FISHERIES RESEARCH BOARD OF CANADA

MANUSCRIPT REPORT SERIES

(BIOLOGICAL)

No. 871

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A HISTORY OF COMMERCIAL FISHING IN INLAND CANADA

(Including Appendices with Additional Historical Material)

AUTHORSHIP

W. A. Kennedy

Establishment

Biological Station, London, Ontario

Dated

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GENERAL

Archeological evidence indicates that the fisheries resources of many lakes in what is now Canada have been utilized by man for millenia.* The first European explorers noted that fish was an important item of food to most of the tribes native to Canada. Prior to exposure to European techniques, aboriginal Canadians fished with spears, with copper fish hooks, with fish traps, and with gill nets made from local materials such as the inner bark of willow and cedar roots.

The special importance of whitefish in the early history of Canada is emphasized again and again in the literature by statements such as the following by explorer Preble: "So important are whitefish as an article of diet, that the sites of many, perhaps the majority, of the trading posts, as well as the wintering stations of a number of exploring expeditions, places which have become famous in Arctic literature, have been selected with a view to the local abundance of this fish," or by Archbishop Tache of Greater Winnipeg: "I have lived for whole years on whitefish as my principal food and frequently the only food."

The earliest settlers caught and used local fish. As each settlement developed, some individuals, European immigrant or native, specialized in fishing, usually for local sale initially. As soon as there were adequate transportation and marketing facilities, these individuals often began fishing for markets outside the community. This history is essentially about such fishing for markets at some distance. It applies only to commercial fishing in the inland waters of Ontario, Manitoba, Saskatchewan, Alberta, Northwest Territories, and Yukon; commercial fishing in other inland waters of Canada is negligible by comparison. Fisheries for Arctic char along our northern coast are regarded as essentially marine and are not included, and a limited fishery in the estuary of the Mackenzie River is excluded on the same grounds.

FISH NAMES

Since some species of fish are known by different names in different localities, common synonyms of the names used in this history are tabulated below. The corresponding scientific name is also given, since each scientific name always applies to one species, and one species only, everywhere, in every language. "Spp." in a scientific name indicates that the name used in the text is a collective noun for several species of the same genus (i.e., several species which are much alike). The names are listed in the order used by some biologists, an order which lists fish that are most alike closest together.

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*In conversation with Dr. W. W. Jury, of the University of Western Ontario, he stated that he had recovered from a "dig" near Port Franks the remains of fish caught 2700 years ago as dated by the radio carbon technique.

Name used here	Synonyms	Scientific Name
Sea lamprey	lamprey	Petromyzon marinus
Sturgeon	lake sturgeon, rock sturgeon	Acipenser fulvescens
Alewife	sawbelly, gaspereau	Alosa pseudoharengus
Spring salmon	Chinook salmon	Onchorhynchus tshawytscha
Chum salmon	dog salmon	Onchorhynchus keta
Atlantic salmon	salmon	Salmo salar
Lake trout	trout, siscowet, togue, salmon trout, grey trout, mackinaw trout	Cristivomer namaycush
Arctic char	...	Salvelinus alpinus
Inconnu	cony	Stenodus leucichthys
Whitefish	lake whitefish	Coregonus clupeaformis
Cisco	lake herring, herring, shallow-water cisco	Leucichthys artedi
Cisco	chub*, tullibee*	Leucichthys spp.
Smelt	American smelt	Osmerus mordax
Pike	jackfish, jack, northern pike, pickerel (in U. S. A.)	Esox lucius
Muskellunge	musky, lunge	Esox masquinongy
Goldeye	...	Hiodon alosoides
Sucker	mullet**	Catostomus spp.
Redhorse	mullet**	Moxostoma spp.
Buffalofish	Buffalo	Ictiobus spp.
Carp	...	Cyprinus carpio
Catfish	bullhead (applicable to some but not all catfish).	Ictalurus spp.
Eel	American eel	Anguilla rostrata
Burbot	ling, lawyer, eelpout, maria, methy, loche	Lota lota
White perch	...	Roccus americanus
White bass	silver bass	Roccus chrysops
Black bass	smallmouth bass	Micropterus dolomieui
Perch	yellow perch	Perca flavescens
Pickerel	yellow pickerel, yellow walleye, yellow pike-perch, walleye, doré, pike (in U. S. A.)	Stizostedion vitreum
Blue pickerel	blue walleye, blue pike, blue	Stizostedion vitreum glaucum
Sauger	sauger pickerel, sand pickerel	Stizostedion canadense
Sheepshead	freshwater drum, drum, silver bass, sunfish	Aplodinotus grunniens

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* Collective nouns, each of which include several species of cisco. The species included may vary from lake to lake.

** In recent years redhorse have frequently, and suckers have sometimes, been sold as "mullets". This could be regarded as misrepresentation, since there is an entirely different group of marine species which have for centuries been called "mullets" and sold under that name.

LAKE ERIE

A remarkable abundance of fish, from earliest times, puts Lake Erie in a class by itself. In the 1700's Indians habitually gathered near Sandusky at the appropriate season to gather whitefish thrown on the beaches by northeast storms. Sturgeon could be taken in such quantities near Pelee Point that early Canadian settlers in that area found it worthwhile to spear them with pitchforks and haul them away by the wagonload to use as fertilizer on their farms. A U.S. government report on Lake Erie for 1885 says: "The fisheries of the lake are of vast importance, surpassing in extent those of any other of the Great Lakes or of any body of fresh water in the world." This statement continued true for most of the period covered by this history. At present, roughly one-quarter of all the freshwater fish produced in Canada comes from the Canadian half of Lake Erie -- 35 million pounds in 1965.

By 1870, when the commercial fishery in Canadian waters first became appreciable, several of the then largest cities in the United States (Toledo, Sandusky, Cleveland, Erie, Dunkirk, and Buffalo) were located on the shores of Lake Erie, and by the time modern transportation developed Lake Erie was reasonably close to the population centre of North America. As a result, Lake Erie fishermen have always been in a particularly favorable position for marketing their catch. With the greatest supply of fish and the readiest access to markets, the Lake Erie fishery has been much more prosperous than most of our freshwater fisheries. Most innovations in the freshwater fishing industry have originated in Lake Erie and gradually spread first to other Great Lakes, then to more distant fisheries. For this reason, the gear and methods used on Lake Erie are described in detail.

Pound Nets

The pound net was particularly characteristic of Lake Erie. The web of the netting used in a pound net is relatively heavy material. "Stakes" (i.e., piles) which support the upper edge of the netting* are driven several feet into the lake bottom and project several feet above the water surface. The stakes are carefully located in a predetermined pattern so that the net as fished will take a precisely determined shape. The pound net "leader" is essentially a straight fence of netting generally set at right angles to the nearest shoreline; when fish encounter it, they tend to move along it to its deeper end where the "head" of the pound net is located. The netting in the head is so arranged that fish are guided further and further into a trap from which retreat becomes increasingly difficult. Finally, they enter the "crib" (part of the head) where they remain like cattle in a pound until the fishermen "lift" by pulling up the bottom of the crib and concentrating the fish so that they can be easily and quickly brought aboard by dip nets.

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* In some cases the upper edge of the netting in the leader is supported by floats.

About 1850 fishermen from Connecticut set the first pound net in the lake near Sandusky, Ohio. The first one used in Canadian waters was set near Wheatley* in 1852. In 1853 two more were set in that vicinity and one was set at Lowbanks. From these localities at opposite ends of the lake the use of pound nets quickly spread along the whole Canadian shore, but they were particularly concentrated in the western third.

Pound nets have changed very little since they were first introduced. The biggest change has resulted from the introduction of synthetic fibres which, within the past 10 years, have almost completely replaced the cotton web and the manila or sisal rope formerly used. These new materials have largely eliminated the tarring of pound nets, formerly a time-consuming and unpleasant task.

Initially, pound-net boats were sailboats, 22 to 28 feet long with about 10 feet beam. They were flat-bottomed, of light draught, with removable rudder and centreboard, all necessary characteristics both to make it possible for the boats to enter the crib without fouling the netting and to enable them to be pulled out on the open beach where they landed. During the first decade of the present century, gasoline-powered** boats replaced sailboats. The new boats were also flat-bottomed; there was a universal joint in the propeller shaft so the propeller and shaft could be pulled up into a recess in the bottom when nets were being lifted or when the boat was beached. In the 1930's and 1940's steel hulls gradually replaced the wooden hulls used until that time, and power-driven aids to net handling were gradually introduced.

A floating pile driver is needed to drive the stakes which support a pound net; the same vessel is also usually used to pull the stakes before freeze-up each year. Initially, both the "hammer" used to drive the stakes and the windlass used to pull them were operated manually. However, gasoline motors replaced manpower for these purposes early in the present century.

Gill Nets

The "web" of a gill net consists of tough, fine threads tied to one another in such a way as to make a network of equal-size squares, each called a mesh. Each of the long sides of the web is tied to stout cords of which one is weighted, the other equipped with floats. As usually fished in inland Canada, the weighted line of the gill net lies along the lake bottom; the floats are buoyant enough to keep the top line up but not to float the whole net off the bottom. Fish become entangled in the web and are held until the whole gill net is pulled aboard the fishing vessel. Each fish must be individually removed from the mesh after the net is brought aboard.

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* It was fished by a Mr. Julian off Two Creeks (near Wheatley). The following year Enoch McLean, great grandfather of FRB Member M. McLean, fished two pound nets just west of Midsly Creek (near Wheatley), and a Mr. Hoover fished one pound net at Lowbanks (eastern Lake Erie); a third generation Hoover fished at Nanticoke until 1958.

** The first powered pound net boat in Canada was built in 1903 and used at Yellow Creek (near Wheatley) by Ned Lamarsh, a great uncle of the Hon. Judy LaMarsh.

On early gill nets stones were used for weights and crude chunks of wood for floats. However, early in the development of the commercial fishery, cast lead weights and shaped cedar floats became standard. At first the web was made of linen twine, but over a period of several decades, starting about 1900, cotton gradually replaced linen. In the 1940's hollow plastic "corks" replaced cedar for floats. About 1950 nylon twine replaced cotton in the web.

At first gill nets were fished from rowboats or from sailboats roughly 30 feet long. About 1880 gill-net fishermen began to use steam-powered vessels with screw propellers and by 1900 most gill-netting was done from "steamers". The first "steamers" were modelled after the steam tugs used for towing log booms, etc., and even had sturdy towing posts in the stern. Gill-net vessels on the Great Lakes have been called "tugs" ever since.

The early gill-net tugs were wooden-hulled, roughly 60 feet long, and relatively narrow. Working room on deck and stowage below were restricted because of the comparatively large space which the boiler, steam engine, and fuel occupied. The pilothouse was small. The nets were pulled by hand; a small roller was fixed to the rail of either bow for this purpose. Mechanical net pullers were developed about 1900, and soon all gill-net tugs were equipped with them. In the early 1900's gasoline and diesel motors gradually replaced steam power, hull design changed to give increased beam and blunter bows, and the space needed for propulsion machinery steadily decreased. Steel hulls gradually replaced wooden hulls between 1900 and 1930. Some shelter was soon provided for the men on deck, and shortly after 1900 some vessels had a deckhouse over the entire deck; by 1920 most tugs were so equipped. This deckhouse provided warmth and shelter to the fishermen as hour after hour they removed, one by one, the fish entangled in the gill nets and it also kept the gill nets on deck from freezing into a solid lump in the net box during cold weather.

Trap Nets

On the U. S. side of Lake Erie a new type of fishing gear, the trap net, gradually evolved. A trap net is essentially the same as a pound net, except that stakes are not used. Instead, the top edge is supported by floats while a system of anchors is used to hold the net in the proper shape. Unlike the pound net which extends from the surface to the bottom of the lake, the trap net usually extends from the bottom only part way to the surface. A trap net has several advantages over a pound net: it can be easily moved; initial cost is less; operating costs are lower; more nets can be handled per boat; and it is less vulnerable to storm damage. Like the pound net, fish are held alive in the crib until the fishermen lift and scoop them out with dip nets.

For most of the period covered by this history, trap nets were not permitted in Canadian waters. However, the ban on trap nets was relaxed in 1950 and by 1952 most pound-net fishermen had changed to trap nets. Cotton twine and manila or sisal rope was used at first, but these materials were soon replaced by nylon and other synthetics.

Seines, Fykes and Set Lines

A seine is an oblong piece of netting with weights and floats which is set parallel to a beach, then pulled ashore, thereby enclosing fish between netting and beach. Seines were favored by the settlers, but were largely replaced by pound nets when the latter were introduced. Seines have played only a minor part in the fishery.

The principle of entrapment* used in pound nets and trap nets is also used in fyke nets. However, fyke nets are much smaller. Round hoops, or sometimes square "hoops", are used to make fyke nets assume the required shape, and for this reason they are frequently called "hoop nets". They have played only a minor part in the fishery.

Although an appreciable part of the U. S. commercial catch has been taken by set lines, baited hooks have played only a minor role in the commercial fishery in Canadian waters.

Trawls

Since 1959 otter trawls have been used commercially on the Canadian side of Lake Erie. The netting in an otter trawl is of heavy twine, and the net is roughly the shape of a flattened funnel. This funnel of netting is towed along the lake bottom big end first, engulfing the fish in its path; they accumulate in the little end of the funnel, called the "cod end". Attached to either side of the big end of the funnel are the heavily weighted wooden otter boards which look very much like small doors. A rope or cable leads from each otter board to the fishing vessel. The interaction of the force exerted by the tow rope and of the resistance of the water makes the two otter boards pull apart, thereby spreading the funnel sideways. Weights and floats spread the funnel vertically. The trawl is brought aboard periodically and the fish are easily removed from the cod end.

Changes in Relative Use of Fishing Gear

Until the 1920's, pound nets were the predominant gear on the Canadian side of Lake Erie. Although both pound nets and gill nets were used in the eastern two-thirds of the lake, the use of gill-net tugs was originally greatly restricted in the western third of the lake where pound nets were particularly concentrated. These restrictions were gradually relaxed during the first World War and subsequently. Partly as a result of declining catches** and partly because of rising costs for wages and nets, the number of pound nets fished steadily decreased between 1925 and 1950. Meanwhile, the number of gill nets fished steadily increased. When trap nets were legalized in 1950, most pound-netters quickly changed to the new gear. However, trap nets were not

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* The fish traps used prehistorically by the Indians also used the same principle.

** Attributed by many to relaxation of the restrictions on gill-net tugs.

the panacea that many had hoped, and the use of impounding gear has continued to decline. In recent years several gill-net tugs have been converted to trawling, so that gill-netting has declined somewhat from the peak reached about 1955.

Catch

By 1880 the once despised sturgeon was in demand and an important fishery developed for the species, particularly near Point Pelee. In spite of increasing fishing efforts, catches declined after 1890 and by 1900 sturgeon had become too scarce to be worth a special fishery.

From about 1850 until 1925, lake herring was the most important species in the fishery. Catches were particularly large between 1910 and 1925, then the species became scarce and catches declined to and stayed at a low level, except for good catches in 1945, 1946 and 1947, all based on a one particularly good hatch.

Blue pickerel have been an important species since at least 1885. While lake herring were plentiful, the fishermen used their gear in a way that would maximize catches of that species and blue pickerel were taken only incidentally. When lake herring became scarce, the fishermen made minor changes in gear and in techniques in order to maximize the catch of blue pickerel. Production of blue pickerel steadily increased after 1925 to a maximum about 1955. Shortly after that they became scarce and catches declined drastically. Since 1960 blue pickerel have been so scarce that catching even one calls for comment.

The closely related yellow pickerel provided moderate catches from early times. Throughout the 1950's increasingly larger and larger catches were made. About 1960 catches began to decline and the species is now relatively scarce.

For over a century production of whitefish was moderate, although it has been an important species because of the high selling price. Unusually large catches were made in the 1940's. Since the early 1950's whitefish have become scarcer and scarcer.

Except for a decade about 1930, perch was a minor but steady contributor to the fishery until the late 1950's. Since that time, perch catches have increased considerably, and because of the scarcity of species which earlier supported the fishery, it has become one of the two important species produced.

Smelt are not native to the Great Lakes watershed. They were deliberately introduced into Crystal Lake, which drains to Lake Michigan, in 1912 and from there have spread through the Great Lakes. They were completely unknown in Lake Erie until the late 1940's and rarely seen until the early 1950's. During the past decade they have become abundant and an important fishery for them has developed. Smelt are small and at the price offered, the labor cost for untangling them from a gill net one by one exceeds their selling

price. Pound nets and trap nets, from which a ton of smelt can be scooped in the time taken to untangle a few pounds from a gill net, are suitable for taking smelt when they are concentrated inshore for spawning but do not catch appreciable quantities at other times. Otter trawls, which take smelt in quantity at all seasons and from which they are easily removed, now produce most of the smelt taken.

Several other commercial species, including carp, catfish, sauger, white bass, sheepshead, redhorse, and suckers, have been and still are produced in moderate quantities.

Sturgeon, lake herring, whitefish, blue pickerel, and yellow pickerel have in turn each played an important part in the fishery. The history of the fishery for each species has been much the same. Production was relatively stable for a long time; then, following catches which for a few years far exceeded those of the long stable period, each species became and remained scarce. Since the pattern has been repeated for species after species, it is natural to suppose that there was some connection between the extremely large catches and the sudden decline in abundance which followed.

Although there likely was such a connection, other factors, particularly changes in the fish's environment, also probably contributed to a decline. One important change has been an appreciable increase in average water temperature since 1900, mainly because average air temperature has increased, but to some extent through man's activities such as in clearing the land, thereby decreasing shade and increasing the temperatures of tributary waters. Temperature is known to be a very important factor in determining whether fish will survive in a given environment. For instance, recently published results of a scientific study* show an important condition for a good hatch of whitefish in Lake Erie is a lower water temperature than has prevailed in recent years. Another change has been the deposition of sludge from sewage on many spawning grounds, making them unusuable. Also, the chemistry of the water has changed considerably because of domestic and industrial sewage and of residues of chemical fertilizers from farmlands in the watershed; an important result has been the development from time to time of extensive areas in the lake where neither fish nor their food can live because of insufficient dissolved oxygen. Again erosion, both of the lake shores and along its tributaries as a result of clearing the land for farming and of other activities, has made the lake much muddier than it was a century ago; muddiness is knwon to have a considerable effect on whether fish thrive. Finally, the recent advent of smelt may have had an effect on the abundance of native species.

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* Lawler, G. H. 1965. Fluctuations in the success of year-classes of whitefish populations with special reference to Lake Erie. J. Fish. Res. Bd. Canada, 22(5): 1197-1227.

Marketing

Apart from strictly local sales, the early production from the Canadian waters of Lake Erie was shipped across the lake (mainly by steamboat) and sold in the cities which were then mushrooming on the U.S. side of the lake, particularly Buffalo. Prices per pound to the fishermen in 1885 were: whitefish 5 1/2¢; sturgeon 5 1/2¢; yellow pickerel 5¢; blue pickerel 4 1/2¢; lake herring 1¢. By the beginning of the present century, much of the catch was hauled to the nearest railway station by horses and shipped by rail, although some was still shipped across the lake in small steamboats. At first those who shipped by rail sold their fish by contract at a price to which both parties agreed before fishing started. After telephones became generally available about 1905, fish were usually sold by daily bargaining. By 1910 most pound-net operators packed their own fish in ice, hauled them by truck to the nearest railway station, and dispatched them by rail to New York or other markets. Some gill-netters also followed the same procedure, but since they were based on centrally located ports (as opposed to pound-netters who landed on open beaches all along the shore), many sold their fish in bulk to a local dealer who packed the fish from several tugs. In several cases local packers owned or controlled sizeable fleets of gill-net tugs.

In the 1920's wholesalers from Detroit began taking delivery of fish at the fisherman's packing house. By 1940 very few Lake Erie fish were moving by rail, most of them were moved by truck from the packing houses on the lake to wholesalers in Detroit, Chicago, and other cities. Among the gill-netters, a growing discontent with the prices offered by local packers led to the formation of fishermen's cooperatives in a number of fishing ports to pack and sell their catch. Some of the co-ops still operate, but more have failed.

Until the 1930's most fish were shipped "in the round", i.e., just as it came from the water except for being packed in ice. As a notable exception, when the production of lake herring was heavy many were sold gutted with head on. In the past three decades more and more of the catch has been filleted, or in the case of smelt, gutted and beheaded. Filleting and smelt dressing have been carried out mainly by the packers at gill-net ports, including the co-ops. In recent years a good deal of the production from gill nets, pound nets, trap nets, and trawls has reached the market through Omstead Fisheries, which has become the biggest processor of freshwater fish in North America.

OTHER FISHERIES IN THE GREAT LAKES BASIN

Lake Ontario

The early beginnings of the commercial fishery are obscure. Apparently the local settlers combined fishing with farming and there was some trade in fish starting about 1800. By 1867, when the first records were kept, Lake Ontario was producing roughly 2 million pounds per year, a value only moderately less than the subsequent long-term average. The earliest fisheries were concentrated near Prince Edward County and on the Niagara Peninsula,

but well before 1900 fish were being landed at ports all along the Canadian shore. During the past forty years the fisheries of the western two-thirds of the lake have gradually diminished, until now most of the fishing is based on ports in or near Prince Edward County.

Gill nets have always been, and still are, the principal gear used. Changes in netting material have been much the same as in Lake Erie. However, big gill-net tugs have seldom been used on Lake Ontario. Shortly after the beginning of this century, sailing craft and rowboats were replaced by gasoline-propelled, wooden-hulled open boats, typically about 30 feet long. The boats have remained about the same size, but there has been a gradual improvement in motors and in hull design. During the past two decades steel hulls have largely replaced wooden hulls and most boats have been fitted with net pullers.

Fyke nets have been and are of minor importance for taking some of the less desirable species, mainly within the Bay of Quinte. Seines have been used to a limited extent, particularly by the settlers. Production from other types of gear has been negligible.

Apart from the local trade, the earliest markets for Lake Ontario fish were Oswego, Buffalo and Toronto. Later, individual fishermen shipped a large part of the catch by rail to New York and other markets. In recent years most fishermen have delivered their catch to local buyers who have packed it in ice and forwarded it by truck or rail to wholesalers in remote cities, mainly in the U.S.A.

Catches of ciscoes have fluctuated considerably, but the average catch has been roughly one million pounds per year, making it the most important kind of fish in terms of quantity produced. Production has been considerably below the long-term average during the past two decades.

Although lake trout production averaged roughly half a million pounds per year for two decades prior to 1930 and even exceeded one million pounds in 1925, the usual production for the past century has been considerably less. Production was particularly low during the past two decades.

Whitefish production during the century has fluctuated moderately around an average of roughly half a million pounds per year, except for the two decades prior to 1930 when considerably greater catches were made, as much as 2 1/2 million pounds in 1923 and 1924. Recently whitefish catches have been well below the long-term average.

A landlocked form of the Atlantic salmon was prized in the early days, but production declined drastically after 1835 and the species was extinct in Lake Ontario by 1890. A number of minor species have collectively formed a substantial part of the catch during all or part of the past century. Roughly in order of commercial importance they are: pickerel (yellow and blue), pike, perch, catfish, carp, eel, sturgeon. During the past decade white perch, which were recently inadvertently introduced into the lake, have become a commercial species. Although alewives have been available in quantities throughout the history of the fishery, there have seldom been buyers for them.

Lake Huron

By 1800 there was a sizeable settlement in the vicinity of Michilimackinac and a local trade in fish. Although this early fishery was mainly in what are now U.S. waters, part was in Canadian waters and, in any case, the fishermen were mostly British subjects. In the early days settlers' wives unravelled linen cloth brought from Europe for clothing and used the threads to make the web of the early gill nets. Before long, however, twine for net making purposes was being imported from Scotland. About 1860, cast lead sinkers and shaped cedar floats (i.e., "leads-and-corks") replaced the stone sinkers and the 2 1/2-ft square boards (floats) used until then. About the same time, steam tugs began to replace the canoes, rowboats and moderate size sailboats used earlier. There was gill-netting in Georgian Bay as early as 1835 and at Southampton before 1855. By 1870 gill-netting was carried out in all Canadian waters of the lake. The development of techniques after 1860 was much the same as in Lake Erie, except for a larger proportion of small boats in Lake Huron and a slower change-over to diesel, steel hulls, and enclosed decks. Gill-netting has been the principal method of fishing from the earliest times until the present.

Pound nets have been fished south of Goderich since 1882, and for almost as long south of Manitoulin Island and at some localities in Georgian Bay. The pound net has always been of secondary importance on Lake Huron. The use of seines and of other gear has been inconsequential.

By 1870, when the Canadian Lake Erie fishery was just beginning to develop, the Lake Huron fishery was already a thriving industry with an annual production of over 4 million pounds. Although total Lake Erie production has been the greater since 1900, the Lake Huron fishing industry was also a very healthy one until about 25 years ago when a drastic change came about because of the advent of the sea lamprey.

Lampreys are somewhat eel-like in appearance and are sometimes incorrectly called "lamprey-eels". There are five species of lampreys in the Great Lakes of which only one species, the sea lamprey, is of special interest. Adult sea lampreys feed almost entirely on the blood of fish. As an adaptation to this method of feeding, they have strong sucking mouths by which they attach themselves securely to their prey. Through the combined action of strategically placed teeth and of a corrosive oral secretion, a lamprey soon seriously wounds the fish to which it is attached, then feeds on its blood. Some fish survive a sea lamprey attack but many, probably most, die either through loss of blood or because of subsequent infection of the wound. Thus sea lampreys kill fish many times their own size. Since they use only the blood, a small fraction of the total weight, the number of fish required per lamprey is much greater than the number required by a predator which eats all of its prey. Thus a comparatively small number of sea lampreys have a surprisingly great effect.

Sea lampreys are a widespread species, being native to both coasts of the North Atlantic Ocean. During prehistoric times, a special group within this species became adapted to freshwater life in Lake Ontario. Niagara Falls

prevented these freshwater adapted sea lampreys from reaching the other Great Lakes until construction of the Welland Canal opened an invasion route. Although they must have reached the lake earlier, the first concrete evidence of their presence in Lake Huron is a 1937 report. The rapidity with which they then increased in numbers and spread to all parts of the lake was phenomenal. Although sea lampreys attack almost every species of fish, they do not seem to have seriously affected the abundance of any species except lake trout. Their effect on lake trout abundance has been drastic.*

Until the advent of sea lampreys, lake trout were the most important fish taken from the Canadian waters of Lake Huron. For half a century, about 4 million pounds of lake trout had been produced annually. Then, as a result of lamprey predation, trout catches declined rapidly after 1936 to less than a million pounds in 1945.** Catches declined further to virtually nill in recent years.

For most of the past century, annual production of whitefish has generally been between one and two million pounds. A notable recent exception has been spectacular catches in Georgian Bay during the 1950's which were entirely the results of an unusually good hatch of whitefish in 1943.

During the past century, cisco catches have fluctuated considerably around an average of about one million pounds per year without an over-all trend to increase or decrease. There seems little doubt that catch has been governed by demand rather than by supply.

Several other species have contributed in a small way to the fishery, including sturgeon, pike, pickerel, and perch. Smelt have been locally plentiful since the 1930's, but there has been almost no commercial fishery for them.

By 1870 fish were regularly shipped by steamboat from the Duck Islands, Georgian Bay and the North Channel to wholesalers in Detroit. During the next few decades, railways replaced steamboats for transportation, although fish were in some cases moved considerable distances by water to the nearest railway station. Since 1930, trucks which haul fish directly from the fishermen to the wholesaler have replaced rail transportation in some areas, particularly for ports between Sarnia and Tobermory. Marketing methods have developed about as on Lake Erie.

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* Repeated attempts to find a correlation between the decline in lake trout and factors other than lamprey predation have failed.

** The 1945 production was mainly in Georgian Bay where sea lampreys became established later than in the main body of the lake.

Lake Superior

From early times*, the Ojibways came from considerable distances to Sault Ste. Marie in order to carry away, after smoking, whitefish which they caught in the St. Mary Rapids at the foot of Lake Superior. In the 19th century it was quite common for two men in a canoe with dip nets only to take over 1000 pounds of whitefish per day.

From 1832 to 1842 small quantities of whitefish caught near Grand Portage (now Fort William) were salted, packed in barrels, and sent by boat to Detroit. About 1860 a similar fishery operated in the general vicinity of Rossport. Starting about 1885 most of the catch was sent to market as fresh fish packed in ice, and the newly built railway was used increasingly for shipping to market fish from the northern part of the lake. However, some fish from the area were moved by boat to U.S. ports as late as 1928. In recent years the use of trucks has steadily increased.

Prior to 1880 there had been a small fishery near Sault Ste. Marie for local use. In 1882 U.S. capital financed a fishery in the Canadian waters and, as a result, production increased several fold in the next decade. The fish were landed at small communities which were established for the purpose along the shore north of Sault Ste. Marie, about as far as Pancake Bay by 1885; later similar fishing communities developed still further from Sault Ste. Marie. Steamboats gathered the fish from these small communities and brought it into Sault Ste. Marie, where it was iced, packed and forwarded by lake freighter (later by rail) to Chicago and Detroit. The gradual development of roads, in the past 30 years, particularly in the past decade, has resulted in the fish being moved to Sault Ste. Marie by truck rather than by boat. In recent decades the fish have usually been packed at the fishing communities rather than in Sault Ste. Marie.

Although some pound nets and other gear have been used, the fishery has been mainly by gill nets. A few larger fishing tugs have been used, but most of the fishing over the years has been carried out from smaller vessels, typically sailing vessels until about 1915, since then typically wooden-hulled, gasoline-powered boats without net lifters**, with a skipper and one helper or even with one man alone; such vessels usually fished close to their home port.

Lake trout was by far the most important species in the Canadian waters of Lake Superior during the first half of this century. From 1895 to 1950 the annual catch averaged about 1.5 million pounds and was never less than one million pounds. As a result of sea lampreys, first reported in 1946, lake trout catches declined steadily after 1950 from the long-term average to 3% of that average by 1960. Because of massive, expensive plantings of hatchery-reared young, the catch has since increased slightly to about 8% of the pre-lamprey level.

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* Reported by Jesuits in 1640.

** Net pullers have been used increasingly during the past two decades.

Whitefish was the most important species initially. After 1900 it became secondary to lake trout and mainly caught incidental to the lake trout fishery, about one pound of whitefish for every five pounds of trout. Since the advent of the sea lamprey, whitefish production has decreased.

Cisco production has been quite erratic, sometimes exceeding lake trout in quantity, although always far less in total value. It seems likely that production has depended on demand rather than on supply, although legal restrictions have also been a factor in limiting production.

Although catches of yellow pickerel have gradually increased for the past century, production is still relatively small. Sturgeon was an important species for a short time in the late 1800's, but catches in this century have been negligible. No other species has been of importance.

Smaller Lakes

Although Lake St. Clair is a link in the Great Lakes chain, it is not usually regarded as one of the Great Lakes because of size. Canadian production has fluctuated only moderately around an average of slightly less than one million pounds per year for almost a century, a substantial production when relative area (1/40 of Lake Superior) is considered. It is of historical interest that the catch included substantial quantities of lake trout and ciscoes until 1893, and of whitefish until 1920. The disappearance of these cold-water species strongly suggests that the lake is appreciably warmer than 100 years ago. In recent years pickerel and carp have been the most important species, although several others are also taken.

Pound nets and seines have been the principal means of production. Baited hooks have also made a significant contribution. Gill nets have not been used. The fishing boats have of necessity been small and of shallow draft. Marketing procedures developed much as in Lake Erie, although strongly influenced by the fact that all parts of the lake are close to Detroit, a good market. An interesting recent development is a growing market for live fish to stock privately owned ponds, mostly in the United States, where the general public angle for a fee.

Although there was some commercial fishing on Lake Nipigon as early as 1898, the first fishery of any consequence began in 1917. Gill nets have been the only fishing gear used. Fish tugs equipped with net pullers, but decks not enclosed, were used from the first; only in recent years have tugs with enclosed decks been used. The catch has been mainly whitefish and lake trout. Pickerel and sturgeon have been of less importance, and a few other species have also been taken.

The earliest available records indicate that in 1885 Lake Nipissing produced 70,000 pounds, mainly pickerel, pike, and whitefish. Sturgeon, muskellunge, black bass, and cisco were soon added to the list and over 100,000 pounds per year were produced for several decades. In 1922 commercial fishing was drastically curtailed by law, and since 1930 the annual

catch has usually been less than 30,000 pounds. Gill nets were the principal fishing gear until 1908; since 1908 pound nets have been the only gear permitted.

In 1615 Champlain noted that the Hurons were fishing in Lake Simcoe. Ojibways, who later moved into the area, also fished the lake. Europeans settled around the lake between 1820 and 1830 and soon were fishing, mainly using methods learned from the Ojibways. A good deal of the catch was used locally, but a commercial fishery to supply more distant markets also developed early in the last century. Fishing was carried out through the ice as well as during the open water season. Spearing has until very recently been a standard means of production. Gill nets were used in increasing numbers until 1885 when their use was restricted by law. By 1890 gill nets and most other fishing gear were illegal, and gill nets have not been an important factor in the commercial fishery in this century. Seines were the important gear from 1910 to 1929, then seining diminished to nil by 1950. Fishing with hooks has always been an important part of the commercial fishery and in recent years has been the only method used. It is not uncommon for one man to catch for sale by angling 100 whitefish per day, either through the ice or during open water fishing.

As a result of long-existing legal restrictions, production has never been great. Peak production, in 1895, was just over 300,000 pounds. The commercial catch has included whitefish, lake trout, carp, cisco, black bass, sturgeon, pike, muskellunge, pickerel, and perch.

THE LARGE LAKES OF SOUTHERN MANITOBA

Winter Fishing

On the Great Lakes there is very little commercial fishing between freeze-up and break-up, but in the rest of inland Canada the winter fishing season has from the beginning been an important part of the commercial fishery. Most of the basic techniques of winter fishing were worked out on the large lakes of southern Manitoba, particularly Lake Manitoba. The methods which are described below are used throughout inland Canada, except on the Great Lakes. Except as noted, methods have changed little since the 19th century.

Winter fishing is carried out by men standing on the ice surface; boats are not required. The first problem is to get a rope under the ice between "basin holes" a net length (about 100 yards) apart. When the ice is only two or three inches thick,* a small hole is made with an axe and a long piece of wood with rope attached is put under the ice and shoved smartly in the required direction. The piece of wood can easily be seen through thin ice and a hole is quickly made where it comes to rest and it is again pushed in the required direction. Half a dozen holes may be required in a net length. When

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* Before contact with Europeans, the Indians used essentially this method even for thick ice. Prior to the jigger, commercial fishermen used the same method, having adopted it from the Indians via the fur traders.

the ice is thicker, by which time it is usually snow covered, a more tedious method is used. First, a basin hole about two feet in diameter must be opened in the ice, which is often two or three feet thick and late in the season on some lakes as much as six feet thick. Until recently, basin holes were chopped out by ice chisels or by "needle bars"; a needle bar is a long heavy iron bar which tapers to a sharp point at one end. Since about 1950 there has been a growing tendency to open basin holes by mechanical means, mainly power-driven ice augers, although chain saws are also used in some places. When the basin hole is finished and the ice fragments scooped out of it, a "jigger" is pushed under the ice through the hole and headed in the required direction. The jigger* is essentially a wooden plank about six feet long to which is attached a simple arrangement of iron levers, such that a sharp pull on the rope attached to the lever system is translated into a thrust against the under surface of the ice, which propells the jigger away from the man who provides the motive power. When the jigger has been propelled a net length in the required direction by a succession of sharp pulls, it is recovered by digging a second basin hole.

Recovering the jigger provides a rope under the ice between two basin holes. This rope is used to pull the gill net under the ice where it is usually allowed to settle to the bottom of the lake. In some cases, extra floats are put on the nets so that the top edge is just below the ice surface. Formerly there was risk that the net floats would freeze to the under surface of the ice. In recent years the practice has been to use inflated toy balloons for floats -- they seldom freeze to the ice and when they do, a strong pull breaks them and allows the net to be pulled free.

In order to lift the nets, the basin holes, which have of course frozen over, are reopened and both ends of the net are brought up. A rope is attached to one end and the net is pulled onto the ice through the other basin hole; thus a rope is pulled under the ice for resetting the net. The fish must be quickly untangled from the gill net before net and fish freeze too solidly. They are frequently eviscerated immediately, although this onerous task is done later in a warm place if circumstances permit. Originally, all winter-caught fish were allowed to freeze on the ice, left frozen in piles often for weeks, and moved to market at leisure; this practice is still followed in many places. About 40 years ago, Lake Manitoba fishermen, no doubt encouraged by particularly good rail connections to their lake, began to take special precautions to keep their fish from freezing in the sub-zero temperatures and to ship them unfrozen to market; the unfrozen fish brought a higher price. Fishermen on other lakes have gradually adopted this practice, particularly during the past 15 years, and it is now usual to market winter-caught fish in the unfrozen state where conditions permit.

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* Although there are conflicting claims, it would appear that the jigger was invented in 1898 by John Gavin, a Lake of the Woods fisherman. Several fishermen from Lakes Manitoba and Winnipeg contributed to development of its present form; the last important modification was a noise-making device invented by J. V. Johnson of Gimli in 1927 as a means of locating the jigger when in operation. Since about 1920 jiggers have been standard equipment for winter fishing.

There have been some recent improvements which have eased the lot of the winter fisherman, but the basic struggle with the elements remains almost unchanged. Winter fishing is always carried out at below freezing temperatures, generally below zero Fahrenheit, not uncommonly at 20 and 30 degrees below zero and sometimes at 40 degrees below. The wind has a clear sweep for many miles over the flat ice surface. The fisherman's hands are wet all the time he is fishing. Few Canadians win their daily bread more painfully.

Lake Manitoba

Commercial fishing started on Lake Manitoba in 1855, in which year almost half a million pounds were taken by a winter fishery. With minor exceptions (all before 1910), it has been entirely a winter fishery using gill nets. In spite of its early beginning, the fishery was relatively small until after 1900. However, during the past 50 years annual production has been substantial, particularly when the size of the lake is considered. Originally the fishery was primarily for whitefish, but by 1920 pickerel had become its mainstay. With the decline in cisco production in Lake Erie, production of Lake Manitoba ciscoes (tullibee) became for a time the second species in terms of quantity produced, although not in value. About 1930 saugers, which until then had been scarce, became a commercial fish of increasing importance, and by 1940 sauger production approached that of pickerel. Between 1940 and 1950 the catch of saugers frequently exceeded that of pickerel. Since 1950 sauger catches have declined and in recent years pickerel has again been consistently the most important species. Whitefish have been of minor importance sine 1930, and rare in recent years. Cisco production in recent decades has been sporadic, dependant on demand rather than supply. Perch and pike have consistently been a minor part of the catch through the years.

Lake Winnipeg

Fish from Lake Winnipeg were an important item in the diet of the Indians, of fur traders and of European settlers who live on or near the lake. By 1872, if not earlier, some Lake Winnipeg fish were being sold in Winnipeg. The first substantial commercial fishery began in 1882, when one sailboat was used to bring fish regularly to Winnipeg for sale and produced a little over 100,000 pounds. In 1884 the first steam-powered fishing tug (no doubt, much like those on the Great Lakes at the time) was in use. In the same year, for the first time, the amount of fish exported to the United States exceeded local sales. The number of fishing tugs and smaller boats increased rapidly, and ice houses and freezers were built. By 1887 annual production was over 2 1/2 million pounds of which about 60% was exported to the U.S.A. By 1893 there were 30 sailboats and 13 steam tugs in the fishery and the annual catch was almost 4 million pounds.

For most of the history of the Lake Winnipeg fishery, gill nets have been the only fishing gear used, in fact the only gear that could be legally used. Some seines and baited hooks were used in the early fishery and a very limited use was made of pound nets; they were not fished after 1890. A limited number of Lake Erie-type trap nets have been fished since 1960.

The gill nets used have been essentially the same as those described for Lake Erie*; however, the gill nets used in western lakes have been deeper on the average (i.e., with the net extending farther vertically) than those used in the Great Lakes. Linen web was used until 1914, cotton largely replaced linen during the next decade, and nylon replaced cotton between 1948 and 1950. Three distinct fishing seasons developed at an early date.

The summer fishery has been primarily for whitefish, and mainly in the large northern basin of the lake. By 1900 there were a number of wooden-hulled steam tugs displacing 10 to 25 tons from which gill nets were fished. Net pullers were not used; the nets were pulled by hand. Although there were in many cases bunks and messing facilities for a crew of about half a dozen who lived aboard for the fishing season, these tugs were not covered in as were fish tugs on Lake Erie. Many two-masted, wooden-hulled, half-decked sailboats about 30 feet long with a crew of three also were used. Early each morning a tug would tow roughly a dozen sailboats to the fishing grounds, then each sailboat and the tug would proceed to the gill nets which its crew had set the previous day. After pulling the nets, removing the fish, and re-setting the nets, the sailboats would return to their home port on their own if the wind was favorable, otherwise they would be towed in by the tug at the end of the working day. In port (or perhaps on their boat while homeward bound) the fishermen would remove viscera and gills from their catch, then sell them in bulk to the operator of the local fish station. The operator either packed the fish in ice for forwarding as fresh fish or froze them at the fishing port by a salt-ice mixture. In either form, the fish were shipped south by freight-boat to the railway by which they were carried to the final market.

Between 1920 and 1930, the sailboats were gradually replaced by gasoline-propelled fishing boats. The practice of freezing fish at the fishing ports declined at the same time, and only unfrozen fish have been shipped for the past 30 years or more. The use of steam tugs was prohibited in 1934, and no vessels comparable in size to the Great Lakes fishing tugs have been used since that date.

The standard fishing vessel since about 1930 has been a wooden-hulled gasoline-powered boat about 40 to 45 feet long, with a beam of 10 to 12 feet, maximum beam well forward, square stern and round bottom. A small deck-house amidship was the only shelter provided. The usual crew was four men including the skipper. For many years nets were "walked in", a rather unique method of pulling by hand. The net was brought aboard over the port or starboard bow, depending on wind direction. One man walked as far forward as practical, grasped the net firmly and facing the bow walked backwards for about 15 feet. While he was still in motion, a second went forward, grasped the net and began to walk backwards, and so on. The net came in steadily and with a minimum of physical effort. Although the design has remained basically unchanged since 1930, some steel hulls and diesel motors have

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* This statement applies to all gill nets used in northern Ontario and in Manitoba, Saskatchewan, Alberta and Northwest Territories.

appeared in recent years. Small net pullers have also been installed within the past decade on most of the boats. Methods of handling the catch have virtually remained unchanged since 1900 or earlier, except that salt-and-ice freezing is no longer used.

Since early in the century, there has been a distinct fall fishing season after the summer whitefish season and before freeze-up, primarily for species other than whitefish and in areas peripheral to the traditional whitefish fishing grounds. By custom and usually by law, the only fishing boats used have been skiffs about 20 feet long. Although the size of this fishery has increased greatly in the past 50 years, methods have remained essentially unchanged since the beginning of the century. Contrary to practice in most Canadian lakes, extra corks are often put on gill nets so that they float with the top edge at the surface; alternatively, a crude method suitable only for use in a small boat is often used to set them at a level intermediate between surface and bottom. Several skiffs are based at each of a number of small fishing stations where the fish, after being eviscerated, are bought by the station operator from the fishermen, then packed in ice for movement to market. About half the catch now leaves the fishing station by freight boats and about half by truck; originally, almost all fish from the fall fishery started its journey to market on a freight boat.

Although there has been some winter commercial fishing on Lake Winnipeg for almost a century, it was a comparatively limited fishery until after 1910. Introduction of the jigger, improved transportation and increased demand have led to a considerable expansion since that time. Until about 1930 most winter fishing was by men who stayed in isolated camps for the winter. Their catch was allowed to freeze, and was kept frozen on the lake often for months until it could be conveniently moved to the railway by horse-drawn sleigh. Between 1930 and 1950 mechanical vehicles replaced horses as a means of bringing fish off the ice. As a result of quicker transportation, a large part of the winter catch from Lake Winnipeg is now kept unfrozen, and many of the fishermen go to the fishing grounds daily from their homes rather than living in camps. The winter fishery is and has been largely for species other than whitefish and mainly on the periphery of the traditional whitefish fishing grounds.

Over the past eighty years average annual production of whitefish has been roughly 3 million pounds; production during the past decade has been consistently less than average. Pickerel was a relatively unimportant species until about 1900, then production increased markedly for two decades, and after 1930 it exceeded whitefish production. Pickerel has usually been the most important species in recent decades. During the past 30 years saugers have become an increasingly important part of the catch, sometimes greater than pickerel. Earlier, sturgeon were taken in substantial quantities, but catch has been negligible in recent decades. For about a decade after 1925, goldeye were an important product of Lake Winnipeg, but the catch has been negligible for the last 30 years. Ciscoes have formed a minor but consistent part of the catch; production has probably been governed by demand rather than by supply. At least 10 other species have had a minor place in the fishery, including burbot, a useless fish in most areas, which in recent years has been produced in substantial quantities for sale to fur farmers.

Lake Winnipegosis

There was a limited commercial fishery on Lake Winnipegosis by 1890. The fishery expanded rapidly after 1897 when the railway reached the lake. One tug and 63 other boats were soon fishing during the open water season, and a sizeable winter fishery quickly developed. In 1906 open water fishing was prohibited; among the reasons given for the prohibition was that the fishermen were paid only 2¢ per pound for summer-caught fish, compared with 5¢ per pound for winter-caught fish. In 1922 fishing during the open water season was again permitted, and a fishery with techniques and equipment much like those used in the Lake Winnipeg whitefish fishery soon developed and still continues. Relatively more of the total catch has been and is taken during the winter season than on Lake Winnipeg.

The fishery was originally primarily for whitefish. However, whitefish catches have steadily declined since about 1930. Pickerel have always been important in the fishery and have become the principal species during the last three decades. For a few years about 30 years ago, substantial quantities of goldeye were produced; in recent years catches have been relatively small. Suckers, pike, sauger, and perch have been marketed in moderate quantities.

GREAT SLAVE LAKE

Unlike every other major freshwater commercial fishery, the Great Slave Lake fishery is unique in that its history is short and well recorded.

Until two decades ago, the lack of suitable transportation prevented the development of a commercial fishery. McInnes Products Corporation (M.P.C.) was able to overcome this problem by unusual methods. A complete fish processing plant, mounted on several barges, was floated down the Slave River and established in a well sheltered natural harbour on Devil's Channel near Gros Cap. The fish caught were immediately filleted and frozen. The frozen fish were later moved in refrigerated barges to Waterways, Alberta, from which they shipped by rail to their final destination.

Commercial fishing began on Great Slave Lake on July 29, 1945. Because of its unique solution to the transportation problem, M.P.C. was initially the only fish buyer on the lake, and fishing was at first mainly confined to the fishing grounds near Gros Cap.

The Mackenzie Highway, which connects the settlement of Hay River with the road network of Alberta, was opened to normal traffic in August 1948. Even before the road was open to normal traffic, it was possible to use it in winter and some were shipped over it in January 1947. By 1949, 12 small fish companies had set up facilities at Hay River settlement to buy fish, to pack them in ice, and to ship them unfrozen over the new road. Since that time the number of companies has gradually diminished to four, each of which has grown. M.P.C. have not produced fish from the lake since 1960.

For the two decades of its history, there have been two distinct fishing seasons on Great Slave Lake. During the winter season, the winter fishing techniques described above have been used. A special consideration has been the extremely short period of daylight in winter, and the consistently low temperatures which eventually make the ice cover five feet thick or more.

During the summer season boats are used. The first fishing boats were 28 feet long, gasoline-powered with wooden hull, carrying crews of two. They were originally built for use on smaller lakes, and were too small for safe and efficient operation on Great Slave Lake. During the influx of new fishermen and fish companies which followed completion of the Mackenzie Highway, a remarkable mixture of fishing boats were brought in from various places in western Canada. More recently, the hodge-podge has disappeared, and most of the large fishing boats seen in recent years have been about 40 feet long with small deckhouses amidships and with crews of three or four. The nets were often "walked in" as on Lake Winnipeg. During the past ten years there has been a steady change-over from wooden to steel hulls and from gasoline to diesel motors. Also recently, many of the boats have been equipped with net pullers and echo sounders. However, there has also been a tendency in the past ten years to develop one-man fishing boats, a 20-ft skiff with outboard motor.

The only fishing gear used has been gill nets. The first fishermen used nets with quite heavy cotton twine in the web. The fishermen who came later used a finer twine, also of cotton. A few nylon gill nets were used for the first time in 1950. By 1952 all the "new" fishermen were using nylon only, but most of the M.P.C. fishermen continued to use cotton nets at least as late as 1954, making them perhaps the last sizeable group of inland commercial fishermen in Canada to retain the less efficient gear.

The rapid influx of fishermen which followed the opening of the Mackenzie Highway resulted in a production of over 9 million pounds of fish in 1949. Then, as exaggerated preconceptions of the fish bonanza dissipated, the number of fishermen declined. Because less fishing was done and because catch per net decreased moderately (an expected and inevitable result of fishing), the lake has never since produced as much as in 1949. It has also produced much less than the sustainable annual crop of fish which could be harvested because, at the prices that have been paid for fish on the lake, it has so far only been profitable to take that part of the fish crop which could be harvested most economically.

The catch has consisted mainly (90 to 95%) of whitefish and trout. Inconnu, although of minor importance, are of interest because they are not produced commercially in any other Canadian lake. Pike and pickerel are also taken.

SMALL AND/OR REMOTE LAKES

General

Although the Great Lakes, the three large lakes of southern Manitoba and Great Slave Lake together provide the lion's share of the Canadian freshwater commercial production, a substantial part, particularly of high-priced lake trout and whitefish, come from several hundred other lakes, mainly in the Prairie Provinces. They range in size from lakes hardly bigger than ponds to Lake Athabasca and Reindeer Lake, each of which are larger than Lake Manitoba. Total annual catches have ranged from less than 1000 pounds to more than 2.5 million pounds per year. Sustainable annual yield varies from less than half a pound per acre to more than 30 pounds per acre. Each lake differs from every other lake in physical, chemical, and biological characteristics.

But all are either relatively small, or relatively remote, and many are both. In spite of their differences, the fisheries of these lakes have much in common, and it is logical to group them for purposes of discussion.

Prairie Provinces

Commercial fishing began about 1885 in a chain of small lakes in the Qu'Appelle Valley, also in Last Mountain Lake. It is no coincidence that it developed immediately after the railway and settlers reached the Qu'Appelle Valley.

As the railway network spread and as the land was settled, more and more lakes were fished commercially. There were substantial fisheries on some of the smaller lakes in southern Manitoba by 1887. Commercial fishing began in several lakes near Prince Albert in 1888, although the fishery was of little consequence until 1900. By 1892 there was a commercial fishery on some of the small lakes near Edmonton, and by 1893 fish were being produced from several lakes in the vicinity of North Battleford, also from Lac la Biche and neighbouring lakes. Shortly after 1900 fishing began on several lakes near The Pas, including Cedar and Cumberland Lakes. Commercial fishing began on Lesser Slave Lake about the same time. By 1910 most of the suitable lakes in Saskatchewan and Alberta, as far north as Latitude 55° (or 56° in some cases), had been fished commercially for at least one season, and a majority still were fished. By 1920 lakes as much as 100 miles north or northwest and 200 miles northeast of The Pas were fished commercially. Commercial fishing began in Lake Athabasca in 1920, was soon discontinued and resumed on a more permanent basis in 1926. As transportation improved, particularly after caterpillar tractors and aircraft came into common use, the area within which there was commercial fishing extended even farther. By 1950 lakes were being fished even in the most northerly parts of the Prairie Provinces, and intervening lakes have been steadily added to the list since that time.

Meanwhile, in many of the lakes in the farmlands area commercial fishing has been restricted or prohibited during the past half century. On

the other hand, the construction of reservoirs in southern Alberta has in recent years created some very productive commercial fishing waters.

The fishing gear has been, almost without exception, gill nets. Initially, most of the lakes were fished in winter using the techniques described for the large Manitoba lakes. Below freezing weather, which normally prevails during the winter season, was the factor which originally made it practical to fish the more remote lakes. The fish were allowed to freeze and were kept on the lake until it was convenient to move them. Frozen lakes, ponds and muskeg plus snow in the wooded areas made it possible to move frozen fish where roads in the usual sense did not exist. For many years winter-caught fish were hauled by horse and sleigh from the lakes to the nearest railway; dog sleds were sometimes used for short hauls. When trucks became available, they were used where circumstances permitted. After 1930 caterpillar tractors, each pulling several sleighs, were used increasingly; in some places farm tractors were used in the same way on short hauls. Between 1945 and 1960, snowmobiles largely replaced caterpillar tractors for moving fish overland. Aircraft have played a minor but increasing part since about 1930. During the past twenty years, particularly during the past decade, there has been a growing tendency to keep the fish unfrozen and to move them quickly to market rather than to let them freeze and then move them when convenient.

Open water commercial fishing was originally confined almost entirely to lakes that were closest to railways; the eligible lakes have gradually increased in number as the railway network developed, particularly when new lines were laid north of the farmlands. Since about 1920, new roads have also had the same effect whenever they were built. During the past decade, air transportation has made it possible to fish some of the more remote lakes during the open water season.

The original fishery was on relatively small lakes, so canoes and rowboats sufficed for open water fishing. Sailboats were used for a short time on Lesser Slave Lake, but were replaced by gasoline-powered boats shortly after 1920; sailboats were not used elsewhere. The fishing boats used since 1920 have varied greatly in size and other characteristics, but in general they have been either wooden-hulled boats roughly 30 feet long powered by inboard gasoline motors, or skiffs roughly 20 feet long with outboard motors, or freighter canoes with outboards. There has been nothing comparable to the fishing tugs of the Great Lakes. Mechanical net pullers have only been used during the past decade and then only to a limited extent.

Whitefish have constituted the bulk of the catch. Lake trout, pickerel, and pike have also been important species. Sturgeon and goldeye, because of the high price per pound, have been important in some areas. Cisco production has been substantial on occasion; it could be increased tremendously if there was a demand commensurate with supply. Buffalo have recently become of local importance in some of the more southerly prairie lakes. Several other species have also been taken.

An unusual fishery has recently developed on Little Lake Manitou, near Watrous, Saskatchewan. The lake, which has no outlet, is more salty than the ocean and freshwater fish will not survive in it. However, it produces a heavy crop of 1/4-inch-long crustaceans known as brine shrimp. In recent years about a dozen outboard-powered, two-man boats have fished brine shrimp using small tow nets. The catch has averaged close to one hundred thousand pounds per year. It is processed in Watrous and sold as aquarium fish food, mainly in New York.

Northern Ontario

There was a commercial fishery on Lake of the Woods and on Rainy Lake in 1893, probably earlier. For some time the fishery on these lakes, and in other waters which form the international boundary west of Lake Superior, was the only one in northern Ontario. Commercial fishing licenses for Lac des Milles Lacs and for Whitefish Lake were issued in 1908. In 1916 legal restrictions were relaxed and fishing began immediately on several other lakes. There has been a steady increase in the number of lakes fished during subsequent decades. Most of them have been comparatively small and the bulk of the production has been from a few of the larger lakes: Lake of the Woods, Rainy, Seul, St. Joseph, Temiskaming, and Abitibi.

Gill nets have been the most commonly used gear. Although the winter fishing methods developed in Manitoba have been used in many cases, most of the production has been from open water fisheries, using methods intermediate between those of the Great Lakes and those of the Prairie Provinces. Pound nets were first used on Lake of the Woods in 1893, and a few were used consistently there and in some other northern Ontario lakes until about 1950, then there was a change to trap nets and the number of trap nets now used exceeds the number of pound nets used before 1950. Hoop nets and seines have also been used to a limited extent.

In the early history of many of the lakes, sturgeon was an important, often the most important, species, but in each lake sturgeon became scarce soon after fishing started. Since about 1900 whitefish have been consistently the most valuable species, with pickerel a close second. Considerable quantities of pike have also been caught. Lake trout have been a minor species. In recent years goldeye have been produced from a few lakes. Several low priced species have collectively formed a substantial part of the catch through the years.

Yukon

Tens of thousands, sometimes hundreds of thousands, of pound of fish have been taken annually from the lakes and rivers of the Yukon Territories since 1898. However, almost all of it has been consumed within the Yukon Territories. The important species have been whitefish, lake trout, and cisco, and gill nets have been the usual gear. Limited quantities of spring and chum salmon and other species have been caught inthe Yukon River near Dawson, mainly by "fish wheels", a unique type of fishing gear, essentially a current-driven paddle wheel with a few dipnet-like projections which dip into the water during each rotation and scoop up any fish encountered.

Northwest Territories

In the early days of the Great Slave Lake commercial fishery, several fishermen illegally fished adjacent lakes and marketed their catch as Great Slave fish. There were also abortive attempts to fish Kakisa Lake in 1947 and Neultin Lake about 1949. The first substantial commercial fishery in the Northwest Territories, exclusive of Great Slave Lake, was on Kakisa Lake starting in 1953. In 1954 three additional lakes near Great Slave were fished plus a fourth in 1955. There was no further expansion until 1960, when eight lakes near Great Slave were fished. Since 1960 the number of lakes fished by men based at Hay River has steadily increased, the furthest being 300 miles away. Within the past five years a limited fishery based on Lynn Lake, Manitoba, has developed in a few lakes north of Manitoba and of eastern Saskatchewan.

The gear used has been gill nets. The fishery has been mainly through the ice, but a substantial part has been carried out during the open water season from skiffs with outboards and canoes. The fish have been moved mainly by snowmobile in the case of lakes near Great Slave, or by air in the case of more remote lakes. Because of a new road, fish have been trucked from Kakisa Lake for several years.

Most of the lakes have produced mainly whitefish and lake trout. Kakisa and Tathlina Lakes have produced mainly pickerel. The production from all the lakes combined has been small compared with Great Slave Lake.

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APPENDIX I

A first draft of the foregoing history was sent to a number of knowledgeable people for comment, and many of their comments have been incorporated in the final text. In addition, specific enquiries were directed to several individuals whose answers have been very useful. Those who materially aided in either way were: R. G. Bailey, M. J. Brubacher, J. W. Cooper, L. E. Crewe, K. H. Doan, G. L. Grant, R. P. Johnson, J. H. Martin, J. M. Paetz, C. C. Parker, G. Powell, W. S. Rankin, A. G. Ryder, and W. H. R. Werner.

A number of the replies to enquiries contained information which might be useful to someone writing a more detailed history, although not used in this one. Pertinent excerpts follow.

Mr. L. E. Crewe, Retired Pound-net Fisherman
Lake Erie, 1904-1956

Re Lake Erie

The sturgeon were taken in quantity along the sand beaches from Wheatley to Lemington but the real harvest was on the sand bars; of which there were many, before the sandsuckers drew them away, between the end of Point Pelee and the burned out lighthouse, known locally as the "old dummy". In June and July, the sturgeon were often seen in pairs, frolicking in the waves, breaking on the beach, between Point Pelee and Pont au Pins.

Swinging the leaders on buoys and anchors, was first tried midway between Colchester and Amherstburg about 1916 and very slowly spread eastward. Because of the heavy summer currents they were rarely used east of Erieau. The first woods used for pound stakes were: White Oak, Hard Maple, Black and White Ash, some Locust, and very rarely some Hickory. Their maximum lengths would be about 46 feet.

It is my opinion the pound net started before 1850 on the south shore. I remember my father looked this up when the North Shore Trail Association (Tourist) was formed. He found out the first pound net on the North Shore was introduced by a man named Julian, at the West Mouth of Two Creeks. My memory says it was 1852, but it certainly was not later than 1856. The next year a man by the name of McLean set two nets just West of Midsly Creek, while the same year, in the Easterly end, a man by the name of Hoover set a pound net at Lowbanks. The fourth generation of McLean's still have extensive fishing interests at Wheatley, while the 3rd generation of Hoover left the fishing profession at Nanticoke about 1958.

There was never a concentration of pound nets on Pelee Island. Owing

to the scarcity of driving bottom due to the outcropping of limestone, where possible they set their nets not far from the beach and had two prolific seasons each year. During the summer months it was white bass, and during the late fall it was whitefish.

Until Hiram Walker's Detroit River and Lakeshore Railway* went through to St. Thomas, it reached Wheatley in 1892, the fish were picked up in boats operated by American Companies. One of the most prominent of these was the Post Fish Co. of Sandusky. Post also got control of some fisheries on Pelee Island, both sides of Point Pelee and for about 12 miles west of Rondeau Harbour. He had very competent men operating these fisheries and they held the licenses, because Post himself was an American citizen and was not eligible. He had two good freight boats, the City of Dresden in Erieau and the Louise in Sandusky. They left early each morning, picking up fish until they met, generally on the east side of Point Pelee. Finding some shelter around the Point among the Islands, the Dresden's cargo was transferred to the Louise. The Dresden returned to Erieau and the Louise proceeded to the packing room and warehouse in Sandusky.

This combination was broken up about 1910, when Post's managers conspired against him. They kept the licenses, appropriated the grounds, but had to buy the boats, buildings and equipment.

Until about 1906 or 1907, the independent fisheries west of Port Stanley generally contracted their fish to one of the Detroit wholesalers, either by the season or for the year. The telephone began to come along the shore about 1905 and contracting soon became outdated. About 1907, Peck Slip, the freshwater market in New York City, became a steady buyer and greatly boosted the economic progress of the fisheries.

I have mentioned the seasonal feature of the early pound nets. The fishermen really only fished for the herring or cisco which was in much demand as smokers. Of course the other species were taken and during the Jewish holidays in the autumn were much appreciated, yet they were incidental. The nets were set with the bottom of the tunnel beginning at the middle of the crib and continuing 8 feet upward. The nets were rarely set in more than 35 feet of water.

The summer herring run began when the mayflies appeared about June 15 and continued until about July 10 when the flies largely disappeared. During that time the catches were fantastic and I have personally helped load a small tug from Ohio with 13 tons of herring from 2 pound nets. There was a smaller run in the fall, when they came in to spawn about the same time the whitefish were spawning. About 1915 the herring runs began to decline, but no one was alarmed until 1917 when the catch averaged 15,000 lbs of herring per net. By the end of 1919 the herring catch in the pound nets was a failure and by 1924 the catch averaged about 50 lbs per net, per annum.

Later Pere Marquette, now Chespeake and Ohio.

Nylon and other synthetic fibres began to be used in gill nets about 1946 and in 4 years had almost ousted cotton. The pound nets followed about 10 years behind in their general acceptance. At first the pound net fishermen attempted to use the white nylon without tarring but a gilling problem developed. Now the nets are heavily dyed.

The sailing pound net boats had a short sheer in the bow, the full beam coming quickly and carried well aft. The boats were 22 to 28 feet long and had two cross thwarts to which the masts were attached. The bow thwart would beat the end of the sheer, about 5 feet and the stern thwart in about 8 feet. In the top of the thwarts and nearly meeting in the waist, around the sides, just under the gunwale and tied to the ribs, were from the bow, two knee and from the stern two shoulder planks. Between the thwarts, in the middle of the waist, the centreboard was hung on a pin in the forward end with about a four foot movable chain aft. This centreboard could be raised or lowered to the necessary depth, according to the direction of the wind, the force of the current and the requirement of the sailing tack. The masts, bedded in the centre keelson, were only shipped in the summer for oiling and painting. By making long tacks the helmsman could do a good job of working to windward.

The first powered pound net boat was built by Ned Lamarsh, a great uncle of Judy Lamarsh, in 1903 and was used at Yellow Creek, 3 miles east of Wheatley, and was quickly followed by other fisheries. By 1906 combustion engines were the rule, though some fishermen for a few years carried a foresail for emergencies.

While I do not know when the gill-net puller was first used on the North Shore, I do know the steam tugs were using them by 1904. By that time the gill-net industry was beginning to develop rapidly from Port Stanley, east. The west end came along much more slowly. By 1911 there were two tugs in Erieau, the Thistle owned by Post Fish Co. and the Mable D owned by Sedge and Story. In Kingsville there was the Ariadne owned by Wright and Westcott, the Endress by Pastorius, and the Alva W by Art Brown. Also on Pelee Island about this time was a large new tug owned by Al Henning, who subsequently located in Port Burwell.

Trap nets were first allowed on the North Shore in the fall of 1950, one to a license to try them out. In 1951 either a pound net or a trap net could be fished. There was great activity changing over during this year. By the end of 1952, there were very few pound-net fisheries left in Lake Erie.

Until about 1926, pound nets were the predominate gear, on the North Shore from Port Stanley, West. There was by this time a heavy concentration of gill-net tugs in Port Stanley and Port Dover and to a slightly lesser extent in Port Burwell and Dunnville. The pound nets were supposed to be protected by regulation governing gill nets. The large tugs could fish 30,000 yards for which they paid $250.00 per annum, but they had to stay out ten miles from the shoreline in Kent and Essex. From the eastern boundary of Kent, they could come within 5 miles of the shore. There was lesser yardage

for smaller boats, costing less and less restricted as to distance. During 1917-18 there was a general relaxation of Regulations and they were never again so strictly enforced. While the large gill-net licenses had gradually gone down from $250.00 to $100.00, the $50.00 fee for each pound net continued till about 1951, when a gradual reducing trend was applied to them.

Mr. George Powell, Teacher,
Registered for M.A. at U.W.O.
Thesis on History of Fishing, Lake Erie

Re Lake Erie

According to an old nautical chart map of north shore of Lake Erie made by Capt. Alexander McNeillodge in 1848, there was only one fishery of any size located on the north shore -- Cross Fishery between Port Rowan and Port Dover. I would not attest to the accuracy of this since islands like Pelee were naturally too small on the chart to carry much detailed information. Also the map did not extend far enough west to include islands like Bob-lo (Bois Blanc) Island.

Better harbour facilities which encouraged larger boats was one reason for concentration of gill nets for Erieau eastward. But after WWI gill netting had made inroads at Kingsville.

The sturgeons were plentiful in Lake Erie in the late 19th and early 20th century. Some of these fish were 6' or 7' long. Until a market was developed for them, they were trucked away and buried in fields for fertilizer. The Ellison Company was one of the first large fish companies on the North Shore located in Port Stanley. One old timer I have talked with remembers some shippers charging to take passengers to watch sturgeon being harvested and brought aboard. Sometimes they would have to be hit over the head with baseball bats to stun them. He also remembers John Ellison taking the caviar, for which a sizeable market also developed, putting it in galvanized tubs, washing it down with a hose and salting it. Finally it was shipped to New York in lard pails at about $1.00 per lb.

Sturgeons were the first fish to disappear. By the end of the war Lake Erie entered what some old timers have called "the herring days". In the fall of these years some reports say that the spawn was so thick on the docks one could slip and fall. The Federal Government and fishermen co-operated to put it back in the lake. Just after the war, in the fall of these years, lifts of herring would commonly exceed 15 tons per tug. In the Port Stanley area (and this was the trend along the whole North Shore) the number of tugs increased from a handful to 23 from 1910-1918.

Charles Wilson of the Wilson and Loder Fish Co. recalls that in these years the East Side Fish Co. pulled in the largest catch of lake herring ever

caught on one tug, 16,065 lbs. Also during these years about 150 tons per day was brought into Stanley, iced and shipped in the round to New York by rail. All the major fish companies would have buyers in Port Stanley to compete for fish.

By 1924 the fishing industry on the North Shore was in a depressed state. Despite the fact that there were tons of fish in the lake, mechanical refrigeration had not been introduced and fishermen were unable to get quality fish to the consumer. Mechanical refrigeration in any industry did not begin to move until 1934-38.

After the war fishermen began to move away from the railroad as a means of getting their fish to market. Fish ran the risk of thawing and becoming refrozen several times, before they got to their final destination. Thus most fishermen found that trucking to a major port where some fish remained and others resumed their voyage by lake freighter was much more economical. The problem of getting good quality fish to the consumer was a very real one during this period and still is today. However, there was certainly a greater danger of fish going sour before mechanical refrigeration than today.

Leonard Omstead Sr. of Omstead's in Wheatley tells me that to his knowledge he was the first on the North Shore to attempt to "fillet" fish to send to retailers. This trial was based on an operation he had seen at a retail outlet in Cleveland in 1932.

Nevertheless, the fishery on the North Shore remained weak until about 1942 when it received a shot in the arm by the war. Up to this time refrigeration had not made significant inroads because nobody could afford to purchase the equipment. Thus it is a great tragedy that when fish in Lake Erie were most abundant the fishery as a whole was unable to take advantage of it.

During the war more people were forced to switch their diet to fish whether they liked them or not.

Another problem in the marketing of fish -- the low price paid to the fisherman for his catch. One of the reasons for this, claims Leonard Omstead Sr., is that there has never been an emphasis on quality fish, e.g. the gill net process. Often the fish have been in the nets for days and since they are gilled they usually die and are thus brought in in an already "sour" state. He feels that the pound net is still the best method for producing quality fish. Nevertheless, despite the nostalgia, the pound net will never return. The last pound net was pulled from the western end of Lake Erie in August of 1965.

About 1950 a Government organizer, Brian Marr, began getting fishermen interested in Co-ops, and a Co-op movement came into existence in an effort to get the fisherman a better price for his product by processing and marketing in a co-operative manner. For several reasons the most significant of which was poor management the Co-op movement failed.

Today the remaining processors are attempting to diversify as well as become more vertical in their operations. For example, Omsteads cook and freeze fillets and then carry them to markets as far away as California in their own refrigerated transport. Omstead too has had more success with diversification, cooking and freezing vegetables for the H. J. Heinz Co. Ltd. Kolbe in Port Dover, however, found that fish processing and the poultry business were incompatible.

Mr. J. H. Martin, Technician, F.R.B.C.
Son of Cecil Martin, Fisherman

Re Lake Erie, Port Dover

The first boat to be closed in was the Racy, operated by Jim Lowe. She was built approximately 60 years ago and was made of iron. She's still in operation as a tow tug in Owen Sound. Net pullers have been in operation for more than 60 years.

Mr. W. S. Rankin - Commercial Fisherman and
President of Eastern Lake Ontario Fisheries Association

Re Lake Ontario

I do not know much of the western end of Lake Ontario except that the fishery vanished about end of WW2. Mr. Nelson Anderson, Port Credit, a past commercial fisherman, may be able to help you on this matter.

The boats have changed from wood to steel hulls with net pullers etc., but we have found the type of craft now in use are the best for most purposes. Whitefish are sold cheaply in the round direct to the markets, carp are dressed, bullheads are sold alive and dressed, perch are sold to the packers who in turn fillet and package, eels are sold as they come out of the water, ciscoes are marketed both round and dressed. Species such as rock-fish, sunfish, white bass, pike and yellows are all marketed as they come from the water.

I would like to state that the early fishing was nearly all done by seines, gill nets had to be made by hand and very little of this type was used. I cannot give you the exact dates but it was before the turn of the century. Whitefish were seined and put in barrels and sold for about $1.00 a barrel.

Huge catches were made and at times no market was available, so they put wagon upon wagon load on the land for fertilizer. This happened not once but often.

The seines not only caught vast quantities, but they also killed untold numbers of fish which were not landed. Sand would get in their gills and kill them. Mr. Clayton Hyatt, who is still living at the age of 98, helped seine when he was a youth. He has told me that the next day after a big haul, the water looked as if ice was floating all over it because of the dead whitefish. This would be in May and June.

The seines completely cleaned the fish out of Lake Ontario. There was a closed season and trout and whitefish came back in goodly quantities. With the pollution which we have now there has more recently been a serious decline.

You may or may not know about the Atlantic salmon. They were very plentiful a long time in Lake Ontario. Mr. Hyatt told me about them; also I learned that they were seined in quantities around Kingston, Wolfe Island and other localities. Apparently they would come up with the river to Lake Ontario and spawn in the spring.*

J. W. Cooper, Manager of Netting Division,
John Leckie Limited

Originally, netting for Gill Nets was cotton and linen, the cotton was used for perch, blue pickerel, chub and some whitefish nets. Most whitefish nets and trout nets were linen. Lake Erie used mostly 80/6 cord cotton, 3 1/16" stretch mesh for perch. This gradually went down to 2 3/4" mesh and then 2 9/16. Chub nets were 80/6 cord and 90/6 cord 2 1/2" mesh. Cotton whitefish netting was 70/6 and 60/6 cord 4 1/2" mesh on Lake Ontario, Georgian Bay, Lake Huron and Lake Superior. Linen whitefish and trout nets in Georgian Bay were mostly 50/3 cord 4 1/2" mesh by 18 meshes deep. Trout nets on Lake Superior were 6 1/2", 6 3/4" and 7" mesh in 18/3 linen. Lake Erie used very fine linen for whitefish such as 50/2 cord and some 70/3 cord.

About 1947, nylon was first introduced in Winnipeg and later spread to Ontario about mid 1949. At that time, nylon appeared to produce from 3 to 5 times as much as linen. It took about 2 years before we had equipment to set the knots properly. About 1953, the West Coast started using nylon double knot gill nets, and here again, production was reported to be 3 to 5 times greater than linen.

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* The usual opinion is that the form of Atlantic salmon found in Lake Ontario was a landlocked form like the Ouananiche or Sebago salmon, not a marine form.

Mr. C. C. Parker, F.R.B. Technician,
Main Informant - J. King whose grandfather
fished at Bowman Island (Lake Superior) in 1865

Re Western Lake Superior

The fishery started about 1860 at Bowman Island (south side St. Ignace Islands) and MacKays Landing - Rossport.

Lake trout and whitefish were salted and taken east, probably to Sault Ste. Marie, by steam freighter. Even after the railroad came through in 1885 the fish were transported by steam ships to Duluth and Grand Marais until about 1928. The Booth Fish Co. was most active in the freighting of fish.

The Nipigon Bay fishery started about 1902 when the Nipigon Bay Fish Co. was formed at Rossport. This independent company shipped most of their fish by rail.

Pound nets were first used about 1890 and then had over 20 set at one time between Thunder Bay and Nipigon Straits.

Lake trout was the primary species that was fished with whitefish a close second. The herring fishery, as such, was not started until 1885 in Thunder Bay.

Sailing boats were used to fish until 1915 when gas driven boats were introduced.

Re Lake Nipigon

Commercial fishing began in 1898 but consisted of ice fishing only, as there were no roads with which to transport their fish. The fish were frozen and taken by teams of horses down the lake to Nipigon and sent by rail from there.

Two tugs began fishing in 1913 when the CNR line went through and these tugs were the first to use net lifters.

The early boats were open tugs with only a closed wheelhouse in the centre. It was only recently that the Lake Erie turtle back type of boat was used.

Mr. R. G. Bailey, Biologist, Ontario Dept. of Lands and Forests
quoting from a Seminar prepared by
Mr. J. F. Gage, same Dept.

Re Lake Nipissing

Records for commercial fishing go back as far as 1885 when walleye, pike and whitefish were the main species taken and totalled some 70,000 pounds. By 1889 sturgeon, maskinonge, bass and herring had been added to the list of a total of some 122,000 pounds. These were mostly gill net fisheries but in 1908 the gill net fishery in Lake Nipissing was closed off in favour of pound nets which remain the only type of net permitted in the lake to this day. No records can be found for the period 1908 to 1917 but in 1918 the sturgeon fishery alone took 99,507 pounds of fish, the highest take for this species ever recorded for Lake Nipissing. The following year, 1919, 128,000 pounds of walleye were caught by the commercial fishermen. These are believed to have been almost entirely made up of "blue pickerel".* In 1922 the "game" fish species were protected and since that time the fishery has been maintained on sturgeon, whitefish, herring and various coarse fish species.

The Sturgeon fishery in the period 1918 to 1927 dropped from 99,000 pounds to 12,000 pounds. In the next six years it dropped drastically with a low of 3,000 pounds. Since then it has fluctuated between 4,000 pounds and 17,000 pounds (taken in 1963). The whitefish, the other mainstay of the fishery, has also fluctuated its highest years being in 1954 (30,000 pounds) and 1963 (23,000 pounds).

Management in the past has been mainly by regulations. The abolition of the gill net fishery, the control of the pound net fishery as to number of nets, mesh sizes, seasons and fishing grounds have come about through public demand and recognition of the importance of the tourist industry.

There are now two commercial fishermen on Lake Nipissing. They operate eight and six pound nets respectively and are confined to certain areas or fishing grounds. The most important species is sturgeon which are in high demand for their smoking qualities on the New York market, current prices bring $1.70 per pound to the fishermen. Caviar is an added bonus of some importance at $4.00 per pound. Whitefish are second in importance and a few good catches in the early spring assures the fishermen of his annual operating costs. Prices drop later in the season and occasional shipments are rejected because of Triaenophorus infestation. Catches usually improve again in the fall as an added supplement to the income. All coarse fish are removed but only a few species can be marketed. Silver bass and herring are two of these, although herring are badly infested with Triaenophorus and find only a local market. Suckers, sheepshead, ling and gar pike are usually buried. Yellow perch and bullhead, although plentiful, are rarely taken in the pound nets. All game species are released unharmed. Occasionally a few musky or pike are gilled in the leads and although the numbers are insignificant the public outcry, led by the tourist operators, is loud and long.

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* Apparently a color phase of Stizostedion vitreum rather than true Stizostedion v. glaucum.

The gross income by the two commercial fishermen in 1963 was approximately $44,000.00.

The present commercial fishery is managed almost entirely through regulation. One fishery is licensed for eight pound nets on specific locations, the other for six nets again on specific locations. The entire fishery is contained within the west-central portion of the lake. By mutual agreement with the anglers no nets are set until the walleye season opens for anglers to prevent interference during the spawning period. In return the commercial fishermen may continue to fish and take sturgeon during the closed season, May 15 to June 12.

The control of the fishery as to nets and location provides large areas for sturgeon where they are free of nets and may spawn unmolested even though there is no closed season. While there may be some advantage with public relations the real reason for these restrictions is to protect the sturgeon fishery against itself.

There is also a conscious effort to avoid installing nets in locations frequented by anglers. However, the pound nets seem to have a strong attraction for the angling fraternity and sport fishermen often have excellent results in the vicinity of the lead nets.

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APPENDIX II

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