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FEATURES

CANADIAN FISHERIES NEWS

FISHERY NEWS FROM ABROAD

COVER PHOTOGRAPH: Fyke nets at a diversion dam in the Puntledge River power development project on Vancouver Island, prevent young salmon from being caught in the pipeline leading to the powerhouse. See article on page 5.

Pacific Coast Shrimper Setting his Trawl in the Gulf of Georgia. (Inset) Part of the Haul.

B.C. Shrimp Fishery

ALTHOUGH it is relatively small among British Columbia's fisheries, shrimping is one of the most continuous operations on the Pacific coast. Shrimp fishermen are out, along some part of the coast, every month of the year.

There is a steady yield of shrimps in southern B.C. waters, particularly in the Gulf of Georgia and Howe Sound, with a peak period in February and a low one in November.

The supply to the market is affected to some extent by the fact that most of the craft used are salmon gill-net boats rigged for trawling which take shrimps during the winter and early spring and are re-converted for salmon when those fish are running. The shrimp fleet is therefore smaller during the summer months.

Landings of all British Columbia shellfish in 1955 had a marketed value of $2,133,000, of which shrimps and prawns contributed $281,000. The shrimp and prawn catch, 1,088,000 pounds, brought $181,000 to the fishermen.

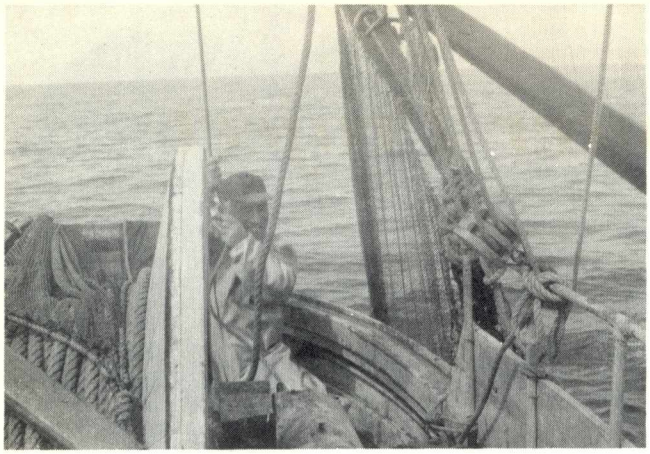
Most of the catch is sold fresh and frozen, with only a small amount being canned. Hotels and stores in Vancouver, Victoria, New Westminster and other cities in the province absorb the bulk of the production, although a small proportion is shipped, frozen, to markets in the prairies and a limited amount is shipped in ice to cities on the United States west coast.

Fishing for shrimps in British Columbia is usually a one-man operation. The conversion of a salmon gill-netter to a shrimp trawler is a simple matter. The drum in the stern of the boat, which in salmon fishing is used to haul the net, serves as a winch to reel in the tow line of the trawl, which is a net of small mesh, about 15 feet wide at the mouth, tapering to a "cod end" common to all trawl nets.

In operation the mouth of the trawl is kept open by a wooden beam, fastened laterally to the net. A ground line of rope weighted with chain or some other heavy material keeps the bottom of the net just above the floor of the sea, while glass floats secured to the upper part of the trawl mouth keep that part above and forward of the ground line.

The shrimps on the bottom, disturbed by the approaching ground line, rise in small clouds and because the upper part of the trawl is forward of the ground line, they rise into the net and are caught in the cod end.

Passengers on ships entering or leaving Vancouver harbour can often see from ten to 15



Tow rope is secured to drum and fisherman brings up cod end by hand.

Shrimp fisherman detaching trawl beam from the mouth of the net.

shrimpers in operation just off the mouth of the Fraser River, a favourite shrimping ground. Sometimes as many as 40 of the small craft are out, having left port shortly after dawn. The speed of trawling is a slow one or two knots. This is to prevent mud from being stirred into the cod end of the net. It is also easier on the gear.

A "drag" may last from one to four hours, depending on the nature of the fishing and other factors. An experienced shrimper can get some idea of what his catch is likely to be by testing the resistance of his trawl.

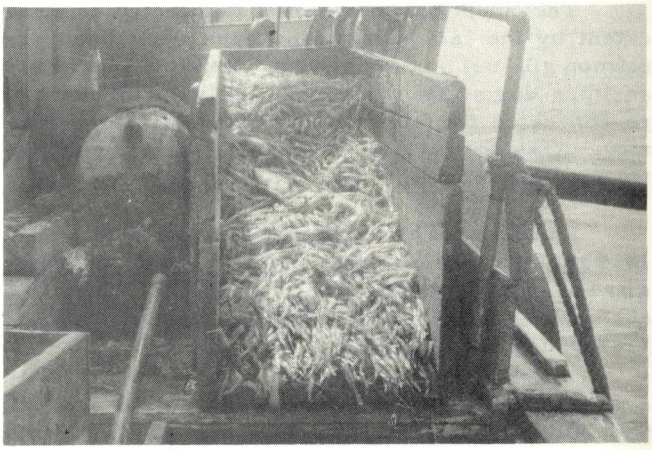
When he is ready to haul in the net, the fisherman wears sea boots, an oilskin apron and gloves, as it is a wet job and there is always the possibility that jellyfish, which can cause painful sores on the hands, will be in the net. Frequently the net comes up festooned with brightly coloured seaweed.

The green Manila tow rope runs from the drum through a block at the head of the vessel's small mast. To haul in the net, the shrimper turns the winch with a foot pedal or a hand control, and guides the rope in even layers around the drum. When the mouth of the trawl reaches the surface, the beam is detached at one end and allowed to float alongside the boat. The remainder of the net is hauled up over the vessel until the cod end appears.

At this point the fisherman is able to appraise his catch. A good drag brings in several hundred pounds of shrimps, and usually there are a few other fishes for good measure. The cod end is vigorously doused in the sea before being brought aboard. This helps to clear away any clinging mud and makes for better quality when the cod end is untied and the shrimps are dropped to the deck.

British Columbia shrimp fishermen usually clean and boil the catch immediately after a drag, the first catch being in the boiler as the second trawl is under way. They thus arrive at the market at the end of the day ready for the table, only a few hours away from the bottom of the ocean. ✔

Cod end is drawn from the water after having been thoroughly rinsed.



Seventy pounds of shrimp, the result of a three-hour drag.

Co-operation Saves Salmon in . . .

Puntledge Power Project

By L.G. SWANN

COMMERCIAL fishermen and sportsmen alike are interested in work now being carried out by the federal Department of Fisheries on the Puntledge River, near Courtenay on the east coast of Vancouver Island, British Columbia.

Spring and coho salmon, steelhead and cutthroat trout originate in streams in the watershed in which one of Vancouver Island's major hydro-electric power developments is now undergoing extensive modifications.

The power plant, formerly owned by Canadian Collieries, was recently taken over by the British Columbia Power Commission and stepped up to produce 35,000 horsepower.

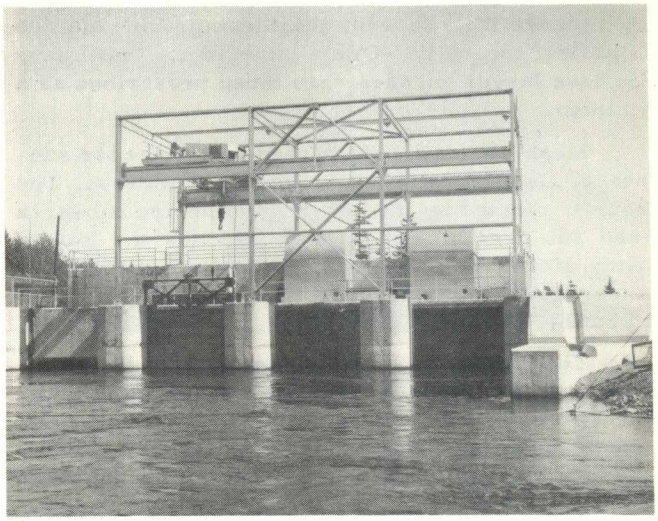
Proposed alterations in water storage and diversion plans posed problems for the people responsible for the protection of fisheries, and the power commission co-operated with the Department of Fisheries and the British Columbia Game Commission in providing measures to protect the fish runs.

When Canadian Collieries began the development, years ago, a storage dam was built on the Puntledge River, forming what has become known as Comox Lake. Another dam was built two miles downstream to divert water into a pipeline which carries it into the powerhouse three miles farther on. The small stretch of river between these dams is the natural spawning ground for spring salmon and steelhead trout, while other parts of the watershed support runs of other species.

Salmon and trout coming in from the sea on spawning migration were faced with a choice of entering the powerful tailrace at the foot of the power plant, or continuing on to the lesser flow coming from the natural river a short distance above the plant. In the first year of the plant's operation, 1955, some mortalities occurred when fish passed into the tailrace and tried to enter the turbines.

This year measures have been taken to prevent similar delays and injuries by shutting off the power house at intervals and flushing large volumes of water down the main river. When fish reach the first upstream dam a fishway, installed along the side of the dam, enables them to proceed to spawning areas above the dam.

Mr. Swann is Area Information Officer of the Department of Fisheries of Canada, stationed at Vancouver, B.C.



Top photo: View of the forebay and entrance to the penstocks of the Puntledge River hydro-electric power development on Vancouver Island. Lower photo: student assistants removing smolts from the "live" boxes of fyke nets. The young salmon are carried in pails of water to the safety of the natural river, which they follow to the sea.

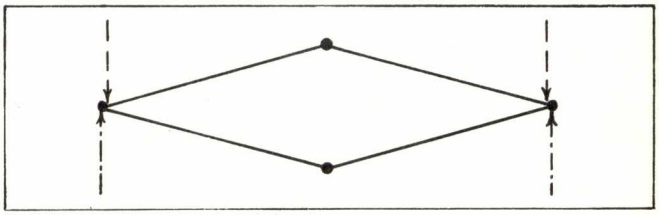
(Continued on page 10.)

Mesh Equivalents for Atlantic Nets

REGULATIONS prescribing minimum mesh sizes in Canadian Atlantic trawl nets will go into effect on January 1, 1957. The regulations apply to nets being used to fish cod and haddock. They do not apply to nets being used to fish redfish exclusively. The regulation prescribes a minimum mesh size for all parts of the trawl. The parts mainly affected are the cod-end, lengthening piece and the aft part of the belly. Other parts of the trawl usually have larger meshes than those prescribed as a minimum.

Mesh regulation is already in effect for sub-area 5, Georges Bank and adjacent waters. The regions affected by the new regulation are sub-area 4 and sub-area 3. Sub-area 4 includes the Bay of Fundy, Nova Scotian waters and the Gulf of St. Lawrence. Sub-area 3 includes the Newfoundland fishing banks.

The minimum mesh size prescribed for sub-area 4 is the same as that for sub-area 5. For sub-area 4, Manila netting used in otter trawls must have a mesh size larger than $4\frac{1}{2}$ inches, internal measure, measured wet after use. For sub-area 3, the minimum mesh size for Manila netting is 4 inches, measured in a like manner. Other materials shrink and stretch to a different degree than Manila. They may also allow the escape of different sizes of fish than Manila through the same size mesh opening. The necessary equivalents for other materials are thus included in the following tables. Also included are the recommended mesh sizes of new netting which should meet the minimum mesh size specified. Internal mesh size is measured with a gauge which is forced into the mesh under 10 to 15 pounds pressure.



Between knot centres mesh size is measured by stretching the cod-end lengthwise, measuring the length of the cod-end and dividing by the number of meshes.

(1) Minimum mesh sizes for otter-trawl netting used in sub-area 4

Kind of Twine	Minimum mesh internal measure used and wet	Size of Twine	Recommended new* netting mesh size (between knot centres)
Manila - double	4 1/2 in.	60 yard and larger twine	5 5/8 in.
double	4 1/2 in.	61-80 yard	5 1/2 in.
double	4 1/2 in.	81 yard and smaller twine	5 3/8 in.
Manila - single	4 1/2 in.	60 yard and larger twine	5 1/8 in.
single	4 1/2 in.	61 yard and smaller twine	5 in.
Cotton - single and double	4 1/4 in.	All sizes	4 1/4 in.
Nylon - single and double	4 in.	All sizes	4 1/4 in.

(2) Minimum mesh sizes for otter-trawl netting used in sub-area 3

Kind of Twine	Minimum mesh internal measure used and wet	Size of Twine	Recommended new* netting mesh size (between knot centres)
Manila - double	4 in.	60 yard and larger twine	5 1/8 in.
double	4 in.	61-80 yard	5 in.
double	4 in.	81 yard and smaller twine	4 7/8 in.
Cotton - single and double	3 3/4 in.	All sizes	3 3/4 in.
Nylon - single and double	3 5/8 in.	All sizes	3 3/4 in.

* These sizes refer to individual pieces of netting. In a bale of netting the pieces usually vary slightly in mesh size. To make sure that all pieces in the bale are at least equal to the recommended mesh size, the netting is usually ordered with a mesh size 1/16 to 1/8 of an inch larger than the equivalent mesh size for new dry netting.

Fishing Tests In North Pacific

Sampling Programme Covers Huge Area To Find Distribution Of Stocks of Fish

A SURVEY now being undertaken by Canadian, United States and Japanese vessels will, it is hoped, prove to be a major step towards determining the distribution and migration routes of salmon and other fish in the North Pacific Ocean.

The crews and the scientific observers accompanying them are making scheduled fishing tests at stations scattered over an immense area, under the auspices of the International North Pacific Fisheries Commission. It is the largest ocean sampling of fish stocks ever undertaken. The scientists hope eventually to find out if overlapping of races between Asiatic and North American stocks occurs, and if so at what point the two populations merge.

The Fisheries Research Board of Canada has chartered two Canadian fishing vessels which, under direction from the Board's Biological Station at Departure Bay near Nanaimo, B.C., are making a series of cruises over nearly 500,000 square miles of ocean. The western boundary of the area to be covered by these two boats is approximately 1,000 miles offshore from British Columbia.

The converted seiner "Key West 2" completed her first Pacific Ocean run at the end of May and started her second after refrigeration facilities had been installed. "Key West 2" is also equipped with an electronic device which will enable her captain to "see" schools of fish under water at any point within 180 degrees forward of the boat for short distances.

The second Canadian vessel, the "Challenger," a former tuna clipper, left Nanaimo on May 30 on a run which will take her to the farthest limits of the area allotted to Canada for survey.

The ocean stations at which tests are to be made are set out on a grilled map of the North Pacific. United States and Japanese vessels will take their fishing samples north and west of the Canadian area.

The converted tuna clipper "Challenger" leaving Departure Bay, B.C., for her first survey cruise in the North Pacific.

The ships are manned by professional fishing crews, and there are scientific observers on each one. The research personnel, working directly under Dr. Ferris Neave of the Fisheries Research Board, are: on the "Key West 2," Robin Le Brasseur, George Dubovic and Rod Calverly; on the "Challenger," James Manzer and W. Pinckard.

The Canadian vessels will fish with specially made gill-nets of varying mesh sizes. Already a number of salmon have been taken in fishing at certain ocean stations. The first catches were mainly of sockeye salmon, with a few pinks and some other varieties. Other fish species are not to be overlooked; the vessels are equipped with tuna trolling gear for use if schools of that fish are encountered.

In the early stages of the survey all specimens are being retained and sent to the Biological Station at Nanaimo for examination. During the later stages a proportion of the fish caught will be tagged and released.

Last year, the Fisheries Research Board had boats follow juvenile salmon from the mouths of streams into Hecate Strait and beyond, through Dixon Entrance in northern British Columbia coastal waters. This year's programme calls for the tracing of the movements of fish in ocean waters far from the coast. Tags placed on young salmon last year will be sought at all stages of the investigation. The tags are made of coloured plastic tubing and are known as the "spaghetti type". Fishermen have been asked to forward any that are found to any fisheries officer or to the Board's station at Nanaimo. ✔

Water Temperatures

On July 23, 1954, H.M.C.S. Labrador under the command of Captain O.C.S. Robertson, R.C.N., sailed from Halifax, N.S., for the Arctic. She carried on board a party of ten civilian scientists headed by Dr. D.C. Rose of the National Research Council, Ottawa.

Scientific studies included cosmic rays, terrestrial magnetism, meteorology, hydrographic surveys, oceanography, and ice reconnaissance. The members of the oceanographic team, W.B. Bailey, J.G. Clark, and C.C. Cunningham from the Fisheries Research Board of Canada Atlantic Oceanographic Group, St. Andrews, N. B., were primarily concerned with making a preliminary survey of oceanographic conditions in the Canadian Arctic.

After completing her Arctic programme, the Labrador sailed westward and was in Bering Strait on September 21st. Esquimalt, B.C., was reached on September 27th.

Courtesy calls were made at Vancouver, B. C., San Francisco, California, Balboa, Canal Zone, and St. Georges, Grenada. The Labrador arrived back in Halifax, N. S., on November 21, completing the circumnavigation of the continent.

Part of the oceanographic programme consisted of making bathythermograph (BT) observations. These were made once every hour while underway, except when ice conditions interfered. This hourly programme of BT observations was carried out around the continent.

The bathythermograph is a temperature recording instrument which may be lowered over the side to depths as great as 900 feet. The instrument marks a trace on a small smoked glass slide which when viewed through a grid enables the observer to read the recorded temperature of the water of any desired depth down to the greatest one attained at that particular lowering. The marked slide then becomes known as a bathythermogram. With the use of high speed winches and long lengths of wire (1,500 feet), a depth of 500 feet may be reached by the BT at speeds greater than 15 knots. A wide range of surface temperatures was encountered, ranging from 28.5°F. in the Arctic to 83.0°F. off the Pacific coast of Mexico.

There is also a wide range of temperature from the surface to 450 feet at several stations. The best examples of this are in the Gulf of St. Lawrence, and off Mexico.

In general, a wide range of temperature from top to bottom means that the waters have undergone very little vertical mixing, while a small temperature range indicates very active mixing had taken place. The mixing may be caused by several factors: for example, wind stirring, strong currents in shallow waters, a subsidence of waters from the surface caused by cooling and the formation of sea ice, and upwelling of water from below. It should be borne in mind that a time difference of four months exists between the first and last bathythermograms.

Pacific Herring Eggs

The Pacific herring (Clupea pallasi) spawns in the late winter and early spring from about mid-February to early April. The adhesive eggs are deposited on vegetation, generally eelgrass and rockweed, along the shoreline between the high and low tide marks.

Each year, officers of the federal Department of Fisheries measure the extent and intensity of herring spawn deposition in each statistical area along the British Columbia coast. An additional and more intensive study of certain aspects of herring spawning is carried out in some of these areas by members of the Nanaimo Biological Station of the Fisheries Research Board of Canada. The amount of spawn recorded is an index of both the number of fish left after the preceding winter seine-fishery and the potential size of the new year-class.

Because of the large distances involved and the fact that spawnings may be occurring simultaneously in different places, it is not always possible for fisheries officers or investigators to be on each spawning ground at the actual time of spawning. Thus, in many cases the actual date of spawning is in doubt. However, from a knowledge of the changes that occur during the development of the eggs, it is possible to estimate the actual time of spawning. This information is also useful in identifying individual spawnings on grounds where more than one wave of spawning has occurred.

A ripe, unspawned Pacific herring egg averages 1 mm. (1/32 of an inch) in diameter and weighs on the average about 0.0002 grams (0.000007 ounces). The unfertilized egg is an opaque sphere consisting mainly of a large mass of colourless yolk globules. The region of the egg from which the actual embryo will develop is concentrated in a thin layer of protoplasm over the surface of the yolk. A fertilized egg is enclosed by three transparent membranes. An inner plasma membrane covers the yolk surface while two outer membranes, a

tough adhesive chorion and a thin vitelline membrane protect the egg. Between the plasma and vitelline membranes acting as a cushion against shocks is a liquid-filled region, the perivitelline space.

The herring sperm is a minute, mobile cell about 0.044 mm. long. It has a rounded head and a thin, movable tail. In normal sea water herring sperms will survive and remain active from 4-5 hours. Fertilization occurs after both the eggs and sperms have been shed into the water. The union of the egg and sperm initiates the development of the embryo. Because of the transparent nature of the egg membranes, the external changes that take place in the form of the embryo until the time of hatching fifteen days later can be readily observed under magnification of about 20 times.

Paper on Antibiotics

Canadian experiments in the use of antibiotics in the preservation of fresh fish were described by Dr. H.L.A. Tarr, of the Fisheries Research Board of Canada, Technological Station, Vancouver, B.C., in a paper presented at the International Meeting of Fish Processing Technologists, held at Rotterdam, Netherlands, June 25-29.

The meeting, which was organized by the Food and Agriculture Organization of the United Nations, Rome, was attended by more than 100 delegates from some 25 countries.

In his paper, which was read in his absence, Dr. Tarr stated that aureomycin was more effective than terramycin or tetracycline in retarding the bacterial spoilage of fish. In the course of experiments with salmon caught off Vancouver Island, flaked ice containing 1 p.p.m. aureomycin was found to be superior to ordinary ice. Convenient methods have been found to add aureomycin to flaked ice as it is being made, and to distribute the antibiotic uniformly in block ice. Studies on the penetration of aureomycin into fish flesh have revealed that only a small amount gets through the skin or belly flaps, and residual antibiotic is removed when the fish is cooked. (See Trade News, March, 1956, p. 12.)

A number of other papers on the use of antibiotics in fish preservation were presented from scientists of Denmark, Germany, Japan, Netherlands, Norway, the United Kingdom and the United States. They showed that much effort throughout the world is now being directed to ways and means of safely using antibiotics in fish processing although no nation has yet approved of the use of antibiotics for this purpose.

Dr. Tarr also contributed a paper on fresh fish preservation in which he gave an account of successful experiments aboard salmon trollers in which had been installed sea water tanks with a capacity of 40,000 to 50,000 pounds of fish. He said that storage of fish in refrigerated sea water, kept at -1° C (30.2° F), had been used for the transport and storage of salmon for canning.

The Inconnu

Early voyageurs gave the name "inconnu" to a fish found in the Northwest and Yukon Territories, where it is of importance as food for humans and for sled dogs. When the voyageurs first travelled those regions they caught some of the fish, the first of the kind they had ever seen. "Poissons inconnus" -- unknown fish, they said, and since then the word "inconnu" has passed into usage as the name of the fish, although often it is shortened to "connie" or "coney." In Alaska it is called the "Sheefish."

The commonly accepted scientific name is "Stenodus leucichthys mackenzii." The "mackenzii" is derived from the fact that in North America the inconnu is found mainly in the Mackenzie River Basin, although as stated it is also to be found in the Yukon Territory and Alaska. A similar species occurs in Siberia.

Although the inconnus of the Mackenzie Basin all belong to the same species, they appear to be divided into two groups or, to use the scientific term, two "forms." One of the two is a landlocked or freshwater form found in Great Slave Lake; the other is a migratory form found in the Lower Mackenzie River. The fish of the first group are believed to spawn in the Big Buffalo River and other tributaries to Great Slave Lake; those of the second in the Mackenzie and its tributaries.

Inconnus of quite large size are sometimes taken in the Mackenzie area, and fish weighing 25 or 30 pounds are not uncommon, although well above average. There is record of at least one which weighed 63 pounds and was a little over 59 inches in length. Others have been reported weighing from 45 to 56 pounds.

Inconnus found in the Yukon are said to be smaller, on the average, than those taken in the Mackenzie district. The fish is light in exterior colouring, with the dorsal fin dusky at the tip and the caudal fin shading to dark at its edge. The lower jaw is longer than the upper and is usually somewhat hooked. There are bristle-like teeth in the upper jaw and weaker ones below. The flesh is white but rather soft and oily.

Eskimos of the Mackenzie delta sometimes catch inconnus with barbless hooks, fishing through the ice; sometimes by means of a fishing spoon or bait, or perhaps a hook baited with a thin piece of bone.

On the Yukon River, the fish are said to offer good sport when fished for with troll or minnow, in contrast to the Mackenzie inconnus, which seem to show little spirit. Commercial fishermen make their catches by means of gill-nets.

There was no fishing for inconnus on a commercial scale until 1945, but since that time fishermen operating on Great Slave Lake have taken them in nets set primarily for whitefish and lake trout. Drying and smoking are the methods used when preparing the fish for future local use.

PUNTLEDGE POWER PROJECT...

(Continued from page 5.)

Two steps have been taken towards a solution of the downstream migrant problem:

As a temporary measure fyke nets have been placed in the forebay of the diversion dam to trap as many seagoing migrants as possible and return them to the river below the pipeline intake. Fisheries engineers, by these means, hope to reduce losses of young fish to an acceptable minimum.

A permanent solution, however, is under study by power commission engineers. This will call for the installation of a fine mesh screen in the forebay of the pipeline intake which will prevent young salmon and trout from entering the pipeline and will divert them to the natural stream.

If acceptable to the Department of Fisheries it is likely that this installation will be completed next year.

To date fisheries technicians working on the fyke nets report a total collection and safe diversion of 27,000 young salmon and trout.

COMBINED UNIT

A third potential danger to fish runs was solved at the conference table. An important part of the power commission's original extension plans had been the building of a new dam, combining both storage and diversion in one unit.

The effect of such an installation would have been to extend the northern boundary of Comox Lake, virtually wiping out the spawning area in the Puntledge River between the two existing dams.

After hearing the fisheries side the commission decided to modify existing storage facilities and to drop its plans for a new dam. Thus another valuable fish producing stream in British Columbia has been given the utmost possible protection for its spawning potential, without hindering the development of power. ✔

Crab Salads for Summer

The sweet tender meat of Canadian crab is the basis of many delicious salads, but perhaps none surpass the famous Crab Louis. This Pacific coast specialty, usually served as a main course luncheon or supper dish, consists of snow white, cooked crab, mounded on lettuce, garnished, and served with the pink tinted Louis dressing. The identity of

Louis, the originator, is shrouded in mystery and today there are numerous variations of his dressing. Here is a typical version of Crab Louis (sometimes spelt Louie) consumer tested by the home economists of Canada's Department of Fisheries.

Crab Louis

- ½ cup mayonnaise
- 2 tablespoons French dressing
- 2 tablespoons catsup OR chili sauce
- ½ teaspoon prepared horseradish
- ½ teaspoon Worcestershire sauce
- Salt and pepper to taste
- 1 pound fresh, cooked crab meat
  OR 2 (6½ oz.) cans crab meat
- Lettuce
- Chopped chives
- 2 hard cooked eggs, cut in wedges
- 2 medium tomatoes, cut in wedges

Prepare the Louis dressing by combining the mayonnaise, French dressing, catsup or chili sauce, prepared horseradish and Worcestershire sauce. Add seasoning if desired and chill. Drain crab meat (if using canned crab) and break into bite-sized chunks, removing any bits of cartilage lodged in it. Divide the crab into 4 equal parts and mound on shredded lettuce on four individual luncheon plates. Top each mound with big pieces of leg meat and sprinkle with chopped chives. Around the crab arrange wedges of hard cooked egg and tomato. Serve accompanied by the dressing. Makes 4 servings.

Fishery Figures For April

SEAFISH: LANDED WEIGHT AND LANDED VALUE

	Jan. - Apr. 1955		Jan. - Apr. 1956	
	'000 lbs	$'000	'000 lbs	$'000
CANADA - TOTAL	318,907	10,539	528,645	14,494
ATLANTIC COAST - Total	186,962	8,242	195,457	8,949
Cod	57,742	1,785	55,147	1,743
Haddock	55,695	1,917	80,903	2,534
Pollock, Hake & Cusk	4,144	52	6,474	99
Rosefish	4,183	95	2,334	51
Halibut	1,559	333	2,039	447
Plaice & Other Flatfish	9,788	319	7,840	247
Herring	38,196	343	17,392	153
Sardines	2,133	52	12,183	305
Mackerel	31	2	11	ø
Swordfish	-	-	-	-
Salmon	-	-	-	-
Smelts	4,145	443	2,243	257
Alewives	771	17	455	12
Other Fish	2,153	53	2,280	47
Lobsters	4,999	2,639	4,295	2,777
Clams & Quahaugs	1,011	56	1,315	67
Other Shellfish	412	136	546	210
PACIFIC COAST - Total	131,945	2,297	333,188	5,545
Pacific Cod	2,923	165	3,033	207
Halibut	-	-	-	-
Soles & Other Flatfish	1,876	88	2,401	117
Herring	117,050	1,462	315,052	4,489
Salmon	389	111	645	196
Other Fish	1,119	39	4,463	117
Shellfish	8,588	432	7,594	419
BY PROVINCES				
British Columbia	131,945	2,297	333,188	5,545
Nova Scotia	93,167	5,910	98,655	6,286
New Brunswick	10,992	615	18,391	781
Prince Edward Island	1,066	33	641	30
Quebec	20,195	152	9,826	78
Newfoundland	61,542	1,532	67,944	1,774

PROCESSING OF ATLANTIC FISH
In Per Cent of Total Catch (Jan. - April, 1956)

	Fr or Fz Fillets	Fr or Fz Wh or Dr	Cured	Canned	Non-Food
Cod	71	4	25	-	-
Haddock	95	2	1	-	2
Pollock, etc.	17	44	39	-	-
Rosefish	94	1	-	-	5
Halibut	13	87	-	-	-
Plaice & other flatfish	90	6	1	-	3
Herring	-	4	40	-	56
Sardines	-	-		99	1
Mackerel	-	100	-	-	-
	Shell	Meat			
Lobsters	97	2	-	1	-
Clams	4	37	-	59	-
Oysters	54	46	-	-	-

PRICES PER CWT. PAID TO FISHERMEN

(Week ending Apr. 21st)	1955	1956
Halifax	$	$
Cod Steak	3.50	3.50
Market Cod	3.25	3.50
Haddock	5.00	5.00
Plaice	3.50	3.50
Yarmouth		
Haddock	4.75	5.00
Black's Harbour		
Sardines	2.50	2.50
St. John's, Nfld.		
Cod	2.25	2.25
Haddock	3.00	-
Rosefish	2.00	2.00
Vancouver		
Ling Cod	9.00	8.00
Gray Cod	5.00	6.00
Soles	8.00	6.00
Salmon, Redspring	35.00	35.00

Fishery Figures For April

MID-MONTH WHOLESALE PRICES, APR., 1956

		Montreal $	Toronto $	Winnipeg $
Fresh Cod Fillets	lb	.267	.290	-
Fresh Haddock Fillets	lb	.362	.380	-
Kippered Herring	lb	.252	.259	.277
Frzn. Halibut, Dr.	lb	.373	.377	-
Frzn. Salmon, Coho, Dr.	lb	.585	.583	.567
Fresh Whitefish	lb	.455	.431	-
Lobster, Fancy	case	-	-	39.22
Sardines, Not Smoked	case	8.76	8.65	9.14
Sockeye, Salmon A	case	-	21.46	21.49

STOCKS AS AT END OF APRIL

	1955 ('000 lbs)	1956 ('000 lbs)
TOTAL - Frozen Fish, Canada	24,480	34,050
Frozen - Fresh Sea Fish - total	18,654	15,743
Halibut Pacific, dressed & steaks	2,556	706
Groundfish Fillets & Blocks	10,107	10,731
Herring	335	593
Salmon Pacific, dressed & steaks	2,307	969
Other	3,349	2,744
Frozen - Fresh, Inland fish -total	3,429	3,688
Whitefish, dressed	539	127
Tullibee, round or dressed	248	184
Pickerel, filleted	162	156
Other	2,480	3,221
Frozen - Smoked Fish - total	2,397	3,074
Cod & Haddock, Atl. fillets	1,658	1,832
Other	739	1,242
Frozen for Bait and Animal Feed	-	11,545
Salted and Pickled Fish, Atl. Coast		
Wet-salted - total	10,187	8,623
Cod	9,204	6,864
Other	983	1,759
Dried - total	19,403	6,719
Cod	18,860	6,133
Other	543	586
Boneless - total	171	401
Cod	117	369
Other	54	32
Pickled - total (barrels)	16,235	15,545
Herring "	4,780	4,998
Mackerel "	1,412	2,489
Alewives "	10,043	8,058
Bloaters (18 lb boxes)	13,421	37,904

CANADIAN EXPORTS OF FISHERY PRODUCTS

Value In Thousands Of Dollars To End Of Mar.

	1955	1956
Total Exports	29,218	29,621
By Markets:		
United States	19,446	21,677
Caribbean Area	4,679	5,185
Europe	3,379	1,708
Other Countries	1,714	1,051
By Forms:		
Fresh and Frozen	15,073	16,612
Whole or Dressed	5,847	6,255
Salmon, Pacific	839	527
Halibut, Pacific	679	723
Cod, Haddock, Pollock	137	211
Swordfish	7	25
Other Seafish	885	759
Whitefish	1,616	1,746
Pickerel	780	984
Other Freshwater fish	904	1,280
Fillets	6,136	7,020
Cod Atlantic	2,172	1,945
Haddock	1,975	2,216
Rosefish, Hake, Pollock, etc.	275	272
Flatfish	525	1,092
Pickerel	534	744
Other	655	751
Shellfish	3,090	3,337
Lobsters (Alive & Meat)	2,945	3,107
Other	145	230
Cured	6,096	5,987
Smoked	397	506
Herring	242	345
Other	155	161
Salted, Wet or Dried	4,973	4,610
Cod	4,396	4,005
Other	577	605
Pickled	726	871
Herring	340	401
Mackerel	199	268
Other	187	202
Canned	4,494	3,457
Salmon Pacific	3,591	2,660
Sardines	521	560
Lobster	284	152
Other	98	85
Miscellaneous	3,555	3,565
Meal	2,150	2,442
Oil	858	740
Other	547	383

Fisheries News From Abroad

Commercial Use of Dogfish in the U.K.

There is a regular major fishery for dogfish in the United Kingdom, but no established fishery for sharks, fishing ventures for sharks being on a very small scale, tentative and spasmodic, and usually abortive.

The following dogfish are regularly caught and marketed: picked dogfish (Squalus acanthias L.), lesser spotted dogfish (Scyllium canicula L.), greater spotted dogfish (Scyllium catulus cuvier).

Of these, the picked dogfish is by far the most common and abundant and constitutes practically the entire landings of dogfish. It is caught in quantity in waters to the east, north and west of the British Isles. Particularly large quantities are caught near the islands and coasts to the north and northwest of Scotland. The majority are caught by trawl, but there is also a longline fishery for them in the North Sea.

The lesser and greater spotted dogfish, more often found in the waters south and southwest of the British Isles, are not nearly so abundant, and are not especially sought by fishing vessels as the market is restricted.

VARIED SHARKS

Of the sharks, the tope (Galius vulgaris Fleming) is sometimes landed from waters to the south of Britain and is probably used as dogfish. The porbeagle (Lamna conubica Gmelin) is occasionally landed by south of England liners but is probably used mainly for bait. The Greenland shark (Acanthorhinus carcharias Gunnerus) caught in Arctic waters is seldom landed, though its liver may be rendered down on a trawler. And the basking shark (Cetorhinus maximus Gunnerus), though it has been the subject of several trial fisheries to the northwest of Scotland, is not regularly fished.

Landings of dogfish in England and Wales by British vessels in 1954 totalled 177,702 cwt. valued at 343,721 pounds sterling.

There are seasonal fluctuations in the catch, but the migrations of the fish are not known and it is only very recently that dogfish have become the main objective in a fishery other than the North Sea summer lining fishery. Now the trawlers fishing for them off the northwest of Scotland are trying to extend their season.

Dogfish is not normally sold as shark, but is usually described by the retailers as "flake." Much of it is sold ready-cooked by fried fish shops.

SKATES AND RAYS

Skates and rays are caught and landed at most fishing ports in Great Britain. Landings of skates and rays in England and Wales by British vessels in 1954 totalled 249,420 cwt. valued at 833,814 pounds sterling. These fish are landed and sold whole at first hand, but usually only the "wings" and jaw-muscles are retailed.

Dogfish prices are relatively low and the flesh is not greatly esteemed; the taste for it is regional.

As far as is known, there is no major tannery of shark or fish skins in the British Isles but some firms are believed to have investigated the possibilities.

Sharks are not fished specially for their livers in United Kingdom waters.

Gold Coast Fisheries

The fishing industry of the Gold Coast of Africa is still in an early stage of development, but there has been an increasing tendency to modernisation in methods of fishing, curing and canning in recent years, says a report by the United Kingdom Trade Commissioner in Accra.

The fishing makes a major contribution to the country's food supply with estimated landings of fish in a normal year of about 20,000 tons. This is nearly all landed by dug-out canoes, estimated to number 8,000 in service, normally working from open beaches through heavy surf.

There are three main types of fishing, the most common being fishing in dug-out canoes with nets of thin twine, length 700-1,000 feet; by beach seines, taken through the surf by canoe and then hauled to the beach by long warps; and offshore line fishing in 20-50 fathoms.

Fishing nets and cords are largely imported and channelled through middlemen -- mainly petty traders -- says the report.

The bulk of fishing nets used are imported in a made-up state. Most of the cords and twines imported are used for repairs rather than for the "manufacture" of nets.

Iceland

EXPORTS OF PRINCIPAL FISHERY PRODUCTS
January - March, 1956
For Comparative Table See "Trade News," July, 1955
Quantities in Thousands of Pounds — Value in Thousands of Kroner

DESTINATION	TOTAL EXPORTS		MAINLY COD						HERRING		FISH MEAL	OILS		OTHER[1] PROD.
	Value	Quan.	Fresh	Frozen	Dry Salted	Wet Salted	Stock-fish	Other Types	Fro-zen	Salted		Cod	Other	
	th. kr.	th. lb	th. lb	th. lb	th. lb	th. lb	th. lb	th. lb	th. lb	th. lb	th. lb	th. lb	th. lb	th. lb
U.S.A.	34,189	13,692	-	11,536	-	110	-	-	-	-	-	651	-	1,395
Other Western Hemisphere														
Brazil	12,423	3,379	-	-	3,379	-	-	-	-	-	-	-	-	-
Cuba	3,084	990	-	-	948	-	-	-	-	-	-	42	-	-
Panama	67	20	-	-	20	-	-	-	-	-	-	-	-	-
Puerto Rico	10	4	-	-	-	-	-	-	-	-	-	4	-	-
Venezuela	7	2	-	-	2	-	-	-	-	-	-	-	-	-
Europe														
Austria	77	66	-	-	-	-	-	-	-	-	66	-	-	-
Belgium	9	4	-	-	-	-	-	-	-	-	-	4	-	-
Cyprus	229	199	-	-	-	-	-	-	-	-	199	-	-	-
Czechoslovakia	7,887	4,010	-	1,826	-	-	-	-	1,081	-	1,103	-	-	-
Denmark	1,568	1,032	-	-	-	265	35	-	-	-	441	256	-	35
Eire	910	783	-	-	-	-	-	-	-	-	783	-	-	-
Faroe Islands	111	86	-	-	-	-	-	-	86	-	-	-	-	-
Finland	1,224	327	-	-	-	-	-	-	-	-	-	249	-	78
France	2,929	970	-	712	-	-	236	7	-	-	-	-	-	15
Germany (East)	6,044	2,201	-	2,201	-	-	-	-	-	-	-	-	-	-
Germany (West)	7,417	6,690	1,572	-	-	148	179	15	-	-	2,844	776	1,156	-
Greece	7,583	4,753	-	31	-	4,614	-	-	-	-	-	-	-	108
Italy	10,277	4,117	-	-	-	1,612	1,151	1,290	-	-	-	64	-	-
Netherlands	7,582	3,285	-	-	-	-	992	-	-	-	375	1,918	-	-
Norway	3,454	2,313	-	-	-	-	-	-	-	-	-	1,647	664	2
Poland	4,985	3,627	-	-	-	-	-	-	831	2,796	-	-	-	-
Portugal	5,662	3,308	-	-	-	3,308	-	-	-	-	-	-	-	-
Spain	3,038	1,014	-	-	-	-	479	-	-	-	-	110	425	-
Sweden	3,195	1,837	-	117	-	132	-	18	-	13	-	7	-	1,550
Switzerland	326	265	-	-	-	-	-	-	-	-	221	44	-	-
Trieste	13	2	-	-	-	-	2	-	-	-	-	-	-	-
United Kingdom	16,133	6,112	128	357	-	452	2,717	-	-	-	1,204	-	-	1,254
U.S.S.R.	45,194	20,436	-	16,701	-	-	-	-	-	3,735	-	-	-	-
Yugoslavia	62	29	-	-	-	-	-	-	-	-	-	29	-	-
Other Countries														
Egypt	1,897	1,094	-	-	-	1,008	-	-	-	-	-	86	-	-
Fr. Equat.Africa	1,304	320	-	-	-	-	320	-	-	-	-	-	-	-
Indonesia	49	22	-	-	-	-	-	-	-	-	-	22	-	-
Nigeria	5,235	1,252	-	-	-	-	1,252	-	-	-	-	-	-	-
Total Jan.-Mar. '56	194,174	88,241	1,700	33,481	4,349	11,649	7,363	1,330	1,998	6,544	7,236	5,909	2,245	4,437
Total Jan.-Mar. '55	188,377	86,443	986	26,349	9,219	15,399	3,323	2,043	-	1,784	18,688	4,191	492	3,969

(1) Includes all whale products which totalled in Jan.-March, 1956, 542 thousand pounds, and in the first three months of 1955, 1,074 thousand pounds.

Current Reading

"Arctic and Sub-Arctic Marine Resources," by John Corlett, and "The Fisheries of Antarctica," by G. C. L. Bertram. (Articles in FAO Fisheries Bulletin, Vol. IX, Number 2, April-June, 1956. Published by the Food and Agriculture Organization of the United Nations, Rome, Italy. $0.30).

The article on the Arctic and sub-Arctic is a survey of the knowledge of the marine resources of the northern seas. For centuries the seamen of Europe and America have known that these waters were teeming with life. They have sailed as far as the ice edge to catch whales and later, when the whales had gone, to catch fish and seals. In the past 50 years marine biologists and hydrographers have turned their attention to northern waters to learn more about the animals and the seas in which they live. More recently fisheries scientists have been trying to find out how the resources of these areas can best be used for the benefit of mankind.

The marine "Arctic" is the area in which polar water is found in the top 650 to 1,000 feet and the "sub-Arctic" is defined as the area in which the upper layers are of mixed polar and non-polar origin. Most of this non-polar water is of Atlantic origin, and in the Atlantic sector the sub-Arctic extends from the Gulf of St. Lawrence to the Kala Straits, including the waters around Newfoundland, Labrador, West Greenland, the north of Iceland, most of the Norwegian Sea, part of the Greenland Sea, and the Barents Sea. In the north Pacific, the sub-Arctic includes the Bering Sea and the coastal waters of north Alaska. The southern boundary of the marine sub-Arctic varies seasonally and with the state of the climatic cycle. The true Arctic waters include the North Polar Basin, north of Russia, Canada and Greenland, and most of the East Greenland waters.

The Polar Basin is an elongated depression surrounded by wide continental shelves. The major axis of the Basin from Spitzbergen to Alaska is 1,600 miles and the minor axis 800 miles across. It was formerly considered as one deep basin, but recent Russian exploration has shown that it is divided by the Lomonsov Range, which stretches for 1,100 miles from the New Siberian Islands across the North Pole to Greenland and Ellesmere Land. In some places the steep-sided peaks of this range rise to within 3,100 feet of the surface. The widest and deepest "deep" is that north of the Barents and Kara Seas with a maximum depth of over 17,100 feet.

The main features of the circulation of the Arctic Ocean are a surface inflow of cold water of low salinity, and a subsurface inflow of warmer and more saline Atlantic water. The principal exchange takes place between Spitzbergen and Greenland, and the other openings are too narrow and too shallow to be important. Those who have sailed on northern seas usually remark on the abundance of life in the sub-Arctic and its comparative scarcity in the true Arctic.

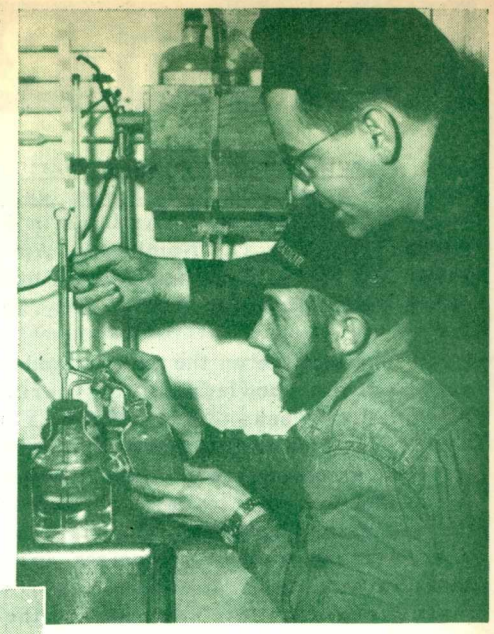
Mammals are the dominant vertebrates in the Arctic, and fishes in the sub-Arctic, seas. This does not mean that mammals are absent from the sub-Arctic; they are, in fact, more abundant there than in the Arctic, but even so, they are outnumbered by fishes in the sub-Arctic.

The article says that the greatest increase in exploitation of the sub-Arctic would come from the development of a fishery for caplin; from increased fishing for herring and redfish, and from greater exploitation of various stocks in the Bering Sea. The author concludes: "It seems unlikely that man will overexploit the riches of the sub-Arctic seas, but he may upset the balance of nature. When he took too many whales perhaps he allowed more cod to live on the krill; if he takes too many cod, perhaps more herring and caplin will be allowed to survive; and by the time he takes too many pelagic fish, perhaps he will have found a way of using directly the great production of zooplankton."

THE ANTARCTIC

A few tons of fish are taken each year off South Georgia for local consumption by whalers and sealers at shore establishments there. But no attempt has yet been made to set up a substantial fishery anywhere in the colder, more southerly, waters of the southern oceans. Antarctic and sub-Antarctic waters have long been recognized to teem with life and, for half a century, have supported by far the greatest whaling industry the world has ever known. The author says it is evident that the prospects for the establishment of any Antarctic piscine fishery are far from encouraging. If prophesy may be ventured, though, he thinks it will be the larger planktonic crustacea which will be subject to direct exploitation. This crustacean plankton, the "krill" of the whalers, mostly "Euphasia superba," an organism which grows to a length of about one and one-quarter inches, is present in far southern waters in enormous abundance. It is rich in oil and is the foodstuff of whales. The article says: "It is not beyond the bounds of possibility to conceive of a floating plant, anchored in deep water, powered by the ever-blowing westerly winds, uninhabited and automatic, and visited at intervals of months for the removal of the crustacean sludge extracted by mechanical separation. Such development would seem more promising than direct fishery in Antarctic waters."

for the future of fishing...



HMCS "Labrador"

EXPERIMENTS by the Fisheries Research Board scientists with seaweed extracts, such as algin and agar, found uses for them in chocolate milk drinks.

Experiments to discover uses for previously unused forms of marine life, make up just one facet of the work of the Fisheries Research Board of Canada. That is why you will find Fisheries research scientists in the Arctic on ships like HMCS "Labrador", in smaller craft on inland lakes, wading knee-deep in coastal streams, revealing, with each new venture, more and more about Canadian waters and their marine life.

They study the conditions of birth, life and death of aquatic species—from the lowly plankton, through the shellfishes and fishes to the gigantic whales.

With special instruments they test 'submarine' weather and the influence of physical and chemical conditions in the water on the life it supports.

The work of these skilled scientists helps to build our great Fisheries into a richer, more profitable industry for millions of Canadians, and to ensure a constant harvest for generations to come.

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