plentiful as smelts in the Atlantic estuaries, if reserve areas for spawning could be defined. The terrible inroads made upon them as they move in from the sea, and after they have entered

the rivers for spawning purposes no doubt affect the supply in the seasons following. The protection is most necessary when the fish are engaged in spawning, and the matter is one calling urgently for scientific investigation.

HERRING.

The superabundance of herring on the coasts of British Columbia has been recognized from early times; but as the local demand was insignificant, no herring fishery can be said to have existed until about thirty years ago, when the pioneers in the business, Messrs. Holbrook & Co., of New Westminster, cured (in 1877) between 500 and 600 barrels of herring, which they exported to South America. 'Should the result of this experiment be satisfactory,' reported Dominion Inspector A. C. Anderson, at the time, 'a field of industry of almost boundless extent will be opened up.' At intervals, various parties engaged in a desultory way in the herring industry, and quantities were converted into oil and guano; but within the last five or six years the value of this fishery resource has been slowly realized. All who paid any attention to the matter were astounded at the incredible abundance of the fish. An English herring fisherman, from Yarmouth, did not exaggerate when he said:

'Only last January, near Nanaimo the coast was for two miles knee-deep with herrings, they were simply crowded on shore by millions more, on their way to spawning grounds. The people were at their wits end as to what to do with them. They were carted to farms for manure, used for fuel, burned in heaps, buried, yet millions of fish lay on the shore to the danger of health. Last season it came under my own observation to see four boats in less than two hours take four tons of herrings, just off Vancouver island. The waters are alive with fish. You can scoop them up with your hat or pail, and such splendid fish, 8, 10 and 12 inches long. The German ocean or North sea cannot compare with the fishing grounds here.'

Herring occur practically all along the coast as far as Alaska, though in sheltered areas like the waters near Nanaimo ,and Ucluelet, Barclay Sound, as well as Virago Sound, Queen Charlotte islands, the schools appear to form solid phalanxes. At Nanaimo they are plentiful from early in November to the new year, vast schools occurring in February, while even so late as June immense quantities of herring have been seen moving out in the Strait of Georgia. They vary according to the locality, and at Ucluelet they are always later than at Nanaimo, the largest numbers appearing in January or February, when they come inshore so thickly as to be easily captured by hand along the beach. Some of the bays, it is reported, appear to be a mass of fish, and the settlers have taken great quantities for manure and for bait. The Indian tribes have for centuries been accustomed to taking the spawn and preserving it in a dried condition. It resembles dried sago pudding and is eaten raw. It is called 'skoe' (pronounced 'skir'), and the Indians have adopted the device of placing cedar boughs on the shallow spawning grounds, and to these boughs the herring attach their glutinous ova.

There are many methods of putting up herring, but the greatest demand is for salted herring in pickle—these being mainly used by Germans, Russians and other peoples on the continent of Europe, who prefer to eat them raw with accompanying vegetables. Red herring are a deeply coloured, highly-smoked kind; bloaters, lightly cured and very slightly smoked herring which will keep only a few days; kippers, a split, well-smoked variety which should be eaten within eight or ten days, and boneless herring prepared extensively on the coast of Maine, the industry demanding over 500 tons of herring per week after the close, in the fall of the so-called sardine canning operations. There is also a good demand for canned herring, of which a large quantity is annually imported into Canada from Britain, but possibly on account of labour conditions, the establishment of a canned herring industry on a paying basis may not yet be possible.

The Dominion government has carried out for two years an important experiment with a view to proving that the Pacific herring are not inferior to other herring for

market purposes, and with the object, no less important, of improving the method of putting up pickled herring. Earnest efforts have been made at Nanaimo and other places to establish a cured herring industry during the last five or six years. Partial success only has resulted as the pickled fish packed in most excellent barrels brought as a rule $4 per barrel, whereas Scottish and Norwegian herring sold in the same markets for $10 to $12. A Scottish expert, with a staff of fisher girls who gut, select and pack the fish, and coopers who attend to the barrelling, has recently been at work and the sample shipment of Scottish-cured British Columbian herring will compare with any herring in the world. This experiment has had some result. Three or four enterprises possessing adequate capital, have already embarked in the business on Scottish lines. There is no reason why the province should not put up as large a pack of the best herring as Scotland, which yields annually 250,000 to 350,000 tons of herring, valued, when pickled and ready for market, at no less than $5,000,000 to $6,000,000 per annum. The Scottish staff also prepared some superior 'kipper' and 'bloater' herring which sold at 12½ cents per lb., but the preparation of kippers and well-smoked bloaters has been carried on for some time by several British Columbian firms.

In 1904 three companies were formed to exploit the industry, and some idea of the possibilities presented can be obtained from the fact that during the season of 1904-5 some 2,000 barrels of pickled herring were packed, 225 tons were 'dry salted' for exportation to Japan, and upwards of 700 tons were shipped fresh to Puget Sound.

The fishing during the season of 1905 was seriously injured by the operations of parties from Vancouver who seined the fishing grounds in a most wasteful and destructive manner, using the fish for the manufacture of manure or guano and oil. Upwards of 2,000 tons of herring were taken in this manner, to the great detriment of the legitimate fishermen and packers, as the immature fish were taken in large quantities, and the schools broken up on their way to the spawning grounds. Large quantities of fish were also killed and left to decompose, thus fouling the waters.

The fish packed in the season of 1904 found a good market in the Eastern States, San Francisco and on Puget Sound, while considerable quantities were exported to Australia, and fetched the market price in every case in competition with Scotch and Norway pickled herring.

It will be seen that while the fisheries of Nanaimo are still in their infancy the possibilities of the industry are large and properly conserved and exploited will become a valuable source of revenue to the whole district.

Thus far all the herring fishing has been done in the harbour during the late fall and winter months, and although the fish were known to be in the deeper waters of the Gulf of Georgia during August, September and October, when they are fat and in the best condition, as the 'fat herring' are those most sought for and bringing the highest prices in the markets, yet no definite knowledge of their grounds could be obtained except at an expense which precluded the investigation by private enterprise. If some definite information could be obtained as to the waters frequented by the herring during the summer and fall the herring fisheries of British Columbia would become second only to the salmon in value, and would provide employment for a large number of men, as is at present the case in Scotland. Systematic biological investigation is imperative on this as on so many other Pacific fishery problems.

Reference has been made to the damage done to the herring fisheries by the use of these fish for conversion into guano and oil, and it can be confidently asserted that in some seasons over 2,000 tons of herring were taken in Nanaimo harbour for this object. It was stated by the parties using these fish for this purpose that the oil was the main product and the guano the by-product, but this is disproved by the following figures: One ton of 'green' fish when at their best condition in the harbour will produce 14 gallons of oil, of which the market price is at present 16 cents per gallon, or $2.24 per ton of fish. One ton of green fish produces about 500 pounds of guano, of which the market price is $2.50 per 100 pounds, or $12.50 per ton, thus clearly demonstrating that the chief value is in the guano and not in the oil.

The herring fisheries of British Columbia are at present labouring under many disadvantages in the way of lack of information as to the habits and location of the fish at different seasons of the year, and there is no doubt that an intelligent investigation of these waters would amply repay the government, as the results would without doubt greatly tend to promote the fishing industry, and would also open out new fields which would be exploited and developed.

The packers of pickled herring have to compete with the European fish in the New York and Chicago markets, and owing to the high freight rates by rail as against the lower water rates, they have to pay from 50 cents to 75 cents per barrel more for transportation to the markets than the European packers pay. In spite of this fact, and of the greater cost of labour and salt, they have been able to sell their product at the ruling market price, showing conclusively that so far as quality is concerned the British Columbian product is first class.

Mr. John J. Cowie, the special expert officer authorized by the Department of Marine and Fisheries to conduct an experiment on the Pacific as well as the Atlantic coast, in order to demonstrate the suitability of Canadian herring for curing by the famous Scottish method, reported in 1905 as follows:—

'The system of conducting the herring business on the Pacific coast is altogether different from that on the Atlantic sea-board. On the Atlantic coast each fisherman cures his own catch of herring, afterwards disposing of them to some local fish merchant. On the Pacific the fishermen simply catch the fish and sell them in a fresh state to local curers who have curing places on shore where the curing takes place. The curing firms own boats and nets, and employ men to do the fishing. There are also a number of independent fishermen, however, fishing on their own account who, besides selling to the local buyers, send fresh herring direct to Vancouver and New Westminster each morning by steamer, but in no case do fishermen cure their own herring.

'On arriving at Nanaimo, B.C., I found only two firms engaged in herring curing. As the season advanced, however, a 'kipper house,' and a wharf and shed for dry salting herring for the Chinese market, were erected, besides another curing place under construction for a Fraser river firm.

'Herring were reported plentiful outside the harbour at Nanaimo about the beginning of November, but it was the middle of the month before they were got inside, and even then only on occasional nights.

'Herring in phenomenally large quantities come right into the harbour about the end of November, and stay there for some months. It seems, however, that their movements during the latter half of November are somewhat erratic.—They will come into the harbour quite plentifully for a night and then disappear for a few nights in succession, coming and going in this way until they finally come in to stay about the end of the month, although their flitting out and in has been known to continue till near Christmas.

The herring caught at Nanaimo are of the 'full' variety, the largest of which are equal to the 'full' grade of the Atlantic, and never exceed 11 inches in length.

When herring began to come in fair quantities the local curing establishments were visited by the staff, where practical lessons in gutting, packing, salting and filling up were given to the staffs of the local curers each day on which herring were to be had.

The Scotch staff filled, in all, 32 barrels and 234 half-barrels, in their demonstrations of the Scotch methods.'

In 1906, Mr. Cowie was ready for operations in Nanaimo about the middle of November, but the herring were so late in coming in that little could be done. The Nanaimo herring will make what are called 'fulls' and 'medium fulls' equal to the second and third Atlantic grades of pickled herring. The pioneer work of Mr. Cowie had given such encouragement to local firms, and their pack for 1906 had been so favourably received, that a repeat order for 1,000 barrels was given to be shipped as

soon as ready. So many orders had been received from various places on the Pacific coast and the Northwest provinces, that it was not possible to meet the demand for the season of 1907.

The season's experience showed that the plan of waiting until the herring schools come into harbours like Nanaimo harbour and Departure bay must be abandoned, and as in Europe the fish must be sought and drift-netting carried on in the open sea. Local girls and men having learned the methods of packing, and having profited by the object lessons provided by the government in 1905 and 1906, a considerable staff will be required, some of the Nanaimo packers having as many as thirty persons employed in this herring business.

While practically no elaborate regulations have been enforced, in connection with the herring fishery, the licenses issued had conditions attached which in some cases proved irksome. The commission was urged by many witnesses to relax and to remove some of these conditions which had the effect and force of regulations. Condition No. 2, requiring that nets should be fished between sunset and sunrise; and condition 5, that herring should not be exported for curing, canning or otherwise manufacturing; condition 8, requiring herring to be liberated alive when inclosed in a seine, if not to be used; and condition 10, that the annual fee be $10, were all objected to. There were reasons for the various conditions imposed; but while the commission favour steps to so amend or do away with the conditions referred to, it seems necessary to require that as far as possible, surplus catches of fish should be liberated alive; this can be done when the mesh is too small to gill the fish, as in the seine 1¼-inch mesh, which, it is anticipated, will prove beneficial and acceptable.

Canadian herring curers must realize that markets differ and require different grades and sizes of herring. A recent authority stated the matter succinctly:

'One market,' he says, 'wants large herrings and will take nothing else, another requires small, and again, another medium size. It is very rare to find a market that will accept mixed—large, medium, and small—at their best price. Now, why is it that something cannot be done to have a straight regular pack of large, another of medium, and another of small, marking the barrels accordingly. The large is wanted, at good prices, in the provinces of Quebec and Ontario; the medium is wanted in Chicago, Milwaukee, and other United States cities, and the small can be shipped to the West Indies and other places.

'The great drawback to the herring trade is the unreliability of the pack. No one can tell from the brand what the barrels will turn out when opened. We, ourselves, would buy carloads, if we could depend on getting what we wanted.

'If herrings are sorted out as large, medium and small, packed honestly and evenly all through the barrels, branded correctly, and the firm's brand put on, in a very few years that brand would be accepted everywhere where herrings are sold. Unless more care and regularity are put on the packing of herrings, it will never be the large business it should be.'

Four prohibitions have been urged with a view to preserving the herring supply and building up a herring industry in the province. 1st. The prohibition of the export of fresh, frozen, and slightly salted herring. Herring, gill-netted and suitable for the remunerative fresh-fish demand in Washington State, might be exported; but as one document handed to the commission states, 'the parties with big seines want to keep up supplying herring for bait, as well as rafting them in bulk to build up curing establishments in ports on Puget sound.' . . . 'If the herring export in bulk is stopped, we will pack and ship to those markets where they are used, and pay the duty.' Another representation to the commission sets forth that no great herring-curing industry can be created:

'If money spent on Mr. Cowie will be of any use, if these herring lightly corned are allowed to be exported to Seattle, where they are gibbed and barreled for shipment all over the States, a cargo is packed in a day as soon as discharged. Parties who are interested with the New England Fish Company are the only persons exporting herring in bulk to be packed at Seattle. If their petition be granted, they expect

to have a monopoly of supplying bait, if these fish go there, it will stop the calling of vessels at Nanaimo, when our fishermen get a chance to sell their catch to them and fees are collected by pilots and customs. Most of the crews on the New England Company's books have signed this petition favouring the export of fresh herring in bulk.'

Second. The prohibition or limiting of herring seining. Seining has been carried on upon a large scale in Nanaimo harbour, the fish being immatuure and unspawned fish. Over 8,000 tons were seined during the past season in that harbour, and it is claimed that 10 out of the 11 seines allowed were sublet to Japanese fishermen under Chinese contractors. At the mouth of Exit passage where it leaves Departure bay, and at the outward entrance of Nanaimo harbour the seining was so persistent and extensive that the passage was completely blocked. As reckless and unrestricted seining it appears has depleted the herring in Puget Sound and Burrard inlet, and recently in Southeast Alaska, the limitation of seining, or its prohibition, deserves consideration. Seven years ago at Point-no-Point, near Port Townsend, enormous catches of herring were taken by purse seines, drag seines on shore, &c., but the effects were so serious that the Washington State fishermen have been unable to obtain bait since, and are compelled to obtain bait, to a large extent, at Nanaimo.

Third. The use of herring for oil has been much discussed, and the Fisheries Act aims to prohibit such use except of fish not usually marketed for food. The amendment of the statute with reference to fish guano and oil manufacture no doubt will fully meet the case, providing (as the commission suggests), for discretionary power being exercised by the Honourable the Minister in appropriate cases. In 1892 the Dominion inspector urged the commission then sitting to recommend a disallowance of the use of herring for oil, giving as his reason their value as food in Victoria and other cities, and for settlers on the coast and islands, and for the Indian population who use them also as a principal bait. Destroying these fine food-fish in immense quantities for oil he characterized as 'useless waste' while innumerable dog-fish are available for utilization as guano and as oil of the very finest quality.

Fourth. The use of purse-seines for herring is opposed by many parties. The use of these nets it may be pointed out has been strongly discouraged in Newfoundland, owing to its bad direct and indirect effects upon the schools of fish. The chief superintendent of that ancient colony, in his report in 1894, uttered a word of warning in the following terms:—

'The use of purse-seines for catching herrings in Fortune bay has of late years also been resorted to owing to the fact that herring some years have kept off in deep water, and not approached the shores so that they could be reached with the ordinary sweep-seines. A couple of years ago it was reported that a great many herrings were taken in this way. The use of purse-seines is claimed to have been the means of ruining the mackerel fishery on the coast of New England, and if extensively prosecuted, no doubt also will have a bad effect upon the herring fisheries in our bays, as it will have a tendency of making the herring shy and more difficult to catch, and to keep them further and further away from the shores.'

Herring Barrel.—The use of a well-made barrel has had much to do with the success in the world's markets of Scottish herring. A presentable package is hardly inferior in importance to the excellence of the contents. The Scottish barrel is a substantial workman-like product made principally of hardwood—oak, birch, white ash, maple, and the harder species of larch and spruce. Norway long supplied the staves. Oak is the best, and is said to impart a pleasant flavour to the fish.

As Mr. Cowie, the Scottish expert engaged by the Dominion government since 1903, states, the use of a proper barrel is essential to the success of a cured herring industry. He says: 'The Scotch half-barrel having been found the most suitable package for carriage to and sale in almost all known herring markets, Canadian herring should be packed in a barrel built and hooped on similar lines.' (See Department's Bulletin, Ottawa, 1906.) A Scottish newspaper published at Fraserburgh, which is a

great centre of the North Sea herring industry, in an article entitled 'Canadian *vs.* Scottish and English methods,' and under the heading 'Barrels and Barrel-making,' said in October last:—'Vastly more depends on barrel-making than is generally supposed. . . . . The art of barrel-making will be found much more intricate than one at first would be inclined to think. The difference between the Scotch and Nova Scotia barrel is so very vast that unless the subject were treated under two totally different heads it would not readily be understood. . . . Scotch barrels are almost entirely made from superior Swedish wood. Sawn in staves measuring thirty-one inches long by two to five inches wide, with a thickness of five-eighths of an inch throughout. The hoops used are almost exclusively Bordeaux chestnut.

'How different is the Nova Scotia barrel from all this, and how much does it resemble the care and patience taken in the manufacture? It is a thin inferior article, made of spruce which bears no comparison to Swedish fir, in that the porousness of the wood will not admit of the barrels holding pickle to anything like the same extent. In the making of the barrel a very careless method is adopted and this requires attention. The combing or tapering from the croze, is carried out to such an extent as to weaken the barrel considerably at both ends. The jointing of the staves is not attended to, and carried out with that preciseness which is so necessary, with the result that the barrel, when manufactured is a bad shape and 'leaky.' The method of hooping and the quality of hoops used is of undoubtedly inferior quality. The notches or joints are, technically speaking, only half made, with the result that when strain of any sort is put upon the barrel a "burst up" ensues.

'The old method of wooden hooping throughout is also responsible for much of the after trouble, and if an improvement is desired iron must of necessity take their place as end hoops. The heads and ends are also poorly made, the whole of this being the outcome of poor workmanship and the want of practical knowledge.

'It certainly is not a pleasant thing to find fault in such a wholesale manner as this, but it is there, and the sooner the question is looked into the better. There is no doubt, however, that even with the material at hand, a fairly decent barrel could be produced, but one thing certain is, that to produce it, in any sort of style or finish, practical coopers must be employed, and the prevailing slipshod method of manufacture abandoned altogether. Each barrel when filled would require to be inspected by a competent man, and on the same lines as the work of the Fishery Board is carried on in Scotland.'

STURGEON.

The sturgeon fishery was neglected until recent years; indeed, in the official report of the Department of Marine and Fisheries for 1890 it is stated that 'there is no regular fishery for them,' the catch which that year amounted to 396,000 pounds being valued at $19,800; but two years later it had advanced to 520,000 pounds, valued at over $26,000, and in 1897 the Fraser river inspector reported that 'the sturgeon fishery has become a very important industry, the more important as it affords winter employment to a large number of resident fishermen, who would otherwise spend their time in an idle or unprofitable manner. The proceeds of the industry for 1897 (he adds) are upwards of $50,000, the fish being dressed and shipped to United States markets.'

It is doubtful if sturgeon, in any numbers, have ever frequented the northerly rivers of the province, and it is on the Fraser river alone that any fishery has been developed of much commercial value. They may be found in the river during most months of the year, but migrate from the sea especially in the early spring about the middle of April, or even as early as February, when they enter the fresh water. They frequented especially Pitt lake, 30 or 40 miles up the Fraser, and Harrison lake and river, 60 miles up the Fraser, and in the latter area Silver creek was the best fishing ground. There the Indians had been accustomed to catch quantities of sturgeon annually by means of trawls, each carrying about a dozen hooks baited with two pounds of salmon steak measuring eight or ten inches across. The spear and torch were also

used. Gill-nets of stout twine were, about ten years ago, licensed by the Dominion government, and for three or four years there was quite a boom in sturgeon fishing.

Fish of enormous size were taken, some being stated to exceed 1,100 pounds in weight, while specimens ranging from 700 to 900 or 1,000 pounds were secured in numbers. The fish were not only taken when migrating up the river, but remarkably large catches were taken in Pitt lake. So remunerative was the fishing, that a large body of fishermen immediately engaged in it ,with the result that in three years the catch fell to one-fifth of the amount above stated. . At the present time not more than 30,000 to 40,000 pounds of sturgeon are annually taken, or about twice the amount of the total Columbia river catch. Vast numbers of small sturgeon are seen by the Fraser river salmon fishermen, hence with the enforcement of the present Canadian regulations the fishery will, in due time, be restored.

The movements of the sturgeon appear to be erratic, for in February, 1895, when the smelt came up the Fraser, the schools of sturgeon followed them as far as Harrison lake, and then apparently satiated with food they descended again. The highest sturgeon gill-nets at that time secured the first fish, and later the nets lower down began to take sturgeon.

Oulachon are a favourite food, and attract the schools of sturgeon in April, but they appear to devour other species, chub and similar fish. Parties affirm that such small fish are often found alive inside the sturgeon, the stomach being distended with hundreds of oulachon and smelts. They feed on the offal thrown out by the salmon canneries, heads and tails being greedily swallowed, but one sturgeon in October was found to contain six fine cohoe salmon.

The British Columbian press have occasionally called attention to the waste of the valuable sturgeon, and a Vancouver journalist a few years ago declared that 'what is called a 400 pound sturgeon is worth 100 salmon in British Columbia. It will yield 60 pounds of roe, worth $1 a pound, and 400 pounds of meat, worth 10 cents a pound. The Fraser is full of sturgeon, which no one takes the trouble to handle. If they get caught in the nets of the salmon fisheries they are knocked on the head. Not one fisherman in a hundred knows their value. Those who take the trouble to salt the roes and cut the steaks make money. Millions upon millions of money have been made out of the Russion sturgeon fisheries by the caviar manufactured of the sturgeon roe.'

The same lack of appreciation was general on the rivers of the United States as well as of Canada.

So little did American fishermen value them that sturgeon were looked upon as a 'by-product,' yet thousands of them were caught, and the eggs of the female, pickled and called caviar, netted much profit to a few. Joint legislation of the states of Washington and Oregon recognized the value of this fish, and laws were enacted that prescribed seasons for the catching of it and the size that could be caught. This law must have answered a requirement or at least attracted attention to the industry, as for several years afterwards no large sturgeon could be secured notwithstanding that the fish laws on the Columbia river are very laxly enforced. 'Recently,' said an authority in 1904, 'the catch of sturgeon has shown an increase, and the fish are equal in flavour to any species for the table, but their appearance creates a prejudice against them, and they are generally served at restaurants and hotels as "sea bass," and there considered an edible luxury from the ocean. As a fact if the dealers in the roe of the female did not handle them few "sea bass" would ever reach the table.'

It has proved difficult to conserve the sturgeon industry either in the eastern or western rivers of North America. Thus in the St. John river, N.B., the sturgeon were first systematically fished in 1880, when over 600,000 pounds' weight were shipped to New York, but six years later the catch had fallen to 16,000 pounds. Similarly in the Fraser river the fishery showed a catch in 1897 (when it was first pursued on an extensive scale) of 1,137,696 pounds, valued at $56,884; in 1898 the catch fell to 750,000 pounds, valued at $37,500, while in 1899 it still further decreased to 278,650 pounds, valued at $13,932, and the number of licenses issued was only 38 against 164 in 1898.

Last year the fishery was practically left untouched, for 20,000 pounds was the amount recorded, valued at about $2,000. In the State of New York the same rapid development and rapid decline of the sturgeon fishery took place, for in 1898 it yielded 509,365 pounds, valued at $43,864, whereas three years later the catch was only 65,000 pounds, valued under $5,000.

It is not necessary in this place to dwell upon the possible causes for this state of things. Slow growth, great loss of developing fry, excessive destruction of ripe female fish, especially by grapnels or bare hooks, and other reasons may be adduced; but the remedy appears to be limitation of destruction of spawning fish, and a cessation of the fishery, with the object of restoring the supply. Witnesses before the commission admitted that the fishing was excessive. 'There was a great number of people went into it, and there was a great number of sturgeon caught. . . . There is any amount of small sturgeon now (some witnesses stated). It is best to wait until they come to a large size.' No doubt the use of sharp grapnels or bare hooks was a main cause of the decrease and waste of fish, many possibly escaping fatally injured and torn. As one witness said, 'we were fishing with barbs—barbed hooks unbaited, just as many as we could put in the water.'

The restoration of the fishery is most desirable, as it is carried on after the close of the salmon fishing, and good earnings can be made. 'We made a very respectable thing out of sturgeon at one time,' a witness informed the commission, 'and we are all in hopes that we will be able to make a very respectable thing out of sturgeon again.' They formerly were also an important element of food for the Indians. 'When I was a young boy,' said Indian P. L. Peter, residing just above New Westminster bridge, 'I always ate sturgeon. At the present time there are no sturgeon for me or my young ones to eat. The cause of the scarcity of sturgeon is that the white man came in and used five hundred hooks at a time.'

SMELT.

The smelt fishery of the Atlantic coast affords a striking illustration of the neglect of a valuable fishery resource, and the wisdom of timely protective measures. Formerly smelt were used mainly as manure, and in spring when they entered estuaries to spawn they were mercilessly netted and destroyed. In another place in this report it is pointed out that this neglected smelt industry in Eastern Canada has been protected and developed, and now ranks as one of the most profitable of all the inshore fisheries of the maritime provinces. The fish are caught mainly in bag-nets fished through the ice in early winter, and before the ice leaves in March. Licenses are issued for bag-nets and seines, the bag-net being a capacious bag or chamber with leaders attached on either side of the large opening. Baited hand-lines are used in winter, and at other times, and the largest and most esteemed smelt are taken in that way. The Atlantic regulations provide for a close season from March 1 to June 30,* covering the spawning season. Bag-nets of 1¼-inch extension mesh are licensed between December 1 and February 15; but while drag-seines are used in the province of Quebec they are discouraged generally as being destructive to small undersized fish. Gill-nets are also used, and capture the larger smelts mainly.

The commission received some evidence that seines, especially off Point Gray in May and June and July, destroyed small salmon of all kinds which were left to perish on the beach, but it seems necessary to have experiments made with seines, of various meshes, before deciding upon any smelt regulations, and we recommend this matter for inclusion in the biological investigations as soon as possible. In the meantime the usual smelt licenses should issue, as their withdrawal would be a hardship upon one class of fishermen. While the commission was sitting, written requests were received from a few smelt fishermen anxious to use 'sparling nets' or 'spirling' nets, which they had used in Scotland, especially in the Firth of Forth. The net is really a 'bag' net, called 'stow' net in England, and is similar to the bag-nets referred to above;

* April 1 to July 1 in Prince Edward Island.

but held in its place in open water by a rope made fast to the anchor of the boat using the net, while four other ropes, one from each corner of the square mouth of the net, are also attached to the same rope, other ropes are attached so that the boat and the net are held by the same anchor, and thus keep their relative position. The net is lowered into position at the beginning of the tide and remains until nearly high tide, when preparations are made to close the mouth and hand in the net. This is done as soon as 'slack' commences, and the fish drop into the terminal part of the bag as the hauling proceeds. As Holdsworth says: 'When the shoals of fish are of considerable size and the captures . . . large, it is found that few fish besides sprats are taken.'*

Such nets used in the Strait of Georgia could hardly stand the tremendous strain of the tide, and possibly quantities of small salmon might be taken. The use of these nets being experimental, the commission cannot at present recommend any appropriate restrictions.

PILCHARD, ANCHOVY AND SHAD.

These three valuable species occur more or less abundantly in southern British Columbia waters. The first named is caught along with the herring on the eastern and western shores of Vancouver island, and it is said to be very numerous in Barcley sound, and adjacent inlets. In its small immature stages it is the 'sardine' of France, and investigations on the Pacific coast would reveal the resorts of these fish, and render possible a canned sardine industry, whose products could successfully compete with the greatly esteemed European article. That the true anchovy is a British Columbian fish has long been known, but the migrations of this valuable species are at present unknown. Once ascertained, the British Columbian anchovy could be prepared as a paste, and supply the markets, which at present are supplied by the Mediterranean. Of the shad it is unnecessary to say much. The shad caught each season by British Columbian fishermen are the result of fry planted further south by the United States Fish Commission. That the waters of the province are favourable for these fish is proved, and artificial culture would aid in establishing a supply permanently, and ensuring a remunerative shad fishery.

COD.

On no subject does it appear more necessary to have accurate investigations upon the fishery of the sea coast than on the cod fishery. That there should be practically no true cod industry is extraordinary, though it may be that these fish do not occur in sufficient abundance to justify large enterprises. The shores and fishing banks further north, in Alaska, yielded cod to the value of $12,500 forty years ago (1867), but twenty-five years later (1892) the value had risen to $118,000, whereas in 1905 it reached $303,000, and the fishery rapidly growing in importance. 'Pacific cod . . . were seldom seen outside the cities on the west coast,' said Mr. W. A. Wilcox recently† . . . 'Now, cod taken and salted by vessels from California and Washington ports is in demand all through the Pacific states, and many carloads go annually to Chicago, New York, Boston and even Gloucester, Mass.'

At least twenty years ago specimens of true cod were reported to the Marine and Fisheries Department, one officer reporting in September, 1887, as follows:—'I may mention that I saw and handled two cod of the Atlantic, or true, cod caught in one of Mr. Cunningham's nets while drifting for salmon in Telegraph passage, inside of Kennedy's island, near the mouth of the Skeena about the first of July . . . On my way home at Alert bay, while taking salmon on board . . . a fine grey cod was caught from the side of the ship, and as we had it for breakfast next morning I can vouch for its excellent quality.'

* During smelt or sparling fishing, smelts only are usually caught.

† The Commercial Fisheries of the Pacific States in 1904. United States Commissioner of Fisheries Report, 1905.

So long ago as 1880 the attention of the Dominion government was called to the presence of this valuable food-fish, and Dr. T. H. Bean had been examining the British Columbian coast with the object, among others, of reporting to the United States government on the resources of the British cod-banks. Dr. Bean was working in conjunction with Professor Starr Jordan, and at the time the Dominion inspector pointed out, in his report that:

'They paid particular attention to the codfish and the halibut, and Dr. Bean became very confident that the Pacific codfish is the same as those caught in the Atlantic; and there is no reason why, in the course of time, with some care and attention, the Pacific codfish should not become as valuable and important on this side of the continent as the Newfoundland fish is upon the Atlantic. At the same time, it may be noted that, though this fishery has not attracted attention in this province, it has already attained to some importance among our neighbours. About twenty-two vessels were in 1880 engaged in it, equipped by parties in San Francisco, who prosecute the business of curing and selling the fish on a well established basis. The inducements to enter upon this branch of industry were limited. The local demand is necessarily of small importance, and it is evident that, with a view to the prospective development of the codfishery from our shores, a more distant yet readily accessible market must be sought. The field, however, is wide. Australia, China, Japan, and the Sandwich Islands, are all consumers to a greater or less extent of fishery productions, and in Chili and Peru there will doubtless be a renewed and very extensive demand, so soon as their present agonizing struggle shall have terminated. With all these countries we have already, in other branches of commerce, an extensive and increasing trade from this province. Thus, a demand being first established for our fishery products, access to these convenient markets is already provided in connection with other industries of local origin.

But although the fishery from San Francisco for true cod has already, as before mentioned, attained to considerable proportions, it has not been established without having encountered obstacles which by perseverence have been successfully overcome. This may be gathered from the following passage, quoted from a trade report:—

'Codfishing, as carried on by San Francisco merchants, has hitherto (1878) suffered from the active competition of the eastern market, coupled with an existing prejudice against Pacific coast fish, which prejudice has been carefully fostered by such merchants as made largest profits on eastern cod, and such Yankee epicures as could see (or rather taste) no excellence in any fish not caught within sight of Cape Cod. This year, however, San Frascisco dealers have been able to place their own coast fish on the local market at prices ruling two and three cents cheaper than eastern fish could be profitably sold for in San Francisco. Per consequence the native article is now having a fair chance on its own merits, and is credited by leading grocers with full equality to its Atlantic cousin. . . . . North coast fishing captains believe that other cod banks exist off the Alaskan coast fully equal to those near the Choumagin Islands. But as the expenses of a careful survey would be considerable, individuals hesitate to assume an outlay, the results of which would belong, in part at least, to others. The large sales of Pacific cod during the past season will doubtless stimulate the fishing merchants to renewed efforts, and if the attention of some one of the government cruisers can be directed towards a discovery so practical as the location of new and accessible cod banks, the outlay of government time and money would be creditable to all concerned, and prove of essential service to this market.'

Before these fisheries can be developed in British Columbia information is necessary, and the new Biological Station will have no task more important than that of ascertaining where the true cod abounds, the nature of its food, migration, and spawning habits.

BLACK COD OR SKILL.

The black cod (*Anopolopoma fimbria*) abounds in the northern waters of the province, especially along the western shores of Queen Charlotte islands. It favours

deep water, especially depths of from 70 to 90 fathoms, though it is found at depths of 200 to 250 fathoms. It is never caught in the surface waters and avoids shallows. The native Indians have long fished for this species in November, and, again, in March and April, but it may be taken in other months, though the Indians have not taken it at other times, being in December and the New Year season too much occupied with feasts and conviviality, even if stormy weather did not prevent fishing operations then, while the salmon fishery, &c., occupies them at other times.

The black cod is a most delicious food fish, of firm and flakey texture, while it is white in colour and rich in flavour. It is flakey like the haddock, but richer in oil. Owing to this rich, oily nature, it is far more appetizing than the drier and firmer true cod. It has been compared to the mackerel, though not very appropriately, but is related to and indeed bears some resemblance on the table to a large whiting, *i.e.*, the true European whiting (*Gadus merlangus*) a fish wholly differing from the inferior, so-called whiting of our western waters.

The mouth of the black cod is tender, and to hook it successfully demands care. Very long lines are used, each line carrying 120 to 150 hooks fixed on snoods at regular intervals. The total cost of the fishing outfit does not exceed $30 or $40. Herring are the principal bait used, but the cuttlefish or squid, cut in small pieces, is far superior, being a more consistent and lasting lure. The boats used are of the ordinary Columbia river type, carrying two men and, in case of the Indians, their wives usually accompany them. In curing the fish it is usual to cut off the head and tail, remove the backbone and salt and split the fish. Experiments have been made in bottling and in canning these fish with good results, but ordinary salt-pickle has not on the whole been successful, and when put up after the manner of salt-cod the fish 'rust' as a rule, while very strong pickle spoils their edible qualities. They are very apt to turn rancid when lightly salted, though some samples sent in a chilled condition to the east were pronounced very good. The most successful method has proved to be 'double' pickle; that is after pickling once, the fish are taken out and pickled a second time for from two to five days. The second pickle is boiled and the fish are replaced in that fluid after it has cooled and then shipped to market. Such fish have been in great demand where sample shipments have been tested.

An important point in attempting to devise regulations to preserve a developing industry, such as the 'skill' fishery, is the determination of the spawning season, and the nature and location of the spawn and fry. These problems, like so many others dealt with in this report, require investigation by specialists, and it is to a biological station that we must look for reliable information and help in the future.

CULTUS COD, RED COD, ETC.

A number of edible fishes abound along the rocky shores of the province, but are chiefly used to supply the local markets. The cultus cod (*Ophiodon elongatus*) is the principal of these minor fish. It weighs from four to eight or ten pounds and is caught by means of baited hooks and drag seines. The red cod has more the features of a bass than a codfish, and in California it is often called sea bass. Its scientific name is *Sebastodes mystinus* and it ranges from three pounds to ten or twelve pounds. Several other bass-like fishes are also largely sold. One species, *Sebastodes pinniger* is generally styled the red rock cod and on the table it is most excellent. The name whiting is given to a species of hake, the merluccio of southern fishermen, and technically called *Merluccius productus*, but it does not rank high, although salted and cured, it is in demand, and compares well with the Atlantic hake. The hake industry is, indeed, developing rapidly.

Complaints have been made that excessive fishing for the so-called red and black cod has been carried on by Japanese fishermen, and that in the inshore waters between Nanaimo and Victoria, stretches of shore, which formerly abounded with these excellent table fish are now barren. The best remedy is a sufficiently long close season whereby the stock of young fry can be ensured; but, while netting for these fish with-

out a license is illegal, we cannot recommend a license for baited hooks. Reserves might be formed, such as the area inside of Cape Scott, at the northwest extremity of Vancouver Island, where some years ago an extensive bank abounding in red cod 15 to 20 pounds in weight was reported. The matter is one for expert investigation and recommendation.

OYSTERS.

The value of shell-fish marketed annually in the province exceeds $50,000, but it could be easily quadrupled. The delicious small native oyster occurs on every suitable shallow flat in the Straits of Georgia and around Vancouver Island, and many leases were granted by the Federal government which required the lessees to protect and cultivate these mollusks. A large species comparable to the Atlantic oyster does not occur, the alleged specimens, hitherto secured, being valueless and inedible shellfish. In some localities, however, a large variety of the native oyster occurs. Eastern oysters have been planted on many occasions, wth more or less favourable results and under the heading of "Transplantation" we make various suggestions, including that of an experiment on a suitable scale, with the large Japanese oyster for which the physical and chemical conditions of British Columbian waters are no doubt fitting. The small native oyster three years old is declared to be less in size than a six months old Chesapeake or Baltimore oyster. The rapid depletion of public oyster beds (two or three years, it was stated in evidence, sufficing for the complete denudation of a bed), points to the necessity of leases in order to encourage private enterprise in oyster farming. In some cases, foreign poaching has worked the injury. 'Some regulations should be made to govern the industry,' said one witness. 'We have our drawbacks and experiences. We had an American sloop come in and poach 50 sacks of oysters.'

A system of leasing is a better policy than annual licenses, though both might be adopted, but government reserves for seeding purposes are desirable, and a close season, if possible, in May, June, July and August, when the oyster is approaching spawning or actually throwing out the spat. Leases for large areas should not be sanctioned, a maximum of 40 or 50 acres should suffice; indeed in State of Washington 40 acres is the limit; but in British Columbia a lease is now in force at Blunden Harbour (240 miles north of Vancouver) for an area 600 acres in extent, and for a period of twenty-one years, at an annual rental of 50 cents per acre.

Inasmuch as the Dominion government has a special oyster expert, Captain Kemp, who has already paid a brief visit to the coast, it would be easy to have all the main areas, where oysters grow, surveyed and mapped out, so that oyster reserves could be defined all along the coast and leases intelligently granted. We are of opinion that the importation of seed oysters should be encouraged, and not prohibited as some oyster merchants have urged.

CLAM FISHERY.

Among many fishery resources whose value has not been appreciated at its real value, is that of the clam industry. There is an unlimited market for these shellfish in the United States both in a canned and fresh condition. On the Atlantic coast, until 1899, the clam-beds were comparatively neglected, the main use being for bait in the deep-sea fisheries; but recently the industry has so developed that the annual return now exceeds in value the oyster in the maritime provinces by over $95,000, the oyster fisheries yielding in 1905, $174,300, while the clam fisheries yielded $269,851. On the New Brunswick shore between Shediac and Buctouche alone there are 500 clam fishermen, who make $2 to $5 per day digging clams, a total amount of $40,000 to $50,000 being paid out each season to the men in the district named. Five or six years ago they were sold to United States buyers at 20 cents per bushel, but they have risen in value to six times that amount, and now bring $1.20 per bushel.

The existence of vast clam-shell beds at numerous points along the British Columbian coast, indeed, wherever Indian communities have established themselves, show

how much the native population relied upon this succulent food. The clam supply of British Columbia is most remarkable; productive areas occur practically at all points, the clams being of many species.

Along the adjacent United States shores of Puget sound and further south the clam supply has been so reduced as to be quite inadequate to the demand. Some of the American canneries, such as that at Friday Harbour, San Juan island, depend entirely on British Columbian clams, the beds in their vicinity having been denuded. British Columbian Indians supply these establishments, and various abuses are alleged to have arisen in connection with this phase of the industry. Amongst other representations made to this commission, the following may be quoted, referring to supplies of British Columbian clams being sent to clam canneries across the international boundary, which it is claimed 'If allowed to continue means the depletion of the beds on the east coast of Vancouver island, and the consequent loss of a source of revenue to many interested in the preservation of our clam beds and the products resulting therefrom.

Furthermore, it is a well-known fact that those Indians who persist in this traffic are in the habit of purchasing articles, whisky included, on the American side, which are dutiable under Canadian customs regulations, and this without hindrance at present on account of the insufficient surveillance exercised by the Canadian customs authorities.'

British Columbian canneries, like that of the Saanich Company at Sydney, Winter Harbour Cannery, Quatsino Sound, or the Namu Harbour Cannery, in the north, have established a reputation for their canned clams, and the industry has a great future. The danger of depletion is an imminent one, as United States firms come over and take off very large quantities, one Bellingham tug taking at one trip no less than 500 sacks of clams from Nanaimo last year. The most necessary step is the prevention of foreign poaching. Hence this shellfish fishery must be under license. Of course the Indian population have from time immemorial used them for food, and cannot be justifiably prevented from supplying their own needs; but if they supply the markets it is necessary to insist upon a license being taken out by Indians; otherwise no supervision can be carried out, and the fishery officers would certainly be unable to detect illegal shipments and enforce the law.

The following five conditions have been urged as desirable: (1) A license for all market fishing; (2) Indians to be exempt unless they sell their catches; (3) A close season during spawning; (4) Prohibition of export of raw clams; (5) Leases for clam beds on the same plan as oyster leases.

The usual price for clams is 75 cents, 85 cents, or $1, per sack when sold fresh to United States buyers. When canned they may bring $3.70 per case, 10 sacks of shell clams being equivalent to 14 cases of canned clams.

ABALONE OR EAR-SHELL FISHERY.

It has long been known that the ear-shell (*Haliotis*) occurs plentifully in certain areas off the British Columbian shores, especially along the Queen Charlotte Islands' coast. The soft animal contents of the shell are valuable for food and the shell is important for ornamental purposes, pearl buttons, &c. In Southern California an abalone or ear-shell fishery has long been of considerable value—San Pedro, Santa Barbara Islands, Calabin Islands have yielded great returns to the fishermen, chiefly Japanese expert divers. These divers drag the shells from their rocky haunts. So great has been the demand for the beautiful iridescent shell, especially by German button makers, curiosity dealers, &c., that the fishermen have taken large and small indiscriminately with the result that the beds have become depleted. These mollusks occur from a depth of 6 or 8 feet to considerable depths and in the latter situations they are taken by fishermen wearing the diving suit and helmet. In the shallow areas the shell-fish are pryed off by means of a chisel or iron bar, the men being almost naked when at work. The abalones are placed in sacks and as many as a ton may be taken at a single tide.

The soft parts are in great demand in China for soups. The usual price is less than 14 cents per pound (about $280 per ton), and as the shells bring $50 a ton, and valuable pearls are occasionally found in them, the fishery is one yielding great returns to a fortunate fisherman. As much as $1,500 to $3,000 per month has been made by abalone fishermen in California. One fishing area after another has succumbed to excessive fishing, the following report (dated December last), may be quoted, relating to one of the best United States fishing areas now 'played out':—

'The picturesque and novel Japanese abalone fishing camp at White's point, about three miles southwest of San Pedro, Cal., is to be abandoned on account of scarcity of the shellfish which have for several years kept the little brown men occupied at remunerative labour. The Japanese had a model outfit for the work, including diving bells and other equipment for submarine work. When the fishery was established several years ago it was very profitable, the abalones not only bringing a good price, but many pearls of considerable value being taken from them. The beds have been worked over so much now, however, that it is almost impossible to take any more, and the Japanese will all go to new fields in the north.'

The same fate will befall the northern British Columbian beds to which the Californian fishermen will transfer their attentions.

It seems desirable in order to control the matter and guard against excessive fishing to institute an abalone fishing license. A size limit could not probably be successfully enforced as the shell is extremely irregular in shape, and an attempt in California to carry out a minimum size limit (15 inches minimum for red abalones, and 12 inches for black abalones), proved wholly ineffective. The meat was taken out of undersized specimens and the shells dropped overboard, hence detection was impossible. A size limit of 12 inches would not be reasonable even if it could be enforced, but a more feasible step is the total closure of the fishery every third year. This would give a chance to the breeding abalones to escape capture for one year in every three and allow a year's undisturbed growth to all, large and small.

We append some suggested abalone regulations in the 'recommendations' which follow this report, but we feel bound to point out that the study of the life history, the spawning, development, and growth of these shell-fish is imperative. The Biological Station founded by the government would do service in as soon as possible making a thorough investigation of the abalone grounds and the natural history of the shell-fish themselves.

LIST OF EDIBLE MOLLUSCA.

The following is a list of the more important species in British Columbian waters:

Ostrea lurida, *Carpenter*, Native oyster.
Pecten caurinus, *Gould*, Scallop.
" hastatus, *Sby*, "
" rubidus, *Hinds*, "
Mytilus californianus, *Conrad*, Mussel.
" edulis, *Linné*, "
Cardium Corbis, *Martyn*, Cockle.
Saxidomus giganteus, *Desh*, Clam.
Paphia staminea, *Conrad*, Hard clam.
Macoma inquinata, *Desh*, Clam.
" nasuta, *Conrad*, "
Rexithærus secta, *Conrad*, "
Siliqua patula, *Dixon*, Razor clam.
Tresus nuttalli, *Conrad*, Large clam.
Mya arenaria, *Linné*, Soft shell clam.
Panopæa generosa, *Gould*.
Penitella penita, *Conrad*.
" ovoidea, *Gould*.
Zirphæa Gabbi, *Tryon*.
Purpuxa crispata, *Chemn*, Whelk.
" lima, *Martyn*, "
" Saxicola, *Val*, "
Littorina sitkana, *Phil*, Periwinkle.
" scutulata, *Gou'd*, "
Acmæa personata, *Esch*.
" patina, "
" pelta, "
" mitra, "
Haliotis Kamtschatkana, *Jonas*, Abalone or Ear-shell.

Also the chitons (*Cryptochiton* and *Katherina* and others) and the cuttlefish (*Octopus punctatus* Gabb.)

DOG-FISH QUESTION.

While the dog-fish question, which has excited widespread alarm and public feeling in eastern Canada did not come up prominently before the commission, it is a question which cannot be passed over. The Dominion government have taken steps to mitigate the dog-fish pest in Nova Scotia and New Brunswick, but the operation of costly fertilizer and oil-works does not appear sufficient to cope with the evil. Fishermen will not capture them unless paid a bounty or some sum repaying them for luring and handling a dangerous and destructive member of the shark tribe. Hence the most feasible means of reducing their numbers is to convert them into food, the sale of which would largely, and might ultimately, entirely repay the cost of capture and preparation.

A Scottish fish merchant has long prepared dog-fish flesh in various appetizing forms. He states that 'when clear of the skin and bone dog-fish are fine eating, especially with tomato sauce. The method of cooking them in the skin is entirely wrong, as the skin of the dog-fish has much in it that is offensive and spoils the flesh as a food. The skin and bones together with seaweed I make into the finest guano powder which brings $35 per ton.' Even more favourable is the opinion of a well-known resident in Cape Breton who ranks the dog-fish very high as a food product. His testimony has been published in which he says that he accords it this high place: 'After trying many experiments with the dog-fish within the last three years, I will, therefore, give you the results of my experiments by the common methods of curing and cooking fish. After having eaten dog-fish for a number of days, mostly with potatoes, I found them by all odds the most satisfactory fish that we have. When well cooked, boiled, fried, or broiled, their flavour is superior to any other, and they are much more satisfactory, indeed the equal of pork as to quantity, and 50 per cent more substantial than cod or haddock. Fresh or salt they are better than many kinds of salmon, with flavour much the same, but without the dryness of the salmon. Mackerel are not to be mentioned in comparison. Smoked, the dog-fish is far superior to halibut, and they dress the nicest of any fish. But that is not all. As a nerve food, there is no equal to the dog-fish. They are the most satisfactory food that I ever ate; it just seems to suit the digestion, and there is none of that ill effect that we have after eating heartily of other fish or meat. Dog-fish are not scavengers like most of our other fish; they live on live food, which may account for their fine, and delicate flavour.' The expressions of favourable opinion are not few, which have been made public in recent years.

Two years ago there was published a report from the American consul at Plymouth, of special interest in this connection, that the English people were beginning to appreciate the edible qualities of dog-fish and cited the fact that the Cornwall Sea Fisheries Committee had recently endorsed the favourable verdict of private investigators and had approved the new name given the fish, namely, 'flake,' the demand for which, it was stated, could not be supplied. In view of this apparently growing demand for a new fish-food for the table, a Nova Scotian company was organized in Halifax for the treatment of dog-fish for food purposes, an achievement of the utmost economic and industrial importance. The magnitude of the pest had indeed caused consternation amongst the fishing population in certain parts of the Atlantic coast of Canada. As a maritime province journal said, there arose a continuous wail from the fishermen whose grounds it has decimated and whose gear it has destroyed. In spite of all the efforts put forth against it, it has shown a tendency to increase rather than to abate in its number and ravages. The government have been solicited to enter into the warfare against it, and have consented; but even their efforts are necessarily on too small a scale, however generous and well intended, to hold out much promise of their ultimate effectiveness. The dog-fish multiply and increase faster than the means of fighting them heretofore devised and applied.

Those who have practically tested the table qualities of the fish have all reported favourably, some, as pointed out above, regarding it as one of the most promising

food-fishes that haunts our shores. The worst thing that can be said of it is its name. But, if it is only necessary to give a dog a bad name to hang him, we should say that all that is necessary to the enjoyable eating of the dog-fish is to give it a good name. This, out of deference to the popular prejudice, which inevitably attaches to an ill-name, led to the adoption of a name long used in the British fishing industry for fish with white flesh, hence the dog-fish has appeared on the market as 'Ocean White Fish.'

Its old name is not one of reproach with reference to the flesh of the fish. It refers only to its predatory habits. The dog-fish preys on other fishes, which it hunts in organized schools or 'packs,' after the fashion of canines in pursuit of their prey. The dog-fish is one of the cleanest-living of fishes. It subsists solely on good, fresh fish. It never touches foul food or carrion as do so many of our most highly esteemed fishes. In accordance with its clean feeding habits, the flesh is sweet and odourless, 'resembling,' says one authority, 'in appearance, when fresh, and not a little in taste, that of the halibut. When tinned it has a delicate, lobster flavour. It makes sound, wholesome, highly palatable food. It appeals to the taste of the most fastidious epicure in daintier dishes, and is a strong, nutritive food for the poor in its simpler forms of preparation.'

Firms which have contemplated canning dog-fish have, of course, had foreign markets chiefly in view; but there is no reason why in different parts of the empire, the merits of canned 'Ocean Whitefish' or 'Flake', or, to use the vulgar term 'Dog-fish,' should not come into demand as a cheap and palatable food. It is generally admitted by those who have given the matter much thought that little hope exists that the dog-fish will ever be extirpated, or even materially lessened, by sporadic, administrative efforts, or otherwise than by educating the public to the enormous potential value of the fish for commercial food purposes. The sooner attempts are made in that direction the better, it would appear, will it be for all. The country is now considerably the poorer not only for every dog-fish that swims on our coasts, but for every one of them that goes to waste, either in whole or in part, through not being marketed as food or through not being worked into other products of commercial utility.

The commission refrains from recommending any definite scheme for encouraging such utilisation, and feels justified in urging only that some effective policy may be adopted on the matter.

OTHER OIL-PRODUCING FISH.

In a concise account of the British Columbia fisheries by Mr. R. E. Gosnell* reference is made, not only to the dog-fish already alluded to on the preceding page, but to certain other fishes which produce similar marketable products. The following quotation indicates the nature of these further sources of fish-oil, guano, &c.:—

'In addition to the piked dog-fish *Squalus acanthias, Galeorhinus galeus,* the tope shark, though not a food fish, is one of the most valuable. It is found in abundance all up the coast to Alaska, and several factories have been established for the reduction of oil from these fish, in which they are very rich. The liver contains a very superior oil, which for lubricating and machine purposes is of the very highest quality. A large amount of oil is also taken from the bodies, which are steamed in large retorts. This oil is of inferior quality and not used for machines, but undoubtedly, if subjected to a proper refining process, would become a useful and cheap product. Both the liver oil and the body oil are largely used in the province, and were formerly quite profitable as an industry, but latterly competition with eastern oils has very materially reduced the profits.

'In addition to the dog-fish there are several other oil-bearing fishes, the principal of which is the *Hydrolagus colliei* or 'rat fish.' It is found in great abundance in places, and the oil procured from its liver is used for the very finest work in

* The Year-book of British Columbia, 1897. (Revised editions later.)

watches, gun locks, sewing machines, &c. It is a very prolific oil-bearer, and should prove to be valuable when commercially utilized.

The basking shark (*Cetorhinus maximus*) is also plentiful in Queen Charlotte Sound during the summer months. It attains a great size, is perfectly harmless, and so tame that while basking it may be touched by the hand. In England, 150 gallons of oil is the average yield of the liver, which alone is treated.'

WHALING.

Many species of whales occur off the British Columbian coast, both whalebone and toothed whales. Occasionally sperm whales have been noticed, four, two males and two females, having been captured by the steamer of the Sechart Whaling Station during the past twelve months. The last caught in September was a gigantic specimen yielding nearly 170 barrels of oil, but the finners and sulphur-bottoms and humpbacks and blackfish or killers are the principal kinds. Some of these monsters exceed 100 feet in length, and one was observed this fall which was estimated to reach a length of 110 feet. Hitherto the schools of whales have been of no value to the province whatever, but the action of the Dominion government, by its encouragement of whale factories on modern principles, will create in a few years a vast and remunerative industry all along the coast. A trip from Victoria to the Naas river suffices to show how plentiful these valuable creatures are, as whales may be seen 'blowing' in schools of two to twenty individuals, all the way from the Strait of Georgia, north. Numerous factory sites have already been secured, and one whaling station has commenced operations at the entrance to Barcley sound, Vancouver island.

As early as 1870 whale fishing attracted some attention, and Agent James Cooper, in January, 1874, officially reported on the disappointing results. He said: 'The whale fishing experimented upon for three or four years has not proved successful, which must be attributed more to the want of proper appliances than to the scarcity of whales, which are as numerous as ever. In 1887 Inspector Thomas Mowat, after a cruise of investigation along the coast, expressed his astonishment at the neglect of the rich whaling resources of the province, and at the neglect of the special advantages British Columbia possesses in its geographical position for utilizing the great whale resources of the Arctic, the richest areas being in the Canadian waters off the mouth of Mackenzie river. The inspector was at a loss to understand this lack of enterprise, 'unless,' he adds, 'it be due to a scarcity of vessels or for want of properly realizing its importance. These cetaceans are very abundant all along the west coast, and I saw shoals of from 15 to 25 of them in the straits during my voyage last year. The fleet which sailed from San Francisco to the Arctic sea last season is reported to have captured 257 whales valued at $1,285,000, or an average of over $107,000 to each vessel. Considering that our people are situated 750 miles nearer the Arctic fishing grounds than our San Francisco neighbours, I am at a loss to understand why an effort is not made to participate in this remunerative business.'

The newly developed whaling enterprise in Barclay sound already proves the immense value of the whales on our Pacific shores. Nearly 250 whales, chiefly humpbacks and sulphur-bottoms, ranging from 70 to 90 feet in length, only about twenty being the much less valuable finback whales, have been captured in less than a year, some months (such as September) showing a record of over 50 whales killed. Two-thirds of these are reported to have been cow-whales, either with calves actually suckling or with young not yet born. The females being broader across the body and slower in their movements, as well as yielding more oil, are of course more likely to be captured than the agile and slender males.

One of these whales will yield on an average 50 to 80 barrels of oil, and 4½ to 5 tons of dried guano, the oil bringing 30 to 40 cents per gallon, though the market fluctuates considerably, and sperm oil is quoted at from 50 cents to 70 cents per gallon, while guano sells at $25 to $30 or more per ton. If the Pacific grey whale, one of the

valuable 'right' whales, still survives in British Columbian waters, though exterminated some years ago off the Californian coast, an excessively remunerative industry is certain to grow rapidly. As it is, the whales, known to exist, furnish numerous important products when treated by the most recent mechanical and chemical methods. Oil, fertilizer, leather, glue, canned 'beef,' which is really prepared whale-flesh put up in beef cans, and even condensed milk from the female whale, are among the articles yielded by these creatures.

The mother whales, especially the humpbacks, frequent the inshore waters in the fall, it is generally stated, feeding on small pilchards, six to eight inches long, about half the size of a herring, and are thus especially exposed to capture. The sperm whales, which possess massive ivory teeth, feed largely on cuttle-fishes or squid.

The demand for certain whale products is peculiar. Thus pickled whales' tails are in great favour in Japan, and about 40 barrels of large tail flukes were shipped from Sechart whaling station in September last. Whale meat is also in demand in Japan; most of it comes from Korea; but the supply is limited and the price is high. Hence British Columbia could readily supply most of the very large demand in Japan, an idea which the British consul at Nagasaki has strongly urged.

A whaling station is in many ways not desirable near a centre of population, especially if there is any carelessness in dealing with the waste and overflow products. If a thousand tons of bones of whales' skeletons, flesh, &c., be exposed to the sun, and the blood and half digested contents of the gigantic stomach (two tons in each whale on an average) be simply dumped into the sea, the results must be serious, and allegations to such effect have been made. Such circumstances had something to do with the strong opposition excited in Scotland and in Norway against whaling, the sanitary trouble as well as the injury to herring and cod-fish being the grounds for restricting whaling operations on the coasts of both countries.

The published results of the British Columbia enterprise last November give some idea of the profitable returns which can be secured. The press stated that: 'The Pacific Whaling Company, at its annual meeting in Victoria last month, declared a dividend of 23 per cent on preferred stock and 16 per cent on common stock. The earnings of the company from the Sechart whaling station, from which the steam whaler *Orion* is operated, amounted to $45,552.11. Of this amount $22,096.48 was expended for completion of plant, &c., and the remaining $22,555.63 will be available when all products for 1906 have been realized. It is proposed to sell stock to repay the money spent for completion of the present plant, and when the money is received for goods produced the net earnings will total $45,552.11, and this, when the stock is sold, will be divided among present shareholders. At present it is proposed to distribute $39,154, which leaves a balance of $6,398.11, which will be transferred to a reserve account. There are 2,044 shares of preferred stock, each of $50—$102,200, and 1,956 of common stock, each $50—$97,800. The preferred stock is first entitled to 7 per cent on the $102,200—$7,154, and the balance of $32,000 will be divided among the whole stock.'

There is no reason why even more favourable results should not be readily achieved and possibly are now being achieved. Thus if the total equipment of a station costs $100,000, including $20,000 for a steamer, the wages, &c., of say 40 employees, &c., would amount to $7,000 or $8,000 per annum. A take of whales such as that referred to above would yield at least 1,000 barrels of oil averaging $11 per barrel (5 barrels going to a ton), the amount realized being $11,000, while 1,000 tons of guano at $30 per ton, would amount to $30,000, 1,000 tons of skeleton, vertebræ, skull, &c., $30,000, and 60 to 70 tons of baleen at $300 per ton bringing $20,000, or a total for a year's operations of $190,000. Such are results that a British Columbian whaling station should readily accomplish. An official statement was published in 1905 that 'from 1,000 to as many as 1,200 whales have been killed annually in recent years in the waters surrounding Britain's oldest colony, the companies carrying on the enterprise with adequate means and methods of utilization, have paid dividends of from 40 to 50 per cent per annum, while other firms prepared to only partially utilize the numerous products of the whale, or confining their operations to the manufacture of

whale oil only, have been able to easily pay 6 to 7 per cent, besides adding substantially to their reserve funds each season. Some Norwegian concerns, it may be added, have paid as much as 300 to 400 per cent a few years ago. These enormous returns are due to the fact that the most recent methods of killing allow of the taking of the large and very numerous inferior whales formerly neglected, while the adoption of mechanical reduction processes secures the utilization not only of the blubber and whalebone, but of the flesh, blood, massive viscera, &c., formerly cast away to be disposed of by voracious sharks, seals, &c. 'But to the utilization of the by-products is largely due the vastly increased profits referred to.'

An industry of this nature will readily bear reasonable restrictions, and sanctuaries where the cow-whales would be safe from attack might possibly be devised by experts.

INDIAN CLAIMS TO SPECIAL FISHING RIGHTS.

There are probably no native tribes in the world so favourably situated as the Indians of British Columbia for benefiting by the development of the natural resources due to the advent of the white man. The fisheries, forests, minerals, &c., were of little value so long as they were commercially unutilized, but the commercial enterprise of Canadian and other settlers gave value to natural products which were previously almost valueless. This is especially true of fish which were so abundant that the wants of the natives were soon supplied and the vast illimitable surplus went to waste. The Indian who made great catches of salmon 100 years ago was no better off than his neighbour who captured the moderate quantity necessary for the needs of himself and his family. All this has been revolutionized since the canning industry started 30 or 40 years ago. Every salmon caught by the Indian has a money value—in some cases a considerable money value—and a vast demand has been created, by canners and merchants, in all parts of the civilized world. Unable to realize the change directly due to the white man the Indians still assert their right to use methods which they used when fish had no money value, they insist upon securing quantities of fish in defiance of the provident laws instituted by the white men, not merely to supply their own wants, but to accumulate wealth by selling them to commercial buyers. One Cowichan Indian boasted of making $800 in four months in 1906. The salmon laws of British Columbia have always provided for the actual domestic needs of the Indians, but when the Indians enter into competition with white men in the capture and sale of the fish, the protective laws must of necessity apply to them both in the interest of the fish supply, and in the interests of the Indians themselves, who would most seriously suffer were the supply of salmon utterly exhausted.

There are at least three methods adopted by Indians contrary to the wise preservative policy of the Dominion government, which call for reference:

(1.) The undue destruction of salmon on the spawning beds. This cuts off the future supply of fish at the fountain head. Every spawning female salmon destroyed at the headwaters of a salmon river implies the loss of from 5,000 to 40,000 eggs just ready to be deposited and transformed into young salmon. Such fish, unlike those captured in the estuary and on the ascent of the river, have overcome all the perils and dangers of the lower waters, and having survived should, as far as possible, be permitted to fulfil the ends which nature purposed.

(2.) The destruction of small salmon fry when about to descend from the remote lakes of the headwaters to the sea.

Extensive fine meshed traps of wickerwork are, it is alleged, set near the breeding grounds of various British Columbian rivers, and vast quantities of immature salmon like small sardines, are taken, which are dried and used for food. This is a most serious drain upon the productive capacity of salmon rivers.

(3.) The use of barricades or wickerwork weirs, which stop the schools of salmon in their ascent to the spawning grounds. Formerly these barricades were very general and as they are often left after the Indians have secured sufficient salmon for their

needs, the depletion in some years and waste of fish has been tremendous. No doubt the fluctuations of salmon in British Columbian rivers, the extreme scarcity of the ascending schools, may be to some extent due to this wasteful destruction of fish in previous years.

Three cases of the blocking of rivers and streams by Indian weirs came prominently before the commission, viz., the Babine case, where a little more than 300 Indians living near the outlet of Babine lake, the main source of the Skeena river salmon supply, cut off the schools of breeding fish until as late as September in some years (as in 1905). August is the main time for this destruction, and the number of barricades is said to vary, as many as three being erected in some seasons, and their destructive character is increased by the erection of basket traps or inclosures on the upper side of the barricade, which hold the fish after passing through the wall of wickerwork. Usually the weir simply detains the fish, which are speared or dip-netted by the Indians. Many fish escape, and if they push through rents in the weir they get up the river; but the adoption of traps and inclosures is a new and more destructive feature. The Babine Indians no doubt were encouraged by the Hudson's Bay Company officers who bought salmon in quantity, and, it is alleged, sold them to distant tribes, including the Stuart Lake Indians belonging to the headwaters of the Fraser river.* As there is said to be ample fertile land for the 57 or 58 families resident on Babine lake, and plenty of hay for horses and cattle, as well as areas along the lake side suitable for growing potatoes and other vegetables, there seems to be no justification for allowing the primitive antiquated conditions to continue. Most of the Skeena Indians earn good wages in connection with the fishing and canning in the lower reaches of the river, many coming every season from as far as Queen Charlotte islands; but the Babine Indians are evidently indolent, and take no adequate advantage of their favourable conditions. Some of the missionaries discourage enterprise amongst them, and assert that work in the salmon industry is no benefit, and that Indians are always in debt who work for the cannery men. The contrary is the case, and the Port Simpson Indians who work on the Skeena furnish many samples of prosperity, and indeed wealth, largely owing to their substantial earnings during the salmon fishing season.

Up the Skeena, black-tailed deer, fine caribou, valuable bears and other fur game abound, and hunting should add to their means of livelihood. The Hudson's Bay Company readily exchange flour and provisions for fur.

The case of the Cowichan Indians presents similar features, but they are less remote from centres of population, and their reserves and villages are located in some of the most fertile tracts on the wonderfully fertile Vancouver island. It is under such conditions no such hardship, as it is in remote and less fertile regions, to insist upon the observance of protective regulations by the native Indian tribes. The benefit to the whole community. Indian and white people alike, is unquestionable. In other provinces it has proved so. As a prominent authority in British Columbia, who spoke from experience in the maritime provinces, said two or three years ago:—

'The effect of enforcing rigorous regulations on the rivers of New Brunswick was of great benefit to the whole community. The Indians and white settlers on those rivers had strongly opposed the application of the law, pleading that it was an interference with their old-established rights. They were in the habit of spearing salmon. When the regulations were enforced the fishing improved, salmon became plentiful in rivers where it had been previously almost unknown, the Indians found profitable employment as guides to visiting fishermen, and the settlers were greatly benefited by the increase of travel. He believed weirs in a river would be a serious obstacle to fishing, and knew of one case where a visiting angler was deterred from going to Cowichan river because he had heard there were weirs there.'

The large wickerwork barricades erected every season are a menace to the river and the policy of requiring their removal or of their being officially removed and

*The custom may have arisen originally owing to the shortage of salmon on Stuart's lake, as so long ago as 1811 the Hudson's Bay Company shipped fish to Stuart's lake from Babine lake.

destroyed, which policy was carried out ten or twelve years ago, should be adhered to. As soon as any salmon appear, the barricades are erected. Indeed in 1906, before the end of March they were built in order to stop the first spring salmon, and at Upper Saltham a large square trap was built at the weir, and the spring salmon and trout taken were sent to Victoria for sale or sold in the adjacent settlements. A carload of these salmon and trout, it is said, reached Victoria about the end of April 1906 and glutted the local market. It may be added that the Upper Saltham weir and trap continued its destructive work until August 4, thus ruining the fine river for about ten weeks of the best portion of the year. On July 13, it was gorged with dead and decaying salmon and trout, as the owners had been away and had not attended to it. The local anglers of Vancouver alleged similar abuses of barricades and of netting in the valued angling streams near Vancouver, and up the Fraser as far as the South Thompson and Salmon rivers, Shuswap. The matter was ventilated in the press and its more serious aspects were referred to in letters by Colonel Falk Warren, C.M.G., R.A., from whom the following quotation may be made regarding Salmon river:—

'The decay of the salmon industry of late years is said to be principally, if not entirely, due to the destruction of the salmon in the sea and at the estuaries by those who capture the fish for canning purposes, but from what I have seen for myself this year, I begin to doubt that this is the case, and from the state of things in the Salmon river I am inclined to think that the disappearance of the salmon is greatly attributable to the fact that the fish are prevented from reaching the natural spawning beds by the reckless and, I believe, unlicensed use of dams to facilitate the capture of the fish by Indians.

'I have resided upon or visited the valley of the Salmon river every year since 1893, and I can, therefore, speak with some kind of knowledge. This river was always considered mis-named, as the run of salmon, in the upper reaches, was usually insignificant. We heard year after year that these fish were in quantities from the mouth of the river at Salmon Arm to the first bridge, about 12 miles above, and we heard also that dams were constructed by the Indians at places where they could be easily made, and we also heard that it was owing to these dams that fish—salmon and trout—were prevented from coming up stream for spawning purposes. Efforts have been made by the settlers to have these dams removed, and on a few occasions this has been done, with the result that they were again put up when the constable had turned his back. The informer, if known, was a marked man, and was sure to suffer at the hands of the Indians. The method of retaliation used was such that their punishment could not be effected by law. The danger, indeed, certainty, of losing horse or cattle sufficed to give immunity to these Indians, who are also said to be supported in their actions by those who look after their interests.

'The dams were, however, removed, and the passage kept open, with the result that salmon had free access for once to the upper waters, and the scene which the river presented was one never to be forgotten by those who saw it. Every pool for over 20 miles of the course of the river was swarming with fish. Not weak, bruised and leprous salmon, but strong, lusty, healthy creatures, leaping, fighting and churning the waters during the few weeks that is occupied in the spawning process. Then the exhausted females and the wounded males began to sicken and die. The river banks became covered with their decaying bodies, and it is doubtful if any returned to the sea.

'This year we see that, owing to the waterway being made clear, the salmon have by tens of thousands found their way to the spawning beds at the proper season, and the consequences will be that millions of young fry will be produced, so many millions that all the hatcheries in the province will not be able to turn out one-tenth the number that will be naturally produced in this one river.

'Surely a lesson is to be learned from these simple facts.'

We are convinced that if the proviso regarding the securing of fish for food be carried out and all fishing for sale stopped, excepting under a proper license, one main cause of the depletion of salmon, as well as of trout, will be removed. To be

lenient in one locality and rigid in another is fatal, and all the Indian tribes should be treated with the same uniform regard for their real interests, and with a regard for the stupendous national and commercial interests involved. A very necessary step is to have the principal fishery restrictions printed in the various Indian languages on strong linen and posted on the different rivers, especially near Indian villages at the headwaters, and spawning areas of salmon. The Indian difficulty was well summarized in the following statement, published in *The Province*, when the Babine matter was under discussion:—

'There are two conditions, diametrically opposed, which face the authorities. One is the right demanded by the natives to capture the salmon in the weirs in order that they may be ensured a supply of food for the winter, without which they say they must starve. They are governed by a law more imperative than statute law—that of necessity. The other condition is the fact that if the fish are not permitted to reach the spawning grounds the permanent supply will be depleted, both for the Indians and the canning industry, which is an important one. It is one, too, which affords a great deal of employment during the fishing season for the Indians themselves. That, however, is not a phase of the question which appeals to the native, who gives but little thought to the morrow, and who believes thoroughly in the maxim that sufficient unto the day is the evil thereof.

'This attitude of the Indians is one, therefore, which calls for the exercise of most delicate diplomacy in order to bring about an agreement without reference to harsh measures. It is scarcely necessary to say that in dealing with the matter the Department of Indian Affairs will have to take carefully into account the prejudices of the Indian. He does not reason about it in the same way as the white man—that is, the white man charged with making and administering the laws in the interests of the whole community. Then, again, there is the tradition to maintain that the British people always deal justly and honourably with the native races, who in this instance are in a special sense the nation's wards. Intelligence is rapidly conveyed among the Indian tribes, and to shake their confidence in those in authority over them, no matter in what respect, would be to infuse the whole of the Indians of the province with a feeling of distrust which would be difficult to overcome. It might lead to more serious results in the future. On the other hand, the future of the fishing industry must be carefully guarded.'

It is of course impossible to allow uncivilized methods to continue to the detriment of the province as a whole, and a firm policy is essential to ensure the welfare of a great industry, and to avoid undue friction. Foolish and criminal advice is often given to Indians by white men posing as their friends; but without such criminal incentives Indians often harbour harsh feelings against canners and others engaged in a legitimate enterprise. Indeed on the Cowichan river it is alleged that 'the Indians intend to exterminate all salmon and trout in these waters, as the trap-owners along the sea-coast are underselling them. In revenge the Indians are destroying all the fish which are in the river for spawning purposes.' Certainly the matter calls for some serious and effective action when fine salmon rivers, the finest in the world, are in danger of destruction by such means and for such reasons.

SALMON HATCHERIES.

At the various sittings of the commission witnesses have prominently brought forward the necessity for extending the hatchery operations which have been carried on by the Dominion government since 1884 and by the provincial government since 1903. The present eight hatcheries at Bon Accord, Fraser river; Harrison lake; Granite creek, Shuswap lake; Lakelse river, Skeena; Birkenhead river, Rivers Inlet, and the Nimpkish river and Seton lake hatcheries, the last-named being the provincial government institution, and the Nimpkish hatchery being operated by the British Columbia Packers' Association, do not by any means meet the necessities of the case;

but the commission is aware that steps are being actively taken to ensure the erection and operation at an early date of three new hatcheries at Stuart's lake, Fraser river; Babine lake, Skeena river, and on Cowichan river, and probably some other point on Vancouver island. A hatchery on Quesnelle lake is absolutely essential and we recommend one on Nechaco river also. The Naas river; the west coast of Vancouver island, say at or near Alberni; and a hatchery in the interior of the province on the Okanagan, Arrow or Kootenay lakes. A hatchery for game fish in the upper Columbia river region or the Banff National Park, is most desirable. The Banff Park is, we are aware, outside the limits of the province of British Columbia; but such a hatchery could be made to embrace the needs of the upper Columbia waters as well as the waters in the park itself.

Besides these there are a number of points both on the mainland and on Vancouver island, at which it would undoubtedly be advantageous to establish and operate hatcheries. Other important points are Barclay sound, where Great Centre, Sproat, and Anderson lakes afford a choice of sites; Kennedy lake on Clayoquot sound, and the interior lakes already mentioned. At one or two of these points cannery proprietors would be probably willing to bear the cost of construction of the hatchery and of its operation for a term of years, in return for certain exclusive fishing rights. Further, the commission would urge the hatching of various species.

On the Fraser, the great importance of the sockeye salmon seems to have led to some neglect of the other varieties which frequent that stream. The collection of spring salmon and cohoe eggs has been largely incidental, 'to fill the trays,' when the take of sockeye eggs was not sufficient to stock the hatchery to its capacity, while there has been practically no attempt to propagate the steelhead. All these are valuable fish, the spring salmon and steelhead particularly being excellent table fish and commanding a high price in the local markets and when exported in a fresh condition, on ice or frozen, or preserved by the mild curing process. The commission strongly recommend that steps be taken to secure the propagation of these varieties in a more systematic way and on a larger scale.

The following table shows the development of fish-culture so far as sockeye salmon are concerned on the Fraser river:—

SOCKEYE PROPAGATION—FRASER RIVER, 1893-1905.

Present Nominal Hatchery Capacity, 140 million Eggs.

Year.	Total Sockeye Eggs Obtained.	Total Sockeye Fry Planted in Fraser River.	Number of Hatcheries Operated.
1898	5,502,000	4,742,000	One
1899	7,496,000	6,200,000	One
1900	Hatchery not operated.		
1901	19,202,000	15,741,000	Two
1902	14,348,000	12,031,000	Two
1903	15,536,000	13,464,000	Three
1904	10,966,000	9,469,000	Four
1905	120,829,000	97,656,000	Five
Totals.....	193,879,000	159,303,000	

There was one hatchery only on Fraser waters in 1898. One was built in 1901, and one in each of the years 1903-4-5.

Of sockeye eggs obtained, about 2,000,000 were sent to New Zealand and Tasmania; and some 300,000 fry were deposited in rivers other than the Fraser.

TRANSPLANTATION OF LOBSTERS, OYSTERS, ETC.

The transplanting of lobsters, oysters and other species from the eastern waters of Canada appears to be well worthy of adoption on an extensive scale. Former experimental shipments, it is true, have been made by the Dominion government, but on too limited a scale to admit of any conclusions as to their success or otherwise being drawn. So far as the planting of lobsters in 1896 and 1905 can be judged, it appears to have been successful, as the lobsters were seen in active healthy condition for some weeks after they were deposited. The planting of oysters in the same seasons as those mentioned does not appear to have had any other result than proving that Atlantic oysters survive and grow fat in Pacific waters, unless the spat or young oysters found by a sub-committee at Nanoose Bay be that of eastern oysters planted there in May, 1905. The selection of some extensive partially inclosed inlet such as Quatsino Sound or Barrington Bay, Cortes island, where experiments in planting lobsters and oysters could be carried out, and kept under official supervision for three or four years, would be advisable. If these transplanted crustaceans and shellfish did well, such a planted reserve might form a centre from which other areas in future years, could be stocked. Tests with lobster traps and with oyster dredges could be made, but in the areas hitherto stocked by the Dominion government no such strict tests were or could be made, the areas being scattered, open to the public, and not sufficiently secluded and supervised to admit of thoroughly testing the results.

The planting of the large Japanese oyster* which has a habitat resembling no doubt that which the British Columbian waters provide, seems to be an experiment well worthy of trial by the Dominion government.

DEPREDATIONS OF SEALS.

The destruction of salmon by the seals which crowd such estuaries as the mouth of the Fraser, was brought to the notice of the commission, and it was urged that measures for exterminating these animals should be devised. A bounty was suggested or that systematic steps be taken under the direction of the government to destroy these enemies of the salmon schools. In the spring of 1905 the loss of fish due to seals was said to have been very extensive.

It appears that in the Bay of Fundy and other localities on the Atlantic coast the herds of seals have increased, but the commission are informed that a bounty was not feasible there, and systematic shooting might be dangerous in the Fraser estuary. Hence the commission recommends that the Dominion inspector for the Gulf of St. Lawrence who has unusual experience with the 'hair-seal' question should be asked to devise some method of destruction applicable to the Fraser river.

TOTAL REVISION OF REGULATIONS URGENT.

The commission have been greatly impressed with the necessity of entirely revising the Dominion Fishery Regulations for the province of British Columbia. Thirty years ago the Fisheries Act, under which the fisheries were regulated in other provinces had no application west of the Rocky mountains, and when the provisions of that Act were extended to include the Pacific waters they proved, and have proved ever since, inapplicable in many ways, while a complex and confusing not to say contradictory, body of Fishery Regulations has grown up under authority of the Fisheries Act. A concise, clear code of regulations is urgently needed to enable the fishermen, canners, and others to readily understand what the law is, and to facilitate its proper enforcement by the inspectors, fishery officers, and the overseers, guardians, and special

* *Ostrea denstlaminosa*, Luschke.

officers, acting under their instructions. Unlike the other provinces, such as Nova Scotia, New Brunswick, and the eastern provinces, which already possessed a code of Fishery Regulations when they came into confederation, British Columbia possessed no such code, as the fisheries were regarded as of too little importance and too slightly developed to call for protective regulations, yet as early as 1875 the Dominion Commissioner of Fisheries at that time (viz.: the late W. F. Whitcher), said that taking into account the abundance and variety of the commercial fisheries of the coast, 'it seems now advisable to extend the Fisheries Act to British Columbia. This might be done,' he said, 'by proclamation, to be followed by specific application of the fishery laws, and by special regulations after further inquiry.' Within a year the Act was applied to the Pacific fisheries and the inspector immediately reported as follows:—

'With regard to the provisions of the Fishery Act, at large, there are many portions which are necessarily inapplicable to this province. Their application, indeed, would in some cases neutralize all fishing operations: for instance, of the salmon, at present the most lucrative. I have, therefore, assumed that such portions, only, of the Act, as are obviously of general application, with such other portions as, on more minute inquiry, may be found to be of particular application, shall be locally adopted. Without, therefore, interfering captiously, and injuriously as I conceive, with existing practice, I shall continue, as hitherto, to exercise a watchful surveillance for the common benefit; reporting from time to time, the result of my observations, and under your sanction, extending such further protective portions of the law, as may be found necessary or expedient.'

The first offence to which the attention of the department was drawn was the use of explosives in Burrard Inlet for killing fish. The inspector, in January, 1877, reported that after visiting the inlet and making full inquiries, he found the practice had prevailed; but in view of the official notice he had received, and (as he himself stated) 'now that the law is known, the practice has been abandoned.' This prohibition formed section 3 of the General Fishery Regulations for the province approved by His Excellency the Governor General on July [illegible] 1889. These early regulations, indeed, consisted of only three sections: (1) Salmon; (2) Trout; (3) Explosives. The following were the provisions:—

SECTION 1.—SALMON

1. Fishing by means of nets or other apparatus without leases or licenses from the Minister of Marine and Fisheries under the provisions of chapter 95, Revised Statutes of Canada, and section 4 thereof, is prohibited in all waters of the province of British Columbia.

Provided always, that Indians shall at all times have liberty to fish for the purpose of providing food for themselves, but not for sale, barter or traffic, by any means other than with drift nets or spearing.

2. Meshes of nets used for capturing salmon shall be at least six inches extension measure, and nothing shall be done to practically diminish their size.

3. (*a.*) Drifting with salmon nets shall be confined to tidal waters, and no salmon net of any kind shall be used for salmon in fresh waters.

(*b.*) Drift nets shall not be used so as to obstruct more than one-third of any river.

(*c.*) Fishing for salmon shall be discontinued from 6 o'clock a.m. on Saturday to 6 o'clock a.m. on the following Monday, and during such close time no nets or other fishing apparatus shall be set or used so as to impede the free course of fish, and all nets or other fishing apparatus set or used otherwise shall be deemed to be illegally set and shall be liable to be seized and forfeited, and the owner or owners or persons using the same shall be liable to the penalties and costs imposed by the Fisheries Act.

4. (*a.*) Before any salmon net, fishing boat or other fishing apparatus shall be used, the owner or persons interested in such net, fishing boat or fishing apparatus shall cause a memorandum in writing setting forth the name of the owner or persons inter-

ested, the length of the net, boat or other fishing apparatus, and its intended location, to be filed with the Inspector of Fisheries, who, if no valid objection exists, may, in accordance with instructions from the Minister of Marine and Fisheries, issue a fishery license for the same, and any net, fishing boat or fishing apparatus used before such license has been obtained, and any net, fishing boat or fishing apparatus used in excess or evasion of the description contained in such license shall be deemed to be illegal and liable to forfeiture, together with the fish caught therein, and the owner or person using the same shall be also subject to fine and costs under the Fisheries Act.

(*b.*) All salmon nets and fishing boats shall have the name of the owner or owners legibly marked on two pieces of wood or metal attached to the same, and such mark shall be preserved on such nets or fishing boats during the fishing season in such manner as to be visible without taking up the net or nets; and any net or fishing boat used without such mark shall be liable to forfeiture.

5. (*a.*) The Minister of Marine and Fisheries shall from time to time determine the number of boats, seines, or nets, or other fishing apparatus to be used in any of the waters of British Columbia.

SECTION 2.—TROUT.

No one shall fish for, catch or kill trout from the 15th day of October to the 15th day of March, both days inclusive, in each year.

Provided always, that Indians may, at any time, catch or kill trout for their own use only, but not for the purpose of sale or traffic.

SECTION 3.—EXPLOSIVES.

The use of explosive materials to catch or kill fish is prohibited.

These regulations were on March 14, 1890, amended in four particulars: (1) The six-inch mesh for drift-nets was reduced to 5¾ inches; (2) a proviso enabled the Honourable the Minister to order the use of a larger mesh than 5¾ inches where in his opinion it was necessary; (3) the weekly close time (Saturday 6 p.m. till Monday 6 a.m.) was reduced from 48 hours to 24 hours (Saturday 6 p.m. to Sunday 6 p.m.); (4) the use of seines was prohibited in all British Columbia. Further on, November 7, 1890, a prohibition of salmon seines was legalized by regulation.

In the summer of 1890 a Commission of Inquiry was authorized to investigate certain matters relating to the fishery regulations,' with special reference to salmon fishing for canneries. The commissioner was the late Mr. S. Wilmot, and in August, 1890, he made a full investigation of the Fraser river fisheries on the spot, visiting the seventeen canneries on the river, and obtaining the views of the leading parties engaged in the industry. The results were further changes in the law.

In June, 1892, nine new clauses or sections were added limiting the number of licenses to be granted to individual fishermen, to canners, dealers, and parties engaged in freezing salmon, or shipping on ice or curing them. One provision limiting licenses to resident British subjects caused much feeling, as it excluded a large number of men who came north to the Fraser river, after the season on the Columbia and Sacramento rivers was over. These American fishermen were much chagrined to find the salmon fishing in British Columbia confined to British subjects, and Americans and other foreign citizens excluded. Many canners were anxious to encourage this foreign labour, and it was publicly asserted that various means were resorted to in order to evade the regulation. Personation in order to obtain licenses, and nefarious naturalization of ineligible persons were amongst the charges made, and much resentment was aroused amongst the British fishermen. Grave abuses indeed continued, and to meet them a system of registration was adopted, which brought to light the fact that a considerable number of aliens still obtained fishing privileges in the British Columbian salmon fisheries. The proposed rigid enforcement of the 'registration' scheme and the 'resident British subjects' requirement, in 1899, caused apprehension.

The *Fishing Gazette* in March, 1899, said:—

'The enforcement by the Dominion government of the law compelling all fishermen on the Fraser river to register with the proper authority at Victoria on or before April 1 is causing serious apprehension. Without this registry they cannot fish the coming season, and every person registering must be a British subject. Unless this law is amended it will cut down the number of boats from an estimate of 6,000 to about 2,500, for fishermen who have gone from California and Oregon to the Fraser river to fish cannot do so under the present law, and this means a large cut in the 1899 pack of British Columbia.'

Much dissatisfaction continued to exist amongst those engaged in the salmon fisheries, and the recommendations, made at the conclusion of Mr. Wilmot's inquiry, were severely criticized. Great objection was made to these recommendations, and the whole report was unfavourably regarded by many of the salmon canners, and their agents, who complained bitterly of the representations which were made by Mr. Wilmot (regarding the wholesale destruction of fish and the universal custom which prevailed of throwing all offal from the canning establishments into the river contrary to law), as well as the conclusions arrived at generally in the said report.

With a view of determining the accuracy of this report, as well as obtaining data and information on many other points respecting the river and deep sea fisheries of the province, upon which, until Mr. Wilmot's report was made, the department had been inadequately informed, a minute of council, based upon the recommendation of the Honourable the Minister of Marine and Fisheries, was approved on December 23, 1891, appointing a commission consisting of Hon. D. W. Higgins, M.P.P., Speaker of the British Columbia Legislative Assembly, Wm. Armstrong, Esq., Sheriff of New Westminster, B.C., and Samuel Wilmot, Esq., Superintendent of Fish Culture, 'to inquire into and report upon the fisheries and fishery regulations in the province of British Columbia.'

Major Charles F. Winter, of the headquarters staff of the Fisheries Department, was detailed for duty and accompanied the commission as secretary.

The commission was convened and held its first session at the Court House in New Westminster, B.C., on February 19, 1892, Mr. Samuel Wilmot being elected chairman, and proceeded at once to take evidence from day to day and hear testimony from the actual fishermen and other interested parties in regard to all matters affecting the fishery interests of the province.

The sittings continued at Victoria, Nanaimo and Vancouver, the final executive sessions being held on March 19, 1892.

The recommendations of the commission became, in the main, the regulations which exist to-day, although amendments have added to their range and extent.

In 1895 the Commissioner of Fisheries was authorized to carry on an inquiry and hold sittings at New Westminster, Steveston and other centres of the Fraser river salmon fishery. The investigation was completed and a number of recommendations made which were at a later date embodied in further amended regulations.

In August, 1902, a special commission, consisting of the Hon. Wm. Templeman and Mr. A. W. Vowell, of the Indian Department, accompanied by Inspector C. B. Sword and Mr. G. T. Mann, legal adviser, inquired into alleged illegal fishing in the Cowichan river and adjacent waters. Much evidence was taken, but the report of the commisson did not result in any important amendment of the regulations.

On January 24, 1902, an important fishery commission was appointed to investigate certain vexed questions regarding the salmon fisheries, especially the proposal to permit trap-nets in the Strait of Juan de Fuca. The members were Mr. (now Judge) Morrison, Mr. Ralph Smith, M.P., the late Mr. Maxwell, who was succeeded by the Hon. George Riley and Professor Prince, as chairman, with Mr. T. R. E. McInnes as secretary.

Sixteen sittings were held from January 24 to February 5, and over seventy witnesses were heard, and certain minor changes in the regulations were carried out, based on the commission's report; but no marked change of policy in regard to trap-nets

resulted until May 2, 1904, when Trap-net Regulations were authorized by order in council, consisting of 14 clauses and 10 sub-clauses, providing for the adoption of that mode of fishing.

The foregoing report (to be followed shortly by a second part embracing the recommendations of the Commission) is respectfully submitted.

EDWARD E. PRINCE,
Chairman.

JOHN C. BROWN,
RICHARD HALL,
GEO. W. TAYLOR,
} *Members of the Commission.*

PART II.

MINORITY REPORT.

For the reasons briefly set below, the undersigned members of the British Columbia Fisheries Commission dissent from the foregoing majority report. When the commisson adjourned its sittings in Vancouver, October 2, 1905, it was distinctly understood that the chairman would within three months submit to the commissioners by mail a draft of a final report that should review the evidence taken by the commission, and fully set forth in detail the facts upon which were based the findings and recommendations contained in the interim reports already submitted to you, and that the commission should be convened in January, or February, 1907, for its discussion and adoption. This understanding was not carried out, the draft was not submitted to the commissioners until the last of June, nor the commission re-convened until July 11, 1907. The undersigned were unable to attend the session at which the foregoing report was considered and adopted, of which fact the chairman was duly apprised.*

Because the report signed by the majority does not express our views, is misleading and lacking in clearness of expression and sequence; and because we do not believe by its perusal that a clear and accurate understanding of the conditions which threaten the extinction of the salmon of the province can be gained, we deem it our duty to dissent therefrom, and to briefly state our views on that the most important question.

The threatened extinction of the salmon of the Fraser we believe is the most vital and urgent question at present demanding your attention in this province. The run of sockeye salmon to the Fraser River district has declined and is still declining at an alarming rate. The periodicity of the run of sockeye salmon to the Fraser has long been recognized and clearly demonstrated: All the evidence obtainable substantiates the statement that the run of a given year depends primarily upon the spawn deposited in its watershed in the previous fourth year. It is also true that the catch of sockeye salmon in the Fraser River district, by which term we include the American waters of Puget Sound, is expressed by the pack, because the entire catch is marketed in tin.

An examination of the table of the salmon pack of the Fraser District shows that the catch of 1903 was 62 per cent less than it was in the year of its seeding, the previous fourth year, 1899; that the catch of 1904 was 66 per cent less than in 1900; that the catch of 1905 was 22 per cent less than in the previous big year, 1901; that the catch of 1906 was 26 per cent less than that of 1902; and that the catch of 1907 was 38 per cent less than it was in the fourth preceding year, 1903. These facts prove conclusively, we contend, that the salmon industry of the Fraser River district is declining. So great has been the decline in each of the past seven years as to conclusively demonstrate that there is some continuous action at work which threatens the destruction of the province's most valuable fishery.

In addition to the above figures, the evidence given before the commission clearly demonstrates that the methods employed to capture the salmon are more effective now than heretofore, the nets used are larger and deeper, the area fished more extensive, a greater effort is made to catch the fish, the measures for preserving the catch have been increased, and there is a greater demand for the fish and a higher price paid for them. Upon such facts we can make no other deduction than that the failure to take an equal or greater number of salmon than formerly is due to the fact that they are not so abundant now. If their numbers had not been reduced a greater instead of a lesser number would now be captured.

* Mr. Campbell Sweeny was absent in Europe on account of ill-health, and Mr. Babcock was engaged officially in the interior of the province.

Abundant evidence was submitted to the commission to prove conclusively that the decrease in the run of salmon to the Fraser was alone due to excessive fishing. It was very clearly shown that approximately 90 per cent of the salmon captured annually in the Fraser River district were taken in the salt water approaches to that river, and in its lower channels, and that the balance were taken in the upper fishing limits of the river channel during the twenty-four to thirty-six hours immediately following the weekly closed period of thirty-six hours. The evidence also clearly showed that, if, during the time fishing is permitted, any considerable number of salmon successfully passed through the trap and net-fished waters outside the channels of the river, and the nets used just inside the river mouths, nets cast in the upper reaches of the river would catch them during the same time, but the fact was elicited that they do not do so save in the hours mentioned. Furthermore, nets would not be used during the sockeye season of the poor years in the upper reaches of the Fraser River if there were no weekly closed periods, because their use there would be profitless.

Almost every witness who appeared before the commission and gave evidence upon these points stated that the only profit made by the fishermen in the upper reaches of the fishing limits in the poor years was made by the sale of salmon caught in the twenty-four to thirty-six hours immediately following the weekly closed time. If the fish which reach the upper fishing limits, and which are caught there during the hours mentioned, were permitted to continue their journey to the spawning grounds the hatcheries could in an average season be filled with eggs and the natural beds well seeded.

In company with two other members of the commission, we personally visited these waters on a Sunday night during the run of 1906. We saw the boats there loaded with as many fish as most of them could carry—loaded with fish which had successfully passed through the open waters of the gulf and lower river because the fishermen there had been compelled to abstain from casting their nets for thirty-six hours so that the fish might pass to the spawning grounds. We believe that during an average season a sufficient number of sockeye would succeed in passing above the bridge at New Westminster during the weekly closed season to insure the filling of the hatcheries with eggs and the stocking of the natural spawning beds. That they do not do so is due to the fact that they are captured in the river above that bridge during the twenty-four to thirty-six hours following.

The catch of sockeye between New Westminster and Mission bridges is taken from the fish which the fishermen in the gulf and the lower river permitted to pass in order that the spawning beds and the hatcheries might be stocked. A large majority of the fishermen living on the river between the two bridges who appeared before the commission testified that there was little or no fishing conducted there during the last three open days of the week in the poor years. There are between two and three hundred boats which regularly fish above New Westminster bridge during the twenty-four to thirty-six hours following the weekly closed period, and they undo in that time all the good that has been accomplished by compelling between two and three thousand fishermen below to quit fishing for thirty-six hours. The fishing grounds are now so extensive that the fish cannot in thirty-six hours pass from the waters of the outer gulf to the closed waters above Mission bridge. The distance is too great for them to do so. This was not the case until the Americans began to place traps at Point Roberts and gradually extend them along the channels leading from the Gulf of Georgia to Juan de Fuca strait. Up to that time our fishermen had chiefly confined their efforts to the channels in the river and a short distance out towards the sandheads. The establishment of the American traps compelled our fishermen to seek fish in all the discoloured waters of the Gulf of Georgia, thus extending the fishing limits for many miles. The area fished now is therefore more extensive, the nets used are larger and deeper, and a large proportion of the catch now made in our waters is made miles from the mouths of the river, instead of in the river proper, which was formerly the case. The regulations issued by the department for the protection of

the Fraser salmon fishery were ample up to the time the Americans began to fish with traps. Had conditions remained unchanged there probably would not have been so marked a decline in the run as is now shown. After the Americans entered the field in 1894, the catch steadily increased on both sides of the line, until in 1897, it was more than doubled. There were no protective measures adopted for American waters until 1905, and very few changes were made in our own to meet the changed conditions. It is not surprising, therefore, that the drain on the run became so great that the spawning beds were left unseeded. It would appear that the department expected to counteract this great drain on the run by the establishment and maintenance of extensive hatcheries since four large ones were constructed between 1901 and 1905. The hatcheries, however, have not accomplished this result for the reason that the men in charge have been unable to fill them with eggs. In 1903 but 25 per cent of the hatchery capacity was filled with eggs, and in 1904 less than 10 per cent of this space was used. We therefore believe that the hatcheries of the Fraser will never produce the results expected of them until such regulations are enacted as will enable a sufficient number of spawn fish to reach them.

As we have stated, the cannery pack of the Fraser is indicative of the size of the run of the sockeye for a given season, because the catch is all canned. An equally reliable indication of the proportion of the run that reaches the spawning sections of the Fraser and its tributaries is the number of eggs secured at the spawning stations located thereon.

The following table prepared for the commission shows the number of hatcheries located on the Fraser, their capacity, the number of eggs collected, fry planted, and the yearly expenditure for the past eight years.

Year.	Number of Hatcheries.	Egg Capacity.	Eggs Collected.	Capacity Reached.	Fry Planted in Fraser.	Amount Expended in Fish Culture.
				P. c.		$ cts.
1898	1	6,000,000	5,200,000	86	4,742,000	2,389 00
1899	1	9,000,000	7,496,000	83	6,200,000	3,736 00
1900	1	9,000,000		0		2,741 00
1901	2	19,000,000	19,000,000	100	15,741,000	17,704 00
1902	2	19,000,000	14,000,000	73	12,031,000	11,079 00
1903	3	59,000,000	15,000,000	25	13,464,000	24,205 00
1904	4	99,000,000	10,000,000	10	9,469,000	23,544 00
1905	5	125,000,000	120,000,000	93	97,656,000	64,622 00

An analysis of these figures shows the condition of the spawning grounds of the Fraser River watershed for the last eight years. There was but one hatchery in 1898, having a capacity of only six million eggs. In 1905 there were five hatcheries in operation with an egg capacity of one hundred and twenty-five millions. In 1898 there was expended on the operations of the hatchery $2,389, and in 1905 the amount had increased to $64,622. With three hatcheries in operation in 1903, having an egg capacity of fifty-nine millions, and operated at an expenditure of $24,205, only fifteen millions of eggs were collected, while in 1899 nearly seven and a half millions of eggs were collected at the one hatchery at an expense of only $3,736. In 1904 at an expenditure of $24,000 only ten millions of eggs were collected at the four hatcheries operated, though having a capacity of ninety-nine millions. These facts tell a plain story. They demonstrate clearly and unanswerably the failure of the fish to reach the headwaters.

The spawning beds of the Fraser and its tributaries remain undisturbed. They have not been injured or destroyed by the diversion of water for power or irrigation. The waters of the Fraser are not polluted by mill or factory refuse. The upper reaches

of the river are to-day as favourable to the propogation of salmon as they were when Simon Fraser first passed over them a centuary ago. They do not produce salmon because they are not seeded. They are not seeded because a sufficient number of spawn-fish are not permitted to reach them. Hence it follows that they must be amply seeded each year or the run of sockeye salmon to the Fraser River district will cease.

The run can be restored and maintained if the spawning beds are seeded, and the hatcheries filled with eggs every year, and there are, we think, three ways by which this result can be attained.

1st. By prohibiting all fishing above New Westminster bridge from July 1 to September 15, restricting the length of all nets used in the district to 150 fathoms, and their depth to 60 meshes, and the enforcement of a thirty-six hour weekly close period in all the waters of the Fraser, and the absolute closing of the river from August 25 to September 15 each year.

2nd. By prohibiting all fishing within the three mouths of the river for sixty consecutive hours each week between July 1 and September 15, and restricting the length of all nets to 150 fathoms, and depth of all nets to sixty meshes, and the observation of a thirty-six hour weekly closed season in all its waters, and absolute closing from August 25 to September 15 each year.

3rd. By prohibition of all fishing, on both sides of the international line, in each of the next four poor years, namely 1908, 1910, 1911 and 1912, and the enforcement thereafter of suggestion 1st or 2nd.

At the time the commission adopted the recommendations contained in the interim report of October 2, 1906, the undersigned and one other member of the commission, favoured the first of these propositions, while one member opposed all three, and the remaining two members favoured the second. As the commission was on the eve of the final conference with the Washington Commission, at which it was essential to any measure of success that our commission should present a unanimous front, we agreed to support the second proposition, stipulating, however that, on the filing of our final report each member was to be at liberty to state his own views upon the subject.

We are so impressed with the seriousness of the situation that we have no hesitation in recommending that all fishing for salmon in the Fraser River district, on both sides of the line, be prohibited from July 1 to September 15, in the years 1910, 1911 and 1912; and that thereafter all fishing above New Westminster bridge be prohibited between July 1 and September 15. We would also recommend the prohibition of sockeye fishing in 1908, were it not for the fact that the present fishing season on the American side of the line cannot be changed until the legislature of the State of Washington convenes in January, 1909.

We believe that the evidence obtained by the commission fully warrants the discontinuance of all fishing above New Westminster bridge from July 1 to September 15; and in this connection we desire to call attention to the fact that the people above New Westminster bridge who own lands and have regularly engaged in fishing, or who fish during the sockeye season, claim an acquired right to fish there, and that they should be compensated for the surrender of that right. To restore and preserve a great industry it would seem to be necessary to deprive these people of this right, which from long usage has come to be regarded by them as a legal right. We think the government should recognize their claims. To determine the amount of compensation to be paid would not be a difficult problem. The sum so expended would in the aggregate be small indeed compared to the lasting benefits to be conferred upon what was once and may still be made one of the richest fisheries in the world. It should be remembered that the salmon of the province of British Columbia exceeds in value that of any other fish taken in Canadian waters; hence the department is amply justified in adopting any measure, no matter how much of an innovation it may be, that will build up and restore that industry. We are therefore of the opinion that the purchase of these acquired rights of the resident land-owning fishermen between the Mission and New Westminster bridges to take salmon from the Fraser

between those points should be the first step taken by the department. Money so expended will have the effect of money spent for propagation. The wisdom of expending moneys for building large and expensive hatcheries, and the annual appropriation of large sums for their support and maintenance, is no longer questioned. Give the salmon fisheries of British Columbia the benefit of the bounty system which is in effect on the Atlantic seaboard of Canada, and our fishermen will willingly forego the exercise of practices on the Fraser which years of usage have made almost a legal right, but which is continued will exterminate the salmon. The same wise and generous policy which is exercised on the Atlantic coast, if applied to the fisheries of the Pacific, would soon place this province permanently in the front rank of the provinces of the Dominion in the value of its fishery products.

We desire again to call your attention to the danger which threatens the salmon fisheries of the northern district of the province. Because of the serious decline in the run of sockeye salmon to the Fraser river greater attention is being paid by canners and fishermen to our other salmon-producing rivers, such as Rivers Inlet, the Skeena and the Naas; and, unless adequate restrictive measures limiting the fishing there are at once adopted there is danger that those streams will become as greatly depleted as the Fraser. Many new canneries have been constructed there in the last few years, and the number of licensed boats increased. The commissioners realized this danger two years ago, and in the interim report of December 7, 1905, pointed out and unanimously recommended that a limit be placed on the number of canneries and the number of boats licensed in the district. There are no international complications affecting the salmon fisheries of the northern districts of the province. The situation there is entirely within the control of the government. If these valuable salmon producing rivers are depleted the responsibility wil rest upon it alone. The evidence submitted to the commission, by the inspectors and other witnesses, made the situation very plain. The northern rivers of the province are much less extensive than the Fraser. Up to a few years ago the sockeye salmon canned on the Skeena and Rivers Inlet was small in proportion to the amount produced by the Fraser river, but during the last two seasons the pack on these rivers has exceeded that packed on the Fraser. The pack of sockeye this year at both Rivers Inlet and the Skeena greatly exceeded that packed on the Fraser river. The latter having been the greatest salmon producing river in the world, has now fallen to third place in the rivers of the province. Excessive fishing, which depleted the Fraser, now threatens the extinction of the salmon of the Skeena and Rivers Inlet.

We strongly urge as a remedial measure that no additional canneries be permitted in the northern district, and that the number of fishing boats licensed at Rivers Inlet be limited to 550, those at the Skeena river to 800 boats, and those at the Naas river to 200 boats. The assignment of these licenses to the different canneries may be left to the cannery managers located there, and upon a failure on their part to agree upon an allotment by February 1 of each year, the assignment should then be made by the inspector for the northern district.

One other matter to which we wish to direct your special attention is the practice of the inspectors of fisheries in the province of collecting a license from each gill-net fisherman who fishes within their respective districts, which does not appear to be authorized by any order in council, and should at once be abolished. The reason given by the inspectors for such action is that it is necessary to collect these licenses in order to make a financial showing in their respective districts. There are three fishing districts in British Columbia, known as the Fraser, the Islands and the Northern. The inspector in each district collects a license fee of $10 from every gill-net fisherman engaged in salmon fishing. Licenses issued in one district are not good in another district, though the fish in each are distinct, and run at a different season than those in other districts. Now, there are gill-net fishermen who fish in all three of these districts during the year, and in each district annually pay a license fee of $10. These men move from one district to another according as the fishing season occurs in each. It is desirable that these men should move about in this manner

because at times labour is scarce, and particularly is this so in the northern district. There are other fishermen who fish in only one or two of the three districts. More would fish in all three if it were not for this excessive taxation. To compel gill-net fishermen to pay an annual license fee of $10 to fish for salmon in the northern district from June to July 15, and then demand that they pay an additional fee of $10 to enable them to fish in the Fraser river district from July 15 to August 25, and still another $10 to enable them to fish in the Islands district—a total of $30 annually to fish in all the waters of British Columbia—is certainly out of all proportion to the amount levied upon the fishermen of the other provinces, or upon men engaged in any other line of work in the Dominion. At best these men make but little more than a living. The majority of the salmon fishermen in this province in the last three years have not cleared $300 annually from their efforts. This year it is doubtful if any of them paid their expenses.

We furthermore do not believe that the department is warranted in demanding a separate license for salmon fishing, another for herring, and still others for oolichan, smelt, &c. By the payment annually of a modest license fee every British subject shou'd be permitted to fish for any and all kinds of fish in all the waters of British Columbia so long as he does so in accordance with other regulations. Compare the system in vogue on the Atlantic seaboard, and the total revenues collected there, and you will no doubt see the justice of our fishermen's claims as above set forth. And, where a license is levied upon the fishermen, we do not believe that it should be coupled with the severe restriction requiring three months' notice or registration. Had we a fishing population capable of handling the business, and engaged solely therein, such a measure might be desirable in order to protect their interests, but we have no such class. The majority of our fishermen engaged in salmon fishing are for the greater part of the year engaged in other occupations—many in the woods remote from fishing centres—and to require such men to appear and register, or even forward an application by mail, is, in our judgment, a hardship that is severe and unnecessary.

Furthermore, we urge upon you the desirability of a personal visit to the waters of this province, for only in that way can you become sufficiently impressed with the great wealth they contain, the dangers of their depletion, and the necessity of continuing by a permanent commission the investigation which at your direction has been commenced

CAMPBELL SWEENY,
JOHN PEASE BABCOCK,
Members of the Commission.

PART III.

Recommendations *re* Changes Suggested in *(a)* the Existing Statutes and *(b)* the British Columbia Fishery Regulations.

The commissioners, in view of the very complicated and, in some cases, almost contradictory fishery regulations which are now in force, principally under authority of orders-in-council passed at different times during recent years, recommend the rescinding in toto of all the existing Dominion fishery regulations applicable to British Columbia, so that a new and concise code of regulations could be devised, in the framing of which they, as a commission, feel themselves to be in a position to aid, after the very exhaustive inquiries made during the work of the commission, and the large amount of evidence from reliable parties which has been received at the public sittings.

Before proceeding to detail these suggested regulations, we recommend that some amendments to the existing statutes be made.

I. The Act Chapter 45, Revised Statutes of Canada, 1906, section 51, reads as follows:

'No one shall catch fish for the purpose of using it as manure.'

In order to provide for the utilization legally of non-economic fishes for purposes of oil or guano, we recommend that the statute be amended so that it shall read:

'No one shall fish for, catch, kill, take, buy, sell, possess or export any fish for the purpose of converting the same into manure, guano or fertilizer, or for the manufacture or conversion of such fish into oil or manure or other fertilizing products except under authority of a special license granted by the Minister of Marine and Fisheries for the taking of certain fishes which shall be specified in the said license.'

II. The Act Chapter 45, Revised Statutes of Canada, 1906, section 47, subsection 14, should be amended as recommended below.

The subsection reads at present as follows:—

'14. From the time of low water nearest six of the clock in the afternoon of every Saturday, to the time of low water nearest six of the clock in the forenoon of every Monday, in tidal waters, and from six of the clock in the afternoon of every Saturday to six of the clock in the forenoon of the following Monday, in non-tidal waters, all sedentary fishing stations and weirs, and all pound and trap nets, seines, gillnets and other apparatus used for catching fish, whether under license or not, shall be so raised, closed or adapted as to admit of the free passage of fish through, by or out of such apparatus; and during such close time no one shall catch fish in such apparatus, whether under license or not.'

But in order to render the Canadian statute uniform with that of Washington State, a matter of supreme importance, so far as the contiguous waters of that State and of British Columbia are concerned, the following words should be inserted after the words 'through, by or out of such apparatus'—'or be so effectively closed as to completely obstruct and prevent the entrance of fish into such apparatus.'

III. Further, the Act Chapter 45, Revised Statutes of Canada, section 94, should be altered in accordance with the recommendation made in the interim report, sent in by this Commission, on October 2, 1906.

Section 94 now reads as follows:—

'94. Except as herein otherwise provided, every one who violates any provision of this Act or of the regulatons under it, shall be liable to a penalty not exceeding one hundred dollars and costs, and, in default of payment, to imprisonment for a term

not exceeding three months, and any fishery officer or justice of the peace may grant a warrant of distress for the amount of such penalty and costs.

The clause amended would read:—

'94. Except as herein otherwise provided, every one who violates any provision of this Act or of the regulations under it, (excepting in the case of violation of the salmon trap-net regulations for the Province of British Columbia, in which the minimum penalty shall be $250 and costs, and the maximum penalty $1,000 and costs) shall be liable to a penalty not exceeding one hundred dollars and costs, and, in default of payment, to imprisonment for a term not exceeding three months, and any fishery officer or justice of the peace may grant a warrant of distress for the amount of such penalty and costs.'

NOTE.—This change is rendered necessary, it may be pointed out, under an agreement between the special Fishery Commission of the State of Washington and this commission. In accordance with the agreement the Washington State law now provides for a minimum penalty of $250 and a maximum penalty of $1,000 or imprisonment for not less than 25 days or more than one year, or both fine and imprisonment.

IV. The Act Chapter 54 of the Revised Statutes of Canada, 1906, section 48, should be amended so as to provide that the special exception made of the province of British Columbia in the total prohibition of purse seines in all the waters of Canada shall apply to the taking of salmon only. The following recommendation is, therefore, made that the words 'for the taking of salmon' be inserted after the words 'special fishery licenses for the use of purse seines.'

Section 48 reads as follows:—

48. No one shall use purse seines for the capture of fish in any of the waters of Canada: Provided that the Minister may issue special fishery licenses for the use of purse seines in certain waters in the province of British Columbia specified in the said licenses.

If amended as suggested the clause would read as follows:—

'48. No one shall use purse seines for the capture of fish in any of the waters of Canada: Provided that the Minister may issue special fishery licenses for the use of purse seines for the taking of salmon in certain waters in the province of British Columbia specified in the said licenses.

V. We recommend that Chapter 45, Revised Statutes of Canada, 1906, section 50, be amended by adding the words 'British Columbia' after the words 'in the provinces of.

The section now reads:—

50. In the provinces of Manitoba, Saskatchewan and Alberta, and in the Northwest Territory and the Yukon Territory,—

(*a*) every ditch, channel or canal, constructed or adapted, &c.

If amended as favoured by the Commission, the clause will read as follows:—

'50. In the provinces of British Columbia, Manitoba, Saskatchewan and Alberta, and the Northwest Territories and the Yukon Territory, &c.'

VI. Further, we recommend the repeal of the Revised Statutes of Canada, Chapter 45, Section 30, as likely to lead to, and encourage the destruction of small immature trout, and we regard that section as clearly contravening subsection 9 of section 47 of the same chapter of the Revised Statutes.

The section referred to reads as follows:—

30. Nothing herein contained shall prevent,—

(a) The taking or the use of small sized trout for the purpose of baiting traps; or.

(b) the taking and using the same by fishermen as bait for cod fishing in tidal waters; or,

(c) shall subject fishermen to penalty if by accident, in fishing for herrings or whitefish by means of nets, trout are inclosed or taken.

VII. We recommend, in order to avoid ambiguity, that Section 21 of the Fisheries Act, Chapter 45, Revised Statutes of Canada, be amended.

It reads as follows:—

21. No salmon shall be captured within two hundred yards of the mouth of any tributary, creek or stream which salmon frequent to spawn.

And we recommend that it be altered to read as follows:—

'21. No one shall fish for or take salmon in any tributary, creek or stream, which salmon frequent to spawn, or within two hundred yards of the mouth thereof.'

VIII. We recommend that Section 17 of the Fisheries Act, Chapter 45, Revised Statutes of Canada, which reads as follows:—

17. The Minister, or any fishery officer duly authorized, shall have power to define the tidal boundary of the estuary fishing for the purposes of this Act,

be amended by adding the words 'to do so' after the word 'authorized,' in the first line of the section named.

(b) FISHERY REGULATIONS.

General Provisions.—Applications for licenses shall not be entertained except the applicants are resident British subjects, and licensees shall make a true return of their catch of fish at the end of each season to the Inspector of Fisheries for the district, or the nearest Fishery Officer.

A fishing license shall be non-transferable except by special permission of the Inspector of Fisheries for the district.

Indians, and explorers in unorganized districts, to be permitted to provide themselves with fish for food purposes; but to be required to report to the nearest fishery officer, the place and time and quantity and kinds of fish taken for food.

A printed application form to be supplied to every applicant for a fishing license or lease, such form to be filled in with all the necessary details, and to be returned to the Inspector of Fisheries, or other fishery officer, before the issue of such license or lease.

Details as to close seasons, and other conditions applying to the fishery covered thereby, to be printed on the back of each license.

No new salmon cannery shall be erected or commence operations unless a license is first obtained from the Minister of Marine and Fisheries; but existing canneries shall be entitled to such license.—Fee $50 per annum.

An annual inspection of all salmon canneries and fish curing establishments to be made by the inspector of fisheries of each district, or by some other person duly appointed for the purpose, and he shall report to the department, at Ottawa, at the close of each season, on the cleanliness, water-supply, &c., in each cannery or curing establishment. The department to furnish a printed form on which the details of each establishment shall be entered.

On the northern rivers the amount of fishing should be limited by departmentally specifying the maximum number of boats to be allowed. The number recommended is: Naas river, 200 boats; Skeena river, 800 boats; Rivers Inlet, 550 boats.

Net Licenses.

Gill nets for salmon fishing.—Annual fee, $5.

Two sizes of mesh shall be allowed.

1. Extension measure, 5½ inches, known as sockeye nets.
2. Extension measure, 7 inches.

Limit of size for all salmon nets:—
Depth, 60 meshes (Commissioner J. C. Brown recorded his dissent, being of opinion that 75 meshes for sockeye nets should be allowed).
Length, 150 fathoms.

Gill nets for pilchard and herring fishing.—Annual fee, $2.50.
Mesh, extension measure, 2½ inches.
Length, 200 fathoms.

Gill nets for sturgeon fishing.—Annual fee, $2.50.
Mesh, 12 inches; extension measure, length, 300 yards.

Smelt and sardine nets.—Annual fee, $1.

Gill nets for all fish other than those specified.—Annual fee, $2.50.

Salmon traps (staked and floating).—Annual fee, $75.
Mesh: leader, 6 inches; crib, heart and pot, 2½ inches.
Must be on a definite location and at a distance of at least 400 fathoms from adjacent nets.

Purse seines (for salmon only).—Annual fee, $50.
Mesh, 3½ inches; maximum length, 500 fathoms.
Such seines not to be used in harbours or in any reserved areas specified by the local inspector of fisheries.

Drag seines for salmon.—Annual fee, $25.
Mesh, 3½ inches; maximum length, 300 fathoms.

Drag seines for herring.—Annual fee, $50.
Mesh, 1½ inches; maximum length, 100 fathoms.

A license for a net of any kind shall cover the use of one net only, and in the case of gill nets, the net shall be used only by the person in whose name the license is issued.

Shell-Fish Licenses.

Crab. The annual fee for crab-fishing license, $2.50

No crab shall be taken measuring less than six inches across the greater breadth of the shell.

Oyster.

Leases and licenses to be issued for natural oyster beds. These to cover defined areas and to require the lessees to carry on their proper cultivation, especially by the system of working areas in rotation.

The close time for oysters to be during the months of May, June, July and August.

Clam.

Leases and licenses to be issued for natural clam beds. These to cover defined areas and to require the lessees to carry on their proper cultivation, especially by the system of working areas in rotation.

Abalone. Annual fee, $10.

Minimum size to be taken, 4 inches across the shell. Fishing for abalones to be prohibited every third year.

(Commissioners Sweeney and Babcock dissent from the recommendations *re* licenses.)

Prohibitions.

No fishing with nets to be allowed except under license.

No sunk salmon nets or diver nets to be used in salmon rivers or in the estuaries of such rivers.

No salmon under three pounds in weight to be taken by means of nets.

No trout under 18 inches in length to be taken in the waters of British Columbia.

No trout under 3 pounds in weight shall be bought, sold, or exposed for sale.

A salmon gill net license shall entitle the licensee to use a gill net for the taking of salmon in any of the waters of British Columbia in which such net may legally be used; but a licensee shall not exercise the right in any inspector's division other than that in which his license was issued, until his license has been endorsed by the inspector of such division.

No net of any kind to be so used as to enclose any bay, cove, creek, or inlet. In all cases one-third of the width of such bay, cove, creek, or inlet shall remain open and unobstructed.

No net of any kind to be used for taking fish in the fresh-water lakes and the non-tidal waters of British Columbia.

Bare, unbaited hooks or grapnels (cross-lines) for taking sturgeon not to be permitted.

The export of fresh clams, or edible shell-fish, other than oysters, to be prohibited.

The introduction of live non-indigenous fish into the waters of British Columbia, except by special permission of the Dominion or Provincial governments, to be prohibited.

Fishing for sockeye salmon above New Westminster Bridge, Fraser River, to River, which is north of the limit mentioned. For that part of the Fraser river above (that is east of) New Westminster Bridge, and the words 'This license valid between New Westminster Bridge and Mission Bridge' shall be conspicuously stamped across the face of such license.

(Commissioner Brown recorded his dissent from this recommendation as he held that that part of the existing regulation extending the privilege to all the residents of the city of New Westminster should remain unaltered.

Commissioners Sweeney and Babcock, while they voted for this recommendation, recorded their conclusion that a total prohibition of all net fishing is necessary above New Westminster Bridge.)

CLOSE TIMES.

Weekly for Salmon Fishing.

Saturday 6 a.m. to Sunday 12 midnight, south of the 51st parallel of North Latitude, excluding salmon traps west of Gonzales Point, but including Skeena River, which is north of the limit mentioned. For that part of the Fraser River between New Westminster Bridge and Mission Bridge, in 'small run' years, Saturday 6 a.m. to Monday 6 a.m.

Saturday 12 noon to Sunday 12 midnight in all waters north of the 51st parallel of North Latitude, excluding the Skeena River and estuary.

Friday 6 p.m. to Sunday 6 a.m., for all salmon traps west of Gonzales Point, near Victoria.

Annual.

Gill nets for salmon, 5½-inch mess shall not be used between November 30th and June 30, both days inclusive, or during the close times as otherwise provided.

Annual for Fraser River District.

August 25 to September 15, inclusive, during which time no salmon nets of any kind shall be used in the Fraser River district.

(Commissioner J. C. Brown recorded his dissent on the grounds stated in his memorandum. See Appendix C.)

CLOSE SEASONS.

Annual for Spawning Salmon.

Spring salmon or quinnat, and sockeye-salmon. October 1 to November 15.

Coho, dog salmon and humpback, November 15 to January 1.

Annual for other spawning fish.

Steelhead, November 15 to March 25 in non-tidal waters; but in tidal waters from January 1 to March 25, both days inclusive.

Trout of all kinds November 15 to March 25, excepting in the waters of the interior of British Columbia, east of parallel 120° West Longitude, where the close season shall be November 15 to May 1.

Herring, March 1 to April 30. The inspector to be empowered to stop fishing operations at an earlier date in any locality, in which, in his judgment, such special prohibition is necessary in order to protect spawning herring.

Halibut, March 1 to March 31, inclusive.

(Commissioner Babcock dissented from the last recommendation.)

TIDAL BOUNDARIES IN RIVERS, ETC.

The tidal boundaries we recommend should be summarized for ready reference, whereas they are contained in separate proclamations under the Fisheries Act, chapter 58, subsection 6 of section 8, and are not generally or clearly known. We would recommend that a small map be appended to the summary, clearly showing by a red line in each case where the tidal boundary is drawn, viz:—

Fraser River.—A line coinciding with Mission Bridge, thus replacing the former line drawn from the mouth of Sumas River to a point due north across the above-named stream (the Fraser River). (Proclamation:—January 31, 1905, in place of that dated July 25, 1889).

Skeena River.—A line drawn from the island on the south bank to Rocky Point on the north bank.

Naas River.—A line drawn across the river at right angles from a place known as Rocky Point on the right bank thereof, immediately above Fishery Bay.

Cowichan River.—A line drawn from Serpentine Point to Cowichan Head.

Rivers Inlet.—From the Devil's Slide to a point on the opposite shore marked by a post bearing a white flag, placed there by authority of the fishery inspector during the fishing season.

PROHIBITED WATERS.

Victoria Harbour.—The use of all nets for fishing to be prohibited in this harbour.

Nanaimo Harbour and Departure Bay.—The use of all nets to be prohibited excepting that herring gill-nets may be used under regulations.

GOVERNMENT BRANDS.

Salmon.—Every cannery should be supplied with a government stamp—a crown, with 'British Columbia' underneath it—this stamp to be used for marking cases when packed. An official form to accompany each stamp bearing that:—

(1) Authorized persons shall alone use the stamp.

(2) British Columbian packed goods of the best grade to be alone stamped.

(3) The stamp to be returned to the department at Ottawa, with the form properly filled in, testifying that the conditions have been observed.

(Commissioners Sweeny and Babcock, while not objecting to the principle, expressed the view that this proposal is not workable.)

Herring.—(1) That a stencil brand consisting of a crown surmounting a maple leaf be adopted as the Canadian government brand, for Canadian-cured herring of the right standard.

(2) Special fishery officers shall be authorized to affix the brand on barrels or half-barrels, (made in accordance with the Dominion Fisheries Bulletin, 1906, as detailed on page 7 of that bulletin), and containing standard pickled herring.

(3) That the brand be affixed only to such standard pickled herring as are (*a*) of good quality, not torn or broken, (*b*) gutted with a knife, and cured and packed within twenty-four hours after being caught.

(4) Such standard herring shall be 'full' or 'mattie' herring, and shall be gutted, roused, packed and pickled as set forth in the bulletin before-mentioned.

(5) The brand shall be affixed to packs of herring of which at least seven per cent have been examined thoroughly by the officer. The examination shall be alternate, *i.e.*, the first barrel shall be opened at the head end, the second barrel at the bottom, and so on until the requisite number have been picked out and examined. Pickled herring not up to the standard shall be judged unfit for branding, and the brand shall not be affixed.

EXPORT OF FISH.

Salmon.—All sockeye salmon to be frozen, canned, salted, cured, or smoked before being exported from the province of British Columbia. (Commissioner Brown objected to the omission of the provision agreed upon by a deputation of canners and fishermen at Ottawa, March, 1907, that the import of fresh sockeye salmon to any part of the province of British Columbia, south of the 51st parallel of North Latitude, should also be prohibited if the export of such salmon caught in gill-nets were prohibited, as is above recommended.

(See Appendix C. explaining the grounds of Mr. Brown's objections.)

Herring.—No fresh herring to be exported excepting herring taken by gill-nets and exported for immediate consumption, or fish which have been preserved in salt for a period of not less than nine days. Further, no herring shall be exported for the purpose of being cured, canned, or otherwise preserved, or of being converted into guano or oil outside the Dominion of Canada.

The onus of proof that any fish exported were caught in gill-nets shall rest on the possessor.

Respectfully submitted.

EDWARD E. PRINCE,
JOHN C. BROWN,
RICHARD HALL,
GEO. W. TAYLOR,
*C. SWEENY,
*JOHN PEASE BABCOCK,
Commissioners.

J. CHAS. McINTOSH,
Secretary of the Commission.

*In so far as the above recommendations are not in conflict with the views we have elsewhere expressed in this report they have our endorsement.

C. S.
J. P. B.

PART IV.

ADDENDA AND RESOLUTIONS.

ADDENDUM 1.—SUGGESTIONS OF THE COMMISSION TOUCHING THE INJURIES DUE TO HAIR SEALS OR HARBOUR SEALS.

Since the completion of Part I. of this report further information has been received by the commission as to the destruction of salmon by seals. Under the heading, 'Depredations of Seals,' reference is made on a previous page to the subject, and a suggestion is offered; but a definite recommendation is now made by which it is possible that the grievance of the fishermen may to some extent be met. Remaining in the open sea, while the salmon are running, the seals follow the last run into the Fraser river at the end of the sockeye season in October and November, and they are very numerous at that time.

We, as commissioners, suggest that two of the government patrol boats, using a suitable form of net, such as it is understood is used by the sealers of the Labrador coast, in the lower reaches of the river where the seals are most plentiful, would probably be able to destroy large numbers of them at very slight expense.

ADDENDUM 2.—RESOLUTION ON RESCINDING OF ORDER IN COUNCIL *re* CLOSURE OF FRASER RIVER SALMON FISHING IN 1908.

The commissioners are of unanimous opinion that immediate action should be taken in regard to the 1908 closure. They recommend that that part of the Order in Council dated February 2, 1905, prohibiting all fishing for sockeye salmon in the Fraser River district in the years 1906 and 1908, which is not already rescinded, should be rescinded forthwith, in view of the fact that the State of Washington has failed to enact similar legislation in the contiguous United States waters, and has now no power to do so, as the legislature of the State does not meet until the year 1909.

ADDENDUM 3.—RECOMMENDATION OF THE COMMISSION *re* FISH HATCHERIES, HATCHING METHODS, &C.

Salmon Propagation.—The commission desires to call particular attention to their recommendation that new hatcheries be built at suitable points on the tributaries of the Fraser river above the Yale Cañon, and also to what is recommended as to the propagation of varieties of salmon other that the sockeye, such as the quinnat or spring salmon, the cohoe, and the steelhead. Further, they beg to impress upon the department the importance of having the new hatcheries, when built, operated to their full capacity, and to this end that the officers be authorized to incur any necessary expense involved in obtaining eggs at points distant from the hatcheries, when the supply locally obtained in insufficient, as it will, of course, be for some time in the 'small run' years.

ADDENDUM 4.—RESOLUTION ON THE ESTABLISHMENT OF A PACIFIC BIOLOGICAL STATION.

The commissioners desire to express to the Honourable the Minister their hearty appreciation of his action in authorizing the establishment of a Biological Station at Nanaimo, Vancouver Island. The commissioners feel that in British Columbia there is an unequalled field for biological investigation, and they believe that the

operations of the station will prove of the very greatest value to the fishery industries of Canada. They would, therefore, strongly urge upon the Honourable the Minister the necessity of affording to the station liberal financial support.

ADDENDUM 5.—ACKNOWLEDGEMENT OF FAVOURS FROM PUBLIC BOARDS, ETC.

Further the Commissioners feel bound to acknowledge the aid and the many kindnesses received from public bodies and private individuals while carrying on their inquiries.

The Secretary of the Commission was instructed to formally thank the following public bodies and public officials on behalf of the Commisison,—

The Victoria Board of Trade, F. Elworthy, Secy.
Vancouver Board of Trade, W. F. Skene, Secy.
City Council of New Westminster, W. A. Duncan, Clerk.
Captain Holmes Newcomb, C. G. S. 'Kestrel.'
Captain Charles Hackett, C. G. S. 'Quadra.'
Captain T. Ackerman, patrol steamer 'Georgia.'
Inspector C. B. Sword, New Westminster.
Inspector E. G. Taylor, Nanaimo.
Inspector J. T. Williams, Port Essington.

ADDENDUM 6.—RESOLUTION ACKNOWLEDGING THE SERVICES OF THE CHAIRMAN, PROFESSOR PRINCE, DOMINION COMMISSIONER OF FISHERIES.

The Commissioners desire to have recorded upon the Minutes of the Commission their appreciation of the uniform courtesy and patience of the Dominion Commissioner of Fisheries, Professor E. E. Prince, in discharging his duties as Chairman of the Commission.

APPENDIX A.

INTERIM REPORT OF THE B. C. FISHERIES COMMISSION.

VICTORIA, B.C., Oct. 2, 1906.

To the Hon. L. P. BRODEUR,
Minister of Marine and Fisheries,
Ottawa.

SIR,—We, the members of the B.C. Commission whose signatures are appended to this report have the honour to present an interim report on certain matters of an urgent nature relating to proposed concurrent Fishery Regulations in the contiguous waters of the coast of Washington State and of British Columbia.

By the order in council, dated July 22, 1905, appointing us members of the said Fishery Commission we were empowered to hold conferences with the authorized United States representatives in the State of Washington, with a view to reaching some common ground of action, and to formulating some mutual fishery regulations for conservation protection of the salmon supply in contiguous waters. We were instructed to visit the centres of the salmon industry, and the various fishing localities on both sides of the international line. We were also instructed to take evidence at public sittings in British Columbia, and make such inquiries and investigations as appeared necessary in order to enable us to make a report and recommendations with a view to enable the Minister of Marine and Fisheries to submit to the government sanction regulations designed to preserve, protect and develop the fishing industries of British Columbia.

When on June 6, 1905, the late Minister of Marine and Fisheries (the Hon. Raymond Prefontaine) informed the Hon. the Governor of the State of Washington, by letter that a British Columbia Fishery Commission was about to be appointed to thoroughly investigate the salmon and other fisheries of the Pacific waters of Canada, he called attention to the fact that 'the interest of the salmon fisheries of Washington State are bound up with those of the Fraser River and the adjacent waters of British Columbia,' and it therefore 'appeared desirable that conferences of joint sittings should be held of the Canadian Commissioners and of a Commission representing the State of Washington.' 'No doubt you are aware' added the late Minister in his letter, 'of the widespread feeling that some such mutual conference should be held, with a view to the formulation of joint fishery regulations for the contiguous waters of the Straits of Georgia, Puget Sound and the Straits of Juan de Fuca.'

In his reply, dated Olympia, June 13th, 1905, the Governor (Hon. Albert E. Meade) stated that he would immediately appoint a commission composed of the Fish and Game Commission of the State and three other gentlemen familiar with the fishing industry, and he promised to forward the names of the commissioners 'to the end that an immediate place and date of meeting may be arranged at the earliest possible moment.' Subsequently other commissioners were added making the total number seven, while the B. C. Fishery Commission was arranged to consist of six members.

As authorized by the order in council referred to we held a series of seventeen public sittings for the hearing of evidence, and have visited various fishing localities on different parts of the coast, besides carrying on a number of special investigations by means of small committees. We have held numerous private executive sittings, have met in conference with the United States representatives from the State of Washington, and have made visits to selected centres and to fishing grounds on both sides of the international line. At these conferences we have thoroughly

and exhaustively discussed the questions involved so that the Canadian position, on the points in controversy, has been made clear to the Washington Special Fishery Commission, and the position of the Washington State representatives has been made clear and well-defined to us.

To briefly review our proceedings we beg to say that after preliminary exhaustive sittings in Victoria on September 19 and 20, and the appointment of committees, one to investigate the Herring Fishery, especially near Nanaimo, the other to inquire into and report upon salmon fishing in the Fraser River with special reference to the fishing above Westminster Bridge, an adjournment was made until November.

On November 10 and 11, 1905, we met the Washington Special Fishery Commission in Seattle, and held a lengthy preliminary conference on the more important points arising in connection with the Sockeye fishery in the Fraser River and the contiguous waters of the Straits of Georgia, Puget Sound and the Straits of Juan de Fuca.

As public sittings, up to that date, had not been held by us, and no evidence had been taken, and as the Washington State representatives had not formulated their views or recommendations *re* mutual fishery regulations, it was agreed to adjourn to meet at a future convenient date in Vancouver, B.C. with the understanding that statistical and other information should be prepared by both commissions, and reports and other documents mutually furnished by one commission to the other.

At the conclusion of the Seattle conference, the chairman of the Washington Special Commission (Mr. T. J. Gorman) said 'we believe that a great deal of good has been accomplished in the meetings. We feel, with the provisions made for data to be furnished at the future conference to be held, that we cannot without difficulty arrive at a satisfactory conclusion in regard to the matters in which we are all so much interested.' Further executive meetings were held in November and December, and a series of public sessions, at which 112 witnesses gave evidence, and a large mass of valuable testimony was received, were held.

The opening public sessions of the commission were held in the centre of the Fraser River fishing industry, viz., New Westminster, on November 14th and 15th. By kind invitation of His Worship the Mayor (Mr. W. H. Keary) and City Council, the sittings took place in the spacious city hall chambers, and owing to the very large and representative attendance of fishermen, canners and the public, the accommodation was taxed to its utmost, and great interest was evinced in the proceedings. The further sittings continued as follows:—November 16th and 17th, Board of Trade Rooms, Vancouver; 21st and 22nd, Board of Trade Rooms, Victoria; 23rd and 24th, Court House, Nanaimo; 27th, Provincial Agent's Offices, Duncans, Cowichan River; December 6th, Council Chamber, New Westminster.

In addition to these seventeen public sittings, which were in many cases lengthy, and elicited most valuable detailed evidence from the leading fishermen, canners and representative men, there were held a number of private executive meetings, viz., on November 7th and 8th at the Driard Hotel, Victoria; November 18th, Vancouver Hotel, Vancouver, and Dec. 8th, at the same place, when certain departmental officials gave important evidence to the commission and a full discussion of salient points took place, resulting in the drawing up of certain interim recommendations which were duly forwarded to Ottawa. The commission adjourned on Dec. 8th, to meet again in 1906.

The adjourned sittings were resumed in Vancouver on June 20th, when arrangements were completed for making a tour of the U. S. salmon traps and certain canneries in Puget Sound, and the salmon traps in British Columbia waters, west of Discovery Island, Haro Straits, near Victoria.

This tour, in company with members of the Washington Commission from Bellingham to Anacortes, and by Rosario Strait to Point Roberts and Blaine, yielded valuable information, and our visit, immediately thereafter the B. C. traps to Juan de Fuca Strait, put the British Columbia Commission in possession of the full facts relating to the fishing operations and fishing localities. During the tour it was finally arranged

that the further proposed international conference should be held in Vancouver on September 19. At this conference held in the Board of Trade rooms, Vancouver, the members of the B. C. Commission presented a concise statement of their views, and a draft of recommendations agreed to by a majority of the commissioners on the understanding that the Washington Special Fishery Commission had some adequate recommendations to make at the Washington State Legislature, with a view to the mutual preservation of the sockeye salmon in contiguous waters.

The principal contention of the Washington State representatives was that thirty-six hours weekly close time in their waters is rendered ineffective owing to alleged excessive gill-netting carried on in the Fraser river, above New Westminster Bridge (that is to say between New Westminster Bridge and Mission Bridge, a distance of 38 miles). The Washington Special Fishery Commission stated their willingness, as far as they are able, to secure the continuance of the thirty-six hours close time each week in their waters, if all gill-neting for sockeyes were prohibited in the Fraser river between the two bridges named. Such a prohibition, it was claimed would ensure preservation, and possibly, the increase of the supply of sockeye salmon in the Fraser river.

At the second mutual conference held on the 19th September, in the rooms of the Board of Trade, Vancouver, we, as a Dominion Fishery Commission, informed the Washington Special Fishery Commission, that our commission was unable to make a recommendation in favour of the prohibition just mentioned; but that we are unanimous in our desire to protect and preserve the supply of sockeye salmon, and to secure their increase by all practical means.

The following are the conclusions which we, as a commission, have reached, and which we desire to lay before the Honourable the Minister in our present interim report (to which, however, Mr. Commissioner Brown, who strongly objects to one recommendation, has added a minority report).

RECOMMENDATIONS.

(1) DEPTH OF SALMON GILL-NETS IN FRASER RIVER AND STRAIT OF GEORGIA.

We are of the opinion that in the Fraser river, and the adjacent area outside where sockeye fishing is carried on, no salmon gill-net should exceed sixty meshes in depth.

This suggested maximum limit in the depth of net, enforced as a universal condition in the waters referred to, would prevent abuses. Very deep nets have been used in recent years near the mouth of the Fraser river, as shown by the evidence. Such deep nets (75 to 100 meshes or more in depth, it is stated), might be surreptitiously used in the river, but if no deeper nets than those of sixty meshes are permitted there is no risk of such abuse. The limitation of the depth of gill-nets will facilitate the ascent of increased numbers of salmon.

(2) MAXIMUM LENGTH OF NET SUGGESTED.

We favour the limitation of the length of salmon gill-nets to 150 fathoms (300 yards). This was formerly the length of net universally used in the sockeye fishery; but for some years double the length, viz., 300 fathoms (600 yards) have been permitted outside of the mouth of the Fraser river. To prevent the risk of abuse arising from the alleged use of long nets inside the Fraser river, a length of 150 fathoms is recommended as a maximum limit.

(3) MISSION BRIDGE FISHING LIMIT.

The suggested alteration of the salmon fishing limit at Mission Bridge on the Fraser river, we cannot recommend. The limit was formerly at Sumas and was

brought down to Mission, but the local resident fishermen on the Fraser river between Westminster Bridge and Mission Bridge protest strongly against a further reduction of the fishing limits in the river. It is claimed that owing to bars, shoals, snags, &c., the fishing area is greatly reduced by natural conditions, and that the extent of the netting done has been exaggerated. We, therefore, recommend that the two following conditions be enforced in that portion of the Fraser River waters between the Mission Bridge and New Westminster Bridge:

(*a*) Gill-nets privileges for sockeye fishing above New Westminster Bridge to be rigidly confined to British subjects actually residing on either side of the river between Mission Bridge and New Westminster Bridge, and the words 'License valid between New Westminster Bridge and Mission Bridge' shall be conspicuously stamped across the face of each such license.

(*b*) No such special license shall be issued through the Inspector of Fisheries or his officers, unless the applicant is known to him, or them, to be a British subject, and a *bona fide* resident above (that is, east of) New Westminster Bridge on the Fraser river, for a period of not less than six months prior to the date of the granting of such special license.

(4) LONGER WEEKLY CLOSE TIME IN 'OFF' YEARS.

In view of the fact that each fourth year is recognized as a 'big' year, characterized by an abundant run of sockeye salmon, while the three intervening years are recognized as 'off' years, when the run of sockeyes is small, we recommend that a weekly close time be enforced in the Fraser river, from its mouth to Mission Bridge, from 6 a.m. on Saturday until 6 p.m. on the Monday following, from July 1 to August 25, in each of the three intervening years, known as 'off' years, or years characterized by diminished, 'poor,' runs of sockeyes. During the period named (July 1 to August 25, both days inclusive) and within the limits named (Fraser river mouths to Mission Bridge), this weekly close time shall be substituted for the weekly close time at present in force, being convinced that such regulation is necessary for the preservation of the sockeye salmon, but the present weekly close time (6 a.m. Saturday to 6 p.m. Sunday) shall be enforced outside the mouths of the Fraser river, while in fourth years, the so-called 'big' years, it shall apply in all the specified waters inside and outside the Fraser river.

(5) INCREASED PATROL SERVICE, FRASER RIVER DISTRICT.

We recommend that in view of the great expansion of the salmon industry, additional patrol officers should be appointed, and that two or more speedy patrol launches be added to the present fishery patrol boats on the Fraser river.

(6) METHOD OF CLOSING TRAP-NETS IN CLOSE SEASON.

We recommend that, by special regulation, a small meshed apron, which can be lowered or raised, shall be provided in each salmon trap, so that such salmon trap can be effectively closed, and the entrance of salmon wholly prevented during the weekly, or other, close time. The Washington Special Fishery Commission concur in this, and are recommending a concurrent regulation of the same character in the State of Washington.

(7) ESTABLISH A LARGE MINIMUM FINE FOR TRAP VIOLATIONS.

We recommend that a minimum fine of $250 be specified for violation of the salmon trap regulation in British Columbia, thus making our law uniform with that which it is intended to establish and enforce in the State of Washington.

In addition to the foregoing recommendations, we, as a Commission, concurred in certain other recommendations to which the Washington Special Fishery Commission gave their adhesion. These recommendations, from an international point of

view, are most important, and we regard them as essential to an effective conjoint scheme of sockeye conservation in the contiguous waters of British Columbia and the State of Washington, with the exception of the clause numbered V, which is identical with the recommendation numbered '7'.

SUGGESTION *re* WASHINGTON STATE WATERS.

(I.) We are of opinion and fully agree with the recommendations of the Washington Special Fishery Commission, that the regulation contained in the Washington State Fishery Laws, prohibiting a trap owner from holding a salmon trap site unless a trap is erected and operated thereon, be amended so that a trap site granted to a trap owner may be held by such trap owner, provided that a trap-net be built or operated thereon for at least one season in four; provided, also, that an increased fee or rental be required to be paid in those years in which the trap is not operated on the site held.

(II.) We are of the opinion that to ensure the effective enforcement of the law, and to safeguard salmon trap owners against vexatious legal proceedings, the trial of cases of violation of the trap regulations in the State of Washington should be placed in the hands of the superior courts of that State.

(III.) We are of opinion that a close season for sockeye salmon should be enforced in the State of Washington from August 20 to September 10 (both days inclusive). This would afford necessary additional protection to the late schools of sockeyes and would ensure uniformity in the closing of the sockeye traps along the shores of the State of Washington.

(IV.) We are of opinion, and strongly stated this view at the international conference on Sept. 19th that the State of Washington Legislature should be urged to make a distinct and adequate appropriation for the proper enforcement of the laws framed for the protection and preservation of the salmon supply in the waters of the State.

(V.) We are of the opinion that the minimum penalty for a violation of the salmon trap laws should be $250, as smaller fines are held not to be deterrent. It may be in some cases profitable to pay a fine if of small amount, and commit the violation. We urge that $250 be the minimum penalty for violations of trap regulations referred to in the State of Washington, and we may point out that recommendation number 7 on page 7 of this report is on the same lines, and we have urged its embodiment in the Dominion Fishery Laws of British Columbia.

At the conclusion of the International Conference in Vancouver on September 19th we were assured by the members of the Washington Special Fishery Commission that the five recommendations immediately foregoing would be included in their report to be made at an early date to their State Government at Olympia. Copies of the report in question were promised by the Washington Commission to be supplied to the British Columbia Fisheries Commission as soon as possible. A copy of this Washington Special Fishery Commission Report will be forwarded to Ottawa by us as an addendum to this present Interim Report.

It is unnecessary to reiterate other recommendations, some of them of an urgent nature, contained in our three previous Interim Reports submitted on December 8th, June 26th and July 24th, referring to fishery matters in northern B. C. waters. etc.

In conclusion we beg to urge that the seven recommendations made in this report, if approved, may be embodied in the Dominion Fishery Regulations with as little delay as possible, and we beg respectfully to request that the Minister of Marine and Fisheries be pleased to forward a copy of this Interim Report to the Washington Special Fishery Commission. We are convinced that a copy of this Interim Report,

if placed in the possession of the Washington Special Fishery Commission will considerably further the efforts of that Commission and thus facilitate the establishment of regulations in the contiguous United States waters of the Puget Sound and the Strait of Georgia concurrent with those in the corresponding waters in British Columbia.

It is urgently desirable that such copy of this Interim Report be forwarded to the Washington Special Fishery Commission immediately. This urgency arises from the fact that the legislature of the State of Washington will assemble at Olympia in December, 1906, for its session, extending usually to the month of March and will not meet again for two years.

The Washington Special Fishery Commission strongly desire that a copy (or copies) of this Interim Report to be in their hands not later than the middle of December, when they will be taking the necessary steps for the embodiment in their State laws of the recommendations numbered I., II., III., IV. and V., as set forth in this Interim Report.

With regard to the minority report which is appended, we have knowledge of its contents and have no change to make in our recommendations, but simply reiterate the views stated in the body of this report.

Respectfully submitted,

EDWARD E. PRINCE,
Chairman of the Commission;

C. SWEENY,
GEO. W. TAYLOR,
RICHARD HALL,
JOHN PEASE BABCOCK.

APPENDIX B.

MINORITY INTERIM REPORT.

The minority report, presented by Mr. Commissioner Brown, is as follows:—

Had the majority of the Commission omitted from its report the recommendation to make the weekly close time on the river longer than that on outside waters, I should have contented myself with the remark that the limitations to residents of the right to fish above the New Westminster bridge should not apply to 'big run' years; and that, say, 75 meshes, instead of 60 only, should have been allowed in sockeye nets. The evidence taken by the Commission, I think, fully supports these contentions.

But against the recommendation to make the close time on the river twenty-four hours longer than on outside waters, I beg to enter the strongest protest.

The chief objections to it are:

(1) It would subordinate the right of our own fishermen to the profit and advantage of the Puget Sound fishing interests to an extent which the latter neither asked for, nor expected, and in return for which we should receive nothing.

(2) It would be a most unjust discrimination in favour of the Japanese, as against the white fishermen, and would make it unprofitable for most of the latter, who are settled along the river side, to continue in the business.

(3) Its value as a measure of protection (if it were necessary, which it is not) would be doubled by reversing it; making the longer close time outside the river.

(4) It was brought before the Commission in executive session at almost the last possible moment. There was no opportunity to take evidence with regard to it.

Taking these points in order, I beg to cite:—(1) The statement made by Mr. Gorman (chairman) and the other members of the Washington Commission (see report proceedings International Conference, page xii). Mr. Gorman said: 'at the expiration of the thirty-six hours you take your traps and nets and hike up above the New Westminster bridge, or as far up as the fish get; there put out your gear, and capture fish that otherwise would have got to the spawning grounds.' And again (page xvl.): In other words, you have not confined your fishermen between Mission bridge and the New Westminster bridge to the *gear that figures there from day to day.* You take the gear which ordinarily is operated near the mouth of the river, and follow the fish up that have been permitted to escape from this gear during the thirty-six hours in order to intercept them.' And both Mr. Gorman and Mr. Deming (page xvii.) make it plain that their complaint referred only to 'small run' years. In Mr. Deming's words, 'In the big year, I do not care for any close season at all, neither on the Fraser nor here—there would be fish enough.' If words have any meaning, the words that I have quoted mean that the American Commission asked and expected only that we should limit fishing above New Westminster bridge to resident fishermen. In Mr. Gorman's words, 'to the gear that figures there from day to day.' They told us that they knew all about our methods and operations. 'We have been careful,' said Mr. Gorman (page xii.), 'to be well informed,' yet they did not suggest any other restriction such as those on depth and length of nets, for example. In return for the limitations of fishing above the New Westminster bridge, they were willing to continue their weekly close time, and to make it effective, and that is all they promise now. This was emphasized by the proceedings of a convention of the Puget Sound fishing interests, held in Seattle a month after our conference (in December, 1905). The proposed 'close year,' in 1906, was condemned, and the weekly close time approved, by a strong majority.

(2) Practically all the Japanese fish outside the mouth of the river, while a large majority of the fishermen, whose aggregate capital invested in boats and nets is estimated at some $250,000, fish in the river. They would, of course, have the legal right to go outside, but as that would involve a boat journey, out and back, of from 20 to 30 miles, few of them could profitably do so.

The sockeye season lasts for six weeks of five and a half days each; the proposed regulations would cut the week on the river to four and a half days, and would therefore, on its face, give the Japanese thirty-three days' fishing, as against twenty-seven for the white fishermen. I say 'on its face,' because its real effect would be much more far-reaching. Examined on the question of extending the close time above the New Westminster bridge only 12 hours, J. J. Wilson, fishery guardian, said (report of evidence, page 55, answering Mr. Hall): 'Well, we'll say that the close time above New Westminster bridge was extended until 6 o'clock Sunday night,—there would be no fish here on Monday morning—the gates would be closed.' The same witness said (page 50, answering Mr. Taylor), 'the mouth of the river is completely barred throughout the week.' Similar evidence was given by a number of witnesses, fishermen, fish-dealers and canners. Of the points as to which the Commission took evidence, none was more clearly established than that of the effective barring of the river mouth by nets. If then, these barriers be in operation at the mouth of the river for twenty-four hours before fishing in the river begins, it follows that the latter would be of little value. The practical effect of the regulation would be to close the river against fishing, the fish being caught outside, by seines and traps, and by those fishermen who come to the river for the sockeye season only, the great majority of whom are Japanese. Our resident fishermen would be driven out of the business.

(3) Side channels, shoals and snags make it impossible to bar any part of the river by nets. Of the fish which fairly get into the river, a good percentage will get through to the spawning grounds. This was repeated by witness after witness, and is proved by the experience of the present season. On the other hand, it is possible to establish a pretty effective barrier of nets on the Sandheads, just outside the river. Plainly therefore, if the close time is to be lengthened in any one part of the Fraser

waters, as a measure of protection, the longer close time should be outside the river. But the proposed regulation is not necessary. The run of this season (1906) was a small one; fishing above New Westminster bridge was in full swing; deep and long nets were in use, and yet there were in the hatchery pens at the beginning of September, almost enough sockeyes to stock all the Dominion hatcheries to their full capacity, and the sockeye have been running in considerable numbers during the whole of the month.

(4) On this point I do not care, in an official report, to do more than cite the fact that a recommendation (previously assented to) to keep the ship channel at the mouth of the river free from nets (a regulation of considerable value as a protective measure, and which would have been of some advantage to our fishermen) was struck out, and this drastic recommendation, the effect of which would be to drive hundreds of the best class of our fishermen out of the business, was substituted, and brought before the commission, as I have said, at the last moment.

In conclusion, I beg to point out that every restriction proposed operates, or would operate, to the disadvantage of our resident white fishermen, and to their disadvantage only, except, perhaps, the abolition of a double length net.

All of which is respectfully submitted.

JOHN C. BROWN.

VICTORIA, B.C., October 2nd, 1906.

APPENDIX C.

GROUNDS OF COMMISSIONER J. C. BROWN'S DISSENT NOTED IN THE 'RECOMMENDATIONS.'

There are four concerns on the Fraser at New Westminster which export salmon (spring, coho, steelhead, but not sockeye) in ice or frozen.

Three of these obtain their fish from gill-net fishermen on the river, the fourth (which is owned by the British Columbia Packers' Association) gets most, if not all, of the salmon it exports from the traps and the northern waters—Tobi Inlet chiefly.

The gill-net fishing is done by a body of regular fishermen—almost all white men—who are permanent settlers. They number about 300 and are the owners of the nets and boats they use. Their average equipment is one net of 5¼-inch mesh for sockeye; one of 7-inch mesh for spring and coho salmon; and one of 8-inch mesh for use in early summer when there is a run of extra large quinnat; and, of course, a fishing boat.

This year (1907), using their 7-inch nets, which do not catch sockeye, these men earned from $15,000 to $20,000 during the time—August 25 to September 15—in which it is proposed to bar the use of these nets. The fish caught were coho salmon and dog salmon, the former of which were at that time running in considerable numbers and of prime quality.

In this report (Part I.) under the head 'Scarcity of Labour,' the commission says:—

The scarcity of labour is one of the most serious difficulties facing the important salmon industry. The Indian labour was always somewhat variable..... while white labour, having been drawn off to other fields.....is practically not to be had to the extent that the growing fisheries require. Salmon fishing has always been an uncertain field for the worker, and in poor years the catches of individual fishermen, while remunerative, have often been very small, and the period over which the fishing extends is too short (six or ten weeks for the main runs) to justify men with steady work forsaking such work for temporary river fishing.'

The proposal to bar all nets in this annual close time, August 25 to September 15, (which is for sockeye only), would still further reduce the fishing season; would indeed deprive this small class of regular fishermen of half the coho season, compelling them either to turn to some other business and thus still further reduce the already depleted force of white men regularly engaged in fishing, or to keep themselves and their plant idle while thousands of fish in season and in prime condition were swimming past their doors.

As to the effect of the proposed regulation on fresh fish exporting concerns, three of them would be deprived of a business which this year justified the payment (in wages to fishermen alone) of $5,000 to $6,000 a week, and a monopoly of that business would be given for the time being to the larger establishment owned by the British Columbia Packers' Association, which draws its supplies of fish from the traps and other sources not open to the smaller firms.

J. C. B.

APPENDIX D.

DRAFT OF SUGGESTED BILL AND NEW CODE OF FISHERY REGULATIONS.

For the sake of brevity, and to facilitate the necessary action, the suggested changes in the existing statutes and regulations are set forth below in the usual formal manner:—

BILL

AN ACT TO AMEND THE FISHERIES ACT.

His Majesty, by and with the advice of the Senate and House of Commons, enacts as follows:—

(1) That section 17 of the Fisheries' Act, chapter 45 of the Revised Statutes of Canada, be rescinded, and the following substituted therefor:—

17. The minister, or any fishery officer duly authorized to do so, shall have power to define the tidal boundary of the estuary fishing for the purpose of this Act.

(2) That section 21 of the Fisheries' Act, chapter 45 of the Revised Statutes of Canada, is repealed, and the following substituted therefor:—

21. No one shall fish for or take salmon in any tributary, creek or stream which salmon frequent to spawn, or within two hundred yards of the mouth thereof.

(3) That section 30 of the Fisheries' Act, chapter 45 of the Revised Statutes of Canada, is repealed.

(4) Sub-section 14 of section 47 of the Fisheries' Act, chapter 45 of the Revised Statutes of Canada, is repealed, and the following is substituted therefor:—

14. From the time of low water nearest to six of the clock in the afternoon of every Saturday to the time of low water nearest to six of the clock in the forenoon of every Monday in tidal waters, and from six of the clock in the afternoon of every Saturday until six of the clock of the forenoon of the following Monday in non-tidal waters, all sedentary fishing stations and weirs, and all pound and trap nets, seines, gill-nets and other apparatus used for catching fish, whether under license or not, shall be so raised, closed or adapted as to admit of the free passage of fish, through, by or out of such apparatus, or being so effectively closed as to completely obstruct and prevent the entrance of fish into such apparatus; and during such close time no one shall catch fish in such apparatus, whether under license or not.

(5) That section 48 of the Fisheries' Act, chapter 95 of the Revised Statutes of Canada, is repealed, and the following substituted therefor:—

48. No one shall use purse seines for the capture of fish in any of the waters of Canada; provided that the minister may issue special licenses for the use of purse seines for the taking of salmon in certain waters of the province of British Columbia, specified in said license.

(6) That section 50 of the Fisheries' Act, chapter 45 of the Revised Statutes of Canada, be rescinded, and the following substituted therefor:—

50. In the Provinces of British Columbia, Manitoba, Saskatchewan and Alberta and the Yukon Territory,

(a) every ditch, channel, or canal, constructed or adapted for conducting water from any lake, river or stream, for irrigating, manufacturing, domestic or other purposes, shall be provided at its entrance or intake with a fish-guard or a metal or wire grating, covering or netting, so fixed as to prevent the passage of fish from any lake, river or stream into such ditch, channel or canal;

(b) such fish-guard shall have meshes or holes not more than three-eighths of an inch in diameter, and shall be built and maintained by the owner of such ditch, channel or canal, subject to the approval of the minister, or of such officer as he from time to time appoints to examine it;

(c) the owner of such ditch, channel or canal shall maintain such fish-guard in a good and sufficient state of repair, and shall not permit its removal except for renewal or repair; and during the time such renewal or repair is being effected, the sluice or gate at the intake or entrance shall be closed and the passage of fish into the ditch, channel or canal prevented.

(7) That section 51 of the Fisheries' Act, chapter 45 of the Revised Statutes of Canada, is repealed, and the following substituted therefor:—

51. No one shall catch, fish for, take, buy, sell, possess or export any fish for the purpose of converting the same into manure, guano or fertilizer, or for the manufacture or conversion of such fish into oil or manure or other fertilizing products, excepting under authority of a special license or permit granted by the Minister of Marine and Fisheries for the taking and utilization of certain fishes specified in such license.

(8) That section of the Fisheries' Act, chapter 45 of the Revised Statutes of Canada, is repealed, and the following substituted therefor:—

94. Except as herein otherwise provided, everyone who violates any provision of this Act, or of the regulations under it, shall be liable to a penalty of not less than two hundred and fifty dollars ($250) and costs, and not more than one thousand dollars ($1,000) and costs; and, in default of payment, to imprisonment for a term not exceeding three months; and any fishery officer or justice of the peace may grant a warrant of distress for the amount of such penalty and costs.

REVISED CODE OF REGULATIONS RECOMMENDED.

The commissioners recommend the adoption of a revised code of fishery regulations on the lines indicated below. Hence it follows that all the existing fishery regulations in the province of British Columbia, established by orders in council up to the present date, be rescinded, and that the following may be substituted in their stead:—

(1) No fishery license in British Columbia shall be granted to any person unless he is a British subject and resident in the province of British Columbia; and (a) he shall make application for such license on an official form, to be filled in with the necessary details required on such form, and shall deliver it to the local inspector of fisheries before the issue of any fishery license; (b) at the end of the fishing season he shall make a true return of his total catch of fish to the district inspector of fisheries, or the nearest fishery officer.

(2) No license shall be transferable unless by special permission obtained from the local inspector of fisheries.

(3) Indians and explorers in unorganized districts may take fish for purposes of food without license or permit; but they shall report to the nearest fishery officer the place and time and the quantity and kinds of fish taken for such food purposes.

(4) No new salmon cannery or salmon curing establishment shall be erected or shall commence operations unless the permission of the Minister of Marine and Fisheries has been obtained, and a canning license has been issued for such establishment; but each existing salmon cannery in the province of British Columbia shall be eligible and entitled to such license, the fee for which shall be fifty dollars ($50) per annum.

(5) No license for a salmon cannery or salmon curing establishment shall be issued unless favourably reported on as to its sanitary condition by the inspector of fisheries in the district, or by some officer authorized for the purpose, who shall make an annual inspection of all canneries and salmon curing establishments, and shall report to the Department of Marine and Fisheries at Ottawa, at the close of each season, on the cleanliness, water supply and other necessary conditions of each cannery or curing establishment; such report to be made on an official inspection form, stating the necessary details as to the capacity, season's pack, number of hands employed and other particulars.

GILL NET LICENSES—SALMON.

(6) The annual fee for gill net or drift net license for the taking of salmon shall be five dollars ($5), and the maximum length of net used under such license shall be 150 fathoms (300 yards); the depth or vertical breadth shall not exceed sixty meshes, and the size of the mesh shall be seven inches extension measure, or in sockeye salmon nets five and three-quarter inches extension measure; and nothing shall be done to practically diminish the size of the meshes specified.

HERRING.

(7) The annual fee for a gill net or drift net for the taking of herring or pilchard shall be two dollars and fifty cents ($2.50), and the maximum length of net used shall be 200 fathoms (400 yards); the size or mesh shall not be less than two and a half inches extension measure.

STURGEON.

(8) The annual fee for a gill net or drift net license for taking sturgeon shall be two dollars and fifty cents ($2.50); the maximum length of net shall be 150 fathoms (300 yards); and the mesh shall not be less than twelve inches extension measure.

SMELT AND SARDINE.

(9) The annual fee for smelt and sardine gill net or drift nets shall be one dollar.

OTHER FISH.

(10) The annual fee for gill nets or drift nets for fish other than those already specified shall be one dollar.

SALMON TRAP NET.

(11) The annual fee for a salmon trap net license, either staked or floating, shall be seventy-five dollars ($75). Each net shall be located on a definite site specified on the license, and shall be at least four hundred fathoms distance from the nearest adjacent net. No salmon trap net shall have a mesh less than six inches extension measure in the leader or lead, or less than two inches extension measure in the heart, crib and pot.

SALMON PURSE SEINE.

(12) The annual fee for a purse seine license for taking salmon only shall be fifty dollars ($50), and the maximum length of such net shall be 500 fathoms (1,000 yards), and the minimum mesh shall be three inches extension measure. No purse seine license shall be issued in any harbour, or in any reserved areas specified by the district inspector of fisheries.

SALMON DRAG SEINES.

(13) The annual fee for a salmon drag seine license shall be twenty-five dollars ($25), and the maximum length shall be 300 fathoms (600 yards), and the minimum mesh shall be three inches extension measure.

HERRING DRAG SEINE.

(14) The annual fee for a herring drag seine license shall be fifty dollars ($50), and the maximum length of net shall be 100 fathoms (200 yards), and the minimum mesh shall be one-inch extension measure.

(15) Not more than one net shall be in use or operation under any net license; and in the case of a licensed gill net, such net shall be used or operated only by the person in whose name the license is issued.

SHELL FISH LICENSES—OYSTER.

(16) The fee for an annual oyster fishing license to fish on any specified natural oyster area or bed shall be two dollars and fifty cents ($2.50); and the fee for an oyster fishing lease, covering a term of years, shall be two dollars ($2.00) per annum per acre; and one of the conditions of any lease or license to be strictly observed by the lessee or licensee shall be the fishing or working in rotation of alternate portions of the areas specified, in such lease or license, and such fishing operations to be under the direction of the local officer. No oyster fishing shall be carried on during the months of May, June, July and August.

CLAM.

(17) The fee for a license for clam fishing shall be two dollars per annum. The annual fee for a lease covering a term of years for specified areas, requiring the lessees to work or fish the beds in alternate sections in rotation under the local fishery officer's supervision, shall be one dollar and fifty cents ($1.50), per acre.

ABALONE.

(18) The annual fee for an abalone fishing license shall be ten dollars ($10); and the minimum size of abalone to be legally taken shall be four inches across the shortest diameter of the shell. Every third year shall be a closed year for abalone fishing.

CRAB.

(19) The annual fee for a crab fishing license shall be two dollars and fifty cents ($2.50), and no crab shall be taken measuring less than six inches across the long diameter or greatest breadth of the shell.

PROHIBITIONS.

(20) Fishing with nets in the province of British Columbia, except under license, is prohibited.

(21) No sunk salmon nets or diver salmon nets shall be used in salmon rivers, or the estuaries or approaches to such rivers in British Columbia.

(22) Salmon gill net licenses shall be valid in any of the waters of British Columbia in which such nets are legal for the taking of salmon; but no licensee shall fish under such license in any fishery inspector's district other than the district in which it was issued until such license has been endorsed by the fishery inspector of the district.

(23) No nets of any kind shall be so used as to enclose any bay, cove, creek or inlet; but in all cases one-third of the width of such bay, cove, creek or inlet shall remain open and unobstructed for the passage of fish.

(24) Nets for the taking of fish are entirely prohibited in the fresh water lakes and the non-tidal waters of British Columbia.

(25) The use of bare, unbaited hooks or grapnels (cross lines) for the taking of sturgeon is prohibited.

(26) The export of fresh clams or other edible shellfish, other than oysters, from the Province of British Columbia, is prohibited provided they may be shipped to any province of the Dominion of Canada.

(27) No salmon under three pounds in weight shall be taken by means of nets in British Columbia, and if taken shall be returned to the water alive.

(28) No trout under eight inches in length shall be taken in the waters of British Columbia, and if taken, shall be returned to the water alive.

(29) No trout under three pounds in weight shall be bought, sold or exposed for sale in the Province of British Columbia.

(30) The introduction of non-indigenous or non-native fish alive into the waters of British Columbia, except by special permission of the proper authorities, is prohibited.

FISHING LIMIT, WESTMINSTER BRIDGE, FRASER RIVER.

(31) No person shall fish for sockeye salmon above New Westminster bridge on the Fraser river, unless under authority of a special license, which shall be issued only to British subjects actually resident on either side of the Fraser river above, that is east of, the New Westminster bridge; such license to bear conspicuously stamped across its face the words: 'This license valid between Westminster bridge and Mission bridge.'

CLOSE TIMES—SALMON.

(32) Weekly.

(a) From Saturday, six a.m., to Sunday at twelve, midnight, in all waters of British Columbia south of the 51st parallel of north latitude, and in the waters of the Skeena river and estuary north of the limits named, salmon fishing with nets is strictly prohibited; but salmon traps located west of Gouzales Point, Vancouver Island, are excluded from this prohibition; provided that in the years 1908, 1910, 1911, 1912, 1914, 1915 and 1916, known as 'small run' years or 'off' years this weekly close time shall be six hours longer, viz.: from Saturday, six a.m., to Monday, six a.m., in that part of the Fraser river between New Westminster bridge and Mission bridge.

(b) From Saturday at twelve, noon, to Sunday at twelve, midnight, in all waters of British Columbia north of the 51st parallel north latitude, but excluding the Skeena river and estuary, salmon fishing with nets is prohibited.

(c) From Friday six p.m. to Sunday six a.m. following, fishing with salmon traps west of Gonzales Point, near Victoria, Vancouver Island, is prohibited.

ANNUAL.

(33) Between November 30 and June 30 following, both days inclusive, or during such close times and close seasons as are otherwise provided, no gill nets for salmon having a mesh less than seven inches extension measure shall be permitted.

From August 25 to September 15, both days inclusive, no salmon nets of any kind shall be used in the Fraser river district.

ANNUAL FOR SPAWNING SALMON.

(34) The taking of spring salmon or quinnat and of sockeye salmon from October 1 to November 15, both days inclusive, is prohibited; the taking of coho, dog salmon and humpback salmon from November 15 to January 1 following, both days inclusive, is prohibited.

ANNUAL FOR OTHER SPAWNING FISH.

(35) The taking of steelheads from November 15 to March 25 following, both days inclusive, is prohibited in non-tidal waters; but in tidal waters from January 1 to March 25, both days inclusive.

The taking of trout of all kinds is prohibited from November 15 to March 25 following, excepting in the waters of the interior of the province of British Columbia, east of parallel 120 west longitude, where the taking of trout of all kinds from November 15 to May 1 following is prohibited.

The taking of herring from March 1 to April 30, both days inclusive, is prohibited; but the close season may commence at an earlier date under authority of the district inspector of fisheries in any locality in which that officer may decide that such prohibition is necessary in order to protect spawning herring.

The taking of halibut from March 1 to March 31, both days inclusive, is prohibited.

TIDAL BOUNDARIES IN RIVERS.

(36) The tidal boundaries in the rivers specified below shall be defined as follows:

(*a*) Fraser river; a line coinciding with Mission bridge.

(*b*) Skeena river; a line drawn from island on the south bank of the river to Rocky Point on the north bank of the river.

(*c*) Naas river; a line drawn across the river from Rocky Point to a projecting point on the right bank of said river immediately above Fishery bay.

(*d*) Cowichan river; a line drawn from Serpentine Point to Cowichan Head.

(*e*) Rivers Inlet; a line drawn from the Devil's Slide to a point on the opposite shore marked by a post bearing a white flag, placed there by authority of the district fishery inspector during the fishing season.

PROHIBITED AREAS.

(37) Fishing by means of nets of any kind or description is prohibited in—

(*a*) the waters of Victoria harbour, inside of an imaginary line from Macaulay point to Clover point, and embracing all the waters of the harbour to Victoria arm, and including the inlet;

(*b*) the waters of Nanaimo harbour and Departure bay adjacent thereto; provided, however, that herring gill nets are permitted in Nanaimo harbour and Departure bay.

GOVERNMENT BRANDS.

SALMON.

(38) Every case or package of salmon packed in British Columbia, which is determined by an inspector of fisheries, or person duly authorized, to be of the best grade, shall bear a government stamp, consisting of a crown with the word 'British Columbia' underneath, if the packers of such canned salmon apply for authority to affix this brand.

The branding shall be carried out under the following conditions:—

(a) The Government shall supply an official stamp or stencil to approved applicants;

(*b*) authorized persons in the employ of such applicants shall alone use the stamp for branding cases;

(*c*) all official stamps and stencils shall be returned to the Department of Marine and Fisheries at Ottawa, with an official form properly filled in, certifying that the stamp has been used only for marking cases of salmon of the best grade, and by a person duly authorized by the canner, and stating the number of cases stamped.

HERRING.

(39) Barrels or packages of cured herring, which shall be determined by the district inspector of fisheries or other authorized officer to be of the proper grade, shall bear an official government stamp, if application be duly made by the packer thereof, under the following conditions:—

(*a*) the stamp or brand, consisting of a crown surmounting a maple leaf, shall be sanctioned by the government for branding barrels or packages of Canadian-cured herring of the right standard;

(*b*) the barrels, half-barrels or other packages, made in accordance with the Dominion Fisheries' Bulletin of 1906, and detailed on page seven of the said bulletin, shall be branded by fishery officers, or authorized persons, on application; and provided that the cured herring are of the right standard;

(*c*) the brand shall not be affixed by such officers to herring, which, on examination, are found to be not of good quality, or to be torn or broken; and such herring must have been gutted with the proper knife and cured and packed within twenty-four hours after being caught;

(*d*) standard herring, in order to be entitled to be branded, shall be 'full' or 'mattie' herring, and shall be gutted, roused, packed and pickled as set forth in the Dominion Fisheries' Bulletin of 1906 before mentioned;

(*e*) the branding shall be affixed to the packages of herring only, of which at least seven per cent have been examined by a duly authorized officer; such examination shall be alternate, that is, the first barrel shall be opened at the head-end, the second barrel at the bottom, and so on, until the required number of barrels have been examined. Pickled herring not up to the standard shall not be branded.

PROHIBITION OF EXPORT.

(40) (*a*) *Salmon.*—No sockeye salmon shall be exported from the Province of British Columbia, except in a frozen, canned, salted, smoked or cured condition.

(*b*) *Herring.*—The export is prohibited of fresh herring from British Columbia, or of herring which have been preserved in salt for a period of less than nine days, or of herring of any kind intended for curing, canning or otherwise preserving, or converting into guano, fish fertilizer or oil outside or beyond the boundaries of the Dominion of Canada, provided always that fresh herring taken in gill-nets in the waters of British Columbia may be exported in a fresh, unsalted condition for immediate consumption; and the onus of proof that such fish so exported were taken by gill-nets shall rest on the possessor or possessors of such fish.

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