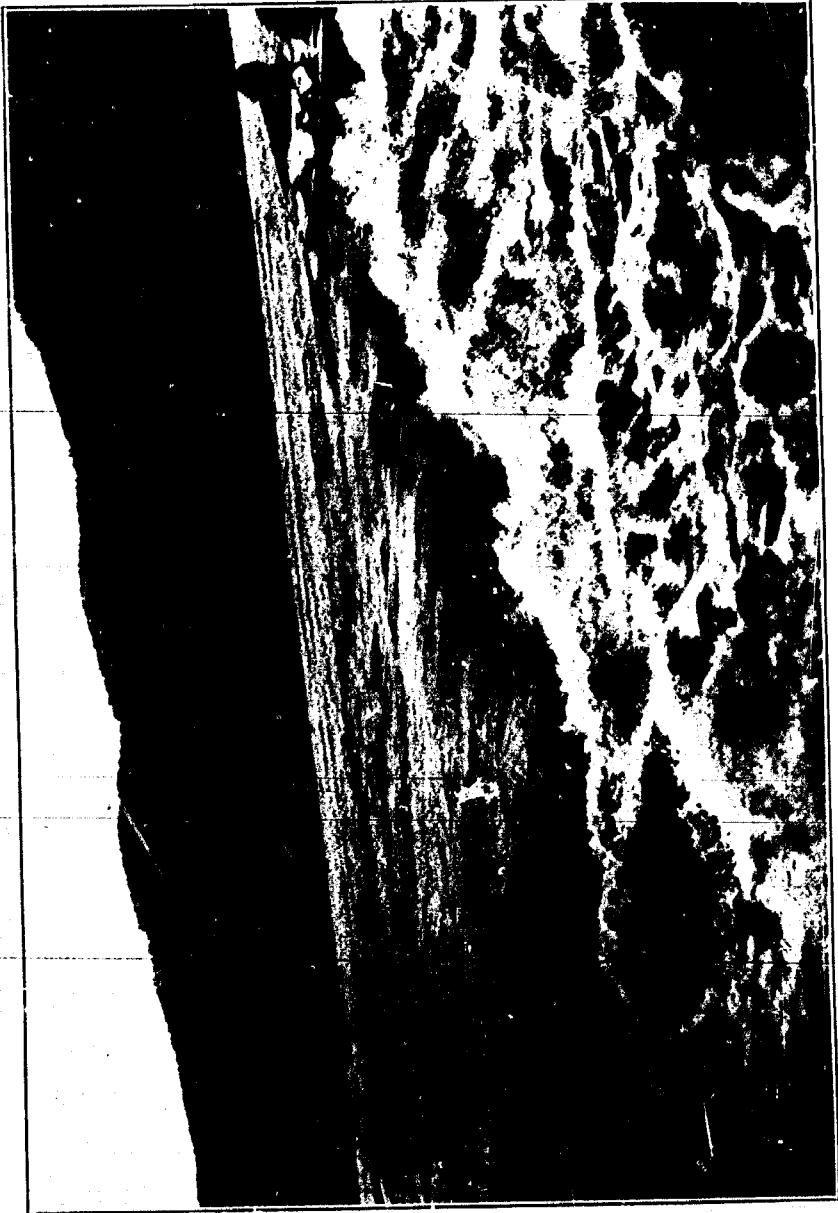


*Frontispiece.*



Atlinbasca River. The Cascade showing Snow descending.

**DOMINION  
ALBERTA AND SASKATCHEWAN  
FISHERIES COMMISSION**

1910-11

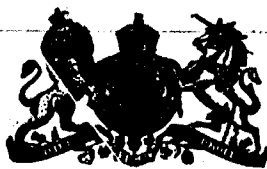
**REPORT AND RECOMMENDATIONS  
WITH APPENDICES**

**COMMISSIONERS :**

PROFESSOR EDWARD E. PRINCE, LL.D., F.R.S.C., &c., Ottawa.  
*Chairman.*

HON. THOMAS H. MCGUIRE, LL.D., Prince Albert, Sask.

Dr. EUSTON SISLEY, M.D., Calgary, Alberta.



**OTTAWA  
GOVERNMENT PRINTING BUREAU  
1912**

# ALBERTA AND SASKATCHEWAN FISHERY COMMISSION

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**PREFATORY NOTE BY PROFESSOR E. E. PRINCE, LL.D., F.R.S.C., &c.,  
DOMINION COMMISSIONER OF FISHERIES AND CHAIRMAN OF THE  
ALBERTA AND SASKATCHEWAN FISHERY COMMISSION.**

The report which follows was presented personally by the three commissioners to the Hon. J. D. Hazen, Minister of Marine and Fisheries, in Ottawa, in December last, and consists of seven parts—two additional parts (the evidences and appendices), it was decided to issue separately, and they are not yet ready for the press.

The introduction to the report, as the table of contents shows, includes a reference to the scope of the commission—a scope which for extent and complexity has been rarely if ever exceeded by the task entrusted to any commission of the kind. Owing to the vast geographical area given the commission to investigate and report upon, and the extent and widely-spread character of the waters visited, the labours of the commissioners were of an unusually extensive nature. The importance of these north-west fisheries so distant from the sea, in view of the vast population ceaselessly pouring into the fertile plains and valleys of the two provinces of Alberta and Saskatchewan, and the urgent demand, growing daily, for supplies of food, of which fish form so desirable an element, is rightly insisted upon in the report. Then follows a review of the kinds of fish occurring and a list of the popular and scientific names of the various species.

The part designated Part I. deals with the numerous questions arising in connection with the utilization of the fishery resources for domestic and market purposes; and Part II. treats of the phases of the protection and improvement of the fisheries, especially by hatcheries and by more effective patrols.

Parts III., IV., and V., treat of the handling of fish, preparations by curing, smoking, &c., and the export question, but especially the placing of good qualities of fish on the Canadian markets, instead of the 'culls' or badly handled and often repulsive fish usually sent to our cities and towns.

Part VI. deals with game fish, a most important subject in waters such as those of Alberta, in which unsurpassed game fish occur. Black bass planting, trout hatchery work, &c., are included, and the concluding section of the report refers to the nature of the work of the commission in 1910 and 1911, and points out the vastness and responsibilities of the task given to the commission to perform, and the arduous, often perilous experiences through which the commissioners passed when on their visits to remote waters usually difficult of access, and to be reached only by dangerous trails abounding in muskegs, or by ascending swift rapids, and little-known streams.

As chairman I can testify to the earnest and laborious work performed by my colleagues, and to the special qualifications, professional in the one case, and judicial in the other case, which they brought to their important task.

I would, as chairman, also add a word of testimony to the aid given by the Inspector of Fisheries, Mr. E. W. Miller, of Fort Qu'Appelle, who has special knowledge of the western waters gained during many years official tours of inspection; and I must also mention that the plates illustrating the report are all from photographs taken on the commission's tour by Dr. Sisley.

OTTAWA, January, 1912.

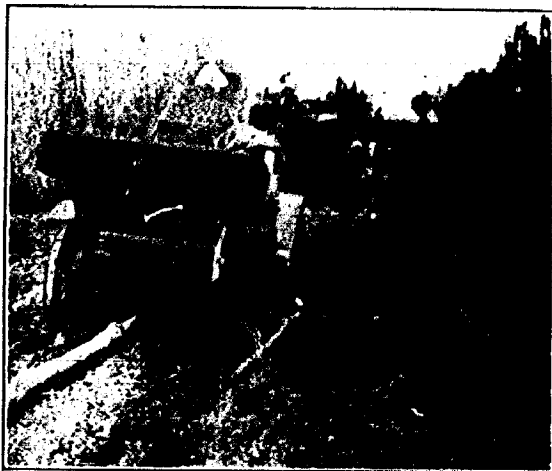


FIG. 1.—The Commission en route to Athabaska Landing,  
Difficulties of travel through Muskeage.



FIG. 2.—Mid-day Meal on the Athabaska River.



ATHABASKA LANDING.  
FIG. 3.—Fishery Inspector E. W. Miller, Guide John Saviar,  
and Canoe-man, aides to the Commission.



# ALBERTA AND SASKATCHEWAN FISHERY COMMISSION

OFFICE OF THE DOMINION COMMISSIONER OF FISHERIES,

OTTAWA, ONT., December 30, 1911.

To the Honourable J. D. HAZEN,  
Minister of Marine and Fisheries,  
Ottawa.

The commissioners, appointed by order in council, approved by His Excellency the Administrator on July 6, 1910, to investigate the conditions and requirements of the fisheries of the provinces of Alberta and Saskatchewan and to report thereon to the Honourable the Minister of Marine and Fisheries, such report to embrace recommendations for regulations to meet such requirements, beg to report as follows:—

## SCOPE OF THE INQUIRY.

A series of meetings had been mapped out, covering a large portion of the two provinces, of which public notice was given through the newspapers and in a great many instances by invitations personally addressed by mail to men engaged in fishing, or otherwise familiar with fish and fishing, and to municipal bodies, boards of trade, &c.

These notices stated that the commission would hold meetings at fixed times and places named for the purpose of meeting, and hearing evidence from all persons interested, especially from fishermen, settlers, anglers and others, on the past and present condition of the various local waters, kinds of fish, scarcity or abundance, spawning times and places, favourable or unfavourable conditions, dams, &c.; also suggestions as to the best means of improving the fish supply, introducing desirable species, and such information as would enable the commission to recommend improved fishery regulations to best conserve and improve the fisheries in the waters of the two provinces generally. Evidence was also invited as to the past and present state of the fisheries, the question of commercial *versus* domestic (settlers') fishing operations, kinds of licenses or fishing permits desirable, and views as to hatcheries and the planting of introduced species of fish, and including documents, petitions, &c.

## ITINERARY.

The commissioners began their work on September 7, their first meeting being held at the city of Regina on that day.

The itinerary embraced a large number of places in localities near to lakes and streams having fish in them or where the introduction of fish might be thought practicable or desirable and covered the period from September 7 until October 31, 1910.

The commission spent in all 59 days taking evidence and visiting waters and covered about 5,000 miles by rail, some by automobile and the rest by wagon and canoe, held some 50 sessions and examined over 200 witnesses during 1910.

Having regard to the lateness of the season, the commission did not deem it advisable to extend the inquiry into November, and owing to the immense area to be covered they were unable in the time at their disposal, to visit the lakes and waters

situated in the more northerly and less accessible portions of the provinces, leaving these for the following year should the department deem it necessary for the commission to investigate the conditions existing there.

The commissioners met at Ottawa in December, 1910, and proceeded to prepare an interim report of their work and of the evidence received by them up to that time. Such interim report was accordingly presented to the Honourable the Minister of Marine and Fisheries on December 21, 1910.

### COMMISSION CONTINUED IN 1911.

In the following year the Honourable the Minister desired that the commission should continue its work by visiting the northern waters above mentioned, beginning in July. The chairman, Prof. E. E. Prince, having been instructed to attend as a delegate the meetings of the International Fisheries Congress held at Rome, Italy, was unable to accompany the other two members of the commission, but Mr. E. W. Miller, Inspector of Fisheries for Saskatchewan, was directed to join and assist them in various ways.

The commission accordingly proceeded to visit and investigate the more northerly waters of Alberta and Saskatchewan, taking evidence and gathering information from all available sources, commencing in July and continuing until the middle of November. During that period the commissioners held meetings and visited the said northern waters as far as the Yellow Head Pass on the west, Lesser Slave lake, Fort McMurray, Clear Water river, and Lac la Loche on the north and Ile a la Crosse, La Plonge, and Doré lakes on the east. They visited and took evidence as to over 60 lakes, rivers and streams, their travelling being done, some by automobile and wagon, but mostly by water, mainly by canoe, and some by steamers and York boats.

The commissioners had included in their tour for 1911 a visit to some of the more easterly lakes, and, in particular, Cumberland and neighbouring waters and to inquire into the sturgeon fishing there. The unusually early cold weather in the latter part of October and beginning of November, freezing over the lakes and causing ice to run in the Saskatchewan river, made it impracticable to carry out this part of their programme.

### GREAT IMPORTANCE OF FUTURE FISH-SUPPLY IN WEST.

The commission therefore beg now to present their final report covering the whole of their work during the years 1910 and 1911.

The commissioners wish to emphasize the fact that the fishery resources of these waters are of vast importance and that they will become more so in the immediate future. Owing to the large amount of fertile land in these two provinces and to the fact that settlers are pouring in, the time is rapidly approaching when there will be an immense population requiring a large amount of food, of which fish is bound to be a considerable element. The conclusions arrived at in this report will go to show that we are bearing this in mind, and that we recognize the importance of conserving our fishery resources and the folly of unduly exploiting them for commercial purposes which will mean their speedy destruction. It is also of prime importance that the Canadian public should be supplied with as ample an amount of fish food as the waters can afford and to have the fish prepared for sale in as palatable and wholesome a condition as possible. It is obvious that the business of exporting fish to the United States markets is of less importance to Canada than the furnishing of an ample supply to the Canadian public, and all fishery regulations should be so framed as to encourage supplying the home requirements first, and export to a foreign market should be provided for only as to the excess of the annual take of fish which our waters can yield without risk of depletion.

## PUBLIC SESSIONS OF THE COMMISSION.

## REGINA.

Public sessions were held at the City Hall on September 7 and 8, 1910, and the following witnesses gave evidence: Dr. Low, Hon. W. R. Motherwell, W. M. Vanvolkenburgh, T. N. Willing, Chas. Benjafield, J. R. Peveret, J. B. Morrison, Dr. G. C. Charlton, J. W. Silverhorne. Their testimony pertained chiefly to Long lake, kinds of fish, introduction of bass or other game fish, analyses of the waters of different lakes, introduction of German Carp and time of close season. Much interest was shown.

From Regina the commissioners drove to Long lake, inspecting the Craven dam, and proceeded up the lake by launch. From there they drove to

## STRASBURG,

where a session was held on September 9. Wm. Rowan gave evidence as to a number of lakes on Last mountain—their suitability for stocking; quality of water also as to Long lake—kinds of fish; decrease in quantity of fish but not in size; length of net to be used; close season; mortality of fish. The commissioners drove to the Last Mountain lakes and inspected the larger ones.

## SASKATOON.

Session held on September 10. Little interest was shown as this is not a district having fish lakes. George S. Pook, Overseer of Fisheries of Rosthern, gave evidence as to kinds of fish in Saskatchewan river. F. M. Schlanders gave evidence as to Goose and Moon lakes.

## LANIGAN.

Session on September 12. Witnesses heard, John Jansen, Hugh O'Neill, V. J. Challenger and P. J. Curtin. Their evidence describes the Quill lakes—waters alkaline; little or no fish in them; would like carp or even suckers introduced. Get their fish supply from Winnipeg; number of licenses issued for north end of Long lake, too many; commercial aspect in Long lake more important than the sporting feature; number of fish not diminishing but their size is; netting should be allowed. Stocking with black bass desirable.

## WYNYARD.

Witnesses: Edward Field, S. Barth, F. J. Cameron, R. Denovan, Joe Stefanson. Lakes described: Fishing, Pelican, Stoney, Sandy, Newburn, Sheo, Big and Little Nutt and Quill lakes. Fifty-yard nets enough for small lakes. No decrease in quantity of fish. Would like bass and pickerel introduced. Indians using fish traps. Petition: Keep Sandy lake as a sporting lake.

## ARCOLA.

Meeting at Council Chamber. Witnesses: C. F. Christopher, Joseph Hewitt, Edw. Holmes, R. B. Clark, F. J. Stent, N. D. McLeod. Lakes described: Fish, Little Fish, Hewitt, Stevenson, White Bear, Moose Mountain. Evidence: Kinds of fish—pickerel is best. Exterminate suckers, also Jackfish, which destroy pickerel.

Should be no commercial fishing. Do not introduce carp. Plant black bass. White Bear lake as a summer resort. No netting should be allowed except to catch pike and suckers. Anglers' limit should be 15 per day.

## QU'APPELLE.

Meeting in Board of Trade rooms. Witnesses: W. M. Thomson, H. Anderson, James A. Meyers, John Leader, W. R. Thompson, P. R. Elmer, William Leader, G. Smales.

Lakes described: Four Qu'Appelle lakes, Mission, Katepwa. Kinds of fish, spawning time. Tullibee are wormy. Great many perch. Weeds in some lakes. Depth of water. Katepwa dam improves lake above—injures Crooked lake—petition to remove. Craven dam diverts water; should be placed above junction of the Qu'Appelle. Spring close season is light; fall close season too long.

## INDIAN HEAD.

Meeting. Witnesses: W. R. Boyd, A. G. Orchard, John H. Berry. Evidence: Katepwa lake, summer resort. Fish are pike, pickerel, perch—decreasing in numbers and size. Angling to be encouraged. Ladder at dam defective—fish cannot ascend. Dam at foot of Crooked lake desirable. Want black bass. Too much netting.

## LUMSDEN.

Meeting. Witnesses: H. C. Cresswell, Walter Kokindowicz, W. Daniels, Mac Simpson. Long Lake fishing. Kinds are: Whitefish, pike, pickerel, ling and suckers. Whitefish most plentiful at north end of lake. One man caught five tons with 600 yards of net. Whitefish multiply rapidly. Mesh  $5\frac{1}{2}$  or 6 inches. Length of net 100 feet for personal use enough. Man with helper uses 300 yards. Prices paid for different kinds of fish. Introduce bass. Fish are sold in the round for Regina. Commercial license fee for 300 yards—\$5 is fair. Winter and summer fishing.

## SWIFT CURRENT.

Meeting. Witnesses: Chas. Reid, Wm. Sanders, Geo. W. Webster, Walter Law, S. Moore. Waters are Pelletier lake, Swift Current creek, Yellow lake, Antelope. Kinds of fish: Whitefish, jackfish, gold eye, suckers, pickerel. Pelletier lake has good fish. Only enough for local consumption. Should be no netting except for suckers. May be a summer resort. Hatchery desirable. Two dams, slides defective. The commissioners visited Pelletier lake.

## MEDICINE HAT.

Meeting. Witnesses: Wm. Cousins, Duncan Black, H. J. Tweed. Waters are: Elk Water lake. Has pike and pickerel. Water is clear. Canadian Pacific Railway dam—no nets used. Gold eyes in creeks. Large artificial lake at reservoir, 28 x 2 miles.

## MACLEOD.

Meeting. Witnesses: R. C. Mathers, Wm. Renwick, G. M. Proud, Dr. Kennedy, Arthur Young, Rev. Robt. Boyle, H. A. Donovan. Waters are: Old Man and Belly rivers, Trout, Beaver and Meadow creeks, Waterton lakes. Kinds of fish: Cutthroat and bull trout, 'grayling' (Rocky Mountain whitefish), pike, lake trout. No fishery regulations posted up; no enforcement. Depletion of fish rapid. Illegal fishing; overfishing. Salting down in barrels; netting; dynamiting; lime. Irrigation ditches. Mormons overfish; tent villages. Angling permits necessary. Limit of size, 10

inches; per diem catch, 20 trout. Three year closure for small streams. Should be better enforcement of regulations. 'Grayling' is a game fish. Fishing should mainly be for sport. Get rid of the pike and bull trout. They are cannibals.

## HIGH RIVER.

Meeting in Town Hall. Witnesses: E. R. Baker, R. A. Wallace, S. T. Alexander, L. M. Roberts, M.L.A., Duncan Shankland, Phillip Weynard. Fishing waters are: High river, Bow river. Kinds of fish are: Cutthroat and bull trout, grayling (Rocky Mountain whitefish) and pike. Rarity of fish regulation notices and officers. No enforcement. Irrigation ditches, evils of, exaggerated. Consider bull trout a game fish. Limit of size of trout 8 to 10 inches and 20 per day. Ten per day. Stop fishing for couple of years here.

## PRINCE ALBERT.

Public meeting in City Hall. Witnesses: John McKay, John Unrau, Alexander Campbell, J. S. Woodward, Senator T. O. Davis, John Morrison, John E. Sinclair, T. J. Noble, Alex. A. McDonald, A. Besnard, J. G. Stevenson. Lakes: Red Deer, Big and Little Trout, Stoney, Candle, Green, Slate, Waterhen, Crooked, Clear, Buffalo, Wakaw, Turtle, Montreal, Egg, La Ronge, Doré, Deer, Ile à la Crosse. Kinds of fish: Whitefish, perch, pickerel, jackfish, trout, tullibee, sturgeon.

One man can use 6 nets of 40 yards each. Prince Albert is a distributing point for fish. At present fishing does not benefit the city much. Sturgeon in the river and Candle lake—11-inch mesh. Candle Lake whitefish are small—4-inch mesh large enough. Green lake fished out. No one, not even dogs, eat ling. Fishing season should open December 1. Should be no exclusive fishing or monopoly. Should our fish be kept for Canada. Cold storage should be established. Net fishing should not be allowed in small lakes south of Saskatchewan river. Hatchery required. American market necessary for excess of fish over home consumption. Net length of domestic license and commercial license—different views as to. Should licenses be given only to residents? Turtle lake overfished. Spawning season over by November 20. Worms destroy nets in some lakes. La Ronge overstocked with fish; fish getting smaller in size there. Present license system hard on commercial companies. Can companies dispose of their catch in Canadian markets? One party of 6 men caught 22 tons from Little Trout lake in one winter. Eight men caught 40 tons in Big Trout lake. Can fishing be done commercially in summer? Too far from railway.

## BATTLEFORD.

Public meeting. Witnesses: F. J. Scully, W. R. Menzies, O. E. Warner, Geo. Douglas, Geo. Simpson, W. J. Howatt, J. G. Oliver, W. W. Smith, A. M. Panton, J. O. Nolin, M.L.A., J. U. Pawkett, Chas. E. Nelson, J. A. Helgason, Alex. Thompson, B. E. Dobree, J. H. Morin, P. C. Morin. Petition from Town council against export, over-fishing and in favour of stocking and a hatchery. Another petition to protect certain lakes. The commissioners drove to Jackfish lake and inspected it. Are Jackfish and Turtle lakes overfished? Export out of province; spawning season; length of net for commercial fishing, for domestic, summer fishing. Sent safely to Calgary and Winnipeg. Fees for licenses. Depletion due to overfishing and too early. Fish offal in Turtle lake. Dam on Turtle lake. Forest rangers should also be fishery officers. Traps. Manure. Could market be got in province for all fish taken by companies? Jackfish lake as a summer resort. Export duty. Should be fish ladder for Sturgeon in Churchill river.

## BRESAYLOR.

Meeting. Witnesses: Edw. E. Mack, W. R. Harrison, Jas. H. Ragan, Rupert F. Harrison, John Stephens, Alex. Inkster, Wm. Shafer. Evidence as to Turtle,

## ALBERTA AND SASKATCHEWAN FISHERY COMMISSION

Pelican and Jackfish lakes. Are lakes being depleted? Fifteen carloads shipped, principally from Turtle lake. Dead horses on ice. Length of net. Two hundred men fishing; 60,000 yards of net. Pelica lake no good. Close season. Five and 6-inch mesh. No pickerel. Dam in Turtle river would raise water in lake. Indian trap—sawdust. Should Jackfish lake be reserved for sport?

## INNISFREE.

Visited Birch lake. Doubtful if there is any fish in it. Water is charged with soda. No signs of insect life. Shells few and small.

## EDMONTON.

Meeting in Board of Trade rooms. Witnesses: F. T. Fisher, Peter Gunn, H. J. Dawson, F. I. Clair, Howard Douglass, Frank B. Smith, Wm. Fitzgerald, Colonel Edwards, Netherfield, J. H. Morris, Sheriff W. S. Robertson, Robert Tegler, George MacLaren, P. E. Lassard, M.L.A., H. Bowtell. Lakes: Pigeon, Gull, Wabamum, Cooking, Sandy, Miquelon, Lac St. Anne, Lesser Slave, Moose, Baptiste, Lac la Nonne, Cold, Beaver, Trout, Long, Touchwood, Whitefish, Island, Little Devils, Lobstick, Shining Bank, Brulé, McLeod river, Lac la Biche. Kinds of fish; summer fishing; cold storage; sufficiency of home market. Planting bass in Devils lake (near Banff); Nepigon trout. Several planting experiments. Pollution of streams by cold screenings; traps; illegal nets; sawdust; dams; necessity for proper guarding. Mesh of nets; close season; catching in spawning time. Should commercial fishing be done in Wabamum lake. Perch and sunfish as game fish—easy to propagate. Summer fishing for local markets. Hatchery required. Mortality of fish. The commissioners visited Cooking lake; thirty carloads from Cold lake. Commercial fishing where settlers few. Defective methods of putting up fish.

## ATHABASKA LANDING.

Taking evidence. Witnesses: Louis Frederick, Felix Dumont, H. U. Box. Kinds of fish: Grayling, whitefish, jackfish, tullibee, Doré, suckers, gold eye; loche is good food. Size of mesh as large as seven inches. Fish not so plentiful now.

## WETASKIWIN.

Meeting in Council Chamber. Witnesses: James Bradley, L. I. Wood, Charles H. Olin, M.L.A., John Lee. Lakes: Pigeon, Dried Meat, Crooked, Bittern, Battle, Conjuring, Buck, Bear, Hill. Evidence; preference should be given to settlers near lakes. Pigeon lake as a water supply for Edmonton; may injure fishing; depletion in fish. No summer fishing. Mesh. Number of licenses about two hundred. Length of net; illegal fishing; necessity for gasoline launch. Close season. Shutting out pike from Pigeon lake; 144,000 Whitefish caught in Pigeon lake in one season. Record should be kept of quantity of fish caught. Licensee alone should use net. Sporting feature important.

## LACOMBE.

Meeting in Board of Trade office. Witnesses: John McKenty, Hon. Senator Talbot, Charles B. Halpin, John W. Fortune, F. Graham. Waters adjacent: Gull lake, as a summer resort. Bass planting experiments. Local offer to try further experiments in stocking. Export to United States, is it wise? Buffalo lake, bass experiment. Summer resort. Fishing question important to Lacombe.

## RED DEER.

Meeting in Oddfellows' Hall. Witnesses: F. B. Harrison, Captain Cottingham, A. V. Stephenson, Dr. George. Lakes: Sylvan, Pine. Commission visited Sylvan

lake. Black bass were planted in Sylvan lake. What resulted? Gold eye in streams. Trout in Red Deer river; spawning season for trout. Netting in streams should be stopped. Dam in Blind Man river. Planting lake trout.

## CALGARY.

Meetings. Witnesses: M. T. Miller, R. A. Darker, W. I. Margach, J. S. Dennis, J. L. Peet, Wm. Pearce, J. Glove, John Irwin. Description of species of fish. Rapid depletion. Some want bull trout exterminated in favour of the cutthroat. Twenty years ago cutthroat was 100 to one of any of kind—now nearly exterminated. These waters not favourable to fall-spawning fish such as bull trout. Pike is comparatively a recent introduction. Irrigation ditches; their effect on fishing discussed. Screens; clogging; revolving screens; close season wrong for best game trout. Hatchery desirable. Illegal practices; excessive catches; sewage; dynamite. Limit of daily catch of cutthroat or Rocky Mountain whitefish; limit of length. License for anglers. Fishery regulations not enforced nor published. No officials. Reproductive capacity in northern lakes slow. Depletion more difficult to remedy than in warmer lakes.

## BANFF.

Meetings. Witnesses: S. C. Vick, A. B. McDonald, Wm. Mather, David, McDougal, Howard Sibbald, O. E. Stenton, R. St. C. Edwards, N. B. Sanson, Captain Stanley, H. D. Sibbald, sr. Fish waters: Rivers—Bow, Spray, Elbow; lakes—Spray, Devils, Forty Mile, Castle Mountain, Consolation. Kinds of fish: Trout, cutthroat and bull, grayling (*Williamsoni*), lake trout.

Evidence: Spawning seasons. Cutthroat spawn in the spring: bull trout and grayling in the fall. Close season should be November 1 to June 1. Hatchery required. Cutthroat trout could be transferred from one lake to another, say, from Castle Mountain lake. Streams are being depleted. Minimum size allowed to be caught; number per day. Canadian Pacific railway planted Nipigon trout. Bass were planted also; not a success; license or no license in park. Ice jams in winter kill fish. Should fishing be stopped for a year?

## ATHABASKA LANDING.

In 1911 the commissioners again visited this place and held a meeting in the Board of Trade rooms.

Witnesses: Big Stone, Chief of the Waubeskau Lake Indians. He is opposed to any close season on that lake. If not let fish in spawning time the Indians cannot catch a sufficient supply to feed their families while they go elsewhere to trap. After close season it is difficult to get more fish than sufficient to feed them from day to day. When they were asked to sign a treaty they were assured they would not be interfered with in their accustomed rights. J. H. Wood gave evidence as to Lesser Slave, Calling, Rock Island, Sandy, Waubeskau, La Biche, Skeleton and Moose lakes. No fishery officers here. No regulations enforced. Approves of a close season and even against the Indians' except for their daily use, but not to sell or preserve. License fee for three hundred yards of net should be \$10; for one thousand yards fee should be \$100.

The members of the Board of Trade were not agreed among themselves as to recommendations to commission. The meeting was adjourned until a later date.

## CALLING LAKE.

Going down the Athabaska lake the commissioners stopped at a settlement of Indians and half-breeds near Calling lake. Peter Pruden, a half-breed, gave evidence as to Calling lake fishing conditions: Fifteen native families at the lake; commercial fishing carried on there; natives catch 20,000 a year, chiefly in spawning season.

## ALBERTA AND SASKATCHEWAN FISHERY COMMISSION

No visible depletion visible yet. It would not hurt the Indians to prevent catching in close season except for daily use. In the Athabaska river are pike, pickerel, gold eyes, suckers, a kind of river whitefish, some lake trout and a small speckled trout.

## PELICAN PORTAGE.

This is a post of the Hudson Bay Company, and Bentley & Patterson, traders. Traders near mouth of Pelican river, where it empties into the Athabaska river Stanley Bentley and Mr. Walker, agent of the Hudson Bay Company, gave evidence as to Waubeskau, Sandy, Pelican and Island lakes and as to the spawning season, kinds of fish, quantity of fish caught by the Roman Catholic Mission and the trading companies and by the natives, number of residents. Little fishing done through the ice. Commercial fishing done in Calling lake; none in these other lakes. It would be hard on the Indians to enforce a close season; think they could be taught how to fish in winter. If forced to obey the law they would find a way to live.

## FORT MEMURRAY.

At the junction of the Clearwater and Athabaska rivers. Sergeant A. H. L. Mellor, of the R.N.W.M.P., gave evidence as to Athabaska and Great Slave lakes; kinds of fish; amount caught annually. No need as yet for a close season.

## CLEARWATER RIVER.

A beautiful river; water clear; many islands; chiefly sandy bottom. Poplar and jackpine along the bank. Some large rapids; commissioners ascend it in canoes to Portage la Loche. No residents along the river.

## PORTAGE LA LOCHE.

A twelve-mile portage here from the river to Lac la Loche. Baptiste Fontaine met the commissioners at the portage. Says he is acquainted with fish conditions in Lac la Loche; not much fish in it. Residents cannot get enough to feed themselves; it has been fished out. Get fish from Buffalo lake. Whitefish cannot be caught in winter; they disappear.

## HUDSON'S BAY POST, LAC LA LOCHE.

Meetings at Hudson Bay Company's post. Witnesses: Lamuel Janvier, Richel Lamerge, Angus McLean; at Revillon Company's post, Rev, Père Pinard, Joseph Janvier, Pierre Maurice, J. Pickering.

Evidence: This has always been a poor fish lake; as plentiful now as twenty years ago. Suckers and doré most numerous. One man in the past three months caught only five whitefish. About October 15 fishing begins; the catch per man in spawning time is 100 to 500; 40 or 50 men fishing; 5½ inch mesh used. Not a deep lake. Fish are 'hung' in October. Scarcity of whitefish may be due to excess of pike and marias which kill them. It would be hard on the natives to stop fishing in spawning time. Only lake near this is Whitefish lake; great mortality of whitefish there two years ago. Worms there destroy nets in the fall; about 250 Indian residents around La Loche. Scrip commissioners told the Indians they would not be interfered with in fishing or hunting. The guardian seized fish caught in close season last year. Should commercial fishing be done in Buffalo lake? Is close season a protection to whitefish?

## BULL'S HOUSE.

Raphael Laliberte gave evidence; fishing not so good as formerly. Fish are caught when ascending and descending the river between Buffalo and La Loche



lakes; in September; they are 'hung' for winter. He caught 6,000 in one year; above average number; used largely for dog feed.

## LA PLONGE MISSION.

Meeting. Witnesses: Rev. Pere Ansell, Brother Burnouf, Alex. Laliberte, Zephurin Morin, Beatty. La Plonge not a good lake; fish few and thin; deep lake; in summer, fish in the river. Mission has 52 native children in boarding school. Indians must have fish food. Parents would take away their children if not given fish. No one living at the lake. Other lakes are Dore, Waterhen, Sled, Stony; Dore is possibly crowded with fish. Spawning earlier in the river. No commercial license for Green or Waterhen lakes; 300 yards of net all that one Halfbreed can handle.

## ILE A LA CROSSE MISSION.

Witnesses: Rev. Pères Rosignol and Rapet, Lauzon, Luzon Roy, Thos. Desjerlais, Baptiste Jourdain, Wm. Hutton, Arthur H. Pearce.

Evidence: not an agricultural country. Period for close season. Indians cannot fish in winter; their trapping time. Mr. McKenna, Treaty Commissioner said they would not be interfered with. Fish do not congregate in one place to spawn on this lake. Fish eat spawn. Thirty natives fish for the Commercial Company. Fish less abundant than twenty years ago. Close season is a good thing; commercial fishing should be limited. Indians cannot have 'hung' fish if close season enforced. McDonald's Company used 23 nets of 45 fathoms each. Offal left on the ice.

## GREEN LAKE.

Witnesses: 'Man-who-runs-in-a-circle,' Day Star, Pierre Aubichon, Corporal Hancock, Big Head, Red Iron, Louis Morin, Baptiste Aubichon, Joseph Morin (Guardian). Evidence as to Green, Waterhen lakes; Indians who hunt should be let 'hang' fish in close season. Sled, Island, Stony, Doré, Waterhen, Indians fish only in south part; 20 licenses might be issued for north part. Lac la Plonge is a good Whitefish lake; few residents.

## JASPER LAKE.

Howard Douglas gave information as to the lakes in the Park; Jasper, Brule and Whitefish lakes; Maligne lake has no fish. The Commissioners visited Jasper Park. Found fish in Pyramid lake spawning on 23rd September. Lakes are small.

## LESSER SLAVE LAKE.

Meeting at Board of Trade rooms; large attendance.

Witnesses: Joseph F. Ferguson, Rev. Father Giroux, Samuel Cunningham, B. Maurice, Joseph Morin, Robert Johnson, Mark Bateson, Wm. Chalifont.

Evidence as to kinds and quantity of fish in Lesser Slave lake. Number of residents around the lake. Commercial Company operated here four years ago but lost a great part of their catch for want of transport. Indians cannot live unless permitted to fish for winter in close season. Fish becoming less plentiful. Commercial fishing on large scale would injure the lake; 100 tons a year would do no harm. Close season not observed. Indians catch some through the ice; about 80 hunters deal with the two trading companies. Capt. Barber of the steamer *Northland* referred to operations of the American Fish Company on this lake in 1904-5. Left offal at the shore. Commercial fishing last winter. Thinks it would stand an annual catch of not exceeding 200,000 fish. Favours charging so much per pound of fish caught without limiting length of net, but limit total catch on the lake. Hatcheries would prevent too much in-breeding.

Capt. Niclas told of his proposed curing plant for summer use of fish—by improved process of smoking and light salting.

A. H. Hawkins, D.L.S., thinks the Indian is lazy; could raise cattle and grain. In places where not enough farming land, move them to where there is such land.

Sergt. Adams, stationed at Grouard; police do not keep train dogs. The Indian practice of 'hanging' fish; some 500 Indians on two reserves at Lesser Slave lake. There should be proper supervision. Younger Indians not hunters.

R. H. Potts said Indians are depleting the lake.

#### LAC LA BICHE.

J. S. Spencer, Hudson Bay Co., agent; 9 years here; average catch in close season 30,000 fish; favours full close season; commercial fishing not a success through the ice; could not locate the fish; whitefish very large. Describe the inconnu of Lake Athabaska. Rev. Père Legoffe told of weight of whitefish; close season is good. Spawning mostly between October 24, and November 1. It is the halfbreed's own fault that they are so dependent on fish. Alex. Hamelin, guardian; close season is October 5 to 26; formerly from October 15 to November 1. Few fish can be caught in winter; enumerates principal lakes and amounts of fish taken; favours no close season for pike. Whitefish spawning is from October 18 to 23. Trout about same time. Inspector Gilchrist reimposed full close season with good results.

#### SADDLE LAKE.

Samuel Whitford told the commission about conditions in and around this lake; Indian reserves. Spawning begins after the ice forms; fishing is done through the ice. No close season observed.

### FISHING OPERATIONS IN ALBERTA AND SASKATCHEWAN.

#### *Net Fishing and Angling.*

Fishing operations in these two provinces are carried on in two ways and should be limited to these:

- (a) By gill nets, and
- (b) Angling.

- (1) Gill nets are used chiefly for catching whitefish lake trout, pike jackfish, pickerel (doré), tullibee and sturgeon.
- (2) Fish that may be taken with hook and line are pike, trout, perch, grayling and gold eyes.

With the possible exception of the last-named species which exists in rivers and streams in both provinces, it may be said that 'game' fish are found only in Alberta, on the easterly slope of the Rocky mountain, for while pike and trout can be taken with a hook, they cannot, strictly, be regarded as game fish, though some people do include the pike and pickerel among sporting fish, because they can be taken with a hook.

#### *Net Fishing.*

Fishing may be divided into:

- (1) Commercial fishing, for sale, and
- (2) Domestic fishing for consumption by the fisherman and his family, and not for sale.

## LAKES IN THE WEST CLASSIFIED.

Lakes may for the purpose of this report, be classed as follows:—

1. Small lakes, in which the quantity of fish is so limited as to admit of only 'domestic' fishing. These may be divided into:

(a) Lakes in which settlers may fish, *e.g.*:

Green, Jackfish, Turtle, La Loche, Buck, Battle.

(b) Lakes which should be reserved for Indians. Instances of these are:

Waubeskau, southerly of the Waterhen lakes, Saddle lake, Good Fish, Whitefish, near Lac la Biche.

2. Intermediate lakes, which have more fish than are necessary for 'domestic' use and from which fish may be allowed to be taken for sale, but only on a small scale and in a local market, *e.g.*:

Long, Wabamun, Ste. Anne, Moose (near Cold lake), Pigeon, La Biche, Red Deer lake.

3. Large lakes in which the fish are sufficiently numerous to admit of commercial fishing on a larger scale without unduly interfering with fishing for domestic use and for local sale, *e.g.*:

Lesser Slave, Ile à la Croix, La Ronge, Doré, La Plonge, Island, Primrose, Buffalo (near Clear), Montreal, Candle, Trout lakes (near Red Deer), Clear, Waterhen (north end).

4. Lakes devoid, or practically devoid, of fish, owing to various causes, as the character of the water, *e.g.* the Quill lakes and Manitou and Crooked lakes in Saskatchewan. Maligne lake in Jasper Park has no fish in it, though the water is good.

5. Lakes reserved for angling:

Where lakes are near parks or other summer resorts and have fish that may be caught with hook and line and have few or no whitefish, they should be reserved for angling.

The lakes in Jasper Park, such as Fish and Jack lakes and those in Banff Park, Round near Prince Albert, Gull, Sylvan and Cooking are instances of this class.

6. Lakes not visited by the commission:

In the far north are some large lakes which the commissioners were not instructed to visit and time would not have permitted them to do so owing to their remoteness, such as Athabaska, Great Slave, Great Bear, Reindeer, Cree, &c. At present the population around them consists chiefly of Indians and halfbreeds, and the quantity of fish caught is relatively so small that there is no present danger of their being over-fished. They are not as yet fished commercially for export, nor likely to be so, for some few years. But in view of the rapidity with which settlement is advancing northward, and the prospect of railway extension, it will at no far distant day become necessary to subject them to regulations as in the case of lakes farther south. It may be pointed out that fishing companies have frequently extended their fishing to remote lakes several years before the Fishery Department had any knowledge of their operations, and before it had made any arrangements for the patrol of these lakes, and such lakes have in the past suffered in consequence. This may happen in the case of these lakes, and the department should not delay too long its investigations, so that full information may be at hand, and that proper officials may be appointed to take charge before any fishing operations shall commence.

In addition to the lakes previously mentioned in this connection we were apprised by trappers of many other important lakes which have not yet been named and which do not appear on any of the maps so far issued. These also, judging by report, are worthy of investigation by the department, as they are stated to be well stocked with best quality of fish.

Until such time as investigations have been made the regulations applying to Alberta and Saskatchewan should also apply to the above waters found to the north of these provinces, and situated in the Northwest Territories.

## REVIEW OF CHIEF KINDS OF FISH.

*A brief review of the principal fishes (commercial and game) in Alberta and Saskatchewan.*

While there is a prevalent opinion that the species of marketable and game fishes in the provinces of Alberta and Saskatchewan do not compare in abundance or variety with those of the waters further west or those to the east yet it is undeniable that the species of economic fishes in the lakes and the game fish in the rivers are for their respective table and sporting qualities not surpassed, and indeed it may be claimed, are not equalled by the species occurring in the inland waters of other provinces.

In contrast with such a province as that of Ontario the more extensive waters, that is the larger lakes which offer commercial possibilities in Alberta and Saskatchewan are not situated along the frontier or along the accessible areas adjacent to the southern border; but lie mainly in the remoter northern portions of these western provinces practically beyond access, at present, by railway and approached only by difficult trails. Many of these distant lakes, it is known, are supplied abundantly with whitefish and trout, and most of them are capable, when developed, of yielding valuable supplies of fish for the food of the people. The country is not settled and is occupied only by sparse tribes of Indians or traversed by the employees of the Hudson Bay Company, and various trading posts, these relying largely upon the lakes for food supplies and for dog-feed.

Fish have formed a staple article of food and quantities have been taken each season for the posts and for feeding the families and dogs of the halfbreeds and Indians. Over the southern portions of the two provinces are to be found a number of smaller lakes, many of which are exceedingly productive considering their limited area.

It is difficult to estimate the total annual yield in past seasons of the larger northern lakes, and, indeed, of the smaller lakes which are more accessible in the southern parts of Alberta and Saskatchewan, owing to the lack of fishery officers and the impossibility of obtaining regular and reliable statistical returns. According to the statistics officially published, and to be found in the annual fishery reports, the total yield of fish in the neighbouring province of Manitoba was almost twenty million pounds in 1909-10; in Ontario the yield was about twenty-eight million pounds, and we do not hesitate to say that the fisheries of Alberta and Saskatchewan yield at least seven million pounds of fish of all kinds, though this estimate is in excess of the figures officially published. Our estimate is based upon the information gathered by the commission in the course of its work. Such an annual yield (7,000,000 lbs.) represents a catch, it must be remembered, far below the productive capacity of these waters.

From a fishery point of view, the waters of these two provinces, especially some of the larger lakes in the north, if properly developed and conserved, are certain to be of vastly increased commercial importance, while the game-fish waters, the rivers and certain lakes offer possibilities of sport not to be surpassed in any other province.

## LIST OF FISHES (ALBERTA AND SASKATCHEWAN).

No adequate scientific survey has been made of the vast waters here referred to, and any list of fishes must, of course, be very incomplete. But the following list may be given as a basis, and it is desirable that at an early date a full and thorough investigation of the fish-life in these waters should be undertaken.

## FAMILY ACIPENSERIDÆ—

*Acipenser rubicundus*, Le Sueur. The Lake Sturgeon.

**FAMILY SILURIDÆ—**

*Ameiurus vulgaris*, Thompson. The Dark Catfish.

**FAMILY CATOSTOMIDÆ—**

*Ictiobus cyprinella*, Cuv. and Valenciennes. Buffalo-fish.  
*Catostomus catostomus*, Forster. Northern Sucker.  
*Catostomus commersonii*, Lacepede. Common White Sucker.  
*Moxostoma anisurum*, Rafinesque. White nosed Red Horse.  
*Moxostoma aureolum*, LeSueur. The Mullet or Red Horse.  
*Moxostoma lesueurii*, Richardson. Northern Red Horse.

**FAMILY CYPRINIDÆ—**

*Hybognathus nuchalis*, Agassiz. The Silver Minnow.  
*Hybognathus argyritis*, Girard. The White Minnow.  
*Pimphales promelas*, Rafinesque. The Flathead or Bull Minnow.  
*Notropis blennius*, Girard. Straw-coloured Minnow.  
*Notropis hudsonius selene*, Starr Jordan. The Shiner, Spawn Eater.  
*Notropis jejunus*, Forbes. The Poor Minnow.  
*Notropis atherinoides*, Rafinesque. The Great Minnow.  
*Hybopsis storerianus*, Kirtland. Storer's Minnow.

**FAMILY HIODONTIDÆ—**

*Hiodon chrysopsis*, Richardson. Western Gold-eye.

**FAMILY SALMONIDÆ—**

*Coregonus clupeaformis*, Mitchill.  
*Coregonus labradoricus*, Richardson.  
*Coregonus Williamsoni*, Girard.  
*Argyrosomus tullibee*, Richardson.  
*Salmo Clarkii*, Richardson.  
*Salmo irideus* Athabasca.  
*Thymallus signifer*, Richardson.  
*Thymallus Montanus*, Milner.  
*Thymallus tricolor*, Jordan and Gilbert.  
*Salvelinus malma*, Suckley.  
*Salvelinus fontinalis*, Mitchill.  
*Cristivomer namaycush*, Walbaum.

**FAMILY ESOCIDÆ OR LUCIDÆ—**

*Lucius lucius*, Linnaeus. The Jackfish or Pike.

**FAMILY GASTROSTEIDÆ—**

*Pygosteus pungitius*, Linnaeus. One-spined Stickleback.  
*Eucalia inconstans*, Kirtland. Brook Stickleback.

**FAMILY PERCOPSIDÆ—**

*Percopsis guttatus*, Agassiz. The Trout Perch, Sand Roller.

**FAMILY PERCIDÆ—**

*Stizostedion vitreum*, Mitchell. Yellow Pickerel, Pike, Perch or Doré.  
*Perca flavescens*, Mitchill. The Yellow Perch.  
*Hadropterus aspro*, Cope and Jordan. Black-sided Darter.  
*Hadropterus guntheri*, Eigenmann and Eigenmann. Gunther's Darter.  
*Boleosoma nigrum*, Rafinesque. Johnny Darter.  
*Boleosoma boreale*, Starr Jordan. Northern Darter.

**FAMILY GADIDÆ—**

*Lota maculosa*, LeSueur. Ling. Burlot, Lake Cusk, Losh and Methy.

## COMMERCIAL FISHES.

## 1. Whitefish.

The most important fish commercially in these waters is the whitefish (*Coregonus clupeaformis*) of which more than one species has been said to occur. It is undeniable that special local characters appear, such as larger or lesser average size, smaller or larger head, light or dark colour on the back, &c., yet all such characters appear to depend chiefly on environment and on the nature of the food supply and there appears to be simply one species which is the same as the lake whitefish of eastern waters. Over-fishing may have reduced the average size, or over-abundance of fish may have resulted in stunted growth, due to insufficient food for the number of fish present in the lake in cases where no fishing has been carried on. The commission found in some lakes that the average weight of the whitefish was two or three pounds; in other lakes, four or five pounds; and specimens 15 pounds in weight have been recorded.

The whitefish being destitute of teeth when adult is wholly non-predaceous, and its small mouth with an over-lapping upper jaw shows it to be a bottom feeder. Its food is mainly small crustaceans, aquatic larvæ, such as that of the Caddis fly and other worm-like organisms. Grass and partly digested moss are sometimes found in the stomach, having, no doubt, been accidentally swallowed with other food. The habit of the whitefish is to migrate in large schools in the deeper parts of the lake during the hottest and the coldest months of the year, and in the middle of extensive lakes, such as Lake Erie, Lake Huron and Lake Winnipeg, it is especially abundant. Extensive gill net fisheries are carried on in these deep open waters. It comes into the shallows in the fall and early winter to spawn and usually selects clean gravelly or honeycombed ground on which to deposit its sago-like eggs which are about  $\frac{1}{4}$  of an inch in diameter, and of a pale semi-transparent appearance. The eggs are not adherent, but are scattered loosely on the bottom and are fertilized there by the male fish. The eggs take five or six months to hatch, according to the temperature of the water, and the young whitefish fry proceed to the deep waters and remain there feeding on the plankton and are never seen in the inshore areas. These small fish are very transparent, so that even large schools of larval and postlarval whitefish are practically invisible to the naked eye when moving through the water, although they frequent the water near the surface. Being a salmonoid the flesh of the whitefish is white, flaky, and very free from small bones, except those belonging to the axial skeleton, and its edible and nutritive qualities are so superior that in the northern regions many people have lived upon whitefish, exclusive of other food, for months at a time. No other fresh water fish, it is stated, can be used solely as a diet without satiating the appetite.

It is found distributed over the whole of the two provinces, and far to the north of their boundaries, wherever lakes occur with pure water of a suitable depth. Occasionally whitefish are found in lakes widely separated from other whitefish lakes such as Pelletier lake near Swift Current. In the northern parts of the provinces the lakes as a rule are most suitable for whitefish and they are, with few exceptions, abundantly supplied with this valuable and esteemed species. The form and appearance of the whitefish are well known, the head being small, the snout blunt and projecting more or less beyond the lower jaw. The mouth is very narrow and destitute of teeth. The tail is short, and there is an anterior dorsal fin on the summit of the back and behind it there projects the stout adipose fin. The broad compressed sides of the body are covered with bright silver scales and the under surface of the fish is white, while on the back the colour is dark in these western lakes.

## 2. Pickerel or Dore.

Next in importance to the whitefish commercially is the pickerel or dore (*Stizostedion vitreum*, Mitchill). It does not occur as universally as the pike (*Lucius*)

having a preference for waters which are pure where the bottom is hard clean and of gravel, sand or clay, and it avoids marshy, stagnant regions. Like the pike it is extremely predaceous in its feeding habits, indeed its prehensile mouth (especially the maxillaries) and wide-gape as well as the bands of numerous villiform teeth on the roof and floor of oral chamber show it to be so. The lower jaw does not project beyond the upper jaw, but both jaws are well provided with teeth, some of which have been described as canines on account of their size and shape. Owing to its smaller size it is less destructive than the pike, its food being mainly minnows; but not to any great extent does it feed upon whitefish or other valuable food fishes. It feeds largely on crayfish when frequenting shallow water in the summer season.

The flesh of the pickerel is firm, white, and flakey, and of good flavour, and being a firm fish bears much handling and shipment for long distances better than the whitefish so that it is in great demand in the markets. It is in many respects one of the most valuable and esteemed of fresh water food-fishes. On the back are two well-developed fins, the first of which possesses strong sharp spines. The scales are small, with minute tooth-like projections upon the surface imparting an extreme roughness to the skin externally, the scales are so firmly attached, that it is difficult to remove them in the process of cleaning the fish. It spawns in the spring usually in the margins of gravelly or hard clay banks, preferably where there is moving water. The eggs are small, about  $\frac{1}{4}$  of an inch in diameter, and so strongly adhesive that they cling firmly together in spongy masses. A 2-lb. female fish is stated to produce about 90,000 eggs. The period of incubation is very short, not more than 10 or 12 days, and the fry on being hatched are very minute and delicate though the jaws are provided with teeth at an early stage. It reaches a weight usually of two to four pounds and occasionally six to nine pounds.

The yellow pickerel in eastern waters is said to reach a much greater size, some of 20 lbs. being on record. The blue pickerel has not so far been recognized in the west and the sauger or grey pickerel which abounds in some of the Manitoba waters and is always of small size has not yet been observed in the two western provinces.

### 3. Pike (*Lucius lucius*, Linnæus).

This fish is one of the most widely distributed varieties in these provinces. He is noted for his size, specimens being taken to the weight of 37 lbs., for his voraciousness and his cannibalistic habits; one specimen was taken with 72 small fish in his stomach, and the Commission saw one lying dead on the shore of Buffalo lake in Saskatchewan, weighing 10 lbs. with a 3 lb. whitefish, sticking tail end from his mouth. Evidently he had been choked to death in his eagerness in trying to satisfy his appetite. No wonder a Halfbreed told the Commission that this fish would swallow the devil if he could capture him. It spawns in the spring during April, usually in marshy and grassy places in shallow water. Owing to its cannibalistic habits, its increase should not be encouraged; in fact in whitefish lakes, its destruction should be favoured. It cannot be considered a good game fish, but since it can be taken with hook and line it affords some sport where nothing better can be procured. Its table qualities are fair, much better than in waters farther east and it is of some commercial value. The annual report of the Department of Marine and Fisheries for 1909-10 states that 815,000 lbs. were taken out in that period in Saskatchewan. Dr. W. T. Hornaday, the well-known United States writer says of this fish:

'Look at any member of the pike family, and tell me whether it does not make you think of a pirate. Observe that yawning sepulchre of a mouth, that evil eye and low, flat forehead—all indicating a character replete with cunning and ferocity. Note the total absence of a dignified and respectable front dorsal fin, which nearly every fish of proper moral character possesses and displays with pride.

'Like scaly assassins, the pikes and pickerels lie in wait for their prey, and whenever one rushes like a green streak under the lily-pads, and bolts a trolling- spoon in

one great, ill-mannered gulp, the angler feels a savage delight in thinking that it serves him right. These fishes are the most voracious creatures that inhabit our inland waters. Their ambition is to devour every living creature that come in sight, and they prey upon all other small fishes, frogs and amphibians generally, ducklings, other small aquatic birds, and also small aquatic mammals. Worse than this, they even devour their own kind. That they are found living with the bass, perch and other fishes is generally due to the fact that it is impossible for them to devour all their neighbours.

#### 4. Yellow Perch (*Perca flavescens*) Mitchell.

The commission found in the course of their tour the yellow perch occurs in lakes here and there over a wide area. It is a hardy species and on that account as well as on account of the nature of its eggs, the slimy covering of which protects it from many enemies, it fairly establishes itself and affords some sport to those anglers, who delight in taking fish that seize the bait readily and are easily captured. The perch rarely reaches a weight of more than one pound or two pounds the usual weight being about half to three-quarters pounds and as they are strong for their size they are regarded in many localities as a desirable sporting species. As a pan-fish the perch is not to be despised—being sweet and delicate in flavour, though its numerous bones are an objection. The reports, which were made to the commission at various places that black bass, introduced from eastern waters by the Fisheries Department, had been a success and that specimens had been captured or had at times been found dead upon the shore, were no doubt not well founded, the fish being in such cases without question specimens of yellow perch. The yellow perch varies greatly in colour—indeed its colour changes have been remarked upon by scientific authorities as extraordinary. The usual colour is a golden yellow, often brownish on the sides, a dark greenish tint on the back, and six or eight transverse dark bars extending from the two dorsal fins to below the middle line on each side. These colours may be very bright, or may be dingy and pale, or at times are as dark as to approach the blackish olivaceous colour of the black bass. Specimens showing the dark shade just referred to are no doubt really the alleged black bass to which reference was repeatedly made at the sittings of the commission. Where perch are very abundant they may become commercially valuable and they form an important element in the fish supply in many fish markets especially in the United States. Under the fish culture systems of the various states and of the federal government of the United States the hatching of yellow perch has been extensively carried on; but in general they have not been regarded as desirable in Canadian lakes, where their reputation for voracity and for destroying the eggs and fry of more valuable species such as whitefish, &c., has resulted in requests for their extermination in the general interest of the fisheries. The yellow perch is a strong hardy species and, as pointed out on another page of this report, may be well adapted for introduction into such western lakes as are not favourable for delicate species on account of salinity or alkalinity. The yellow perch, by actual tests, have been proved suitable for planting in the somewhat unfavourable environment of saline and alkaline waters. It is practically omnivorous, living upon other fish, upon spawn, insects, crayfish, frogs, &c., and is very destructive on the young of other species of fish. It spawns in the spring, the ova being contained in tubular masses lying folded up like delicate lace among weeds or about stones in shallow water. The young fry hatch out in a very short time, 8 to 12 days, and are protected by their small size, transparency and extreme agility in escaping from enemies. At the spawning time the colours of the perch are usually very striking, the yellow sides and dark bars being of a more intense colour than at other times, the high spiny first dorsal and the second dorsal fin having a vermilion tinge and extended to their full extent, while the brilliant red of the paired fins (pectorals and ventrals) add to the effect. The scales are roughened with minute denticles so that like the pickerel it is very rough to the touch. They are of a pugnacious nature, and



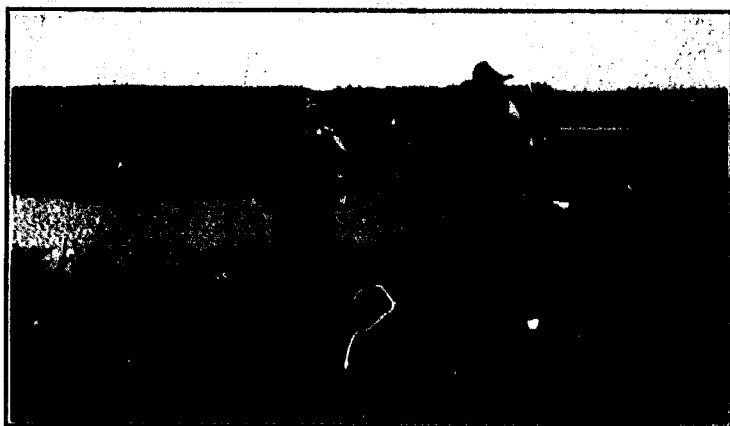


FIG. 1.—Pelican River, Alberta.

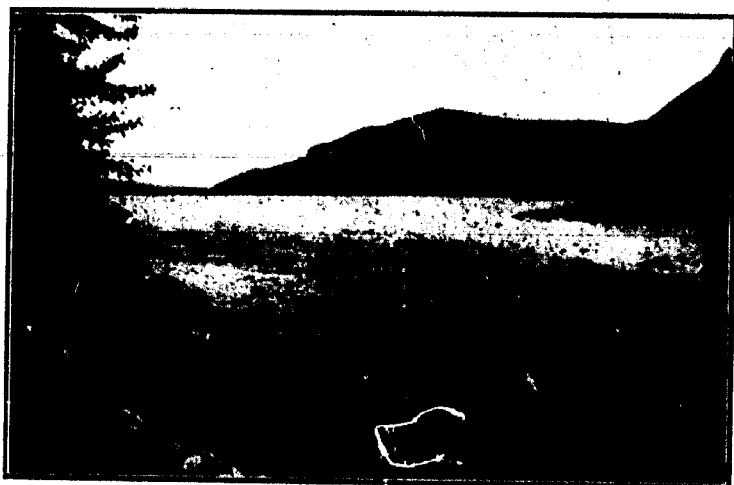


FIG. 2.—Grand Rapids, Athabaska River.



FIG. 3.—Leading Commission's Camp Supplies, Athabaska River.  
18804—p. 10.

is a rule increase rapidly whenever they are introduced, so that they may become a detestable nuisance especially to sportsmen who desire to take the better kinds of game fish.

#### 5. *Tullibee (Argyrosomus tullibee)*. Richardson.

This fish is not of much commercial value in these provinces, but as it is occasionally sold for whitefish, to which it is much inferior, a description may be of some value. It resembles very much whitefish in appearance to a casual observer, but on closer examination there are found to be important differences. The lower maxillary of the whitefish is shorter than the upper while the reverse is the case with the tullibee, the former having the mouth placed underneath while the latter has its mouth pointing upwards. It is a short deep fish with sides compressed being curved in the back and underneath as well. The colour is similar to that of the whitefish, but the flesh is softer with less flavour, and it is often found to be wormy. It is very interesting to read what the late Mr. F. C. Gilchrist who did so much for the fisheries of these provinces during his lifetime, had to say about it. In an official report he said: 'In September they will again be found gradually nearing the shoal water, feeding heavily, and plump with fat and the now swelling ovaries. Later on they appear to eat little or nothing, and devote all their time to playing until about the 25th of October, when they have settled down to the business of propagation, which they have finished by November 10. They prefer shallow water close to the shore with clean sand to spawn on, and during the day they may be seen in pairs and small schools, poking along the shores, but at night they come in thousands and keep up a constant loud splashing and fluttering, very strange and weird on a calm night. Two years ago I carefully counted the ova from a ripe fish 2½ pounds in weight, and found there were 23,700 closely resembling whitefish eggs in appearance, but somewhat smaller. After spawning the fish are very thin, lank, dull in colour, and quite unfit for human food.'

#### GAME FISH.

##### 1. *Trout*.

Two species of real trout are found on the eastern slope of the Rocky Mountains, the Cut throat trout (*Salmo Clarkii*) in streams of the southern part of the Province of Alberta and the Rainbow trout (*S. irideus Athabasca*) in the upper tributaries of the Athabasca river. These belong to the same genus as the king fish of game fishes, the salmon (*Salmo salar*).

Of the twenty-nine game fishes belonging to the family Salmonidæ given in the American Angler some years ago (August, 1892) as embracing all the species esteemed by sportsmen on this continent, ten only belong to the genus *Salmo*, most of the others being members of the Genus *Salvelinus* or Charr though popularly called trout.

Since there are no true trout to be found in the provinces to the east of Alberta it is reasonable to conclude that the two species are migrants from the Pacific Coast, and are therefore Western or Pacific species, and must in the opinion of zoologists have migrated thence to the eastern slope of the Rockies. President D. Starr Jordan regards these black spotted trout as migrants from the waters further west and has said:—'All the true trout have come to America from Asia, and none have crossed the great plains.' He adds that the Cut Throat trout must have spread from Alaska southward into California, and across the mountains into Montana, Utah, Colorado and the waters north of these states. Geologists tell us that the great upheaval which formed the Rocky Mountains took place comparatively recently, and it is reasonable to suppose that these fish were left on the east side of the newly formed mountains and have never since been able to find their way to the Coast.

2. *Cut Throat Trout (Salmo Clarkii)*. Richardson.

This fine game fish is the trout *par excellence* of the Rocky Mountain streams. It is as graceful in form and in its silvery hues as it is bold and strenuous in game qualities. It is a miniature salmon with its small head, silvery scales, black spots and muscular tail. The red gash on the under side of the lower jaw is a very marked feature when the fish is examined. It is a bold fighter and takes a fly with great readiness and vigour. A small Cut Throat say 7 in. and only 6 oz. in weight will give more sport than a *Salvelinus* of five times the size. They reach a weight of 4 lbs. and over but good fish weigh from 1 to 2 lbs. The scales are small, 170 or less along the lateral line, and the black spots are small but vary in number. The back is dark, the sides and under surface light and often showing a pink tinge, and at the spawning time acquire a deep red colour, the female being nearly as bright as the male. but the fins do not change colour as they do in many fishes. The palate is flat and the vomer studded with teeth and a line of slender teeth runs down the middle of the tongue, while larger teeth surround the edge of the tongue. The spawning time is mainly in April, May and June—they are spring spawners and always seek shallow gravel or sand bars and frequently ascend very tiny tributary streams. It is very often called, erroneously the Rainbow trout, but differs from the Rainbow by showing the mandibular red gash and the absence of any lateral band of red. The flesh is typically red, but often pale and at times almost white but the flavour is always excellent. Only one species is recognized in Alberta but further south many species or sub-species and on the Pacific Coast a very great number of species of the Cut-throat trout have been described by authorities.

Of all the indigenous fish of the western streams none are more worthy of preservation and of increase by artificial culture than this highly esteemed and beautiful trout.

The bright red blotch like a cut in the skin of the inner side of the mandible and the small scales and the small black spots, extending not only along the back and sides but over the tail and the fins marks it so plainly that no technical formula is needed to identify this splendid fish.

One of the most important characteristics of the true trout mentioned is their general non-cannibalistic nature, that is they do not prey on other species, unless very exceptionally, but live mainly on insects, larvæ, &c. They are, on three grounds, worthy of the fullest protection, viz: because of their non-predatory character, their excellent food qualities, and their fine game qualities. They are worthy of cultivation and of widespread increase by artificial culture, so that they may be increasingly abundant in the fine rivers and streams of the mountain and foothill country.

3. *The Rainbow Trout (Salmo irideus Athabasca)*.

Very much the same remarks as have been used in describing the Cut Throat trout could be properly used in describing this fish. It is also a true trout, covered with black spots, but with the following differences: It has no red stripe in the skin on the inner side of the mandible, but has a well-marked lateral red band, reaching from behind the gills to the base of the caudal fin. Its habits, game qualities and spawning time are similar to those of the Cut Throat. Apparently it is only found in the upper tributaries of the Athabasca river.

4. *The Grayling (Thymallus Montanus and T. tricolor)*. Cope.

The fish usually called Grayling in southern Alberta is really the Rocky Mountain Whitefish, but there is a true Grayling, indeed apparently two if not three species in the waters reviewed and reported on by this commission. A photograph of a specimen taken in a stream in Birch Mountain District, really a tributary of the Athabasca river, is, owing to its high dorsal fin and slender mouth and colouration

as described, undoubtedly Back's Grayling and called *T. signifer* by Richardson, who described the species as found in the various tributaries of Great Slave Lake. Further, a specimen forwarded in a dried condition from a tributary stream of the Athabasca west of Athabasca Lauding is unquestionably *Thymallus tricolor*, while other specimens obtained by Dr. Sisley are identical with the specimens found in Montana and named by Mr. Milner, *T. Montana*.

All alike are fine game and food fish, indeed, Dr. Henshall, the veteran fish authority in Montana declares that 'as a game fish the Grayling is fully the equal of the trout, though its way of taking the artificial fly is quite different.'

The typical Alberta grayling is similar to the Montana species and has smaller scales than the Michigan Grayling called *tricolor* or '*signifer ontariensis*.' It is slimmer in form, and has about a dozen small black specks about the shoulder, but not extending posteriorly as in the eastern grayling. The large oval dorsal fin is prominent in all, indeed it is a very extraordinary feature, distinguishing these fish from other Salmonoids and from most other fishes. All alike are insect feeders, and not injurious to other species in spite of the outcry raised some time ago against the planting of *Thymallus* in new waters. The Montana species which, as stated, is identical with the grayling most prevalent on the eastern slope of the Rocky Mountains, is coloured a steel grey on the back, the under surface pearly white, the sides silvery, a few black spots around the shoulder region, and the dorsal is rounder and more oval than the eastern species. The tail fin is distinctly furcate. The fish as a whole is neater and trimmer built than *signifer*. It reaches 2 lbs. in weight but on an average is only  $\frac{1}{2}$  to 1 pound in weight, and they may be taken from May to November, but take the fly best and are gamiest in summer. They spawn in April and May. The Michigan grayling which has been described in the west by several experts, including Dr. Eigenmann, has a more slender head, less of the blunt, pugnacious outline of *T. Montana*, and has larger scales, while the colouration of the dorsal fin is different. The scales of the lateral line number 93 to 98. The grayling of waters north of Alberta has a small head, acute snout, a blue mark below each mandible and 5 or 6 rows of bright blue quadrangular spots on the anterior part of the body on each side. The dorsal fin is very large and has 24 rays as compared with 20 rays in the eastern form, and 21 in the Montana species. Richardson described it as 'a beautiful fish which inhabits strong rapids. Its stomach is generally filled with gravel or black earth. It bites at the artificial fly with eagerness, and deriving great power from its large dorsal fin, affords much sport to the angler.'

Richardson found also a small Grayling which he called the Little Winter River Grayling, *Coregonus thymalloides*, which was no doubt the same as the species called *T. montana* though he stated that the number of dorsal rays was 24. All the Graylings have a characteristic geometrical arrangement of the scales by which they can be at once distinguished from either Trout or Rocky Mountain Whitefish. The number of eggs each fish produces is not large and each is of smaller diameter than the eggs of the Trout, viz.: one-seventh of an inch, and they hatch out rapidly viz.: in 10 to 14 days. The young fry are extremely small and delicate, and Henshall compares them to 'mosquito larvæ.' As the Cut Throat and the Grayling have their main spawning time in the same months, they can be increased in the same streams with safety, as spawning fish do not as a rule take much food or prey upon each other's eggs when laying their ova simultaneously. Where the Western waters are well stocked with these fine game fish just named they afford angling sport not to be surpassed anywhere.

##### 5. The Rocky Mountain Whitefish (*Coregonus Williamsoni*.)

So-called Grayling in Southern Alberta. This very fine fish, inhabiting the swift flowing streams and rivers of the eastern and western slopes of the Rocky Mountains, ranks as an esteemed game fish. Its mouth is comparatively small, toothless as in the Coregonidæ generally, the back not much elevated and the scales

rather small, viz.: 83 to 90 along the lateral line. Its weight is usually  $\frac{1}{2}$  or  $\frac{3}{4}$  of a pound but specimens of 3 lbs. weight are recorded. A sub-species called *Coregonus cismontanus* has been described in Montana which is more slender in form, has smaller scales, and shorter fins, and it may occur in Alberta. Both are grey on the back and slightly silvery on the sides and whitish below. They spawn in the fall, and are insect feeders, hence the grasshopper is a good bait, but they have been known to be caught in numbers with a small piece of beef but are usually bottom feeders. The readiness with which they take the fly gives this fish an interest and importance, which confers on them a special claim to protection and increase in western streams. They are at their best and are fat and in fine gamey condition in the early fall before spawning. They are gregarious and in August and September will congregate on shallow sandy beds of the stream and large baskets are secured especially it is said if small dark greyish flies are used but when the water is higher lighter coloured flies are more useful. The ichthyological formula for this fish is Head  $4\frac{1}{2}$  to 5; depth 4 to 5; Dorsal 11 to 14; Anal 11 to 13; scales 8 to 10—83 to 87; head short, snout compressed, maxillary short and very broad; adipose fin large.

6. *The Bull Trout or Dolly Varden Trout. (Salvelinus malma or parkei, Suckley.)*

The bull trout has not largely increased in most of the Albertan waters while the superior Cut Throat trout has been decreasing. The former has been partly regarded as the cause of the decrease for it is a predaceous species and indeed a cannibal. It is a charr and though often handsomely coloured externally, it has not the fine shape, active behaviour, determined gaminess and fine table qualities of the *Salmo clarkii*. It is most voracious, feeding greedily on its own and other species, and usually skulks at the bottom of pools or behind a stone ready to pounce upon any passing fish. It will not rise to the fly but takes bait such as a small fish, a piece of beef or other coarse lure, and has no fighting qualities. It requires no skill to secure and on that account has some popularity amongst anglers of little ambition or experience. Its general colour is a greenish brown or olive tint, variegated with dull pink spots, and often showing smaller orange spots, indeed in fine condition this fish may present quite a brilliant appearance but its coarse build, large head and capacious mouth, its skin in which the small scales are hardly discernible, fully 240 scales appearing in the lateral line, are all features which contrast unfavourably with the rival species in the same western waters. It reaches a large size, ranging from 10 or 12 inches up to 3 feet or from half a pound up to 12 or 14 lbs. It is not an attractive fish on the table. The flesh is very pale pink as a rule. Tastes however differ, and an eminent authority has pronounced it a 'good food fish' but he also states that it is much more voracious than the true trout and most freely takes the hook, and 'to the trout hog the Dolly Varden can be strongly recommended for it swarms in millions' in the Pacific waters to which he is referring. In evidence at some of the Commission's sittings its voracity and ease of capture were held to be favourable features, 'tourists,' said one witness, 'are pleased with bull trout as nine out of ten don't know the difference between it and a good game fish.' The chief features for diagnosing the species are the very small scales, the absence of wavy or vermicular lines on the back, the presence of red or orange spots, the massive head, slender body, and lack of fight or game quality when hooked. The species spawns in the fall, in the latter part of September and in October.

7. *Great Lake Trout (Salvelinus namaycush or Cristivomer namaycush, Walbaum).*

It is not usually regarded as a game fish but in Minnewanka Lake, near Banff, the Waterton Lakes and some other lakes near the Rockies it is fished for by troll and from its sheer weight and size, gives the fishermen some labour to land. The lake trout has no real game qualities although on rare occasions it has been taken with the fly, and ranges from 2 or 3 lbs. up to 60 or 70 lbs. In some lakes the smaller variety are distinguished as grey trout and often lack the varied spotted feature seen in the large examples. A profuse spotted colouration is marked in most lake

trout, the back, head and sides being dotted with pale round spots with at times orange cast, the head covered with dark vermicular marks and the fins showing the spotted character. The tail is somewhat furcate. Its jaws are armed with strong teeth and it is very predaceous, preying voraciously on other fish. The species is widely distributed being abundant in some northern lakes such as Little and Big Trout Lakes north of Prince Albert where considerable fishing has been carried on. In a short winter fishing season of 7 or 8 weeks 13,000 to 15,000 fish were taken by 6 men, a weight of catch amounting to not less than 40 tons. The fish in these lakes are both red and white fleshed and a large proportion run about 6 lbs. in weight. In Lake Minnewanka the Commission were informed that probably 1,500 trout were taken by trolling in the season—five persons taking 29 in four hours, the largest of the fish being 9 lbs. Examples 30 lbs. in weight are not rare when trolling, and the fishing lasts from June to early in August. The fish remain in deep water but in the fall come into the shallows to spawn. After the ice leaves in May they are also found in shallow water and take the bait readily, but in the summer months they are in depths of 30 to 50 feet or more, and at these depths will take the bait when trolled for.

## COARSE FISH.

1. *Fresh-Water Ling or Cusk (Lota maculosa, Le Sueur.)*

The ling is the only fresh water representative of the cod family, and is called by many other different names: Burbot, Lawyer, Lake Cusk, Loche and Methy. It is a very ugly and repulsive fish. It has a compressed head, with a small barbel attached to each anterior nostril, mouth wide and capacious; 'each jaw with broad bands of equal villiform teeth; vomer with a broad crescent-shaped band of similar teeth; no teeth on palatines' (Jordan). There is a long barbel hanging from the chin. The body is long, compressed, and more attenuated towards the caudal fin. There are two dorsal fins, the anterior one being short and the second one long, the anal one being also long. The caudal fin is rounded, and the scales are small and deeply imbedded. This fish spawns in the early spring (March) the eggs being small,  $\frac{1}{32}$ -inch in diameter and they are semi-buoyant. The eggs of the sea species float on the surface and it is thought that those of this fresh water species would float in sea water. This fish has no redeeming qualities. Its flesh is stated by some to be fairly good, but its disgusting appearance prejudices many people against its use. It is a nuisance to fishermen as it becomes very much entangled in his gill net when caught; it is a glutton, feeding at night, and with its capacious mouth gulps down many small fry when they are gathered together for the night resting on the bottom. Its destruction should be encouraged whenever and wherever found. It is indigenous to the waters of these provinces and is found in most of them, chiefly in lakes and in the deep water. The flesh when cured by salting and smoking is said to be quite palatable.

2. *The Sucker Family, (Catostomidae.)*

The Sucker family is a very large one containing some seventy species, many of which are found in these Provinces. The mouth is placed underneath the head and possess fleshy tubular lips with no teeth, although teeth are to be found in the throat of this fish, so that its food is thoroughly masticated before entering the stomach. It is a bottom feeder, living mostly on vegetable growth, and is usually found in muddy places. It is not a desirable table fish owing to its poor flavour and the presence of many inter-spinous and costal bones, although to those who are far removed from fish of good quality it is somewhat appreciated. To the Indian the head is a great delicacy, the rest of the fish he does not appreciate and sells this part to his unsophisticated white brother. Large numbers of these are taken accidentally in the gill nets by the fishermen when trying to capture species of better quality. These are usually thrown to one side, and are not considered to be of any commercial

value. If it were not for the expense of shipping they would be of some value in large cities with a foreign population. Several witnesses spoke before this Commission of their destructive habit of eating spawn of such species as the Whitefish, but this remains to be proven, for we found that many such general statements were not supported by facts.

### SPECIAL RECOMMENDATIONS.

We, Your Commissioners, recognize that it has been the policy of your Department to regulate the Fisheries of the different Provinces by means of an established license system, and accordingly make recommendations to the best of our ability along these lines, but at the same time we have reason to think that a change in this system at least in these Provinces is worthy of consideration and this we briefly outline in another place.

We also recognize the variable conditions that obtain in these Provinces owing to the rapid development that is taking place. Many persons are fishing now that in all probability will be so occupied with their agricultural duties in the winter that they will have no time or inclination for fishing operations, consequently regulations will require changing from time to time. Regulations that may be suitable now may be quite out of place in the near future.

#### LICENSES—KINDS OF, AND CONDITIONS.

##### *Permits for Indians.*

Indians and Half-breeds, resident in the two Provinces, should be granted free of charge an annual permit for the use of 60 yards of net, not more than one for each family, the fish to be used solely by the holder of the permit and his family, and no sale of fish is to be allowed. This permit shall allow Indians and Half-breeds to take fish during the close season for their necessary daily consumption, but not for the purpose of curing or hanging.

If an Indian or Half-breed wishes to fish for sale, he should be placed under the same restrictions as White men.

#### FIVE KINDS OF LICENSES RECOMMENDED.

##### *(a) Settler's License.*

Under this License the maximum amount of net to be allowed should be 30 yards, the fish to be used solely by the licensee and his family, no sale of fish being allowed; and not more than one license to be issued to each family; the fee to be \$2 and the holder should be allowed to fish summer and winter but not during the close season.

This License shall permit the holder or a member of his family, the use of the net.

##### *(b) Fisherman's License.*

Maximum length of net 300 yards. The fish caught under such a License may be sold for local consumption within the province in which the license is issued, but not for export, the fee to be \$5, and netting may be done either in summer or winter, in summer, only when there are proper cold storage facilities at hand.

This kind of license shall apply only to lakes which are not fully covered by settlers' licenses.

*(c) Fisherman's License on large lakes.*

Maximum length of net 600 yards. The fish caught under this license may be sold for consumption within the province but not for export; the fee to be \$10. Netting to be done in winter only.

This license shall apply only to large lakes where commercial fishing is allowed.

*(d) Commercial License.*

Maximum length of net 6,000 yards. Fee to be \$100; to be issued solely on large lakes (specified elsewhere in this Report) and only for winter fishing. The individual or company holding this license should not be unnecessarily hampered in fishing operations and should be allowed to employ experienced fishermen as hereinafter provided.

*(e) License for Baited Hooks.*

Fee to be \$2. Not more than 50 hooks to be used, the fish taken to be for consumption by the licensee and his family only.

## REGULATIONS PERTAINING TO LICENSES.

1. No license shall be transferable except by special written permission of the Inspector of Fisheries of the Province.

2. Each applicant for a license shall state the lake on which he wishes to operate, and no change in his license shall be made in this respect except by special written permission of the Inspector of Fisheries of the Province.

3. One license shall cover the taking of all kinds of fish whether Whitefish, Trout, Jackfish or other fish except Sturgeon.

4. No permit or license shall be issued to any person but a British subject and a bona fide resident of the Province in which he intends to operate, or to a Canadian Company with headquarters in the Province, preference being given to such residents as have been domiciled three years or more. This is not intended to exclude a bona fide homesteader from fishing for his own use, although he may not be a British subject for the time being.

5. Under licenses (a) and (b) no holder shall be allowed to employ any unlicensed person to fish other than an actual member of his household, and under licenses (c) and (d) no licenses shall employ any person other than a Canadian, who has been resident in the Province for at least six months.

6. All nets, anchor stakes and buoys shall be legibly marked by tags or otherwise with the number of the license issued to the owner.

7. All applications for licenses made before a specified advertised date should have preferential consideration.

8. Fishing with apparatus other than gill nets, or hooks and lines should not be permitted either in summer or winter fishing in either of these provinces.

## SUGGESTED REGULATIONS FOR HANDLING AND SHIPPING OF FISH.

1. Fish should be properly cleaned as soon as taken from the water and packed in proper boxes of a uniform size with a capacity of 50 or 100 lbs. or both sizes, the smaller size being suitable to small dealers. These boxes of fish should be suitably labelled by the Fishery Officer before being sold or removed from the lake, with name of lake where caught, of licensee, of shipper, of Fishery Officer, kind of fish, and date of catching, also whether for export or local consumption, otherwise to be liable to seizure.

2. We would suggest that an official circular be sent with every license explaining the proper manner of handling fish on being taken. Cancellation of the license



or the refusal of one for the following year should be the penalty for ignoring the rules laid down in this circular by supplying for sale repulsive looking and badly handled fish.

3. No railway, express or other transportation company should be allowed to accept for shipment any fish unless in boxes, labelled as above, nor should they be allowed to ship fish outside of each of these provinces unless labelled as above "for export."

4. Cold storage plants should be inspected from time to time and the storage of fish should not be allowed for more than a certain limited period, nor should any but properly dressed fish be allowed in cold storage.

5. All nets should be drawn at least once in every 24 hours as it is desirable to have fish in the best condition for food. Fish that die in the water in the nets are not in the best condition and should not be offered for sale.

6. No nets should be allowed to remain in the water between the hours of 6 p.m. Saturday and 6 a.m. the following Monday.

7. In the process of cleaning fish the offal should not be allowed to fall on and pollute the ice as has usually happened, but should be placed directly in boxes or barrels, these to be removed and emptied at a safe distance from the lake.

#### *Mesh of Nets.*

1. The mesh of nets should be six inches in the lakes generally where there exist whitefish or lake trout.

2. On lakes in which there are no lake trout or whitefish, but there are pickerel or tullibee, the mesh of net should be 4½ inches. This will not apply to sporting lakes, which are reserved for hook and line.

3. Owing to the fact that the fish in certain lakes on which fishing operations have not been carried on, are stated to be over-abundant and in consequence stunted and of small size, they could not be taken with a six-inch mesh. Under special permit a smaller mesh might be used until such time as they show an improvement in size. We find by evidence that this usually takes place in a few years, when their number becomes somewhat lessened and the over-crowding ceases.

4. The 6-inch mesh recommended above will allow most of the pickerel and perch to pass through. If it is found in whitefish lakes that these fish are becoming too plentiful and from their predaceous habits are reducing unduly the number of whitefish, a special permit may be issued allowing the catching of them with nets having a smaller mesh, say 4½ inches, and during the spring close season, at the mouths of the rivers and streams, when they are proceeding to their spawning beds, because at that time small whitefish are not likely to be caught. This should be carried on under the supervision of an officer.

5. Also most of the tullibee will pass through a 6-inch mesh, and it is a question if, at any time of the year, a smaller mesh could be used to take these fish without also taking small whitefish. This is a matter that might be enquired into by Fishery Officers. It has been stated in evidence that tullibee spawn a few days later than whitefish.

#### *Close Seasons.*

1. We recognize the impossibility of fixing a uniform close season for whitefish which will be applicable to all parts of the two provinces, there being such a diversity in the time of spawning according to location and other causes.

2. The ordinary close season may be fixed from the 1st October to the 15th December, which will be suitable to the larger proportion of waters in which whitefish may be found, with the exception of those lakes situated north of Prince Albert where the close season should be from the 1st October to the 30th November.

3. In lakes in which lake trout are found the close season should begin September 1 and end on the 15th December, in those where net fishing is allowed. In lakes

reserved for angling the close season should be from the 1st September to the 30th day of April.

4. The close season for pike, pickerel and perch to be from the 1st day of April to the 31st day of May, both days inclusive.

5. Under present conditions we see no good reason for a close season for suckers and allied species in streams in which no fish of good quality such as trout, are to be found. In some places, especially on the prairie, they are the only fish food procurable for the people living in these localities, and only in the spring when ascending the streams for the purpose of spawning.

6. We have no recommendations to offer with regard to sturgeon fishing, as time would not permit us to properly investigate the important waters in which these fish are found.

#### *Open Seasons or Periods for Fishing.*

1. Fishing operations may begin on the 16th December or on December 1st, as provided in section 2 under 'Close Seasons,' but should end on the 15th February. We make this recommendation for the reason that if fishing is carried on to a later date, a loss may be entailed, by early spring weather not permitting the transportation of the fish in good condition. Evidence shows that many tons in the past have annually been lost in this way.

2. The summer fishing season should commence on the 1st of June and end on the 30th of September. Summer fishing should be encouraged on lakes where there are facilities to allow of the proper handling of fish.

#### *Recommendations re Duties of Fishery Officers.*

1. At present guardians' and overseers' reports are sent to the inspector. Copies of these should be also forwarded to the Department of Fisheries by the inspector.

2. We recommend that the annual productive capacity of each lake be ascertained as nearly as possible and that a limit to this amount be placed on each lake, and that all net fishing should cease when this limit has been reached. We are not in a position to fully furnish this information, but a fishery overseer or guardian who is conversant with his work should be able to do so.

3. Correct returns of fish should be made to the inspector, to be entered in his annual report.

4. No net shall be permitted by any fishery officer to be so placed across a stream or a narrow channel in or between lakes, as to completely obstruct the passage of fish.

### GENERAL RECOMMENDATIONS.

#### 1. INSPECTORS' REPORTS RE LOCAL CONDITIONS NECESSARY.

It being impracticable to make specific provisions for every contingency, and in view of the fact that the conditions of fishing differ so much according to the waters, location, kinds of fish, the size and quantity that may be taken, &c., as we have already pointed out under the heading, 'Mesh of Nets,' (where we state that 'in some lakes the size of the mesh might be less' than the 6 inches extension measure recommended for the lakes generally), we recommend that special reports should be required from the Inspector of Fisheries to enable the Minister of Marine and Fisheries to issue appropriate instructions where the conditions are exceptional. Lakes which, on account of special local conditions must be regarded as exceptions, should be reported on by the Inspector and modifications in the general regulations should be authorized, such modifications to include not only (1) the special mesh of net necessary, but (2) the total quantity of net permissible in each of the several lakes,

and if possible should specify (3) a limit to the total catch of fish to be taken each season. On such reports from the Inspector appropriate instructions could then be sent by the authority of the Honourable the Minister of Marine and Fisheries.

## 2. PRESENT INADEQUATE SYSTEM OF PROTECTION.

We have been very much impressed in our tour with the extreme lack of a proper patrol by Fishery officers. The staff is altogether inadequate, and in many cases inefficient, and with the rapid settlement of the country this lack of effective supervision is becoming a menace to the fisheries generally. The Province of Saskatchewan has been more fortunate from the fact that she has possessed for some years an intelligent Inspector who has tried to do his duty, but even he has been handicapped in finding suitable Guardians at the beggarly salary he is allowed to pay them, and it is evident that more are required for the proper supervision of these waters.

The Province of Alberta for several years has had no Inspector, and only one Overseer, and the Guardians are few in number, consequently the waters of this Province have suffered accordingly, many important lakes having had no supervision. The people living around Lesser Slave Lake, which is 75 miles long by 25 wide, state that they have never heard of Fishery Regulations and have never seen a Fishery Officer.

We request the immediate attention of the Honourable the Minister to the above state of affairs in Alberta and beg leave to recommend the following:—

### *Inspector for Alberta.*

The appointment of an Inspector who should possess as nearly as possible the following qualifications. He should be at least 35 years of age and not more than 45, be strong, active, alert and sober, and capable of commanding respect, should be possessed of practical knowledge of all fishery matters in this Province, such as the use of nets, the different varieties of fish and their habits, able to endure hardship in all weathers, accustomed to the use of a canoe either paddling or sailing, and of sufficient education to enable him to report intelligently from time to time to the Fishery Department. A man of such qualifications should receive adequate remuneration, and we suggest \$2,000 per annum and expenses while away from home and on duty, for the first year, with an increase as he proves his capability. He should reside in some important centre such as Calgary or Edmonton. He should have the power of inspecting fish taken in this Province and of seizing those not in a fit condition for food. His whole time should be given to his fishery duties.

### *Overseers.*

Under the Inspector should be placed a number of overseers, as far as possible possessed of similar qualifications. Their duties should consist mainly in patrol work and they should also supervise the work of the guardians that may be placed under them. Each one should be allotted a certain amount of territory for which he is to be held responsible. The following subdivision will answer for the present:

District 1. This should include the territory from Calgary in the north to the boundary line in the south, and the work will consist chiefly in the patrol and supervision of all the mountain streams on the eastern slope of the Rocky Mountains, including the Bow River and its tributaries, also the Waterton lakes in the south.

District 2. This should include the territory lying between Calgary on the south and Edmonton on the north. The waters to be patrolled and supervised are the streams on the eastern slope of the Rocky Mountains including the head waters of the Red Deer river, and of the Saskatchewan river (north branch) and the following lakes: Gull, Sylvan, Buffalo, Pigeon, Battle, Buck, Cooking, Wabamun, and Ste. Anne.

Here we wish to remark that the present overseer is possessed of all the necessary qualifications and the department will be fortunate if it is able to procure as efficient men as this one to fill the other positions.

District 3. Lesser Slave lake, owing to its size, will require a good man, and under his supervision may be placed the following lakes: Whitefish, Wabiskau, Sandy, Moose, Calling and Baptiste.

District 4. What might be known as the Cold Lake district would require the services of a good overseer. The following are the lakes: La Biche, Whitefish, Goodfish, Boyne, Saddle, Cold, Primrose, Moose, Frog, Keheewin, Man, Crane, Muriel, Jackfish, Blue Jackfish, Fox, Tullibee and Fishing.

These men should commence with a salary of \$1,000 per year with expenses when away from home and on duty, to be increased from time to time as efficiency has been proved.

#### *Fishery Guardians.*

A third class of officers will be necessary, namely, guardians, who will be under the supervision of the overseers. Several of these will be required, some being employed by the year, and others temporarily. These also should be possessed of similar qualifications to those of an inspector, especially those referring to bodily vigour.

The appointment of guardians may properly be left until after the inspector and overseers have commenced their duties, for they will be in a better position to make recommendations with regard to the need of these.

We wish to heartily recommend the work of Guardian Hamelin of Lac la Biche, for we feel that he is doing his work thoroughly and well.

For guardians employed by the year the salary should be \$600 and expenses while away from home and on duty.

The above recommendations referring to officers and their work may admit of further explanation. The idea we wish to convey is that there should be an inspector for the province who shall supervise the work of the overseers and guardians and visit them as occasion requires. Also that the overseers shall have certain spheres of influence, and who shall not only do patrol work but also supervise and direct the work of the guardians that may be working in their localities. Guardians shall report monthly to the overseer, and the overseer shall then report to the inspector and he to the department.

We would respectfully suggest that the appointment of these officials should be placed in the hands of a commission appointed by His Excellency the Governor General in Council. Better results would likely follow and certain members of Parliament would be relieved from much annoyance and trouble.

The above suggestions and recommendations in general apply equally as well to the province of Saskatchewan, but since there has been an intelligent inspector in this province for several years, who is conversant with its conditions and necessities, we feel that he should be in a better position than this commission to advise your department as to the need of and distribution of the several officers required in this province.

### 3. ALTERNATIVE LICENSE SYSTEM.

If the foregoing recommendations as to officials and salaries are adopted and it is necessary that they should be to ensure the fisheries of these provinces being placed upon a proper basis, it will mean the annual expenditure of a considerable amount of money. Opinions were expressed by some witnesses that the income from the fisheries should be sufficient to render them self-supporting or more nearly so than at present. Timber and mines are now in some such position, and in our tour we were impressed with the marked contrast that exists in the results of the two systems. The forestry officials were found to be bright, active and intelligent men and in several instances

could give better evidence with regard to fishery matters than the fishery officers. Fire regulations were constantly before our notice in the form of cotton posters placed on trees and buildings, whereas fishery regulations were conspicuous by their absence, also in the most remote places, fire regulations were obeyed implicitly, while the reverse was the case with fishery regulations. It would appear then on the one hand that public respect is engendered, on the other widespread disregard.

Would anyone for a moment suggest that timber should be cut under a license allowing the use of so many axes, or that mines should be worked by limiting the number of picks and shovels? This would appear ridiculous, and the proposal would not be entertained for a moment. Why the difference in handling these natural resources? In view of these facts, we recommend to the attention of the Honourable the Minister of Marine and Fisheries, a change in the established license system.

That the Indian's permit, and settlers' license be retained as recommended.

That all fishermen under license (b) and (c), and all companies under license (d), take out a license at a nominal fee, say \$2 for registration purposes only, and that they pay one-half cent per pound on all fish taken for sale.

The same regulations as recommended heretofore, such as length of net, would apply under this scheme, but in this case we would limit the quantity of fish taken.

Under 'license (b)' we would limit the quantity of fish to 10,000 lbs.

Under 'license (c)' we would limit the quantity to 20,000 lbs.

Under 'license (d)' we would limit the quantity to 120,000 lbs.

As soon as these several amounts were reached by the fishermen or company he or they would cease from any further operations.

If this scheme were adopted it would be necessary to know the annual productive capacity of a given lake, and it should be ascertained under any scheme, as we have already pointed out.

We consulted several prominent witnesses asking their views with regard to this. They one and all expressed themselves as being entirely in accord with it.

The plan is simple and it would be much easier for an officer to compute the amount of fish taken than the quantity of net in use, and more businesslike, for under this scheme the fisherman pays only for the fish actually taken by him.

#### 4. HATCHERIES.

We are of the opinion that there should be a system of fish propagation carried on in these provinces and at least four hatcheries appear to be needed, two in each province. One of these hatcheries is required in the province of Alberta for the propagation of trout, and we will deal with this under that part of our report dealing with game fish. The three other hatcheries should be mainly devoted to the hatching of whitefish ova. One might be placed near Edmonton, another on the Qu'Appelle lakes and another in the neighbourhood of Prince Albert, as there are lakes containing the best quality of whitefish near each of these three places.

These hatcheries would not only increase the productiveness of the waters but would also admit of the introducing of new blood into small lakes where we suspect inter-breeding may have been going on for many years. The summer death rate in many of these lakes is considerable, and it is just possible this condition may be partly responsible for the loss.

It may here be mentioned that the other provinces are fairly well supplied with hatcheries, while Alberta and Saskatchewan have none. There is as great need for them in these provinces as in any of the others.

#### 5. CLAIMS OF INDIANS AND HALF-BREEDS.

One important point in dealing with the fisheries of these two provinces, is the claim of Indians and half-breeds to special consideration.

To intelligently handle this question it will be necessary to go into the subject more fully than at first sight may appear desirable, and for the sake of brevity the

term 'Indian' is meant to include halfbreed as well, and one term might well include them both, for it has been repeatedly stated to the commissioners that there are few, if any, pure bred Indians in existence at the present time, referring specially to those living in the north. The distinction is that the halfbreed is a Canadian citizen while the Indian can be made so only with difficulty under our present Indian Act.

The Indian of to-day is not of the same class as was to be found previous to the advent of the white people. Then he was free to roam the country far and near and nature was so prodigal in her productiveness in comparison to the population, that no conservation regulations were necessary. Being thus assured of a subsistence easily secured, he consequently became a free and independent being and his philosophy of life was: 'Take no thought for the morrow, sufficient unto the day is the evil thereof.' The buffalo after a time ceased to exist and other changes took place, so that the Indian became more dependent on fish for food than previously.

The Indian of to-day inherits the philosophy of his forefathers, but under entirely changed conditions, and he finds himself so hampered in many ways, that this is not a practical rule of life for him, at the present time, and to meet these changed conditions, it will be necessary for him in some ways to change his mode of living.

Even of the Indian to-day it cannot be said that he will not work, if allowed to do so in his own way. Solitary labour does not appeal to him, and when working in numbers together, it is an easy matter to arouse some rivalry among them as to which is the best man, and then he will accomplish some wonderful feats of agility and strength.

The missions have done good work with their Indian schools; but the full benefit of this work has not been reaped, for the children are allowed to return home at the age of sixteen, when they still require guidance: for if they return at this time of life to the tepee and the blanket, their civilized training is soon forgotten and the primitive life of their parents is adopted. The missions have also accomplished something in the way of enlightening the Indian generally, but this influence has been overbalanced by other people with whom he has come in contact. To speak more plainly, since the advent of the trader the Indian has been reduced to a condition of slavery. His instincts as a hunter were utilized and he was engaged to catch and bring in furs for which he received in exchange, flour, bacon, tea, sugar, tobacco, blankets, &c., but at greatly enhanced prices in comparison to the amount he received for his furs. Also, if his catch of fur was a good one, many useless things are said to have been pressed upon him by the unscrupulous trader, the object being to have the Indian in his debt so that he would be compelled to work for him the following season, when a similar process would be repeated.

The Indian then was a slave under the lash of debt. Add to this the immorality practised by some of the whites (too many of them) and now we have a class of Indians, who in many cases have become tuberculized and generally demoralized, with white blood running in their veins which has not always crept in by the legal method of matrimony. Thus civilization has so far been a detriment rather than a help to the Indian, and little has been done to stimulate his self-respect. Even the treaty money paid to him yearly has the tendency of leading him to pauperism.

Their claim is that they should be allowed to take all the fish they require during the spawning period of the whitefish, not only for their daily needs, but also for the purpose of curing for winter consumption for both themselves and their dogs.

The reasons given for this are the following:—

- (1) Ease of capture as the fish are congregated in shallow water.
- (2) The fish were easily cured, for when caught they were hung by the tail in rude shelters constructed for the purpose.
- (3) These dried fish were easily carried long distances, furnishing food for man and dog.
- (4) Dogs are the only animals suitable for transport in this country at the present time.

(5) Green fish are not as good food for dogs and from their weight less can be carried.

(6) Without these 'hung' fish Indians would not be able to hunt, therefore could not make a living.

These are the principal reasons given why they should be allowed to fish in the close season.

#### VIEWS ON INDIAN CLAIMS GIVEN BY TRADERS, CLERGY, &C.

Evidence was obtained by your commissioners from four different sources: The Indians themselves, the traders, the Missions, chiefly the priests, and from independent people, the first three naturally upholding the Indian claim; the second and third because their interests depend to some extent on the Indians.

*The Indians' Argument.*—They stated, 'We are not practical fishermen, and the only method by which we can successfully catch whitefish is by netting during the spawning period.' They also stated that the Treaty Commissioners when negotiating held out to them as an inducement to signing the treaty that as long as the sun should shine and the waters flow they would not be interfered with in their accustomed rights and habits. This is not specified in the treaties, but to their minds it is just as binding, for if this inducement had not been held out to them they would not have signed. If the commissioners did make this promise is it right that it should be later repudiated? It was also stated by several witnesses that the Indian agent when recently paying treaty money told them that they need not obey the fishery regulations, as these did not apply to them.

*The Traders' Argument.*—This is not an agricultural country, and the Indian is dependent on fur and fish for a living, therefore he must fish during the close season.

~~This argument when closely examined, means that without this privilege, the Indian cannot catch fur, 'therefore we will be practically put out of business. In other words sacrifice the fisheries in order that we may make a profit.' The traders as a rule have not been noted in the past for any great concern they have shown for the welfare of the Indians.~~

*The Missions.*—The priests, out of the kindness of their hearts, are always ready to put in a good word for the Indian, since they exercise a paternal influence over them and having Indian schools such as at La Plonge, the feeding of Indian children is one of their problems. Their argument is that the Indian should be allowed to fish during the close season, so that he may not starve. If the Indian is allowed this privilege then 'we should be allowed the same, for we are feeding Indian children, and these children are not healthy without a fish diet.' Possibly the cheapness of this food may have had something to do with this last statement, and it is quite apparent that if the alternative is the preservation of the fish the Indian Department ought not to hesitate to find other ways of having the children fed.

Independent witnesses claim that the Indians should not be allowed any such privileges and that they would not suffer in consequence.

#### FINDINGS OF THE COMMISSION.

(1) The Indian as a rule has little else to do in the summer time but his fishing, but there is more work in connection with taking fish at this time than at the spawning time.

(2) The Indians cure meat (moose, &c.) in the summer time, and we have seen them curing fish in the summer time also.

(3) The Trading companies thought at first that they would not be able to feed dogs without fish, but they now feed on corn meal and tallow.

(4) The Indians at the present time are not in as comfortable circumstances as they might be and deserve the sympathy and help of the public along proper channels.

(6) The whole Indian question in the north country should be properly investigated by those in authority, with a view to improving their health and the development of those several forces which will raise their standard of life and activities.

(6) It is the duty of the Fishery Department to so conserve the fish that the best results may follow, and to this end a rigid close season is necessary.

(7) The Indians should have preferential treatment in lakes near which they live in so far as it does not conflict with the regulations of the department in the matter of conservation of the fisheries.

(8) If the Fishery Department undertakes to practically feed the Indians by allowing them to fish in the close season it is taking upon itself duties which properly belong to the Indian Department.

(9) If this practice were allowed it would be to the detriment of the Indian himself in a few years. We have found that he has already depleted some lakes.

We have been informed from a credible source that the Indians in the Peace River district are in a much better position than those visited by the commission. The money these received from furs they did not waste in foolish articles, but bought implements and harness, and are now earning a good living by freighting and farming operations, thus showing that the Indian can make good if he has the proper encouragement and has an opportunity.

*Conclusion.*—To allow the taking of fish in the close season is in no wise a solution of the Indian question, and it should be faced in a proper manner by the Indian Department. We cannot uphold this claim of the Indians as being for their own and their children's welfare, not to mention that of the fisheries generally, and therefore recommend that a rigid close season be maintained except as elsewhere provided for under heading 'Permit for Indians.' With regard to lakes situated farther north such as Athabasca lake, where almost the sole population consists of Indians and where the 'hanging' of fish is still practised, without harmful results to the fisheries, owing to their great extent, we recommend that a gradual change should be brought about in enforcing that part of the regulations referring to close seasons, for the Indian would suffer more at this time by a full enforcement, than he would later on as the country becomes opened up to settlement, and he will have an opportunity of earning a living in other ways.

#### 6. FOREST AND FIRE RANGERS TO BE FISHERY OFFICERS.

We have found in many instances that forest and fire rangers while on duty travel over the same water routes, which it would be necessary for a fishery officer in the discharge of his duties, also that in some instances these forest rangers as soon as their work terminates in the autumn, under the Forestry Branch of the Department of the Interior, become engaged as guardians under the Fishery Department. We, therefore, recommend that some arrangement be reached between the Fishery Department and the Department of the Interior whereby forest and fire rangers may act as fishery guardians at the same time. The mere knowledge that they were connected with this department would have a deterrent effect on those disposed to disobey the fishery regulations. If they performed no other duty than reporting offences against the fishery regulations to the Department of Marine and Fisheries, through their own department, they would be of some service.

#### 7. PUBLICATION OF FISHERY REGULATIONS.

We, as a commission, have been much impressed with the general lack of knowledge prevalent in the two provinces as to the fishery regulations. These regulations in our opinion should not only be prominently distributed throughout the provinces, especially by means of placards on cotton posted along the banks of the rivers and on the shores of the lakes, in hotels and in public places generally, but they should also be announced in the news columns of the local newspapers from time to time.



These regulations should be printed in English, and in Cree Syllabic, for if printed in English alone there is good ground for parties (Indians and half-breeds) claiming to have violated the regulations unwittingly when detected by the officers. This course has already been adopted by the Forestry Branch of the Department of the Interior.

#### 8. PROHIBITION OF NON-INDIGENOUS FISH.

We are of opinion that there should be stringent prohibition against the introduction and planting of new species of fish not native to the waters of the two provinces. Great harm has resulted in many cases from the planting of foreign species of fish, which have become a nuisance. Should there be grounds for introducing fish not indigenous to these provinces, such steps should be taken only with the permission of the Honourable the Minister of Marine and Fisheries.

#### 9. PLANTING PARENT WHITEFISH.

Of all the lakes visited by your commission we found only two, Gull lake near Lacombe, and Sylvan lake near Red Deer, that seem suitable in every way for whitefish but do not at present possess them. The stocking of Gull lake with whitefish has been before your department for some time, having been suggested, we believe, by Hon. Senator Talbot. We recommend that a small grant be spent on each of these lakes for this purpose, with the distinct understanding that this experiment is to be carried on under reliable supervision so that the test may be a fair one and the result may be of value for guidance in future work along similar lines.

#### 10. GASOLINE YACHTS FOR FISHERY OFFICERS DESIRABLE.

Our attention was drawn to the fact that on some lakes, owing to their extent, fishery officers would be able to do much better work if suitable arrangement could be made whereby they may have the use of gasoline yachts. L. I. Wood, Fishery Overseer on Pigeon lake, offered to place one on that lake if some suitable remuneration were sanctioned, in fact, if his expense in fuel and oil were provided for he would provide a launch. We recommend this as being worthy of the attention of the department.

#### 11. DAMS AT THE OUTLETS OF CERTAIN LAKES.

The Dominion government has in the past erected dams at the outlets of certain lakes with the object of raising and conserving the water, and at a number of sittings evidence was given to this commission strongly in favour of the building of further dams, in view of the fact that those previously erected had proved to be satisfactory though to the detriment of the lakes below them. Such new dams might be built at the foot of Crooked lake and Qu'Appelle lake near Fort Qu'Appelle.

In such dams provision should be made for the safe passage of fish either up or down stream. The commissioners visited two of these dams, one known as the Craven dam and the other the Katepwa dam. Fishways were found at both these dams at one side of the spillway but were constructed and placed in such a manner as to render them useless for the purpose they were intended. We found them tightly boarded over on the top, admitting no light, and divided into compartments by means of partitions with openings to allow of the passage of water from one compartment to the next lower down. These openings were of such a small size as to become easily blocked by floating debris, and the outlets of these fishways were some two feet higher than the level of the water at that time. They were built with a more gradual descent than the spillways, consequently the water discharges from them a considerable distance down stream. The fish on their journey up stream pass by the fishway outlet and proceed to the foot of the spillway, wearing themselves out in futile efforts to ascend at this point. The subject of fishways is in need of special investigation

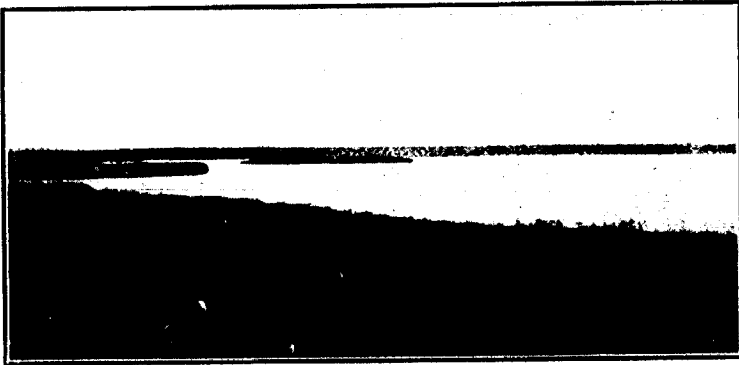


FIG. 1.—Frog Lake Alberta.

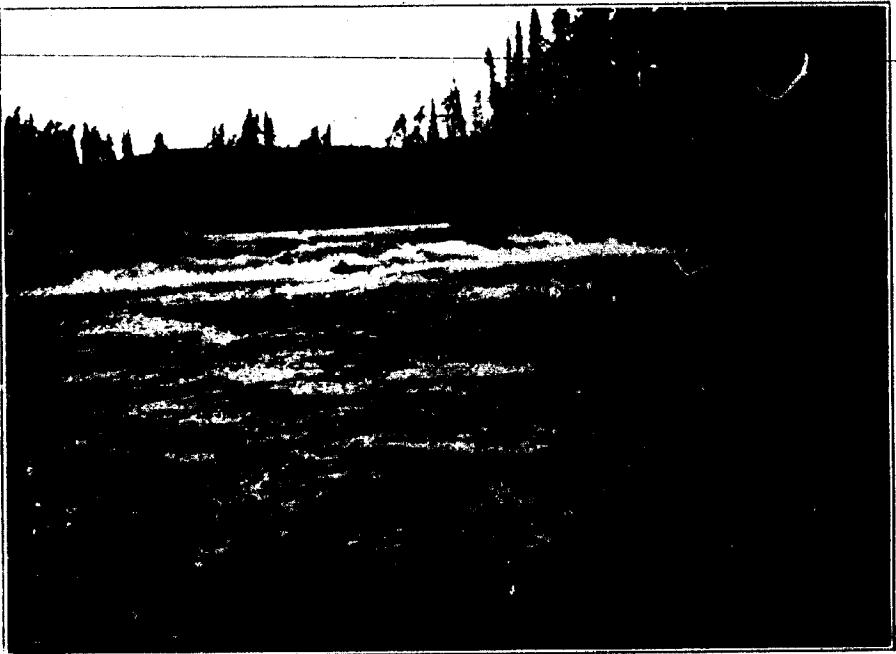


FIG. 2.—White Mud Falls, Clearwater River.

by some practical man, in order that the Department of Fisheries may be in a position when enforcing the regulation to give specific instructions as to what is required. In the case of small dams, say to the height of 5 feet, fishways would not appear to be necessary if the spillway were given a gradual descent to the level of the water below and were depressed in the middle to increase the depth of the overflow instead of being flat and wide, as at present, causing the water to overflow in a wide shallow ribbon. Fish would have no difficulty in ascending a dam so constructed, provided there was a sufficient depth of water overflowing the spillway.

## 12. THE KANANASKIS FALLS AND THREE LARGE DAMS ACROSS THE BOW RIVER.

The Kananaskis falls are some twenty feet in height and under ordinary conditions, do not admit of the passage of fish up stream. There are no streams of any importance emptying into the Bow for the stretch of two miles between these falls and the dam below.

### (a) *The Calgary Transmission and Power Company's Dam.*

This dam is 60 feet high with a base equal in width to the height. It might be mentioned that this dam is built for power purposes supplying Calgary and Exshaw. The fish pass, as shown on the company's plan, has a drop of some 60 feet in 80 feet. It is a question whether it is possible to construct a useful fish pass or ladder under these conditions. It might be further mentioned that there are two important streams, the Ghost river and the Jumping Pound emptying into the Bow, one from either side, below this dam, and these streams afford ample spawning grounds for all fish between this dam and Calgary. The fish-frequenting this part of the river are cutthroat trout, bull trout and Williamson whitefish.

*Conclusions.*—In our opinion a fishway is not necessary, very difficult of construction, and likely to be useless under the circumstances.

At this point we would like to mention that all three of these companies interested cheerfully gave us all possible information and stated that they were ready and willing to comply with the fishery regulations, but at the same time emphatically stated that they thought it was the duty of the department to supply them with information as to what was required of them.

### (b) *The Southern Alberta Irrigation Company's Dam, 14 miles southwest of Namaka.*

This dam is about one-half mile in length and ten feet in height. It is built across the foot of an island with a concrete spillway at either end with an earth embankment some 1,200 yards in length between. If fish passes are necessary here, two will be required, one at each of the spillways and these present no difficulties of construction. The gates for supplying water to the ditch are placed at the southwest end of this dam. The gates for supplying water to the ditch are placed at the southwest being found so far down stream.

*Conclusions.*—As long as the companies are allowed to take water for irrigation purposes without screening their canals, these dams would be better without fishways, for the fish ascending would in all probability lose their lives by descending the canals. Furthermore the classes of fish found there are fond of slow running water and this dam will be a help to them rather than a hindrance, provided they are not all destroyed by descending the irrigation canals. Our conviction is that no fishways are necessary. This company is constructing a reservoir some miles below the headgates, which will be some 20 miles in length and one mile in width. If the outlet of this reservoir were screened, it would provide such a suitable place for pike and suckers, that a much larger number of them would thrive there than ever were found in the Bow, furnishing food for a considerable number of people.

*(c) The Canadian Pacific Railway Irrigation Dam near Bassano.*

This dam when finished will be 50 feet in height with a base of similar width. The headgates for the irrigation canal are placed at one end of the dam. The same fish but few in number are found here as frequent the water at the dam known as No. 2, in this report. This company is also constructing a reservoir some three miles below the headgates, which will be three-quarters of a mile long and a quarter of a mile wide and 30 feet deep. If this reservoir could be properly screened, it along with the pond formed by the dam would provide much better conditions for the fish found there than have previously existed in the Bow river. At the present time they are only found and taken out of the sluggish backwaters in the river and this kind of water is not very plentiful in such a rapid river as the Bow. Mr. J. S. Dennis, manager of Irrigation, Alberta and British Columbia Land Company, informed us that he intends to do his utmost to properly screen this reservoir.

*Conclusions.*—No fishway is necessary. Dams No. 2 and No. 3 will be a benefit rather than a detriment to fish if proper screens are installed. Fishways could be extended down stream far enough to admit of a gradual descent but the fish would pass this outlet and ascend to the foot of the dam making useless efforts to ascend over the dam.

## 13. EXPORT OF FISH.

It is exceedingly desirable that our own people should be enabled to obtain a supply of fresh fish and the best our lakes afford instead of having the choicest of these fish sent away to a foreign market. The population of these two provinces is increasing so rapidly and will continue to do so that the time is not far distant, if, in fact it has not already arrived, when the demand for fish will equal the annual capacity of our waters. To secure the maximum of consumption however it is necessary that fish should be available during the whole of the year and in the best possible condition. In winter, fish can be handled in a frozen state and forwarded to urban communities without any preservative other than that provided by nature. It is at this season of the year the commercial companies can operate most safely. They find it at present more profitable to ship to a single point—a United States one—than to distribute directly to many points as would be necessary were they restricted to the local market. It is even contended that to so restrict them would be to put an end to commercial fishing because the provincial demand would not be sufficient to make it profitable for a company to engage in fishing as a business; that few places could make use of a carload at a time and to ship in less than carload lots is too expensive. The people of these provinces are, however, more concerned with the problem of being able to secure an ample supply of fish food, than that a few commercial fishing companies should be able to carry on their business under conditions most profitable to themselves. If prevented from shipping to a foreign market they would probably find means to dispose of their catch to our own people. We think it advisable that the export of fish should be discouraged and in fact not even permitted from the smaller lakes. Under the present system of fishing practically all the catch is made at one season, namely, December, January and February. This brings more fish on the market than are needed by these provinces. Export to other markets is the result and at other seasons the home market is dependent for its fish supply upon external sources. The large drafts upon our lakes in the winter months not only produce more than the local demand requires, but in many cases it practically exhausts the whole of the safe annual catch leaving little or none for summer fishing. The aim of a wise system should be to distribute the catching over as great a portion of the year and the product over as large an area of local consumption, as possible. To achieve this ideal natural difficulties must be overcome. It is obviously impossible to carry on summer fishing and to widely distribute the product without some efficient method of preserving the fish while in transport from the lake to the consumer. Only two methods

are apparently in sight and these are, first, cold storage, including under that term the use of some freezing agent, whether in a warehouse or shop, or while in transport; and, second, salting or smoking or both.

#### A.—COLD STORAGE OF FISH.

Preservation by freezing seems to be the better of these two methods. How is this system to be secured. Cold storage warehouses are necessary. Shall they be owned and operated by private companies or by the government? Such warehouses are in the nature of monopolies and in private hands are open to the objections incident to other monopolies. If owned and operated by the government they should have all the advantages of private plants without their objections, but could the government undertake the task? We are free to confess we have our doubts. Governments do operate creameries but the conditions are not the same. Even in the matter of creameries it has been found more satisfactory to assist private enterprise. Possibly, in the fish industry, it would be better to utilize private ownership aided by subsidies.

In 1907 an Act was passed by Parliament for the encouragement of cold storage plants under which the government offers, subject to certain conditions, to contribute to defraying the cost of building and equipping cold storage warehouses up to 30 per cent of such cost. The Act further provided for securing that such warehouses shall be properly equipped and conducted subject to inspection and regulation of the rates and tolls charged to the public for the use thereof.

If private companies can see their way to build such warehouses so as to entitle them to the assistance given under this Act the problem would be solved and the evils of a monopoly to a large extent eliminated. If the Act does not go far enough or is too restrictive to be popular, it could be changed to meet the circumstances of the case.

We observe that this problem has been presented to another commission and the way in which it was dealt with by the commission to inquire into the fisheries of Georgian Bay, &c. (at pp. 20 to 22 of their report),\* will repay perusal.

#### B.—PRESERVING FISH BY SALTING AND SMOKING.

Preservation by 'salting' as ordinarily performed, while it does keep fish or flesh treated from spoiling, produces an article of food which is not so palatable as that preserved by freezing. Salt fish, like salt pork, or corned beef, may be kept for a long time. It is not always necessary, however, that it should be so cured. If it can be treated so as to remain in proper condition long enough to reach the retail dealer, and while he is disposing of it to his customers, that would practically overcome the difficulties of handling in summer, and if a process of preservation can be used which does not affect the palatability of the fish, it would obviate the objections incident to ordinary salting.

A method of preserving fish for summer use has been suggested which is worthy of careful consideration, that is, curing by light salting and smoking, as is done in the case of Finnan haddie. The proposed method is not new in theory nor even in practice in these provinces, but it has not been applied by persons having any special training or experience or under the best conditions. During our visit to Lesser Slave lake we learned that this process had been recently tried with a fair measure of success, sufficient to encourage experiments on a larger scale and by improved methods and appliances. On this lake at its eastern end is Dog island, the only one in the lake, and here a company in which Mr. J. K. Cornwall, M.L.A., is largely interested, is already making preparations for treating whitefish as above mentioned, the operation covering from a few days to a fortnight, depending on the length of time the fish,

\*Georgian Bay Fisheries Commission, 1906-1908. Report and Recommendations, Ottawa, 1908.

when treated, are intended to be kept before consumption. The work is to be carried on under the management of Captain Nielas, who was sent to Germany for three months to learn the latest and most improved methods of fish curing.

The commissioners have had an opportunity of examining fish treated by Captain Nielas, both for immediate consumption and for extended preservation. A sample of the latter was sent by express from Lesser Slave lake in November to Calgary and from there to Ottawa, and now, near the end of December, both in appearance and flavour it compares favourably with the best finnan haddie.

If this treatment when applied to whitefish proves successful and practicable, it may be extended to other kinds of fish such as pike, doré and tullibee, and it has even been suggested that ling, which abounds in most of our waters and which is not at present seriously regarded as human food, might, when so treated, be rendered fairly palatable. We are not able to say whether this suggestion as to ling may or may not be practicable but it is at least worthy of a trial. As to the other fish named, we see no reason why it should not be practicable and while preserving them also improve their appearance and flavour.

Should this method of curing whitefish prove to be the success that is hoped for it, some encouragement should be given to the pioneers in what may be incalculable benefit to these provinces. This encouragement might take the form of making Lesser Slave a summer fishing lake so far as commercial fishing is concerned, that is to say limiting or if necessary prohibiting commercial fishing in winter, in order that a company entering on such an enterprise may be certain to have sufficient fish to justify the expense that may be requisite in the erection of necessary building, plant, &c.

#### 14. LAKES WITH SPECIAL FEATURES.

##### *Cold Lake.*

This is by all odds the finest lake in the west and it is doubtful if there is any finer for its size in Canada. It is 28 miles long by 20 miles wide. The water is cold, clear and very deep. It has been stated by some witnesses that it is 600 feet in depth. It is surrounded by rocky and sandy shores. Heavy storms may rage here for days without affecting the purity of the water, and no vegetable growths are found upon its surface, such as algæ, which are so unsightly on many other lakes, and no dead fish are ever seen on its surface in midsummer, which condition is common on many lakes. It is surrounded for the most part by vigorous forests, and in several places are shady and delightful spots for summer homes. The Alberta government contemplate building a railway line to this lake, and from the characteristics already mentioned and from the fact that the finest of lake trout are taken in these waters, sometimes reaching the weight of 65 pounds, it will no doubt soon become one of the finest summer resorts. Unrestricted commercial fishing has been carried on here for several years and the close seasons have been disregarded, resulting in partial depletion. We therefore recommend that no commercial fishing be allowed on this lake until a proper fishery officer can report to the effect that it is capable of standing such fishing.

Cold and Primrose lakes are in the peculiar position of being partly in one province and partly in the other, the former is mostly situated in Alberta, and the latter mostly in Saskatchewan. This has given rise to some confusion in issuing licenses, as they have been issued from both provinces. There are two ways of overcoming this difficulty, either by placing both lakes for fishery purposes in one province, and owing to the fact that the only trails to these lakes run through Alberta, they should be placed in this province, or for fear of interprovincial controversy, the boundary line between the two provinces, which is here particularly plain and marked, should be the dividing line, so that a license issued in Saskatchewan shall apply only to the waters of these lakes situated in the said province, the same to apply to the Alberta portions. We recommend the latter.

*Lac la Biche.*

This is a fine sheet of water studded with many islands and the water is generally deep. It is stated in evidence that while the whitefish are very large and fine they cannot be netted in the winter time. The probability is that the fish during the cold weather resort to deep water. Expert fishermen have tried to take them in deep water at this time but have failed, but it must be remembered the nets used are so arranged that they invariably sink to the bottom of the lake, and while the fish are no doubt in deep water it would hardly be right to infer that they would be at the bottom. This difficulty may be overcome when transportation facilities have been provided, by allowing of summer fishing.

*Pigeon Lake.*

This lake has probably sustained more continuous fishing than any other lake in Alberta, and is yet a good lake, this condition resulting to a great extent from the careful attention it has received from its overseer. At the present time the city of Edmonton is contemplating the taking of its water supply from this lake. We have been informed by Overseer Wood that the stream which flows from this lake, which at the time of our visit was of large size, during dry seasons becomes altogether dry. Under this circumstance the taking constantly of a large supply of water will no doubt considerably lower the lake. It has been suggested that a dam be built at the outlet of the lake to conserve the water. In this connection Mr. Wood also informed us that a dam had been built some years ago and remained intact for one winter, but the water in the lake did not rise to any appreciable extent. This may be owing to the sandy nature of the soil at this point. We wish to draw the attention of the department to this matter so that Pigeon lake may not be injured in regard to the fisheries for which it has had an enviable reputation.

*Lac Ile à la Crosse.*

Extensive commercial fishing was carried on at this lake last winter, but we find that the bulk of it took place within five miles of the village. Complaint was made that this interfered with the inhabitants securing fish for their own consumption. We suggest that no commercial fishing should be allowed within five miles of the post office in this place.

*Battle Lake.*

The whitefish in this lake do not spawn until January, and if a proper close season were arranged for this lake it would not permit of winter fishing. We recommend that as this is only a small lake, no winter fishing be allowed upon it.

*Macleod Lake.*

This lake is situated eight miles north of Athabasca river, opposite the entrance of the Macleod river. Inspector Peter Gunn states that he has taken whitefish from this lake ten, twelve and fifteen pounds in weight. They have a small head and these large fish can be taken with a 5-inch mesh. It is a small lake, being only 3 miles by  $1\frac{1}{2}$  miles.

*Sturgeon Lake.*

This lake lies about 100 miles west of Lesser Slave lake, and the whitefish are said to spawn about the 25th of December, and the same may be said of Shining Bank lake.

*Buffalo Lake.*

This fine sheet of water is situated near Stettler, and is used by this town and others as a summer resort. At present the lake is only stocked with coarse fish such as pike and suckers. Those interested in this lake are persistent in their efforts, which are to be admired, to better the quality of the fish, and even request a hatchery. To our minds the hatchery is out of the question, as the water of this lake does not appear to be sufficiently pure. During the visit of the commissioners on the lake some wind was blowing and the surface was flecked with small patches of foam, and the shore was lined with the same as seen in the half-tone view, showing that there exists some foreign matter, probably soda. The water was also quite turbid at the time of our visit.

*Bittern Lake.*

There are certain lakes of which Bittern lake is a notable example, also Whitesand and Whitefish near Lac la Loche, in which there exists a small aquatic creature which destroys the nets. If the nets are left in for 24 or 48 hours, at the end of those periods there will be, it is asserted, nothing remaining but the ropes. Some fishermen partly overcome this trouble by dipping their nets in lime water.

*Windermere Lake, B.C.*

This lake is becoming noted as a summer resort. It is a small lake, six miles long by about 2 miles in width at its widest part, and 30 feet deep, situated near the upper end of the Columbia river. Very few fish are to be found in this lake, especially during the summer season. Those having summer residences in the neighbourhood are anxious that good fishing should be added to the many other attractions, and accordingly have requested your department to stock it with black bass. Our investigation took place about July 10, 1911, and we found the following conditions to exist:—

One species of trout is found in this lake during the winter season, but they likely migrate on the approach of warm weather. Temperatures were taken of some neighbouring streams and of this lake on the above date with the following results:—

Temperature of the air about midday was 53° F. and this had been about the maximum temperature for the previous two weeks; in fact there has been no warm weather so far this season. Temperature of Toby creek, which enters the Columbia river, a short distance below Windermere lake, taken near the mouth, was 44° F., of Dutch creek, which enters the river above this lake, was 50° F., and of Columbia river channel some miles above the lake, was 58° F. The temperature of Windermere lake was taken in its middle and at the surface and at the bottom. Surface temperature was 62° F., and the bottom 64° F. Entering into the river above this lake were seen some hot sulphur streams which would partly explain the temperature of the lake, and as the bottom of the lake was warmer than at the surface and 10° F. warmer than the air, it was thought by the commission that possibly there might be hot springs at the bottom of the lake as well.

Toby and Dutch creeks mentioned above, which are mountain streams, are well stocked with cut-throat and bull trout.

We also examined several small lakes in the vicinity in which fish do not at present exist. The stocking of these did not appeal to us as being worthy of trial for the water in them proved to be shallow, warm and stagnant.

*Conclusion.*—We are not of the opinion that black bass would prove a success planted in this lake, that if they ever were planted there would be no guarantee of them staying here, and if they migrated from this water they might proceed down the Columbia river, and make their habitat in places where they were not desired. This planting of foreign species of fish for the benefit of one portion of an extensive water system should receive very careful consideration before it is attempted or allowed by your department.



## 15. THE STOCKING OF ALKALINE AND SALINE LAKES.

In the course of the investigation of the commission, certain lakes known as alkaline or as saline, were prominently mentioned in some localities, with a view to possible stocking them with such kinds of fish as could withstand the unfavourable effects of alkalinity or salinity, characteristic of the waters referred to. As example of these lakes, we may mention, the Quill lakes and Lakes Houghton and Birch. The analyses of their waters are as follows:—

## Big Quill—

	Grains.
Magnesium sulphate. . . . .	640
Sodium chloride (table salt) . . . . .	86.2
Sulphate of lime. . . . .	209.3
Sodium and potassium sulphate. . . . .	239
	<hr/>
Total solids per imperial gallon. . . . .	1130.5

An analysis of Lake Houghton is as follows:—

	Grains.
Sulphate of potassium. . . . .	12,000
Sodium sulphate. . . . .	2,000
Magnesium sulphate. . . . .	200
Sodium chloride. . . . .	102
Other solids. . . . .	698
	<hr/>
Total solids per imperial gallon. . . . .	15,000

We are indebted to Dr. G. G. Charlton, of Regina, for the above analyses.

*Birch Lake.*—The following are results of an analytical examination of the water of Birch Lake, near Innisfree about 80 miles east of Edmonton, by Professor Parker, of the University of Manitoba:—

Analysis of a sample of drinking water received from Mr. R. Creelman, Canadian Northern Railway Company, on September 23, 1910:—

(Results stated in parts per 100,000)—

Free and saline ammonia. . . . .	.004
Aluminoid ammonia. . . . .	.091
Oxygen consumed. . . . .	.690
Temporary hardness. . . . .	18.05
Permanent hardness. . . . .	Nil.
Sodium carbonate. . . . .	211.90
Nitrogen as nitrates. . . . .	.01
Nitrogen as nitrites. . . . .	Present
Chlorine as chlorides. . . . .	24.90
Total solids. . . . .	642.2

The ammonia content of the water is high, as is also the oxygen consumed. In its present condition the water is quite unfit for drinking purposes.

(Signed) MATTHEW A. PARKER.

In these waters fish as a rule are believed not to exist, though evidence was offered that some species of fish do inhabit certain of these lakes. It is known that in such lakes as the Great Salt Lake in Utah, while the Brine Shrimp (*Artemia*) flourishes and would afford food for fishes, no experiments in introducing fish have proved successful, the salinity being too great apparently for their welfare and propagation.

Other experiments, which were carried on in the United States a few years ago, showed however, that in some alkaline lakes, species like pike, and suckers, did survive for some time, and a scheme of gradual acclimatization might be more successful, because small fish like the stickleback (*Eucalia*) and some small minnows, (*Cyprinodonts*), seem to be unaffected by their chemical environment. Ten or twelve years ago the Department of Marine and Fisheries, at the suggestion of the Commissioner of Fisheries arranged for an experiment with some eastern species of fish, whose habitat is in brackish water for a part of the whole year. The tom-cod (*Microgadus tom-cod*), and the striped bass (*Roccus lineatus*), also the hardy catfish, (*Ameiurus nebulosus*), were included, but through a delay in the shipment of the fish, connection with the special through fish-car bound west was missed, and the arrangements have not since been repeated.

It is still a debatable point whether or not the tom-cod, a much esteemed food-fish down the shores of the St. Lawrence, would find the saline or alkaline conditions of, say, the Quill lakes in Saskatchewan, sufficiently favourable to enable it to live and propagate. The splendid striped bass, one of our handsomest and best table fish, as well as a splendid game fish, which spends only part of the year in brackish water, might be found on test to survive and flourish. The experiment tried with the latter species in transporting them from the Atlantic coast to the coast of California in 1879 under the auspices of the United States Bureau of Fisheries was of course less uncertain, and the hundred and thirty-five striped bass in 1882 and a second lot of 300 in 1882 have done remarkably well in Pacific waters, indeed several million pounds of bass are annually taken for the San Francisco markets alone as a result of these shipments and introduction of an Atlantic species into Pacific seas. If there were any possibility that such a fish as the striped bass which resorts to brackish or even fresh water when ascending to spawn in spring or hibernating in rivers in winter would live in the saline lakes of the west the experiment is well worthy of trial.

Evidence of the endurance of fish when placed in new surroundings is seen in the attempt to restore Devil's lake in North Dakota, a lake 30 miles long, the analysis of whose waters showed relatively high alkalinity, so much so that pebbles and broken rocks strewn along the lake shores were encrusted with a white alkaline deposit. The unfavourable nature of the water is shown also by the scanty vegetation along the shore. The dried up creeks and lands around showed a frosty deposit of greyish white alkali. The difference between the mean temperature of summer and winter was known to be very great, the weather in winter being very cold and in summer comparatively warm. Jackfish and some other fishes were said to have once lived in the lake, but as it shallowed, and the level of the lake fell as much as ten and a half feet in less than twenty years, they disappeared. The spawning beds were cut off by the drying up of intervening channels and the fish disappeared as the alkalinity increased until only two small species of fish survived, a stickleback and a cyprinodont, while some frogs (*Rana virescens*) and water-lizards (*Menopoma cryptobranchus alleghaniensis*) also were pretty plentiful. The depth of the lake was twenty-five feet and the bottom fairly level, but rising to the shallow inshore parts. The increasing alkalinity and the high summer temperature made the test interesting. Five species were introduced viz: pike, suckers, catfish, yellow perch and large mouth black bass. On Aug. 9th, three jackfish and seven suckers of good size were enclosed in a wooden car 12 ft. by 8 ft. and 6 ft. deep, the frame of which was 2 by 4 timber, and a wire netting covering, 1 inch mesh, over all. For three or four days the fish were lively but on the fifth day three jackfish and one sucker were dead. Two days later, (Aug. 16th.) the others were found dead. On Aug. 16th 300 yellow perch, one to seven inches long, were placed in several cars and for nearly a month while under observation were healthy and active, indeed until October 30th, no mortality had taken place. A second test was also carried on with the young large mouth black bass and catfish. Cars covered with quarter inch netting were used, and from Aug. 27th to September 10th they survived, healthy and active. Later a large number were released

from the cars, but the few remained continued in fine condition until observations ceased on Oct. 30th. Sticklebacks and minnows were given as food. The catfish also survived, and the test showed that the yellow perch, bass and catfish were most enduring and favourable for planting in an alkaline environment. The conclusion reached was that few bodies of water exist, no matter how alkaline or apparently unsuited for normal fish life, which cannot be made the habitat for hardy species of fish.

From a fishery point of view alkaline and saline waters do not therefore appear so unpromising as is often supposed. To the farmer it need hardly be said that the presence of alkali is not the menace which it was at one time pronounced. Black alkali is a more serious trouble but it is unusual in Canada. The term 'black' is given for the reason that it stains the soil dark brown and tinges the water owing to the decayed vegetable matter acted upon by the white sodium carbonate, which is the same compound as washing soda (*Sal Soda*). Besides the sodium carbonate there are always more or less chlorides and sulphates. The compounds of white alkali are mainly sulphate of soda and chloride of sodium (Glauber's salts and common table salt) but there may also be present chloride and sulphate of magnesium or Epsom Salts, and the latter may be so abundant as to render it of great medicinal value, as for example the water of Lake Manitou, near Watrous, which is exported commercially. White alkali is a term used for many mixtures of the salts above referred to, and as a matter of fact it is in a mingled condition that they occur. The effect upon animals and plants is most unfavourable as the salts affect the cells, it is held, so as to shrink the protoplasmic contents, and the higher the percentage of alkali, i.e., the more concentrated the solution, the more deleterious the effects, the solution acting as a poison upon the cells of the living organism. Yet many species of fish appear to have endurance sufficient to survive and the matter is one for testing by careful experimentation in the way indicated.

### SUPPLEMENTARY EXPLANATORY NOTES.

(LICENSE FEES, BETTER HANDLING AND SHIPPING OF FISH, AND MESH OF NETS.)

*Fees for net fishing and angling.*—In comparing our report with some presented by Fishery Commissions in other provinces it may appear rather sweeping and drastic in its representations. We wish to state however, that no recommendation of importance has been made that is not in accord with public opinion and the result of our own observations. It was very gratifying to us as a commission to find that public opinion in these provinces is much in advance of legislation. In the first place we would call attention to the license fees recommended, for they will appear high in comparison, say, with those in force in Manitoba. If anyone takes the trouble to peruse the evidence he will find that the fees are based on the testimony given by witnesses. They apparently were of the opinion that the general apathy in respect of the enforcement of fishery regulations was owing to the fact that the income from those provinces was too meagre to allow of better patrol and protection, and they would rather bear the expense themselves than see the fisheries continue to suffer as they have in the past. With regard to licenses for game fish, the same remarks apply, for witness after witness was emphatic in his statement that there should be a license issued for anglers; that the other provinces do not have a similar license is no argument why this recommendation should not be carried into effect in Alberta and Saskatchewan.

*Cleaning and shipping fish to market.*—Under the heading 'Handling and Shipping of Fish,' some of the recommendations may appear drastic to the uninitiated. We refer especially to the cleaning of fish. It may be said that it would be cruel to force the fishermen to clean his fish on the frozen lake in the depth of winter, and it

is proper that we should give our reasons. All the fish exported from these lakes are properly cleaned and boxed, while the home market is supplied with the culls which are not cleaned and have lain on the ice exposed to the sun and winds for weeks, with their fins and tails broken off, and smeared with blood. These repulsive looking fish are shipped to such places as Calgary, the consequence being that there is no market there for our unexcelled whitefish, but a good market for foreign fish. If fishermen can clean and box fish for the foreign market there is nothing to hinder them doing the same for the home market. If this recommendation were carried into effect it would to a large extent be the means of preventing the export of our best fish, for who would buy halibut and salmon coming from the Pacific coast if they could procure a palatable whitefish from local waters?

*Mesh of nets.*—The mesh of nets recommended by us which is 6 inches extension measure may also appear excessive in comparison. We can only say that the best fishermen are at present using this mesh, and some are using even 7 inches.

*Conclusion.*—In a final summing up of the situation we would say that it is necessary for the welfare of these fisheries that three of our own recommendations should be accepted as of absolute necessity.

- (1) Rigid close season.
- (2) Six inch mesh for whitefish and trout.
- (3) Fish should be properly cleaned and boxed before being placed on the market.

If (1) and (2) are carried into effect there will be no danger of depletion of the lakes, fish will be taken at maturity, consequently at their best, a good supply will be afforded for the present and a future supply will be assured.

If (3) is carried into effect, the public will be assured of an article of diet wholesome and attractive, a home market will be developed, and the people will be reaping the benefit of their own products. Fish prepared in this way will be a trifle more expensive but the west is ever ready to pay for a good thing, and nothing but the best will suit their requirements.

It is important that boxes of fish should be labelled as above recommended, especially with the name of the license so that if any fraud in the packing should be discovered, it may be traced to the proper person. One dealer stated that some of the boxes shipped to him were filled with stones, and another that he had bought 25,446 lbs. of fish, represented as properly cleaned, these he shipped to Winnipeg, and they were rejected because on examination they were found to be opened but not cleaned. This meant a great loss to the shipper.

We feel that we have recommended liberal treatment to commercial companies under license (d). We have found that in the past some of these companies have considered only their own benefit and have totally disregarded the welfare of the fisheries, it having been their policy to strip a lake as speedily as possible and then move to the next available one. Should it be found that any company or individual under this license does unduly take advantage of this liberality, we recommend that their privileges be cancelled or very much curtailed.

## GAME FISH.

The eastern slope of the Rocky mountains has become famed as the home of the trout and other game fish such as grayling and the Rocky Mountain whitefish (*Coregonus Williamsoni*).

This is an immense territory reaching from the boundary line in the south to the Athabasca, and indeed much farther north.

Several great rivers take their rise by numerous streams and rivulets of all sizes, from the mountain slope. These are:

- (1) South Branch Saskatchewan river.
- (2) North Branch Saskatchewan river.
- (3) Athabasca river.

These streams may be divided into four groups according to the kinds of fish frequenting them. Beginning from the south:

(a) All streams from the boundary north to the Bow including it and its tributaries:

- The Cutthroat Trout (*Salmo Clarkii*).
- The Bull Trout (*Salvelinus malma*).
- Rocky Mountain Whitefish (*Coregonus Williamsoni*).

- (b) Streams entering into and forming the Red Deer river:
- Rocky Mountain Whitefish (*Coregonus Williamsoni*).
  - Bull Trout (*Salvelinus malma*).
  - Brook Trout (*Salvelinus fontinalis*).

(The last fish is said to exist by credible witnesses but has not been seen by any member of the commission.)

(c) North and south streams entering into the North Saskatchewan river. No sufficient evidence has been forthcoming as to what kinds of fish characterize these waters. The commission was not able to investigate further these streams.

(d) Branches of the Athabasca river, such as MacLeod river, and Embarras rivers with its branches:

- Trout (*Salmo irideus Athabasca*).
- Grayling (*Thymallus montanus*).
- Rocky Mountain Whitefish, (*Coregonus Williamsoni*).
- Bull Trout (*Salvelinus malma*).

The water in all these streams is pure, cold and clear, and it runs for the most part over rocky and gravelly bottoms, with many rapids and pools. Being rich in insect life they are an ideal home for trout.

These streams present this peculiar feature, that owing to their surroundings their present purity is likely to continue indefinitely, inasmuch as no cultivation of the soil is likely to take place on their banks, and not many factories are likely to be built upon them.

In addition to the streams and rivers already mentioned there are a number of lakes in which are found the lake trout (*Christivomer namaycush*). Several of these lakes have already been reserved for fishing with hook and line, and may be known as sporting lakes in which netting operations are not allowed, viz: Minnewanka, Waterton, Pyramid, &c. To this number others should be added in the near future, and in this connection we would especially mention Cold lake, to which it is proposed by the Alberta government to build a railway.

A beautiful lake, surrounded by park-like areas, suitably wooded is of more importance to the public generally as a sporting lake, than it is if commercial netting is carried on by a few fishermen, and all such lakes should be reserved for this purpose whenever and wherever required.

#### CAUSES OF DEPLETION.

We regretted to find that the valuable fish native to them have become sadly depleted, and we now proceed to enumerate and explain the causes:—

- (a) Overfishing.
- (b) Illegal fishing (dynamite, nets, &c.).
- (c) Infraction of Irrigation Regulations.
- (d) Improper close seasons.

- (c) Lack of fishery officers to enforce regulations.
- (f) Sewage and other pollutions.
- (g) Drought.
- (h) Fishing through the ice.

(a) *Overfishing*.—Evidence goes to show that fishing has been carried on in a commercial way and that these game fish have been taken in great quantities and salted down by the barrel for private consumption.

Unfortunately the present regulations do not call for a limit to the daily catch. This has been unduly taken advantage of by so-called sportsmen resulting in the destruction of large numbers of fish, they having taken more in one day than they could reasonably make use of. In many instances the fish thus taken have been sorted at the end of the day and large piles have been left rotting on the bank, composed of those of inferior size.

The evidence goes to show that many families go up these streams; as many as 70 families in one instance, who camp on the banks and fish without interference or limit so that many of these streams are now nearly depleted. No doubt these people derive considerable enjoyment from this kind of a holiday, and if it did no harm to these streams no fault could be found with it, but we think that regulations should be framed in a manner looking to the preservation of these fish so that future generations may enjoy some privileges also.

(b) *Illegal Fishing*.—There has been undue overfishing though not contrary to present regulations, but this, while detrimental in itself, does not compare with the wholesale slaughter that has taken place by means of dynamite, netting, &c. This has been carried on chiefly by miners and construction navvies, yet we regret to state that it has been done by men who know better and for whose conduct no terms could be found to properly characterize it, it is so selfish, unsportsmanlike and contemptible.

(c) *Infraction of Irrigation Regulations*.—The subject of irrigation ditches came prominently before the commission especially in Southern Alberta and there was abundant evidence to show that considerable damage had been done and is being done to the fisheries of these streams, by the lack of proper screens. We have reached the following conclusions:—

(1) There is no sufficient cause for non-compliance with the present regulations, so far as the small streams in the foothills are concerned, for the simple reason that the water is almost free from floating matter, and practically no cleaning of the screens is necessary.

(2) In regard to the large irrigation ditches such as the C.P.R. irrigation canal near Calgary, some difficulty arises, inasmuch as the water is more or less charged at certain times with floating matter, such as leaves, weeds, &c., but we believe this difficulty can be overcome by erecting screens not at the intake where there is a great force of water, but lower down in the canal at a point below the first waste gate. Even if the screens do become blocked, notwithstanding, yet we see no reason why the owners of these large ditches, who carry on extensive irrigation, should not provide men to watch them and keep them clear.

Mr. J. S. Dennis, then assistant to the vice-president, on behalf of the C.P.R. expressed the entire willingness of that company to comply with the law in regard to this matter if a reasonably practicable method of screening the ditches or canals could be recommended by this commission. We think one can be found, and the onus of finding it should rest upon the Irrigation Company.

One witness, Mr. Clove, who came before the commission, pointed out that screening was quite feasible, and that revolving screens as used in some of the irrigation canals of the United States were satisfactory.

We also recommend if the screen is placed below the waste gate that proper facilities be provided at these gates to permit of easy access to the river again, of such fish as may have descended the canal.

(d) *Improper close seasons.*—We have at hand abundant and convincing evidence that the cutthroat trout (*Salmo Clarkii*) the game fish of paramount importance in these waters, spawns during May and June, chiefly in the former month, and that the bull trout (*Salvelinus malma*) and Rocky Mountain whitefish (*Coregonus Williamsoni*) spawn in September and October. It is impracticable to have a close season completely covering both spawning periods. As a choice must be made, the best course to take is to protect the fish regarded as most valuable, viz.: the *Salmo Clarkii*.

(e) *Lack of fishery officers to enforce regulations.*—The prevailing opinion seems to have been in the past, that game fish were of minor importance, and should not be protected to the same extent as commercial fish. We are glad to find that a marked change is taking place and that people are beginning to grasp the fact that a country blessed with good game fish, is possessed of an exceedingly valuable asset. Apart from the pleasure it affords the community and tourists, it is a source of wealth to the country generally of no mean proportions. Alberta, in common with other vast areas of the Dominion of like nature has suffered deplorably. Along the whole slope of the Rocky Mountains it has practically no fishery officers outside of the park reservations. This accounts to a great extent for the illegal fishing that has been going on.

The amount of illegal fishing going on in these game-fish waters is discreditable to any community and should be put a stop to in a summary manner. We suggest that rigid regulations be made and a substantial fine be provided for infractions thereof. Such depredations having for so many years been permitted without control it will be necessary to use energetic measures to stamp out this lawlessness.

(f) *Sewage.*—We find that at the present time, all the cities and towns in Alberta drain their sewage into the rivers and streams. This is a bad state of affairs, and the matter should be speedily remedied. We are glad to learn that the provincial governments have been taking steps to rectify this.

Another condition exists which it is difficult to realise could long continue in an intelligent community. A good many people, living at or near streams, seem to think the main purpose for which they may be used is for the carrying off of manure, rubbish and other refuse, such as tin cans, old clothes, dead animals, &c. Some steps should be taken to put a stop to these practices.

(g) *Drought.*—It occasionally happens that a dry season occurs, especially in the southern part of this territory. Many small streams dry up totally, and larger ones are so affected that there is a considerable loss of small fish. This, of course, is unavoidable, though in some places remedial measures could be adopted by the local fishery officers, such as dip-netting the fish and replacing them in larger pools adjacent.

(h) *Fishing through the ice.*—Fishing to a considerable extent has been done in the winter time by cutting a hole in the ice over deep pools in the rivers where the fish are congregated during the cold weather, using for the purpose hook and line baited with beef. The present regulations which prohibit this should be vigorously enforced.

### RECOMMENDATIONS OF THE COMMISSION RE GAME FISH.

We recommend that a license system be introduced, for the taking of game fish would be better controlled in this way, and we are encouraged to do this, because very many witnesses appearing before us, urgently requested the adoption of such a course.

#### LICENSES, KINDS OF.

(1) *For British Subjects.*—Fee to be \$2 annually. This license should permit the holder to fish with hook and line in any of the unreserved game waters of his province, under the proposed regulations which follow.

(2) For Foreigners.—a. The fee to \$1 per single day, the date to be specified on the license.

b. Fee to be \$5 annually. It is intended that the applicant shall have a choice of these licenses, e.g. if he wishes to fish for one day; or if he wishes to fish for the full season.

#### SIZE OF FISH.

(1) The minimum size of game fish namely, cutthroat trout, rainbow trout, grayling and Rocky Mountain whitefish should be 9 inches in length.

(2) The minimum size of lake trout should be 12 inches in length. Any of the above mentioned fish when taken of a less size than 9 inches in the first class and 12 inches in the second class, should be immediately returned to the water alive and as far as possible in an uninjured condition.

#### PER DIEM LIMIT.

The maximum daily catch of cutthroat trout, rainbow trout, grayling and Rocky Mountain whitefish should not exceed 15 in number per day. The maximum catch of lake trout shall not exceed six in number per day.

#### FISHING GEAR.

No gang hooks should be used, e.g., in connection with spoons, phantom minnows or such like devices in streams in which cutthroat and rainbow trout are found, as they unduly injure fish, which being undersized, must be returned to the water. Only single hooks should be used, not more than three in a single line, and these to be separated by such a distance that a fish cannot take more than one at a time by a single strike.

In lakes in which lake trout (*Cristivomer namaycush*) are found one license should permit the use of only one troll.

#### REGULATIONS PERTAINING TO LICENSES.

The number of licenses held by each fisherman should be attached by means of a tag or otherwise to his rod or troll and his creel.

No license should be transferable, and any infractions of the regulations shall render it liable to cancellation. This condition should be stipulated and stated on the license.

On the back of each license may be printed a precis of the regulations pertaining to that particular kind of fishing.

#### Close Season for Trout.

We cannot recommend a uniform close season for trout in all the streams on the eastern slope of the Rocky Mountains, as different species are found in different river systems.

The close season should extend from November 1 to June 30 on streams found in the territory extending from the boundary to the Bow River in the north, including its tributaries.

The close season should extend from September 1 to April 30, on streams forming the Red Deer River, and on those forming the North Branch of the Saskatchewan.

The close season on the Athabasca system should extend from November 1 to May 31.

In lakes in which black spotted trout (the Cutthroat or the Rainbow) are found the close season shall be the same as applies to that district. This will not apply to lakes in which only lake trout are found.

In lakes in which lake trout are taken by means of hook and line the close season should begin September 1 and end on April 30.



*Continued Close Season for Some Streams.*

We have been requested and advised by a number of witnesses to strongly recommend a close season for three years on some of the trout streams, more especially middle and south forks of High River, Trout Creek and Willow Creek with their tributaries. This suggestion meets with our approval and if carried out would give these streams a much needed rest.

## GENERAL RECOMMENDATIONS.

## FORESTRY RESERVE A FISH RESERVE.

We find that the Department of the Interior has set apart a certain portion of the eastern slope of the Rocky Mountains as a Forestry Reserve. We recommend that this Forestry Reserve be also made to some extent a Fishery Reserve, so that no fishing may be done in the small streams there. Our reason for advising this arises from the fact that this region is the natural spawning place of the trout. Here the ova are hatched, and the young fish pass the early period of their life, gradually descending the streams as they increase in size until, as full grown fish, they are found many miles down stream in large pools such as occur in the Bow River. The carrying out of this idea would do much towards the preservation of these fish. This would work to the advantage also of the forests inasmuch as a large proportion of forest fires may be traced to wandering fishermen, these calamities being often the result of camp fires built by them.

## FOREST AND FIRE RANGERS TO BE FISHERY OFFICERS.

In this connection we would also recommend that an arrangement be reached between the Department of Marine and Fisheries and the Department of the Interior whereby forest rangers in this reserve may be fishery officers at the same time. In this case one set of officers could easily do the work of two and with little additional trouble.

## TROUT HATCHERY NEAR BANFF.

We consider it of great importance that a hatchery should be started at Banff or in the near vicinity if a suitable place can be found. More ideal conditions can be found along some of the spring creeks in the foothills but it is doubtful if such a place could be located convenient to a railway station. This is a matter that should be carefully looked into by a hatchery expert, and among other things the temperature of the water should be taken in several places so that the one most suitable for hatching ova might be chosen. This hatchery should be devoted chiefly to the propagation of Trout and Grayling not only for the purpose of restocking depleted streams, but also for stocking other suitable streams many of which exist to the north of the Bow River, being tributaries of the Red Deer River. These Trout and Grayling are possessed of certain characteristics not usually incidental to the charr family, which render them peculiarly adapted for artificial propagation. They spawn in the Spring and owing to this fact only a short period will be required to hatch the ova. They live almost wholly on insects. This is very much in favour of these species for artificial propagation purposes, inasmuch as the larger and more vigorous ones are not likely to devour the weaker ones, a frequent occurrence with some other species.

If these Spring spawners alone are to be hatched expensive buildings would not be necessary to provide against the intense cold of winter. On the other hand, if the building were proof against extreme cold, such fish as the Lake Trout and Rocky Mountain Whitefish might be propagated during the winter months. In addition

to the Hatchery building it would be necessary to provide retaining ponds for the keeping of parent fish, so that there would be little difficulty in collecting the ova at the proper time.

## BLACK BASS.

The prairie part of these provinces is unfortunate in possessing no game fish. This lack is much felt by the sportsman, especially those living in cities and towns, Regina has its Long Lake, Indian Head its Katepwa, Prince Albert its Round Lake, Edmonton its Cooking and its Wabamun, Stettler and Alix their Buffalo Lake, Lacombe its Gull Lake, Red Deer its Sylvan, &c., and the people interested in these summer resorts were energetic in placing before your Commission their needs, asking for a remedy. In regard to Long Lake, a peculiar condition has arisen. The sportsmen, many of whom have summer houses on this lake, assert that netting should be stopped because it reduces the pike and pickerel, and these afford some sport, inasmuch as they can be taken with hook and line. As this is a lake in which Whitefish abound, some other solution must be found. Some of the net fishermen themselves have taken an intelligent view of the matter. They are using a 6-inch mesh net and they find that they can take a better quality of Whitefish, and at the same time Pickerel pass through and many Pike also escape.

The almost universal desire, as expressed by these witnesses, has been for the introduction of black bass. This eastern game fish has been already planted by the Department of Marine and Fisheries in several lakes, viz: Cooking Buffalo, Gull and Sylvan, some shipments as long as eight years ago and some more recently. We have made careful inquiry and can find no trace, nor has any trace been found except that one witness declared that he found one dead on the shores of Gull Lake. Also Captain Cottingham of Red Deer wrote the Commission this year that some fishermen while operating their nets, took two Black Bass in Sylvan Lake which they liberated. Some 500 parent Black Bass and some 3,000 fingerlings were placed in Lake Minnewanka near Banff some ten years ago. No trace of these fish has since been found and the Commissioners are thus warranted in their finding that the planting of Black Bass in these waters has not been a success. Different causes may be assigned, one of which is, that the waters are not suitable, another is that these waters being infested with large Pike, the Bass easily fell a prey to the stronger fish. It is important that the wishes of these people, should receive serious consideration but we wish to state our unqualified disapproval of the indiscriminate planting of these fish without proper experimentation, and to this end Bass ponds are necessary, in which nesting and the rearing of the young may be carried on.

SMALL MOUTH BLACK BASS (*MICROPTERUS DOLOMEU*).

'The Black Bass is eminently an American fish; he has the faculty of asserting himself, and of making himself completely at home, wherever placed. He is plucky, game and brave, unyielding to the last, when hooked. He has the arrowy rush and vigor of the Trout, the untiring strength and bold leap of a Salmon, while he has a system of fighting tactics, peculiarly his own. I consider him inch by inch and pound by pound the gamest fish that swims.' (J. A. Henshall.)

It would be very desirable if such a fish could be introduced and would thrive in some of the above mentioned waters, but it is very doubtful if experiments along this line will ever be successful. He is one of the daintiest of fish, and will not tolerate a trace of mineral or alkali in the water in which he lives. The water must also be clear, cool and constantly moving, and the temperature must not at any time exceed 60° Fahrenheit. This being the case, all the lakes mentioned in the preceding paragraph would be quite unsuitable for this fish. There is no constantly moving current in any of them, the temperature exceeds the limit of 60° as all of them are very warm in the summer season, and the water becomes more or less muddy during

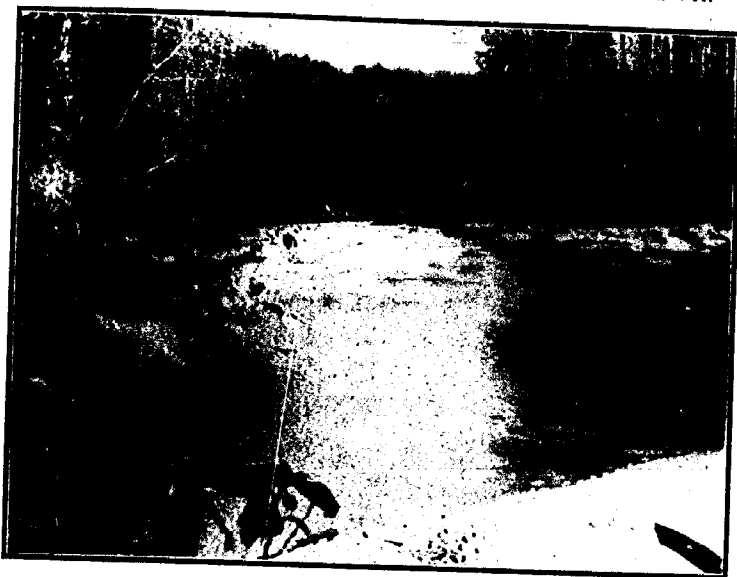


FIG. 1.—Mouth of Doré River.

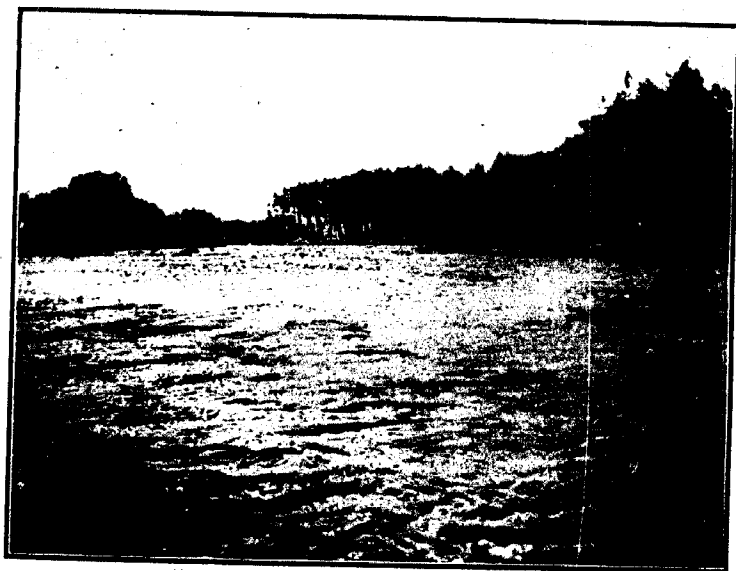


FIG. 2.—Mouth of Waterhen river.

wind storms. We cannot advise the planting of these fish in these Provinces, unless it can be satisfactorily proven that they can be acclimatized to the prevailing conditions.

#### LARGE MOUTH BLACK BASS (MICROPTERUS SALMOIDES.)

This species sometimes called the large-mouth Green Bass, grows to a larger size than the former species but is usually not so gamey. This latter statement requires some modification, for if found in cold and running water it is equal in gaminess to the best, but it is usually found and appears to be at home in sluggish waters, especially in weedy places. It is a very voracious fish, and lives chiefly on other fish—although a frog or a crayfish does not come amiss. We are of the opinion that it is desirable to introduce a game fish into the lakes of Alberta and Saskatchewan that this one would give better results than the former species, but it should be in mind that it is a cannibal and if introduced into Whitefish lakes, and if it thrives there, it would be most likely at the expense of the Whitefish. We wish that suitable ponds be created for the propagation of these and if they succeed that they be planted in suitable waters. Both species of Bass are much different in their habits, as to rearing their young, from other fresh-water fish. The male builds a nest in some sheltered spot, the small mouth species of gravel, and the large mouth species of weeds. The male guards the nest and the female after depositing her eggs leaves the nest for a free life, whereas her mate remains and gently fans the water over the eggs until they are hatched, and then he takes care of them, keeps enemies away, leads them to proper feeding places, and generally guards them until the young are quite capable of taking care of themselves.

#### CONCLUDING REMARKS.—1910.

Your commission spent in all fifty-nine days in taking evidence and visiting waters. During this time we covered about five thousand miles, most of it by railway, some by automobile, and the rest by waggon and canoe; we held some fifty sessions and examined over two hundred witnesses. We can speak in complimentary terms of those who came before us. They seemed anxious to place what information they possessed before the commission, and to assist in showing the waters in which they were interested. They also made proposals in regard to changes in the present regulations and to the addition of new ones far in advance of those now in force in these provinces, and of those in force in other provinces as well. To the Boards of Trade and City Councils we are especially indebted for many kindnesses and favours, such as the use of their chambers. The only exception to this interest and readiness to aid the commission's work was in respect to the apparent indifference displayed by sportsmen. It was the season for duck and chicken shooting, consequently many of them had no time to think of fishing matters. This lack of interest was markedly felt in some places by the commission.

We feel that the time was all too short in comparison to the importance of the work, and if the work was not as thorough as it ought to have been, and our investigations less elaborate than we desired, no other excuse is necessary. The limited time at our disposal was fully occupied, and the programme laid out at the beginning of the work was strictly adhered to, and all appointments were kept at the exact date with one exception, and this was owing to the train being late. We found everywhere the keenest interest taken by the public generally, and a feeling of appreciation of the action of the Dominion government in authorizing this commission.

1911.

The work of this year was of quite a different character to that of the previous year. Then we had the benefit of railway facilities, while this year we were chiefly

restricted to the use of canoes. During our canoe trip which lasted something over two months, we covered over 1000 miles, encountering many serious obstacles, such as rapids in the rivers, many long portages, and storms on extensive lakes. Owing to the many kindnesses of the factors at the different posts of the Hudson Bay Company, our labors to a great extent were lightened. Through this Company we were able to secure the services of good men for the whole trip, often to the inconvenience of the Company which had other work for the men. Notwithstanding the dangers necessarily incident to traversing immense lakes and swift rivers in light canoes, there were no casualties except an occasional wetting and the health of the entire party was good throughout the whole trip. On a later trip, Inspector Miller took seriously ill, and it was necessary for the commission to proceed without him. This regretted very much, as well on his account as our own. Many waters were visited many conditions were enquired into. The territory of these two provinces dense and at present transportation is so inadequate, that it will cause no doubt that we were not able to completely cover the whole work, but what has been done was considered the most important and has been thoroughly done. The work unfinished by your commission is as follows: The head waters of the following rivers taking their rise from the eastern slope of the Rocky Mountains; the Red Deer, north branch of the Saskatchewan and the Peace, also the Cumberland lakes, which are noted for their sturgeon fishing. These waters are of prime importance and for your Department to intelligently handle them it should be supplied with the fullest information concerning them. We regret our inability to attend to these waters, which was to some extent owing to the early cold weather, rendering lake and river travelling impossible, but we hope that your Department will find some way by means of which the desired information may be obtained.

We, the Commissioners, before presenting this final Report, would again call attention to the vast areas of comparatively unexplored country over which our work extended and the great responsibility and risk incurred in the prosecution of this work, and would also like to express our appreciation of the privileges we have enjoyed in examining the natural resources of the two provinces which have so recently been created, also of the courtesy that has been extended to us in our work by your Department.

(Signed) EDWARD E. PRINCE,  
*Chairman.*

THOS. H. McGUIRE,  
*Commissioner.*

EUSTON SISLEY,  
*Commissioner.*

## LIST OF SITTINGS OF THE COMMISSION, 1910-1911.

## FIRST SERIES OF SITTINGS (1910).

Opening Sitting,		Council Chamber, Regina, Sept. 7, 1910.
Sitting No.	II.	Council Chamber, Regina, Sept. 8, 1910.
"	III.	Council Chamber, Regina, Sept. 8, 1910.
"	IV.	Strassburg, Saskatchewan, Sept. 9, 1910.
"	V.	Council Chamber, Saskatoon, Sept. 10, 1910.
"	VI.	Council Chamber, Saskatoon, Sept. 12, 1910.
"	VII.	Council Chamber, Lanigan, Sept. 13, 1910.
"	VIII.	Board of Trade Rooms, Wynyard, Sept. 14, 1910.
"	IX.	Council Chamber, Prince Albert, Sept. 17, 1910.
"	X.	Council Chamber, Prince Albert, Sept. 18, 1910.
"	XI.	Red Deer Lake, Saskatchewan, Sept. 22, 1910.
"	XII.	Council Chamber, Prince Albert, Sept. 24, 1910.
"	XIII.	Council Chamber, Prince Albert, Sept. 26, 1910.
"	XIV.	Court House, Battleford, Sept. 27, 1910.
"	XV.	Bresaylor, Saskatchewan, Sept. 28, 1910.
"	XVI.	Board of Trade Rooms, Edmonton, Sept 30, 1910.
"	XVII.	Board of Trade Rooms, Edmonton, Oct. 1, 1910.
"	XXVIII.	Board of Trade Rooms, Edmonton, Oct. 7, 1910.
"	XIX.	Board of Trade Rooms, Edmonton, Oct. 8, 1910.
"	XX.	Wabamum Lake, North of Edmonton, Oct. 1, 1910.
"	XXI.	Edson, G.T.P., Oct. 3, 1910.
"	XXII.	Athabasca Landing, Oct. 4, 1910.
"	XXIII.	Wetaskiwin, Oct. 10, 1910.
"	XXIV.	Board of Trade Rooms, Lacombe, Oct. 13, 1910.
"	XXV.	Board of Trade Rooms, Red Deer, Oct. 14, 1910.
"	XXVI.	Banff, Alberta, Oct. 17, 1910.
"	XXVII.	Board of Trade Rooms, Calgary, Oct. 20, 1910.
"	XXVIII.	Board of Trade Rooms, Calgary, Oct. 21, 1910.
"	XXIX.	High River, Alberta, Oct. 22, 1910.
"	XXX.	Pekisko, North High River, Alberta, Oct. 23, 1910.
"	XXXI.	City Hall, Macleod, Oct. 24, 1910.
"	XXXII.	City Hall, Medicine Hat, Oct. 24, 1910.
"	XXXIII.	Council Chamber, Swift Current, Sask., Oct. 25, 1910.
"	XXXIV.	Fort Qu'Appelle, Oct. 26, 1910.
"	XXXV.	Fort Qu'Appelle, Oct. 26, 1910.
"	XXXVI.	Indian Head, Sask., Oct. 27, 1910.
"	XXXVII.	Council Chamber, Arcola, Sask., Oct. 28, 1910.
"	XXXVIII.	Lumsden, Sask., Oct. 29, 1910.
"	XXXIX.	City Hall, Regina, Oct. 31, 1910.

## SECOND SERIES OF SITTINGS (1911).

Sitting No.	XL.	Edmonton, Alberta, July 17, 1911.
"	XLI.	Athabasca Landing, July 21, 1911.
"	XLII.	Pelican Portage, July 25, 1911.
"	XLIII.	Fort McMurray, Aug. 7, 1911.
"	XLIV.	Portage la Loche, Aug. 16, 1911.
"	XLV.	Lac la Loche, Aug. 19, 1911.

Sitting No.	XLVI.	Lac la Loche, Aug. 21, 1911.
"	XLVII.	Lac la Plonge, Aug. 27, 1911.
"	XLVIII.	Lac Ile à la Crosse, Aug. 28, 1911.
"	XLIX.	Lac Ile à la Crosse, Aug. 29, 1911.
"	L.	Beaver River, Sept. 5, 1911.
"	LI.	Green Lake, Sask., Sept. 6, 1911.
"	LII.	Green Lake, Sask., Sept. 7, 1911.
"	LIII.	Edmonton, Sept. 18, 1911.
"	LIV.	Athabasca River (on SS.), Oct. 2, 1911.
"	LV.	Lesser Slave Lake, Oct. 5, 1911.
"	LVI.	Lesser Slave Lake, Oct. 6, 1911.
"	LVII.	Lac la Biche, Alberta, Oct. 12, 1911.
"	LVIII.	Saddle Lake, Alberta, Oct. 15, 1911.
"	LIX.	Cold Lake, Alberta and Saskatchewan, Oct. 23, 1911.
"	LX.	Cold Lake, Alberta and Saskatchewan, Oct. 27, 1911.
"	LXI.	Frog Lake, Alberta, Oct. 28, 1911.
"	LXII.	Buck Lake, Alberta, Nov. 7, 1911.

## LIST OF WITNESSES.

- ABBEY, CHARLES, Beaver River.  
 ADAMS, G. S., Sergt. Royal N.V.M. Police, Lesser Slave Lake.  
 AHENUE (Indian), Man-who-runs-in-a-circle, Green Lake.  
 ALEXANDER, SAMUEL T., High River.  
 ANDERSON, H., Fort Qu'Appelle.  
 ANDREWS, A. G., Edmonton.  
 ANCEL, Rev. Père, Lac la Plonge.  
 AUBICHON, PIERRE, Green Lake.  
 AUBOSCHEN, Baptiste, Green Lake.  
 BAKER, E. R., Pekisko.  
 BARBER, Captain SS. *Northland*, Mirror Landing, Athabasca River.  
 BARTH, S., Margo, Wynyard.  
 BATESON, MARK, H. B. Co., Lesser Slave Lake.  
 BEDINGFIELD, F. N., Pekisko.  
 BENJAFIELD, CHARLES, Silton, Sask.  
 BENTLEY, STANLEY, Pelican Portage.  
 BERNARD, AIME, Prince Albert.  
 BEATTIE, H., Lac la Plonge.  
 BIG HEAD (Indian), Green Lake.  
 BIG STONE (Indian Chief), Wabescan.  
 BOWIELL, HARRY, Frog Lake.  
 BOYD, W. R., Indian Head.  
 BOYLE, Rev. ROBERT, Macleod.  
 BRADLEY, JAMES, Wetaskiwin.  
 BYRON, C. E., Jumping Pond, Calgary.  
 CAMERON, F. J., Wynyard.  
 CAMERON, HUGH, Pekisko.  
 CAMPBELL, ALEX., Green Lake.  
 CASE, L. (Case & McInnes), Prince Albert.  
 CHALLENGER, V. J., Lanigan.  
 CHALLIFONT, WM., Lesser Slave Lake.  
 CHARLTON, Dr. G. A., Regina.  
 CHRISTOPHER, C. F., Arcola.  
 CLARE, JAMES, Red Deer Lake.  
 CLARE, F. C., Edmonton.  
 CLOVE, J., Claresholm.  
 CLARK, R. B., Fishery Officer, High View, Arcola.  
 COTTINGHAM, Captain W. H., Red Deer.  
 COOK, MATTHEW, Buffalo Lake, Lacombe.  
 COTÉ, J. L., M.P.P., Edmonton.  
 COUSENS, WILLIAM, Medicine Hat.  
 CRESSWELL, H. C., Lumsden.
- CUNNINGHAM, SAMUEL, Lesser Slave Lake.  
 CURTIN, P. J., Fishery Officer, Govan.  
 DANIELS, WM., Regina Beach, Lumsden.  
 DARKER, R. A., Calgary.  
 DAVIS, Senator T. O., Prince Albert.  
 DAWSON, H. J., Edmonton.  
 DAY STAR (Indian), Green Lake.  
 DESJERLAIS, THOS., Lac Ile à la Crosse.  
 DENNIS, J. S., C.P.R. Supt. of Irrigation, Calgary.  
 DENOVAN, R., Wynyard.  
 DONOVAN, H. A., Fishery Officer, Macleod.  
 DOBREE, B., Battleford.  
 DOUGLAS, GEORGE, Meota.  
 DOUGLAS, HOWARD, Supt. of National Parks, Edmonton.  
 DUMONT, FELIX, Athabasca Landing.  
 EDWARDS, Colonel E. B., Edmonton.  
 EDWARDS, R. SINCLAIR, Banff.  
 EKLUND, DAVID, Minnihik, Buck Lake.  
 ELMER, P. R., Fort Qu'Appelle.  
 ERIKSON, KLAMAT, Wynyard.  
 FIELD, EDWARD, Fishery Officer, Wadena, Wynyard.  
 FISHER, FRED. T., Edmonton.  
 FITZGERALD, WM., Fishery Officer, Edmonton.  
 FERGUSON, JOS. F., Grouard, Lesser Slave Lake.  
 FONTAINE, BAPTISTE, Portage la Loche.  
 FORTUNE, J. W., Lacombe.  
 FREDERIC, LOUIS (*see Percheron*).  
 GARDINER, WM., Lesser Slave Lake.  
 GEORGE, Dr., Red Deer.  
 GIROUX, R. Rev. Père, Lesser Slave Lake.  
 GRAHAM, WM. F., Lacombe.  
 GUNN, PETER, M.L.A., late Fishery Inspector, Edmonton.  
 HALPIN, C. B., Lacombe.  
 HANCOCK, Corporal HARRY R., Royal N.W.M.P., Green Lake.  
 HARRISON, F. B., Pine Lake, Red Deer.  
 HARRISON, WM. R., Bresaylor.  
 HARRISON RUPERT F., Bresaylor.  
 HAWKINS, A. H., D.L.S., Lesser Slave Lake.



- HEADRICK, ROBT., Fishery Officer, Prince Albert.  
 HELGESON, J. A., Battleford.  
 HEMLIN, ALEXANDER, Fishery Officer, Lac la Biche.  
 HESS, GEO., Athabasca Landing.  
 HEWAT, JOSEPH, Carlyle, Arcola.  
 HOLMES, EDWARD, Carlyle, Arcola.  
 HOWELL, M. J., North Battleford.  
 HUTTON, WM., H. B. Co., Ile à la Crosse Lake.  
 INKSTER, ALEX., Bresaylor.  
 JANSEN, JOHN, Lanigan.  
 JANVIER, JOSEPH, Lac la Loche.  
 JANVIER, SAMUEL, Lac la Loche.  
 JOHNSON, ROBERT (Revillon Bros.), Lesser Slave Lake.  
 JOURDAIN, B., Lac Ile à la Crosse.  
 KEITH, DONALD, Battleford.  
 KENNEDY, DR., Macleod.  
 KINSMAN, J. C., Battle Lake.  
 KOKINDOWICZ, WALTER, Lumsden.  
 LAW, WALTER, Swift Current.  
 LALIBERTÉ, ALEX., Lac la Plonge.  
 LALIBERTÉ, RAPHAEL, Lac la Loche.  
 LALIBERTÉ, LOUIS (Green Lake), Lac la Plonge.  
 LAMERGE, MICHELE, Lac la Loche.  
 LAWTON, B., Edmonton.  
 LEADER, JOHN, Fishery Officer, Fort Qu'Appelle.  
 LEADER, WILLIAM, Fort Qu'Appelle.  
 LEGGOTTE, Rev. Père, Lac la Biche.  
 LEE, JOHN, Pigeon Lake.  
 LEIFSON, ELLEF (Minnihik), Buck Lake.  
 LESSARD, P. E., M.L.A., Edmonton.  
 LIVINGSTON, ALDERMAN, Battleford.  
 LOW, DR., Regina.  
 LOUZON, F., Lac Ile à la Crosse.  
 MACK, E. E., Bresaylor.  
 MATHER, R. C., Macleod.  
 MATHER, WILLIAM, Banff.  
 MARGAON, W. J., Calgary.  
 MAURICE, B., Lesser Slave Lake.  
 MAURICE, PETER, Lac la Loche.  
 MELLOR, A. H. LLEWELLYN, Fort McMurray.  
 MENZIES, W. R., North Battleford.  
 MERON, JOS., Lesser Slave Lake.  
 MILLER, BENJAMIN, Prov. Fish and Game Warden, Edmonton.  
 MILLER, M. T., Sheep Creek, Calgary.  
 MILLER, H. W., Pekisko, High River.  
 MORRIS, J. H., Edmonton.  
 MORRISON, J. B., Lumsden.  
 MORRISON, JOHN A., Prince Albert.  
 MORIN, JOSEPH, Green Lake.  
 MORIN, JULES F., Green Lake.  
 MORIN, PIERRE, Meadow Lake.  
 MORIN, ZEPBURN, Lac la Pionge.  
 MORIN, LOUIS, Green Lake.  
 MOOR, WILLIAM, Swift Current.  
 MOTHERWELL, Honourable W. R., Regina.  
 MEYERS, JAMES A., Grayson.  
 MCINTYRE, WM., Didsbury.  
 McLAGAN, J. W., Forest Ranger, Strathcona.  
 MACLAREN, GEORGE H., Edmonton.  
 MACLEOD, A. D., Arcola.  
 McLEAN, ANGUS, H. B. Co., Lac la Loche.  
 McDONALD, A. B., Supt. Banff National Park, Banff.  
 McDONALD, ALEXANDER, Prince Albert.  
 MACDOUGALL, DAVID, Banff.  
 McKAY, JOHN, Prince Albert.  
 McKEILEY, JOHN, Lacombe.  
 NELSON, CHARLES E., Turtle Lake.  
 NELSON, S. E. (Yeoford), Buck Lake.  
 NETTERFIELD, J. A., Edmonton.  
 NICLAS, Captain HERMANN, Lesser Slave Lake.  
 NOBLE, THOMAS J., Prince Albert.  
 NOLIN, J. O., M.L.A., Jackfish Lake.  
 OLIN, CHARLES H., Bittern Lake.  
 OLIVER, J. G., Battleford.  
 ORCHARD, A. J., Indian Head.  
 O'NEILL, HUGH, Lanigan.  
 PANTON, A. M., Battleford.  
 PAQUET, J. W., Meadow Lake.  
 PEARCE, WILLIAM, Inspector of Mines, Calgary.  
 PEET, J. L., Calgary.  
 PERCHON, LOUIS, Athabasca Landing.  
 PEVERETT, J. R., Regina.  
 PIERCE, A. H., Lac Ile à la Crosse.  
 PINARD, Rev. Père, Lac la Loche.  
 POOK, GEO. S., Saskatoon.  
 POTTS, R. H., Grouard, Lesser Slave Lake.  
 PICKERING, Officer, Royal N.W. Mounted Police, Lac la Loche.  
 PRICE, WM. J., Cold Lake.  
 PROUD, G. M., Macleod.  
 PRUDEN, PETER, Athabasca Landing.  
 RAGAN, JAMES, Bresaylor.  
 RAPHY, Rev. Père, Lac Ile à la Crosse.  
 RATTÉ, Rev. Père, Lac Ile à la Crosse.  
 REID, CHARLES, Swift Current.

- RED IRON (Indian), Stoney Lake.  
 ROBERTSON, Sheriff W. S., Edmonton.  
 ROBERTS, L. M., M.L.A., High River.  
 ROSSIGNOL, Rev. Père, Lac Ile à la Crosse.  
 RENWICK, WM., Macleod.  
 ROWAN, WILLIAM, Last Mountain, Strassburg.  
 ROY, LUZON, Lac Ile à la Crosse.  
 SANSON, NORMAN B., Banff.  
 SAUNDERS, WM., Swift Current.  
 SCULLY, P. I., Battleford.  
 SCANDERS, F. M., Saskatoon.  
 SCHAEFER, W., Fishery Officer, Bresaylor.  
 SIBBALD, HOWARD, Banff.  
 SIBBALD, H. E., sen., Banff.  
 SILVERTHORN, J. W., Fishery Officer, Lumsden.  
 SIMPSON, GEO., Battleford.  
 SIMPSON, M. C., Regina Beach, Lumsden.  
 SHANKLAND, DUNCAN, High River.  
 SHOTT, CAPTAIN, Lac la Biche, Edmonton.  
 SINCLAIR, JOHN E., Prince Albert.  
 SMITH, ALDERMAN, Battleford.  
 SMITH, F. B., Edmonton.  
 SMITH, W. W., Battleford.  
 SMALES, G., Fort Qu'Appelle.  
 SPENCER, JAMES S., H. B. Co., Lac la Biche.  
 STANLEY, CAPTAIN JOHN, Banff.  
 STENTON, CHARLES E., Banff.  
 STENT, F. J., Carlyle, Arcola.  
 STEFANSON, JOE, Little Quill Lake, Wynyard.  
 STEPHENSON, ALBERT T., Commissioner of Red Deer, Red Deer.  
 STEPHENSON, J. G., Kandahar.  
 SOUCY, J. O., Cold Lake.  
 TALBOT, SENATOR PETER, Lacombe.  
 TEGLER, ROBERT, Edmonton.  
 TESTON, Rev. Père, Lac la Plonge.  
 TIPPING, J. I. (Minnihik), Buck Lake.  
 THOMPSON, ALEX., Battleford.  
 THOMSON, W. A., Fort Qu'Appelle.  
 THORSON, CHARLES, Swift Current.  
 TRANT, WILLIAM, Magistrate, Regina.  
 TWEED, H. L., Medicine Hat.  
 UNRAU, JOHN, Prince Albert.  
 VEER, JOHANN, Waldheim, Saskatoon.  
 VICK, S., Banff.  
 VOLKENBERG, W. M., Von, Regina.  
 WALLACE, RICHARD A., High River.  
 WALKER, ALEX., Pelican Portage.  
 WARNER, E. O., North Battleford.  
 WEBSTER, GEORGE, Swift Current.  
 WEST, C. H., Royal N.W.M. Police, Edmonton.  
 WEYNARD, PHILIP, Hig River.  
 WILLING, T. W., Regina.  
 WHITFORD, SAMUEL, Saddle Lake.  
 WOOD, L. INGRAM, Fishery Officer, Pigeon Lake, Wetaskiwin.  
 WOOD, J. H., Athabasca Landing.  
 WOODWARD, J. S., Sec. Board of Trade, Prince Albert.  
 YOUNG, ARTHUR, Macleod.

## APPENDICES.

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  - IV. Statement from J. J. Forest, Cut Knife, that he could not get whitefish at Turtle Lake when fishing was proceeding.
  - V. Petition from residents near Jackfish and Murray Lakes opposing commercial fishing as it depleted Turtle Lake.
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  - VIII. Resolution of North Battleford Board of Trade *re* threatened depletion of lakes north of N. Battleford and urging hatchery.
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  - XII. Letter from Secretary F. C. Clare, united farmers of Alberta Union (Edmonton) *re* pollution and restocking of the Great Saskatchewan River with fish.
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  - XV. Letter from Cecil E. Byron, Esq., Jumping Pound, Alta, *re* inserting Fishery Regulations in Prov. *Gazette*, on anglers, per diem catch, irrigation ditches, &c
  - XVI. Letter from W. G. Green, Esq., Macleod Board of Trade, covering a letter from H. F. Baker, Esq. (See next Appendix).
  - XVII. Mr. Baker's letter *re* depletion of fish in Alberta streams.
  - XVIII. Letter from T. W. Andrews, Granum, *re* more officers needed, close season suggested, omitting bull trout, &c.
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  - XX. Petition from Green Lake Indians to reserve the lake for them.
  - XXI. Petition from residents at Grenfell, Grayson, &c., asking the removal of Katepwa dam, as it lowers seriously Crooked Lake, &c.
  - XXII. Letter from W. M. Slocum, C.N.R., Innisfree, Alberta, forwarding analysis of Birch Lake water, a proposed summer resort, where fish are desired.
  - XXIII. Chemical analysis of water of Birch Lake by Professor M. A. Parker, University of Manitoba.

## APPENDICES.

APPENDIX I.—*Letter to the Commission from Dr. E. L. Cash, M.P., on the lakes in the Yorkton District, Sask.*

HOUSE OF COMMONS,

OTTAWA, December 9, 1910.

DR. E. E. PRINCE, F.R.S.C., &c.,  
 Dominion Commissioner of Fisheries,  
 Marine and Fisheries Department,  
 Ottawa.

MY DEAR DOCTOR,—As it was not possible to have your Commission sit in Yorkton, I think it well to give you an idea of the lakes in that district.

We have several lakes which are supplied with fish such as jackfish and pickerel. These lakes are a fair size known as Devil's Lake and Long Lake. There are also a couple of lakes south in the Saltcoats district known as Crescent Lake and Leach Lake. All these are fairly supplied with the above mentioned fish, and only at Devil's Lake have we a fishery guardian to protect the fish industry. Of course you will readily understand that there is no commercial fishing done there.

I want also to speak of another lake known as Birch Island Lake. This lake is contracted in the centre so that we have a southern part which is quite deep and most excellent water either for drinking or general domestic use. The northern part is more shallow and somewhat muddy. The upper lake particularly is well supplied with minnows that exist there in very large quantities. There are no other fish in either of these lakes, and I would suggest that this would be a very good point to stock with some good game fish such as black bass.

I think this is about all that you would have learned concerning these lakes had your Commission been able to have sat in Yorkton.

I am,

Yours very truly,

E. L. CASH.

APPENDIX II.—*Petition from Turtle Lake residents, forwarded by Mr. A. Champagne, M.L.A., on Pseudo-homesteaders and other abuses.*

(Petition received by the Department of Marine and Fisheries on July 6, 1909, and transferred to the commission.)

To A. CHAMPAGNE, M.P.,  
 Ottawa, Canada.

We, the residents and settlers around Turtle lake, which is situated in townships 52, 53 and 54, in range 18, in the province of Saskatchewan, wish to bring to the attention of our worthy member, A. Champagne, and the Honourable Minister of Marine and Fisheries, that the regulations as they now apply to the waters north of the North Saskatchewan river are totally inadequate to meet the desires and wishes of the local fishermen and those who earn a living part of the year by fishing, for as it now is, the local fisherman is deprived of the rights for which the law is intended to protect.

Whereas the fishing season in these northern waters opens on November 15, and as a result a host of non-residents from Manitoba and elsewhere swarm on these lakes, and especially Turtle lake, which is noted for its white fish. These men are

usually in the service of large fish companies such as the Dominion Fish Company, whose sole desire is to crush out the local fisherman, and whereas these non-residents in the service of these wealthy fish companies are hired out of the province on salary, commission or contract, and are supplied with nets and fishing accessories, and as a blind these men are entered on homesteads adjacent to the lake and as soon as the fishing season is over the land is thrown up and the money that is earned is taken out of the province, leaving the local fisherman poorer thereby, and very often the local resident is excluded from getting a license altogether.

And whereas fish caught at this early season of the year are just beginning to spawn, the lakes for this reason are being rapidly depleted of fish.

Now we, as residents and homesteaders, who depend largely on Turtle lake as a source of revenue, protest against such infractions of the fishing regulations and wholesale depletion of this lake of its wealth of fish, pray that amendments may be made to the fishing regulations that are applicable to these northern waters, so that non-residents will be excluded from fishing on these waters and that the wealth of the lake may be conserved for the residents of the province, therefore we pray first that the close season for fishing in waters north of the North Saskatchewan river be extended to December 15, so that the fish may be allowed to spawn so that the waters may not be depleted, but serve as a source of wealth and food for the residents of the province; and second that no person be allowed to fish in these northern waters who is not a resident of the province of Saskatchewan for at least one year; and third to have entered for a homestead and to have lived on it for at least six months before the granting of a license; and fourth that he must have the license and not merely the receipt of the money paid in before he is allowed to set his nets; and fifth that 400 yards be the length of net per license instead of 300 as it now is; and sixth that the lake must be kept clear and clean of all fish refuse such as spawn, offal and heads, and other dead animals; and seventh that a severe penalty be imposed on parties who poison fish refuse and scatter it over the ice; and eighth that the fish inspector be instructed to make regular visits every two weeks to see if the regulations are being carried out according to the intent of the law, and for these amendments to the fishing regulations we shall ever pray.

FRED. A. ROSS, Lumberman,  
J. B. ROSS,  
J. C. MANN,  
J. CÔTÉ,  
W. W. LIVINGSTON, Battleford, Barrister,  
J. H. GENEREUX, Battleford,

ERNEST ADAMS, S.W. 16, 50, 19,  
JOHN MAY, N.W. 36, 50, 18,  
JULIUS OVERMOR, S.E. 26, 51, 19,  
SAMUEL OVERMOR, N.E. 26, 51, 19,  
LOUSSIAN ABDUL MANAM, N.E. 7, 50, 19,  
and 157 others.

APPENDIX III.—*Petition from Farmers on Great South Plain, opposing the export of fish from Turtle and Jackfish lakes.*

BATTLEFORD, Sept. 27, 1910.

To the Fisheries Commission (Alberta and Saskatchewan) of the Dominion of Canada:

We, the undersigned petitioners, humbly pray that the export of fish from Turtle and Jackfish lakes be stopped so as to provide food for the farmers on the Great South Plain.

P. E. MURPHY,  
A. LEBŒUF,  
FRANK BEATCH,  
JOHN BEATCH,  
JOSEPH O. FOREST,  
JOS. GUICHON,

GEORGE BEATCH,  
JULES BANTARIE,  
ALEXIS MURPHY,  
NICK BEATCH,  
FRANK BEAUDRY,  
S. HOFFMAN, and 41 others.

APPENDIX IV.—*Statement from J. J. Forest, Cut Knife, that he could not get White-fish at Turtle lake when fishing was proceeding..*

CUT KNIFE, September 26, 1910.

This is to certify that in the winter of 1909 I was unable to procure any white-fish at Turtle lake.

JOSEPH O. FOREST, Jr.,  
Section 28, 43, 21.

APPENDIX V.—*Petition from Residents near Jackfish and Murray lakes opposing commercial fishing as it depleted Turtle lake.*

July 10, 1910.

To the Honourable

the Minister of Marine and Fisheries for the Dominion of Canada:

The petition of the undersigned residents of the districts adjacent to Jackfish lake and Murray lake, North Battleford, in the province of Saskatchewan, humbly sheweth,

That whereas fishing for commercial purposes in the lakes above mentioned is being carried on at the present time and many tons of fish have been caught in these lakes this season;

And whereas fishing for commercial purposes was heretofore allowed in Turtle lake, situate twenty-five miles northwest of Jackfish lake, and of about the same area, with the result that the said Turtle lake was fished out in one season;

And whereas your petitioners believe that if fishing for commercial purposes be allowed to be carried on in Jackfish and Murray lakes the supply of fish will be depleted in the same way as it was in Turtle lake;

And whereas it is of very great importance that the fishing in the above mentioned lakes should not be destroyed as it was in Turtle lake;

Therefore your petitioners pray that fishing for commercial purposes in Jackfish lake and Murray lake be stopped at once.

And your petitioners will ever pray.

J. A. NOLIN, and 34 others.

APPENDIX VI.—*Petition from Meota, Sask., against summer export of fish from Jackfish and Murray lakes.*

(Copy transferred to the Alberta and Saskatchewan Fisheries Commission.)

MEOTA, SASKATCHEWAN, June 9, 1910.

PETITION.

To the Minister of Marine and Fisheries:

SIR,—We, the undersigned settlers, resident in the district of Jackfish and Murray lakes, are desirous of conserving the fish therein contained and beg the Government to revoke at once all summer licenses issued, in order that the settlers' winter fishing shall not suffer from depletion.

We appeal to you to stand by the people, and forbid any commercial shipping of fish out of this district in summer time, and safeguard the settler's interests while he is farming the land.

## ALBERTA AND SASKATCHEWAN FISHERY COMMISSION

We also wish to remind you that in years of frost or hail the farmers have in some instances been wholly dependent for subsistence on the winter fishing, and we implore you to give immediate attention to our warning before the lakes have been depleted.

Trusting you will give this your earnest consideration, on behalf of the settlers.  
We remain, yours obediently,

H. WILKINSON,  
W. LANG,  
MARTIN G. HUMPHRY,  
JOHN MATHESON,  
C. A. PITCHER,  
H. WILKINSON,  
J. BELL EMMERY,  
W. E. FOX,  
BERTIE MANXX,  
ISSIDORE FIDDLER,

PETER LAING,  
G. SAVALLIE,  
J. P. ATKINSON,  
A. LAMONT,  
F. WATERER,  
FARRIS SMITH,  
A. E. ROXSBY,  
CHARLES MAY,  
SEELEY, —

APPENDIX VII.—*Resolution of Battleford Town Council re threatened depletion of adjacent lakes, and urging a fish hatchery.*

BATTLEFORD, SASK., Sept. 26, 1910.

W. W. LIVINGSTON, Esq.,  
Town.

SIR.—I am instructed to advise you of the following motion passed at the regular meeting of the council held on September 26:  
That this council protest against the further export of fish out of the province; that it recommends that a close inspection of lakes be made each year to guard against further depletion; that an inspection be made of lakes now devoid of fish with a view of having same stocked with fish suitable to them; that a hatchery be established on the Battle river; and to ask you to present the features embodied therein to the Fisheries Commission.

Yours truly,

H. C. ADAMS,  
*Secy.-Treas.*

APPENDIX VIII.—*Resolution of North Battleford Board of Trade re threatened depletion of lakes north of North Battleford and urging hatchery.*

BOARD OF TRADE,  
NORTH BATTLEFORD, SASK.

To the Fishery Commission:

Resolution passed by the North Battleford Board of Trade, September 27, 1910.  
Whereas the lakes to the north of North Battleford, namely: Jackfish lake, Turtle lake and others are being rapidly depleted of fish; and  
Whereas this being the source of supply for the northern portion of Saskatchewan, the depletion of these lakes would mean a great loss to the settler and sportsman;  
and

Whereas all the lakes in the northern part of this district are fresh water lakes, free from alkali, and therefore peculiarly adapted for the propagation and preservation of fish;

Therefore, be it resolved that we recommend the establishment of a hatchery at some point in the northern part of this district, and we would strongly urge that Jackfish lake be the location chosen for this purpose. This lake being centrally located, easy of access, had already a popular summer resort.

E. A. FOX, *President.*

M. J. HOWELL, *Commissioner.*

APPENDIX IX.—*Petition of Reeve and residents of Wynyard re stocking of the Quill lakes, and favouring experimental stocking*

To the Dominion Fisheries Commission for Alberta and Saskatchewan:

We, the undersigned residents of the territory adjacent to the Quill lakes, realizing the valuable opportunity of submitting to you our views on the stocking of those lakes with fish, respectfully pray,

That experimental boxes of different varieties of fish be placed in these lakes to ascertain which species would be best adapted.

Rumours have been circulating that fish are unable to live in these lakes, but five different species have been observed at various times, thereby proving the fallacy of these rumours.

And your petitioners will ever pray.

Municipality of Big Quill, No, 308—

S. J. ERRICKSON, *Reeve.*

R. DENOVAN, *Secy.-Treas.*

Village of Wynyard—

S. A. SIGFUSSON, *Overseer.*

R. DENOVAN, *Secy.-Treas.*

Wynyard Board of Trade—

F. S. CAMERON, *President.*

FRANK A. HUERS, *Secy.-Treas.*

Wynyard Liberal Association—

JAS. A. BLACK, *President.*

R. DONOVAN, *Secy.-Treas.*

H. R. ROSS, *M.D.*, D. M. MCKENZIE, T. H. ROSS, GEORGE HEGLAN, and twenty-six others.

September 15, 1910.

APPENDIX X.—*Letter from Secretary of Edmonton Board of Trade enclosing Petition from summer residents at Gull Lake.*

THE EDMONTON BOARD OF TRADE.

EDMONTON, Alberta, October 8, 1910.

Prof. E. E. PRINCE,

Chairman, Fisheries Commission, (Alberta and Saskatchewan) Edmonton.

DEAR SIR,—

I enclose herewith a petition in regard to the stocking of Gull lake with black bass, signed by a number of gentlemen who own property and have permanent camps about that lake. While this petition is addressed to the Minister of Marine and Fisheries, it seemed proper, in view of your making the investigation here, to place this in your hands, and to ask you to forward same, with your recommendation. The number of signatures could be greatly increased, if there were an opportunity to place this before other property owners there.

I might state for your information that, at the present time, there are about seventy-five cottages along the shores of this lake, and the number is rapidly increas-



ing each season. In addition to the permanent camps however, there are each season, a large number of people camping in tents. Sporting fish placed in this lake would, therefore, be of service to a very large number of people.

Yours truly,

F. T. FISHER,  
Secretary of the Edmonton Board of Trade.

APPENDIX XI.—*Petition favouring stocking Gull Lake with black bass.*

Department of Marine and Fisheries, Ottawa, Ont.:

We, the undersigned summer residents of Gull Lake and others interested, humbly petition your Department to stock the said lake with black bass, the conditions there for their propagation we believe to be ideal.

And your petitioners will ever pray.

DATED at Edmonton this 30th day of September, A.D. 1910.

W. J. DAWSON, Barrister, Edmonton.

J. S. CLAIR BLACKETT, Edmonton.

R. HYNDMAN, Barrister, Edmonton.

E. C. EMERY, Barrister, Edmonton.

CHAS. A. STUART, Judge, Supreme Court.

GEO. H. KINNAIRD, Chartered Accountant.

S. W. SMITH, Official Assignee.

J. A. O'NEIL HAYES, C.P.R. Land Inspector.

F. T. FISHER, Secretary Board of Trade.

HENRY GILBERT, Notary Public, Edmonton.

D. G. McQUEEN, Minister, First Presbyterian Church, Edmonton.

GEO. GILMER, Edmonton.

APPENDIX XII.—*Letter from Secretary F. C. Clare, United Farmers of Alberta Union (Edmonton) re pollution and restocking of the Great Saskatchewan River with fish.*

UNITED FARMERS OF ALBERTA.

OFFICE OF THE SECRETARY-TREASURER.

EDMONTON, 1st October, 1910.

To the Royal Commission on Fisheries. (Alberta and Saskatchewan).

GENTLEMEN:—

As the notices of your meeting invite any and all persons interested in the subject of Fish and Fisheries, to bring before you any information or requests bearing on the same, I beg to do so on behalf of the Edmonton Local Union of the United Farmers of Alberta.

There is no doubt, but that as a congenial recreation the pastime of fishing is one which commands a prominent position, as it not only provides an agreeable amusement, but also, where fish are at all abundant, a welcome change of food.

The Saskatchewan river is a stream which we claim has exceptional advantages for the growth and production of fish life, and we deplore that from various causes the river is not stocked as it should be. In the vicinity of Edmonton there are a few, but only a few salmon trout caught each year, fish running up to 13 pounds weight, gold-eye, two species of sucker, ling, jackfish, and now, rarely, sturgeon are to be caught, all of which testify from their fatness the excellent feed they ob-

tain. On the other hand, from experience the number of fish seems to be diminishing, which seems to be due to various causes, such as sawdust which is often in considerable quantities, and the sewerage and other impurities which are allowed to enter the river.

To show this is the case, last year some of the sewerage from the Griffin Packing Plant ran into a small creek known as 2nd Rat Creek, with the result there was a number of fish at the mouth of the creek killed; the sewerage now runs into the river without any purification.

Another reason which is very evident the cause of the diminishing number of fish in the river, is the destruction of fish in the spring when running up the creeks and small rivers to spawn, wastefully destroyed by fish traps and other illegal means.

While however submitting our views to you gentlemen, we admit our ignorance of the means which could be best employed to give us a better supply of fish in this splendid river. Whether the present species could be better protected and preserved, or the introduction of other species would be more advantageous, we would ask you earnest consideration, as we assure you we consider that the stocking of the Saskatchewan river with fish, would be welcomed by the farmers and community at large, probably as much as the opening up of the river to traffic, which matter has been receiving some attention of late.

We are, dear sirs,

(On behalf of the Union) Yours truly,

Yours truly,

FRANCIS C. CLARE.

Secretary.

APPENDIX XIII.—*Communication from Athabasca Landing Board of Trade re discouraging export of fish from northern lakes.*

ATHABASCA LANDING, ALTA, October 25, 1911.

Dr. SISLEY,

c/o Alberta and Saskatchewan,

Fish Commission,

Edmonton.

DEAR SIR,—A communication from Judge McGuire has just been received. He has asked me to forward to you the opinion of this Board regarding the fishing in the lakes in this north country.

We regret not meeting you on your return trip. At a meeting of the Board held after the conference between your Commission and our Council, it was unanimously decided that in the best interests of this north country, the export of fish, from the northern lakes, to points outside of the Dominion of Canada, be discouraged. This could be done by a very high export duty being placed upon the fish, or prohibiting the export entirely. It was not considered possible to attain the desired end by merely regulating the quantity of net given each fisherman, nor by raising the license fee.

I trust this decision receives your best consideration.

Yours sincerely,

A. L. LAWLER,

Secretary.

APPENDIX XIV.—*Letter from W. Pearce, Esq., Calgary, re Fluctuations in the abundance of fish in northern waters in former days.*

CALGARY, ALTA., October 21, 1910.

DEAR SIR.—In further reference to my interview with you this morning regarding the subject of white-fish in the northern lakes, I omitted to direct your attention to what is at least interesting and might possibly be of very considerable benefit in the investigation of the subject.

In going through any of the records of the Hudson's Bay Company in the North you will find at intervals of very few years mention made of the fact that the Indians were starving, that the fisheries had failed. Now whether the fisheries had failed owing to stormy weather being prevalent at the time the great fall fishery took place when the winter supply was obtained, or whether it had failed by reason of the carelessness or for some other cause on the part of the Indians, or whether it had failed because of the depletion of fish in the lakes, or possibly the fish haying taken to some other spawning ground, would be a matter of great interest to investigate. The amount of fish utilized by the sparse population of Indians even when we consider the amount that was fed to dogs should not have been sufficient to deplete the lakes, at least one would so imagine even though the fishery was conducted on the most destructive basis namely during the spawning season.

If these records can be obtained from the different lakes and I think they can by applying to the Hudson's Bay Company, they might furnish material which would be of value to your Department, hence this communication.

Yours truly,

WM. PEARCE.

Professor Prince,  
Chairman Fisheries Commission,  
Alberta Hotel, Calgary, Alta.

APPENDIX XV.—*Letter from Cecil E. Byron, Esq., Jumping Pound, Alta., re inserting Fishery Regulations in Prov. Gazette, on anglers per diem catch, irrigation ditches, &c.*

(Forwarded to the Commission by R. A. Darker, Esq., Calgary, Alberta.)

JUMPING POUND, P.Q., October 17, 1910.

DEAR MR. DARKER.—I am very sorry to find that I shall not be able to be in Calgary on Thursday, but I should be much obliged if you could see your way to draw the attention of the Commissioners to the following points:—

1. When I was appointed a magistrate for this province I made a point of trying to ascertain facts as regards close seasons, legal size of fish caught, &c., but no one seemed to have the information I wanted. I happened, however, to be in Edmonton in July 1908, and went to the Attorney-General's department only to be told that fishery regulations were governed by Orders-in-Council at Ottawa, and that the Provincial Government knew nothing about them. I, therefore, called on the late Mr. Harrison Young, who was Fishery Inspector for Alberta, and he very kindly gave me all the information he had. My contention is that copies of orders in council should be transmitted to each provincial government in order that they may be inserted in the *Provincial Gazette*; by this means every J.P. who chose to read the *Gazette* would be able to ascertain the law in the event of his having to administer it.

2. At a meeting of the Alberta F. & G. Prot. Ass., over which you presided some two years ago, a resolution was passed to the effect that no person should be allowed to take more than fifteen fish in one day. I feel very strongly that a limit should be



FIG. 1.—Cold Lake, north of Fort Pitt.



FIG. 2.—Primrose Lake, North of Fort Pitt.

placed either on the number of fish or on the weight of fish caught, but the latter restriction has this objection that a policeman or fishery guardian does not carry a weighing machine with him and might have to walk some miles to find one; furthermore, the weight of the fish alters considerably after it has been out of water some time. I have known cases of a couple of men coming out here from Calgary for the week-end and boasting that they caught a couple of hundred fish or half a sackful as the case may be. This should be stopped in the interests of everybody, as a large number of such men must be wasted.

3. There is no doubt that many people break the law as regards catching and keeping undersized fish because they firmly believe that 90 per cent of the fish which are put back in the water after being unhooked, die shortly after the operation; some evidence on this point is therefore desirable.

4. It is too much to suppose that riparian ownership will ever be recognized in this part of Canada, but in my opinion the law of trespass on the part of fishermen should be placed on a more satisfactory footing. The common belief is that no one can be turned away as a trespasser as long as he is within high-water mark; the absurdity of this belief is shown as soon as one attempts to define 'high water-mark.' On the sea shore it is regularly defined by the tides, but if it means anything at all in connection with these creeks it means the highest point known to have been reached by the water of the creek. This is absurd on the face of it as many scores of acres in a section belonging to my next door neighbour were covered some years ago by the Jumping Pound creek on the bank of which I live, and a man might walk there now and not be a trespasser although he might be a quarter of a mile from the creek. Personally, I do not see how you can lay down a hard and fast law on the subject unless you state that a man is trespassing if he has not both feet or at least one foot in the water.

5. When I saw the late Mr. Young two years ago I asked him for the name and address of the fishery guardian for the Calgary district; he told me that the appointment was vacant although he had repeatedly drawn attention to the matter at Ottawa. Mr. Young himself died last year and no successor to him was appointed for many months even if there is one now. I hope that steps will now be taken to rectify this matter.

6. I should like to draw your attention to the headworks of the Springbank Irrigation Ditch, which are situated on this creek about half a mile above my house. The ditch as you know has never been used for irrigating purposes and probably never will be, but the sluice-gates are a perpetual source of danger to fish as they have never been protected by netting in accordance with subsection 17 of section 5 of the Fisheries Act of July 1894. Two years ago some one opened the gates and diverted the creek into a reservoir with the result that when the latter dried up, the fish in it died. I told Mr. Peet, who was then Secy. of the Alb. F. & G. Prot. Ass., about the matter and shortly after I received a visit from a constable of the R.N.W.M.P. to whom I showed the gates but nothing further was done in the matter. The gates were opened again this spring while I was over in Europe and the creek below the dam was left dry for some time in consequence. Sections 60 and 86 of the Act, chapter 45 seem to provide for such a case except that the trustees of the irrigation ditch can hardly be called the 'owners.' As a matter of fact, however, the fish in the creek above the dam are at the mercy of anyone who chooses to open the sluice-gates and the chances of being caught in the act are very slight.

Believe me,

Yours truly,

OEIL E. BYRON.

APPENDIX XVI.—*Letter from W. G. Green, Esq., Macleod Board of Trade concerning a letter from H. F. Baker, Esq., (see next Appendix).*

BOARD OF TRADE.

MACLEOD, ALBERTA, October 20, 1910.

Prof. E. E. PRINCIE, F.R.S.C.,  
Chairman of the Fisheries Commission,  
Ottawa, Ont.

SIR,—When you had your session at Macleod I told you that I had written to some people in the district who were familiar with local fishery conditions and who had not been able to attend your meeting. I have to-day received a letter from Mr. H. F. Baker of Macleod who is one of the most experienced fishermen in the country. I enclose this letter herewith for your information and think that Mr. Baker's suggestions are admirable.

Yours truly,

W. G. GREEN,  
Vice-President.

APPENDIX XVII.—*Mr. Baker's letter re Depletion of fish in Alberta streams.*

MACLEOD, ALBERTA, October 23, 1910.

To the Members of the Alberta and Saskatchewan Fishery Commission:

SIRS,—Yours of the 20th inst. only reached me to-day, I was, therefore, unable to attend the session of the Dominion Fisheries Commission, which fact I regret, as there are several points on which I would be glad to have you act on; viz:

1st. The wholesale destruction of fish below the authorized dimension, which I understand is seven inches.

2nd. A limit should be put on the catch per diem, say forty (40), I have personally seen piles of fish which were caught and left to rot on the banks.

3rd. Water bailiffs should be appointed to gather information as to infraction of Fishery Regulations, and to see that they are enforced and especially fishing out of season during the winter months through the ice and dynamiting, several cases of which I have heard. I would also suggest that the season close on October 1, instead of November 1, as hitherto.

As regards the condition of trout streams in Southern Alberta, the trout are gradually being exterminated, the increase not being nearly equal to the number killed yearly, which can be partly accounted for by the amount of fish caught for the purpose of salting down.

I would also suggest the removal of any limit to the size of bull-trout which may be caught, but would not like to suggest removal of protection as it might lead to other trout being killed out of season.

I have noticed that the fish locally called grayling are on the increase and trout on the decrease.

Any further information in my power I will be pleased to provide you with.

Yours truly,

H. F. BAKER.

APPENDIX XVIII.—*Letter from Thomas Andrews, Granum, re more officers needed close season suggested, omitting bull trout, &c.*

THE CANADIAN BANK OF COMMERCE.

GRANUM, ALTA., October 21, 1910.

Professor PRINCE, F.R.S.C., &c.,  
Chairman Alberta and Saskatchewan Fishery Commission:

SIR,—Referring to your letter of the 20th inst., regarding the Fisheries Commission I would very much like to meet these people but cannot say at present whether I can get away.

Should I not get there I would suggest that more guardians be appointed, as it is impossible under the present conditions to watch the streams for poachers and it is impossible to get a local man to act as he will not incur the enmity of his neighbours by reporting them.

I would also suggest that the close season for Trout and Grayling start the 15th September as the bull trout and grayling are spawning very shortly after them, in fact some of the bull trout have spawned by that date.

Trout streams will be a thing of the past here within three years unless they are properly guarded against poachers using explosives, &c., in low water by properly paid and authorized agents of the Government who have power to make an arrest when necessary without having to go to town for a warrant when caught in the act. I would also suggest limiting the catch to any one man to twenty pounds of fish or less per day.

Yours truly,

THOS. ANDREWS.

APPENDIX XIX.—*Rev. Father Ancel, Lac la Plonge, on request to fish in close season to supply Indian Mission requirements.*

(Precis of letter from Rev. Father Ancel, Lac la Plonge, on above subject).

The Rev. Father Ancel, O.M.I., of Lac la Plonge, Sask., writes on behalf of the Indian children confided to his care and states that last winter the whole personnel of the school of Lac la Plonge derived their living from fish captured in rivers Castor and Dore. Now it appears that the law forbids fishing in these rivers precisely when fish is most abundant therein, that is to say, at the end of October and beginning of November, and they were condemned by the inspector to pay a fine of \$125 last fall for doing so. The subsidy granted by the Indian Department is hardly sufficient to enable him to feed, clothe and procure lodgings for these Indian children. Mr. Miller, Inspector of Qu'Appelle, who visited the locality seemed to understand the conditions obtaining there after Father Ancel had explained to him that fishing is practically impossible in the middle of November as the rivers have become shallow and it is impossible to set nets under the ice. The inspector, however, did not consider it advisable to allow them to capture the 6,000 fish which are required for the winter food of the Indian children and Father Ancel applies to the Department for permission to be allowed to capture the necessary fish for their requirements.

(Translation of the Department's reply.)

OTTAWA, June 13, 1910.

SIR,—I beg to acknowledge your letter of the 16th ultimo, explaining the conditions under which you urged that fishing be allowed at Lac la Plonge during the close season therefor.

In reply I may say that, as you will readily appreciate, it is very necessary, if the fisheries are to be saved from depletion, that they should be given efficient protection, and most of all it would seem during the time that they resort to the spawning grounds to reproduce their species and fall such a ready prey to those who may then engage in fishing operations.

The Department, however, in carrying out such protection endeavours to do so in a manner which will at once afford the protection requisite, and at the same time impose the least possible hardship on those desiring to obtain fish for food purposes.

The existing Fishery Regulations for the Province of Saskatchewan were adopted several years ago, and the Department fully appreciates that there has been considerable change in conditions in the meantime, and in order to enable the fullest information to be available on which to base wise regulations, the Minister has decided to this summer appoint a Commission which will thoroughly investigate the conditions and requirements of the fisheries there, and when such Commission is appointed, I shall cause your letter to be placed before the chairman thereof.

I am, &amp;c.

DEPUTY MINISTER OF MARINE AND FISHERIES.

APPENDIX XX.—*Petition from Green Lake Indians to reserve the lake for them.*

A Petition from the residents of Green lake and vicinity.

To the Chairman:

DOMINION FISH COMMISSION,  
N. Battleford:

SIR,—We have the honour to present this petition, signed by such of the residents of Green lake, as were present when said petition was drawn up; and which, moreover, represents the requests and wishes of the entire community regarding certain matters in connection with the fisheries of the north.

We wish to call your attention to the fact that the said fisheries are our main support and livelihood; should by any chance, anything occur to deprive us of our regular supply of fish, as for instance, overfishing by commercial companies, we would undoubtedly suffer great hardship if not starvation.

Green Lake, Water Hen Lake, and Sled Lake, are all centres of a considerable half-breed and Indian population, who practically depend on fish for their daily food.

We do therefore make petition and pray that the above mentioned lakes be protected from fishing by commercial companies for export purposes, and that the said lakes be reserved entirely for bona fide settlers or residents thereon.

There are a number of lakes in this vicinity which can be fished by large com-



panies without interfering with the living of the natives; as for instance, Dore Lake, Lac la Plonge, Squirrel Lake, &c., all very large bodies of water.

And this we do most humbly request.

(Signed)

EDWARD BEATTY.

his  
LOUIS ROY x LA LIBERTY.  
mark.

his  
THEOPHILE x AUBICHON.  
mark.

his  
GEORGE x MERASTY.  
mark.

his  
BAPTISTE x MERASTY.

his  
BAPTISTE x AUBICHON.  
mark.

his  
JOSEPH x AUBICHON.  
mark.  
and 53 others.

GREEN LAKE, September 16, 1910.

APPENDIX XXI.—*Petition from residents at Grenfell, Grayson, &c., asking the removal of Katepwa Dam, as it lowers seriously Crooked Lake, &c.*

PETITION.

The Fisheries Commissioners (Alberta and Saskatchewan Fishery Commission)  
Fort Qu'Appelle.

The petition of the undersigned, to your honourable body, respectfully sheweth that:—

1. That a dam has been erected across the Qu'Appelle river, at Katepwa, with the consent of the Government, for the purpose of raising the waters in the lakes thereat.

2. That the said dam prevents the natural flow of water down the Qu'Appelle river, eastwards, and has caused the water supply in the said river to become abnormally low and in some parts, almost dry; in consequence of which, the Crooked Lakes and Round Lake have suffered to such an extent, that the fish in these lakes, will become diseased and their extermination will only be a matter of a few years.

3. That the lowering of the water in the Qu'Appelle river caused by the said dam, is an injustice and very serious matter to the many settlers now located on the river banks, who rely upon the river water for their stock both summer and winter.

4. That we humbly petition that your honourable body will take immediate steps for the removal of the said dam, thereby restoring to the many settlers the full supply of water that is so urgently needed by them for their stock, and at the same time protecting and preserving the fisheries and fish, in the Crooked Lakes and Round Lake.

5. That, in the event of your honourable body deeming it expedient or beyond the powers conferred upon your honourable body, to order the removal of the said dam, we humbly petition that, as an alternative, you shall recommend to the Govern-

ment that a dam be erected across the river at the east end of Crooked Lake, for the purpose of counteracting the injury and damage that is being done by the dam at Katepwa.

And your Petitioners as in duty bound will ever pray.

H. Coy, Grenfell, Oct. 17th.

Geo Parley, Grenfell, Oct. 17th.

H. Patterson, Grenfell, Oct. 17th.

J. Walker, Grenfell, Oct. 17th.

T. van Someren, Grenfell, Oct. 17th.

J. McLeod, Grenfell, Oct. 17th.

J. H. Holcott, Grenfell, Oct. 18th.

I. P. Brittan, Grenfell, Oct. 18th.

John Walker, Grenfell, Oct. 18th

C. J. Roxborough, Grenfell, Oct. 18th.

Hugh W. Dobson, Grenfell, Oct. 18th., 1910.

A. W. Argue, Grenfell, Oct. 18th, 1910.

D. Patterson, Grenfell, Oct. 18th, 1910.

H. E. Davis, Grenfell, Oct. 18th, 1910.

M. H. Neill, Grenfell, Oct. 18th, 1910.

A. J. Claxton, Grenfell, Oct. 18th, 1910.

James W. Brown, Grenfell, Oct. 18th, 1910, and 70 others.

APPENDIX XXII.—*Letter from W. H. Slocum, Esq., C.N.R., Innisfree, Alberta, forwarding analysis of Birch Lake water, a proposed summer resort, where fish are desired.*

INNISFREE STATION, December 20, 1910.  
ALBERTA, CANADA.

Prof. PRINCE,  
Royal Fishery Commission,  
Ottawa, Ont.

DEAR SIR.—I hand you herewith, the result of analysis of a sample of Birch Lake water, made by Prof. M. A. Parker, of the University of Manitoba.

This Company is considering the advisability of opening Birch Lake as a summer resort, but it will depend largely on whether the lake will carry any kind of fish, and if so, whether or not the government see fit to stock the lake.

If any report was made by the Commission, I should be very glad to know it.

Yours obediently,

W. M. SLOCUM,  
Agent, C.N. Ry.

APPENDIX XXIII.—*Chemical analysis of Water of Birch lake by Professor M. A. Parker, University of Manitoba.*

CHEMICAL LABORATORY, UNIVERSITY OF MANITOBA.

October 13, 1910.

Results of a sample of water from Birch Lake received from Mr R. Creelman, Canadian Northern Railway Co., on Sept. 23.

(Results stated in parts per 100,000.)

Free and saline ammonia . . . . .	.004
Aluminoid ammonia . . . . .	.091
Oxygen consumed . . . . .	.690
Temporary hardness . . . . .	18.05
Permanent hardness . . . . .	Nil.
Sodium carbonate . . . . .	211.9
Nitrogen as nitrites . . . . .	Present.
Nitrogen as nitrates . . . . .	.01
Chlorine as chlorides . . . . .	24.9
Total solids . . . . .	642.2

The ammonia content of the water is high as is also the oxygen consumed. In its present condition the water is quite unfit for drinking purposes.

(Signed) MATTHEW A. PARKER.