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MONTHLY SERVICE BULLETIN

Number 11 November, 1952

FISHERMEN'S MONTHLY RETURNS

It is perturbing to note that a practice has arisen whereby certain inspectors have been accepting fishermen's logs which have been completed by processors, and not by the fishermen themselves. If this practice were allowed to continue it would defeat the whole object of our statistical system, and immediate steps must be taken to stop it. It must be appreciated by officers that quite apart from details of production other very important data are required on the logs, and these cannot be supplied accurately by processors. There is the aspect too that it is the fisherman only who is required by statute to furnish the information required and in the event of logs being received from processors (or not being received) we would have no legal recourse so far as the processors are concerned in the event of logs being false or in any way incorrect. Officers are therefore instructed to see that returns are furnished by the fishermen and only by the fishermen, and no returns prepared by processors or other people shall be accepted.

(A. J. Fraser)
SUPERINTENDENT.

STAFF ITEMS

During October the Superintendent visited Shark Bay and Geraldton.

The Supervising Inspector, Inspectors S. W. Bowler and W. Davidson and Cadet Inspector M. J. Simpson have resumed duty after annual leave.

Inspector J. S. Simpson is on sick leave and Assistant Inspector J. L. Gallop on annual leave. Cadet Inspector M. J. Simpson is relieving Mr. Gallop at Mandurah. Inspector H. J. Murray starts leave early in November and Inspector G. C. Jeffery later in the month. Inspector A. K. Melsom will relieve in both cases.

Assistant Inspector G. Coombes has returned to Head Office after spending the whole of the whaling season at Point Cloates.

The following crews have been detailed for the three patrol vessels for the immediate future, viz., "Lancelin", Capt. H. C. W. Piesse, skipper, Assistant Inspector J. C. Thair and Cadet Inspector M. J. Simpson; "Kooruldhoo", Inspector A. J. Bateman and Assistant Inspector O. Hello; "Garbo", Inspector R. M. Crawford and Cadet Inspector B. A. Carmichael.

Mr. B. K. Bowen spent about 10 days in Geraldton during October carrying out a cost-of-production survey. It is expected that he will visit all districts in the near future for the same purpose. At the moment Mr. Bowen is on annual leave.

Inspector J. E. Munro spent a few days at Kalgoorlie recently to organise and supervise a departmental exhibit at the Australian Inland Mission's Wild Life Show. Mr. Munro reports that the interest evinced by goldfields residents generally, but more particularly the school children, in the Department's exhibit was such as to lead him very easily to the conclusion that it was well worth the trouble and cost.

Cadet Inspector D. Wright is now temporarily stationed at the C.S.I.R.O. Fisheries Hydrological Laboratory at the University of W.A. Mr. Wright is

the third of the cadets to undergo basic training in scientific methods, Messrs. Carmichael and M. J. Simpson each having spent nearly three months at the laboratory under the tutelage of C.S.I.R.O. personnel.

Inspector F. A. L. Connell is at present spending much time with the m.v. "Silver Gull" on patrol of the snapper fisheries at Safety Bay.

Cadet Inspector B. A. Carmichael during the last week or two in October was stationed at Bunbury assisting Inspector A. V. Green.

ANNUAL INSPECTORS' CONFERENCE

The annual conference will this year be held in the Board Room at Head Office from December 8 to 12 inclusive. The programme has not yet been finalised, but arrangements are well in hand for the showing of a series of fisheries films, including some recent underwater films from overseas. The agenda for the conference is now in course of preparation, and any officer is free to list any item for discussion. Any such item should reach Head Office not later than November 25, so that the agenda may be sent to all officers in sufficient time to enable them to give some thought to the various items before the conference opens.

WESTERN AUSTRALIA'S WHALING INDUSTRY

By E. J. Brownfield

Whaling on the west coast of Australia has a history older than that of any other industry, or indeed of any settled community in the State. The occurrence on the coast of the humpback whale on its annual northward migration was noted and capitalised by whalers in the early days of the nineteenth century, principally by American nationals. This annual migration between the months of May and October, when the whales proceed to and from the warmer waters off the North-West, has persisted until this day. In the years immediately prior to World War II it provided a rich field which was exploited mainly by foreign ventures which took from our waters products valued at hundreds of thousands of pounds.

Modern whaling methods were first introduced into Western Australia in 1912 when two Norwegian companies registered in the State and commenced operations at Frenchman's Bay, Albany (on the south coast) and at Norwegian Bay, near Point Cloates (on the upper west coast). Operations were initially successful, but restrictions imposed by World War I resulted in the companies closing down in 1916. At both centres operations were conducted from shore stations, that at Point Cloates being the most modern of its time.

Between 1916 and 1922 whaling lapsed, but a successful period followed from 1925 to 1929 when a Norwegian company leased the Point Cloates station and in four seasons processed 3,425 humpbacks. No further whaling was done until 1936 when two foreign fleets operated off the north-west coast outside territorial waters. Each fleet comprised a mother ship and six chasers and each was reported to have secured 1,500 whales for the season.

The State Government in 1937 permitted operations by two American pelagic fleets in the Shark Bay area. Two mother ships ("Ulysses" and "Frango") and 14 chasers were employed for a take of 3,237 humpbacks. The following year "Frango" and 6 chasers operated and took 913 whales in the same area.

Eleven years passed, including years of war and post-war re-adjustment, before a local company, The Nor'-West Whaling Company, in 1949 re-opened the Point Cloates Station. The plant at this centre had already greatly deteriorated prior to its being swept by a cyclone in 1944, and considerable reconditioning was necessary. The new company made a start on July 5, 1949, with two 120-ton Fairmile launches converted for chasing. Operations for the season terminated on October 12, 1949, after a take of 190 whales. The success of this venture resulted in its flotation as a limited liability company and continuance of operations in the 1950 season.

The Commonwealth Government had meanwhile become interested and had under the Whaling Industry Act, 1949, set up an authority called the Australian Whaling Commission for the purpose of conducting shore whaling on the Western Australian coast. The Commission established a modern station on Babbage Island, near Carnarvon, and acquired three orthodox chasers. Operations

were to have commenced in June 1950, but various delays postponed the start to September 23. In the meantime the chaser "Thorvard" had operated between August 12 and September 28 for a catch of 93 whales, all of which were sold to the Nor'-West Whaling Co. The Commission's other chasers, "Carnarvon" and "Gascoyne" took 40 whales between September 23 and October 31, the closing date of the season, thus enabling a test run of the installation to be made.

In 1950 the operations of the Nor'-West Whaling Co. Ltd. covered the period June 29 to October 9. The converted Fairmile, "Point Cloates", was employed, and, including the 93 whales captured by "Thorvard", the total take was 348.

The following year, 1951, saw both stations equipped and ready for full scale whaling, each with an objective of 600 humpbacks, which was the quota allotted to each station by the Commonwealth Government. The Nor'-West Whaling Co. planned to use three catchers, but several mishaps prevented their full use. A start was made on June 23 with "Point Cloates" and on July 11 "Haerami Star", 114 tons (another Fairmile) was commissioned. This vessel operated alone from August 1 to 18 when it was joined by "Vigilant" (120-ton Fairmile). The catcher "Point Cloates" was again in commission on September 7, and two days later "Vigilant" left the fleet. The company ceased operations on October 14 after taking 574 whales (including 2 lost). The Australian Whaling Commission experienced a very successful 1951 season, taking a total of 650 whales between June 25 and October 9. Three whales were lost to sharks. The chasers "Gascoyne", "Carnarvon" and "Minilya" (formerly "Thorvard") were employed throughout.

It had been anticipated that a third venture would operate in 1951 and a quota of 50 whales had been allotted. Since the new venture was unable to commence in 1951 its quota was re-allotted to the Australian Whaling Commission which was thus enabled to increase its take to 650 humpbacks for the season.

The whaling industry is now firmly established in Western Australia and this year, 1952, has been the year of greatest activity in the history of the State. Sited at King George Sound, Albany, on the south coast, a third company came into being and commenced whaling on June 14. Known as the Cheyne Beach Whaling

Co. Ltd., it originally proposed to operate from Cheyne Beach (about 40 miles east of Albany) but later decided on the Frenchman's Bay site in King George Sound. This is a site very close to that formerly occupied in 1912 by the old Norwegian company. The new company's 1952 quota of 50 humpbacks was later in the season increased to 75, but the company finally closed down for the season on August 8 owing to the scarcity of whales. Its season's take had then reached 51 humpbacks. The experience gained, processing results achieved and the smoothness of plant operation all augur well for the future.

The Australian Whaling Commission experienced another successful season in 1952, taking 600 whales between June 2 and September 1, using three chasers; although "Minilya" did not operate until August 13.

Three chasers were employed also by the Nor'-West Whaling Co. Ltd., although "Vigilant" came into operation only on July 30. Whaling ceased on October 9, with a total take of 536 humpbacks for the season. High winds during September - usually the most productive month - interfered with whaling, with the result that the quota was not reached.

The participation of so many nations in whaling on the high seas and the degree to which the various species were being exploited led, in 1937, to an International Whaling Conference. This was held in London and all leading whaling countries were represented. Further conferences were held in 1938 and 1944, and of latter years a conference has been held annually in one country or another. Conference lays down measures designed to preserve the species consistent with rational exploitation and all those countries which are signatories to the Whaling Convention and Protocol are in honour bound to observe these conservational measures. In Australia both State and Federal legistration has been enacted to govern whaling and this legislation embodies those provisions of the Whaling Convention which are relevant so far as Australia is concerned. In consequence a predetermined maximum number of humpback whales is allotted to the Australian industry and operations must cease when the quota is reached.

Table Showing Whale Production 1949-1952

YEAR	POINT CLOATES		CARNARVON		ALBANY	
	Whales taken+	Oil produced	Whales taken+	Oil produced	Whales taken+	Oil produced
		tons		tons		tons
1949	190	x				
1950	348	x	40	189		
1951	574	4,166	650	5,175		
1952	536	4,683	600	5,253	51	465

+ All humpbacks

x Not recorded

A LEGAL OPINION

The following advice received from the Crown Law Department raises a very interesting point, and is published for general information.

"Re Fisheries v .....

The above case came on for hearing in the Perth Police Court on the 24th September, and was withdrawn as examination of the facts and the Act disclosed that there was no case to answer.

The defendant was charged pursuant to Section 46 of the Act, which reads:-

"(1) Any person who is found on any waters in a boat containing any net ..... the use of which in such waters is prohibited by any proclamation made under sections nine or ten ..... if guilty of an offence ..... "

The proclamation in this instance was made pursuant to Section 19, and Section 46 therefore is of no effect.

The defendant should have been charged pursuant to Section 21, if the facts could sustain a conviction but here, the nature of the offence is different, and involves the "use, for the purpose of catching fish".

There is no evidence that the net was being used, and any proceedings under Section 21 must fail.

Regarding the question of the net, there is power to confiscate only where it involves the commission of an offence. No offence was committed, and neither is it possible to utilise the provisions of Section 21 (3) since this contemplates there being no person in the boat upon which the net was found.

The net in question was therefore taken without authority and must be returned to the defendant. I have informed him that if it is to be returned he will not be required to collect it, but it will be forwarded to him. I suggest that it be insured or registered for its full value since you are legally liable for its safe custody."

Incidentally, the complaint and summons in this case were prepared, not in this Department, but by officers of the Crown Law Department.

FISHING IN GREENOUGH RIVER

A new regulation (No. 12D) made under the Fisheries Act, 1905-1951, was gazetted on October 17. It reads as follows -

12D (1) A person shall not use for the purpose of taking fish from the waters of the Greenough River more than one net from each boat.

(2) The net shall not exceed sixty-six yards in length and shall have meshes of not less than two-and-a-half inches throughout.

BIRD LIFE IN THE NORTH-WEST

On the overland trip to the North-West undertaken in August last by the Deputy Superintendent, Mr. E. J. Brownfield, and the Supervising Inspector, Mr. J. E. Bramley, several interesting occurrences of fauna were noted.

Wild turkeys were seen at several points and in numbers which are heartening in view of various reports which have been received indicating that these birds are becoming less plentiful. Pastoralists met on the trip are all concerned for the preservation of this valuable bird and it would appear that this is the view generally of those persons living in the areas in which they occur. Such destruction as does occur is usually inflicted by people passing through the districts.

Brolgas, or native companions, were plentiful particularly along the 80-mile beach stretch (between Broome and Port Hedland) although one was seen as far south as the junction of the Carnarvon and Hamelin Roads. A flock of these birds performed a dance for the travellers and their antics were of very great interest indeed.

At the Sherlock River, 30 miles north of Roebourne, a pheasant cuckoo was seen.

The greatest occurrences of any one species were noted at the Minilya River Bridge and at Thangoo Station, 50 miles south of Broome. At the former place straw-necked ibis were seen in the river bed in many hundreds, and at the latter spot approximately 100 brolgas were together in one flock. A spoon-bill was also seen at the Minilya River.

An extraordinary occurrence of kangaroos was noted at False Cape, the northern arm of Lagrange Bay. The country here is fairly well wooded and literally abounds in kangaroos.

Although not seen south of Broome by the two officers, reports received indicated that the Magpie Goose has been seen as far south as Wallal and several which had alighted at one or two stations had caused much interest. In several instances they had been retained as pets. A flock of these birds was seen in Broome township itself.

THE CLEARING HOUSE

Development of Fisheries in Uganda Waters

By Ian H. Dundas of Dundas
General Manager of the Uganda Fish
Marketing Corporation Ltd.

The Uganda Fish Marketing Corporation Ltd. was created in 1948 by the Protectorate Government with an authorised share capital of £50,000, the Government holding 51 per cent. of the shares. The remaining shares were offered to African local governments and to individual Africans. Its main objects were to provide for the proper economic development of fisheries in Uganda waters and at the same time to ensure the continued participation of African interests in the fishing industry. Furthermore, it was hoped that the Corporation would be able to assist by providing more protein food.

The directors of the Corporation include the Financial Secretary to the Protectorate Government as chairman, the Secretary for African Affairs, the Game Warden, one non-official and one representative of the African local governments holding share capital in the Corporation.

To avoid interference with existing fisheries, the Corporation was given a purchasing monopoly on Lake George, which had been closed to fishing for some years. This lake is about 110 sq. m. in area and is extremely rich in plankton content, which supports vast quantities of a first-class fresh water species of fish called Tilapia nilotica. The lake is well manured by hippopotami and P_H (or alkalinity) value of 9.7, as against a normal of about 7. These factors all help in making the lake a first-class fishery.

A site for a modern fishery station was found at Kasenyi, then a small village in the centre of the Game Reserve. Construction work proceeded throughout 1949, and production started on a limited scale towards the middle of January, 1950, roughly six weeks ahead of schedule.

Five villages were organised by the Government as fishery villages, and each was allotted ten canoes. Each canoe was permitted to fish with three

5-in. gill nets, 100 yd. in length. This ensured that the lake would not be overfished, provided that excessive poaching did not occur. In addition, a limited number of dug-out canoes was licensed to fish with long lines in order to keep down the number of other fish in the lake, most of which are predatory.

By January 18, 1950, when the station first went into production, it consisted of one 150 ft. fish washing, gutting and salting shed; one large stock shed and one salt and marine store of the same size; two wet basins, one of which was fitted as a small dry dock; a power house with a 22kW. diesel generator; a small workshop; African lines and temporary European quarters; and large numbers of drying trays for sun drying. We also had two special fish-transporter launches and one high-speed personnel launch, all diesel-engined.

The procedure was for the Corporation to collect the fish by launch from three of the villages and by truck from the other two, and to issue receipts against all fish bought at a price which had been fixed some weeks before and which has remained constant ever since.

The fish were then to be brought back to the wet basins at the station, where they were to be off-loaded into trailers and towed by tractor to the fish washing and gutting shed. Here, after washing and gutting, they were to be salted and put into the bins. Forty-eight hours later they were to be laid out on the trays for sun-drying, after which they were to be sent to the stock shed for stacking prior to delivering to buyers from the Congo, who were to bring their own trucks and pay cash on delivery. In practice, everything went according to plan, and the same procedure, as far as dry-salted fish is concerned, continues today. There was only one hitch, and that was in the weight of the landings.

It was anticipated that not more than six tons of fresh fish would be landed each day to start with, but this estimate was far out. As a safeguard we had allowed space in the salting bins for 24 tons to be under preparation at any one time. This meant that, should the landings be double what Government anticipated, we could still give the fish 48 hours in the bins.

However, on our first day, with only about half the number of canoes in action, seven tons were

landed, and within a few weeks this figure rose to 27 tons.

Consequently, buying was stopped for a time. It was found that the fishermen had been setting and hauling their nets not once but many times a night and, in addition, had been driving the fish into the nets by beating the water and shouting. With the assistance of the Administration we managed to persuade them to be satisfied with reasonable landings of about 12-15 tons a day.

Since the early days of 1950, we have gone ahead with an expansion scheme by stages. In addition to supplying dry-salted fish to the Congo for hard currency, we smoke Tilapia for local consumption, and also distribute dry-salted fish as rations to some of the large tea estates in Uganda. By July last year we had erected a 3-ton Weirs ice-plant at the station and had installed a cold holding room in a modern shop in Kampala. This enabled us to transport fresh fish on ice once a week for retail sale in Kampala. This service has been increased to two deliveries per week, of roughly 3½ tons each. In addition, for those who like such luxuries, we are now bringing from the coast by rail each week, limited supplies on ice of lobster, crab, prawns and other sea fish.

At the time of writing, heavy construction work is going on both at Kasenyi on Lake George and in Kampala. At the former station a large quick-freezing and cold-storage plant is nearing completion, and the machinery is starting to arrive. This building will consist of a preparation and filleting room, a pre-cooling room, two blast freezing tunnels, each of 3-ton capacity, two cold rooms each of 30 tons, an ice store, a packing and despatch room and, of course, an engine room. All the refrigeration equipment is being manufactured by Weirs, except for a few American blower coils of a new type not made in the United Kingdom. The power is being provided by three English Electric diesel generators giving in all some 350 kW.

Our fleet has been supplemented by a very fine sturdy twin diesel fish transporter of an entirely new type, designed by the Fairmile Construction Company to our general specifications. This launch is 36 ft. in length, has two insulated holds and is powered by two-handed R.N. engines. Another towing launch has also been acquired, and four steel dumb barges built by Fairmiles.

For transporting the fish to Kampala, we now have two large Albion diesel lorries on the run, fitted with special enclosed bodies made locally. The roads, however, present an enormous problem, and we are seriously considering for the future the possibility flying fresh fish for delivery to Kampala, Stanleyville and Costermansville in the Congo, and to Nairobi in Kenya. In this event, we should use Bristol Freighters, by arrangement with one of the air-freight organisations in the United Kingdom. From figures available we are convinced that this can be achieved at an economic rate, and we could still sell our fish at competitive prices.

At Kampala we are also constructing a cold store of 100-ton capacity which will be capable of handling quick-forzen or chilled fish, chilled meat from Kenya and other produce such as milk and butter. All these developments are expected to be completed by the end of this year, when we shall be in a position to divert the whole or any part of our production to quick-frozen or chilled fish.

We have also been producing wet-salted crocodile skins from the Semliki River, and from Lake Kyoga and the West Nile. These skins have been sold through Nairobi and London to America. At present, our activities in this field are being limited to the Semliki River, where we had the misfortune to lose a very valuable officer, the late Mr. Samuel Tweedale, in May last year, when his dinghy was upset by a rogue hippo and he was drowned.

Perhaps in the future we shall go across to Lake Albert and attempt the development of the commercial fisheries of that lake in deep water. However, very little is known of the potentialities of these fisheries as yet, and much further research work will have to be done before such a step can be taken.

(New Commonwealth, London, September 1,1952).

Fishing Around the World.

Israel will carry out a fisheries research program to develop methods for the capture of pelagic species. A biologist will assist in managing the fisheries resources in the Sea of Galilee.

South Korea has approached the FAO (United Nations) for experts in fisheries engineering, refrigeration and fish canning.

Liberia has a fisheries engineer to assist in organizing a fleet of small fishing boats and a technologist to develop a fishery product suitable for inland distribution.

Thailand has initiated training of local fisheries officers: has studied the activities of the existing fisheries stations and submitted future activity recommendations.

Panama Government will make a detailed study on marine life biology, fishery management laws, spawning, etc., with a view towards formulating ordinances for fishing on a scientific basis.

Ecuador is engaged in finding inexpensive methods of fish processing: experimental fishing with ground lines.

Libya has begun work investigating tuna resources.

Ecuador plans to supply the local demand for shrimp, reduce price to consumer, freeze excess supply for shipment to the United States. Such represents a $5-million investment.

Japan sets up Ocean Fishery Commission to assist in restricting Japanese fishing operations, such as salmon, halibut, herring, sardines, and tuna in Eastern Pacific Ocean and the Bering Sea.

Chile has begun a biological survey to determine the fisheries resources of Chilean waters. A campaign aimed to increase fish consumption continues - including a "fish week".

(Western Fisheries, Vancouver, B.C., June 1952.)

Pearl Diving....

Natural Pearl Fishery

Pearl fisheries as off the coast of Venezuela for example, are carried on off the pearl beds which are mostly to be found at depths ranging from 2 to 11

fathoms; their size varies greatly with some of the oyster beds extending more than 11½ miles.

Pearl oysters are found on a variety of bottoms, but never in mud.

Most of the oyster fishing now is done with a dredge. This gear consists of a light, cast-iron frame of rectangular shape, with a scraping plate about 3 inches wide, mounted at the lower edge of the frame. A bag of netting is attached to the frame. To prevent tearing of the netting by rocks and corals the bag is kept slightly off the bottom by four or five wooden sticks attached to its lower side. Three arms of the dredge's frame are joined by a ring five to six inches in diameter, to which the rope is tied.

Diving for Pearls

In diving for pearls the boats use hand-operated, 2-cylinder piston pumps, diving suits, and several hundred feet of rubber hose.

Divers equipped with suits work at a depth not exceeding nine fathoms. The boat slowly follows the movement of the diver as he walks on the bottom, while the line tender watches for signals, consisting of a system of jerks and pulls on the life-line. The diver usually remains in the water from four to five hours without coming up for rest. Some individual divers fish for pearls without any diving equipment. They generally operate for themselves from a small boat sometimes assisted by one or two men. The oysters are shucked where they are landed, without any special equipment. The meat is mostly discarded, but may be used in preparing simple dishes. It is quite palatable, especially when boiled in water.

Natural Pearl Marketing

The procedures in selling the pearls follow this pattern: The buyers generally grade the pearls by spreading them on a table where the best pearls are picked out first. Then, using a small and shallow silver scooper the buyer places the remaining pearls in a set of copper cups 3 to 4 inches in diameter, with perforating discs fitted to the bottom. The discs have holes varying from 1/32 to 1/4 inch numbered from 1 to 60. The largest holes (No. 60 sieve) retain pearls of more than 8 grains (about 2½ carats). The

pearls are mainly exported to India, China, United Kingdom and the United States. The market requirements of each country are quite specific, that is, New York demands white pearls of high lustre, while pink pearls are preferred in Europe. India and China import large quantities of seed pearls.

A sack of pearl oysters weighs from 77 to 99 lbs. and contains 875 to 1,350 oysters. The average yield is about 4.5 carats per sack.

Pearl Classification and Value.

Pearls are commercially classified as follows: Mostacilla, pearls of inferior quality because of irregularities in shape, orient (color and lustre, etc.), and size; Barroque: pearls with good orient but not round; Descarte: pearls with good orient but not entirely spherical; Redondas: less than 4 pearls to a carat; Devista: spherical pearls, without defect, that weigh over a grain and have good orient.

The value of the pearls is proportionate to the square of their weight, times the basic market factor. Such is interestingly outlined in "The Pearl Fishery of Venezuela," U.S. Fish and Wildlife Service.

(Western Fisheries, Vancouver, B.C., July 1952).

How Many Fish in the Sea?

By Stewart Bates,
Deputy Minister for Fisheries, Canada.

Man knows little more about the sea than he did in the beginning. Its surface has been well navigated, but its depths have not been plumbed. So far we have only dredged its merest shallows.

Some interesting abstracts follow from the address of Deputy Minister Stewart Bates to a joint gathering of Canadian-American Chambers of Commerce.

Hungry Generations Depend on Sea for Food

Should the sea continue to hide its other secrets, we already know that adjacent to the Canadian and American coasts, is a vast food potential, not only for us but for the whole world. If properly managed, it is a self-perpetuating resource. In the development and probably also in the management of these fisheries,

Canada and the United States have a singleness of purpose. These resources, especially on the Atlantic coast, have been, are and probably always will be, fished by many nations. The competition for them increases. Canada and the United States have a part, a lot, in that rivalry ..... Today on both coasts, American and Canadian fishermen push out the frontiers of our development, out from the coast lines to the high seas. Today, our joint fishing industry is a billion dollar industry. That alone seals our interest in these resources.

But beyond that interest is the ever-growing pressure we feel from across the seas. It is across the Pacific and across the Atlantic that the hungry generations dwell. They want to, and from Europe they do, cross to the rich grounds on our side, coming each year with new and better equipment for killing fish on the grand scale. Too many fish can be caught. They are free resources in the high seas, and because they are free we must expect the folly of mankind to prevail more than usual, and gradually to bring the dissolution and eclipse of the resource itself - unless protection is given it. Overfishing has occurred in other seas, in many species, and off our own coasts too.

Changing Oceanic Conditions

The great fisheries are in the northern hemisphere. Since Asia across the Pacific and Europe accross the Atlantic, are the areas of dense population inevitably they must fish their local waters, and fish intensively. Inevitably too, since the seas are free, they have sailed out over almost all horizons, ploughing all waters with their keels and nets for their foods and oils.

The first point we should note about the northern seas is that they are changing. The frigid dome of the world has been warming up since 1900. Navigation is easier now in the Arctic seas, and in 1932 for the first time in history, a vessel sailed round Franz Josef Land. The glaciers are melting in Norway and Alaska. In Iceland and Norway the warmer weather allows new root crops; the bird-watchers now see the Canadian warbler and the Baltimore oriole, while the grey plover and other Arctic birds have retreated north. The sea has warmed up along Greenland, Iceland, Spitzbergen and northern Europe. When cod appeared on the east coast of Greenland in 1912 it was a strange fish to the inhabitants.

Now, following the warmer water, it provides a substantial fishery and this year there are expeditions from Norway and the United Kingdom fishing the Denmark straits for this now prolific fishery. Since 1920, warmer water has penetrated far into Davis Straits, right up to Baffin Bay, and there is a fishery three hundred miles farther north than was available a few years ago. On the West Coast of Greenland there are now plants and freezers ashore. In the Straits themselves you will find the trawlers and the schooners from Portugal and France.

Changes in Fishing Techniques

With the northward migration of these commercial species have come others. In Iceland new visitors have appeared, warm water lovers like the basking shark, the sunfish and the swordfish and they have even penetrated the Barents Sea and the Murman coast.

Thus commercial fish have penetrated into the Arctic. After them the great fishing nations - Norway, the United Kingdom, France, Spain, Portugal and Italy - are in full pursuit. Down all the northern fish lanes to Nova Zembla, Spitzbergen, Iceland and the Davis Straits. All these remote areas are now profitable for fishing, as well as the Great Banks of Newfoundland.

This change provided by nature has been accompanied by one achieved by man - a change in fishing techniques.

The techniques change, but basically you catch fish as a woman does a husband - by lures, snares and the ambush. The lure you all know: The angler with his rod, line and fly is a small replica of the commercial schooner with its "set" of perhaps eighteen miles of line with 30,000 baited hooks, or the troller with his 18 spoons or spinners operated by winches and clutches. The snare method is effective when fish leave the safety of the seas and get close to shore. There, along the beach they may be trapped in weirs, or on their way up-river to spawn, may meet walls of gill-nets set across river mouths to trap them on the way. But most effective and most useful on the high seas where fish are in abundance, is the ambush, the veiled, the masked attack. In fishing, this involves large-scale techniques - the big ship, the big net. There are seine nets that can be worked around a school of fish, then pursed in from below to trap the school. These may be as long as a city

block and as deep as ten storeys, costing up to $15,000 apiece. Recently, one of our seine boats, in one "set" trapped 1,450 tons of herring. That set was worth $35,000 to the boat.

Trawling and Dragging

The other main type of deep-sea net is the trawl, usually dragged over the ocean floor and hauled up by winch. Trawlers handling such nets vary in size from small draggers up to large ships 250 feet long that fish distant waters. With these afloat, you can guess the new range of fishing. The distant ships are big ships, trans-oceanic in scope. They have such winches and gear as will let them drag down to 300 fathoms, several times the pre-war depths. They are acquiring new devices that can float the trawls so that they may fish at any depth above 300 fathoms. Man penetrates the deeps, and now becomes "sagacious of his quarry from afar", as the poet put it. In the wheel-house they have echo-sounders, loran, asdic and every innovation to show where fish are, how they are schooling, and about how many there are in the school. Such ships begin now to work in fleets. If forty leave Portugal for the western ocean, they can set off for distant grounds, each one exploring for fish. When one finds good fishing, his radio-telephone - and his own code - can bring five or any number of his fellows to the gold, "the yellow, precious, glittering gold". If the fish are not on the Grand Banks they will be on St. Pierre, or Greenland or elsewhere. The big fleet will find them and fish them. The people back home must eat.

As oceanographers and biologists increase their knowledge they are better able to forecast where the fish are likely to be, so that the attack can be made faster and more economically.

Such ships are not only equipped to kill, but also for the proper handling of the product. In their monometal or aluminum holds - like dairy factories - they can freeze fillets and store them. Aboard, too, they can render the offal into meal and oil, and from livers extract the high-grade vitamin and pharmaceutical oils.

Such ships can produce, therefore, high-grade articles for the most fastidious markets - for the modern frozen food trade of North America. Others salt down their catches and prepare their products for sale to the Mediterranean and Latin-American

markets. These ships from many nations are in real competition, both on the high seas and in the market distribution of the end-products the sea yields them.

Earnings from the Sea

There is a revolution on the high seas and in world fish markets. The sea can earn you either dollars or sterling. The sea is free and rabid nationalism in the form of vessel subsidies can increase any nation's share. The fleets it subsidizes are available for defence, the men aboard them are the nucleus of navies and merchant marines. Such a policy is as old as the sixteenth century at least, and is followed by many governments, but not the United States and Canada.

Our countries have not launched or subsidized large ships because, as yet, we don't need them. On our west coast the great salmon runs and the herring come close inshore, and our industries can wait for them with relatively small craft. They use something bigger to fish the open seas for halibut it is true, but this has been a fairly profitable industry that needed no subsidy. On the Atlantic the great Banks are not far from our shores. In Canada we have Newfoundland and Nova Scotia jutting out from the continent, like two great ships moored on the Banks themselves. I think, too, that in North America, with our great land area and our relatively small populations, we have never had to go to the seas for our proteins.

Actually, it is only since 1949 that the stage has been finally set for the full development of Canadian-American relations on fisheries. Before that time Newfoundland - a big present, but a bigger potential, producer - was a separate country whose international relations were looked after by the United Kingdom ..... Since then, Newfoundland has become part of Canada. The destiny of the fisheries around the North American continent now depends on the initiative and leadership of the two North American countries.

In high seas, fisheries are two different problems but both need some kind of international action for their solution. On the one side is the matter of rules of the road, the prevention of conflicts between fishermen of different nationalities. This kind of problem arises in congested waters where different nations use different techniques, where, for example one group may be using fixed gear with others trawling. The latter frequently tear up fixed gear unless it is

properly marked both day and night. This kind of question has not been too difficult around our coasts although it is growing in significance on the Atlantic as a result of the increase in the number of large trawlers.

Fishery Management

The other kind of problem relates to the fish themselves, to the fact that they can be overfished. A whole race of salmon going up-stream to spawn can be trapped in a net, and it, and its progeny, lost for all time. In the high seas it would be difficult so to fish out a race of any species, but they can be killed so intensively as to make it uneconomic to continue fishing effort. These are matters for the study of scientists. "He who knows that he does not know", says the proverb, "is never a fool". I hope that can be said for our fishery scientists. They cannot put the Pacific Ocean in a goldfish bowl for laboratory study. Fish in the sea keep their own mysteries about them: their movements, their numbers and age distribution, their feeding grounds are all hidden in an element that is alien to man and in which only his most recently devised instruments are of much avail. Nevertheless, when industry complains that catches of any species are declining, the opening gambit is up to the scientists. They have to go to work and try to assess the reasons - a slow problematic assessment at best, frequently taking years. When good reasons are found, then correctives have to be applied, usually in the form of Government regulations for that fishery. Roughly there are five things governments can do:

(a) Establish open and closed seasons.

(b) Close off certain areas as nursery grounds for the small or immature fish.

(c) Establish minimum size limits below which no fish can be taken.

(d) To proscribe or prohibit the use of certain types of gear like, for example, the size or the mesh.

(e) Fix an overall quota on the catch.

Such regulations can be made by governments and enforced by their patrol officers at sea or ashore.

With so many unknowns and in so alien an element, these remedial measures may be far from ideal for the restoration of stocks that have been depleted. Nevertheless, these methods usually work. There are enough examples to indicate that by a combination of scientific enquiry and skillful regulation, depleted resources have been restored.

To cavil at the efforts of the scientists and government administrators is to fail to understand their problem; it is to be like the man to whom Cicero referred on one occasion, as one who imagined that he was living in the Republic of Plato instead of in the days of Romulus. The high seas are no ivory tower, no place for the idealistic dreamer. With her, and with the resources she breeds in her depths, we can do only what she allows us. It is only men - fishermen - that we can control in an attempt to restore stocks. We cannot fertilize the sea as you might the chemistry of the soil; with her you can do nothing. You can only regulate fishermen.

Pacific Coast Conservation

The United States and Canada did, however, show the fishery world what could be done in high seas regulation. About fifty years ago on the Pacific, we both fished halibut close inshore in sheltered waters. As this species became scarcer, our fishermen went offshore, building bigger boats, and soon found themselves fishing as far as the Aleutian Chain. Despite these efforts, the catch kept going down and in 1923 the Halibut Treaty was signed. It set up a joint American-Canadian Commission to investigate the problem and to prepare for regulation.

This Commission was successful in itself. But even more, it was a new step in international collaboration on the high seas. And still more it was for North America a beginning of conservation and utilization on a continental scale, a joint venture. But it was on the high seas. Naturally, American and Canadian fishermen began to feel a proprietary right in this species. By refraining from fishing under the regulations, they stored up capital in the form of halibut with the intention of getting the maximum yield from year to year into the future. The taxpayers of the two countries annually contributed to these costs. This

Commission led to others, notably the successful Sockeye Salmon Commission. Successes in these induced the governments separately to extend their investigations into other species and to regulate these. Thus from the Behring Sea southwards, the United States and Canada jointly and severally, have built up various species. But these species live in the high seas, and traditionally these are free to all nations. Inevitably there had to come a time when this contradiction would be apparent. North Americans have built up these stocks; but was every nation free to fish them? The very fact that we had increased the stocks might induce other nations to cross the Pacific to share the lucrative yields. And so long as they kept outside our territorial limits there was nothing to stop them - until a few months ago. At a fisheries conference in Japan, between that country, the United States and Canada, a new principle was expounded, and accepted by the Japanese. They agreed to abstain from fishing any stocks on this side of the Pacific which we had under scientific investigation, under regulation and under full utilization. Japan admitted that even now, halibut, salmon and herring met these conditions and that for these reasons she would abstain from fishing these species. The significance of this principle is as yet hard to appreciate in all its aspects. It does mean, however, that we and the United States can be encouraged to continue our conservation work, without having the results completely dissipated and lost to other nations; the incentive remains to us both to continue our programmes of investigation and restoration.

On the Pacific seas, the United States and Canada can only propose policies they believe to be right, that they are willing to have enforced against them in any other sea, and that they believe the community of nations will regard as honest and proper. Many of our fishermen think we own the Pacific ocean. They would like to see it carved up into territorial wedges. But the freedom of the seas still remains in most men's minds as a basic freedom. The only thing we and the United States can legitimately lay claim to is a stock we have built up by careful scientific study, by extensive regulation, and by the full utilization of the resource. This notion other nations might accept as has Japan, and may agree to abstain from fishing such resources. Beyond this you cannot expect to shut out the nations of the world from the seas, even with the walls of righteousness.

We cannot easily convince ourselves that fishermen on the high seas can be transformed into a tiny garden of saints. There is a rebel in every man and perhaps more of him among fishermen. Gamblers by calling, living with the chance of feast or famine, and so often arm in arm with disappointment, they naturally despise regulation, even if the latter is aimed at conserving the stocks of their livelihood. The Canadian and American governments each spend annually large sums of money on protection, on policing the fisheries and enforcing the regulations against our own nationals. Problem enough it is to control our own nationals on the seas, when we know we are in the right. How much more to try to control foreign fishermen who believe that the seas are basically free! - unless their country is willing to abstain from fishing under some such principles as elucidated above.

While the United States and Canada make treaties and in many ways act singly for the sake of the fisheries, our fishermen are in competition with each other. They don't go very much for hands-across-the-border stuff. Yet in the face of intruders from across the seas, they are apt to feel a partnership one to the other. Between each other, our fishermen may pass a mutual glance of great politeness, but in fishing it is "devil take the hindmost".

And that is healthy. We fish the same grounds together, and with much the same costs and methods. Almost three-quarters of our totalmarketings go into the United States. Yet in the U.S. market some tariffs are too high to get over; some quotas exist; some threats overhang us from time to time. Our product is, however, a North American product - packaged fillets, canned salmon and the like - and there are few other markets in which such articles can be sold. If a Canadian surplus does arise, in Government we are immediately asked, "What is the sense of spending all this money and effort with the Americans on conservation, if you can't sell the produce?" We don't have to seek our problems, we in fisheries, as Diogenes is said to have sought for an honest man in broad daylight with a lantern. To our domestic critics we can only reply that conservation is right in itself: that in the end all North Americans will recognize that the Canadian product is the same as the American product, produced not with cheap labour but from those who are partners on the high seas, produced at equal cost and with equal quality, a North American product for North American use.

The world is not a unity but a confusion of tongues, desires and purposes. Men cannot work together until they have similar principles. But, - most rare occurrence! - the United States and Canada do have similar principles. Neither of us wishes to use this for addressing eloquent insults to the rest of the human race. But in "the giant agony of the world", in the present Babel of confusion, this similarity is so exceptional, so great an asset, that it should be emphasized, used and realized for the exceptional thing it is.

Our two countries have together in fisheries capitalized on this similarity of purpose. After our joint work on halibut restoration, our attentions were directed to other species. The sockeye salmon of the Fraser River merited another Commission. The success of the halibut and salmon commissions opened a new era in the conservation of fisheries on the high seas. They are regarded as models for other commissions and other countries. In 1949 under the leadership of the United States and Canada a commission of investigation was set up for the whole North West Atlantic area, the European nations fishing that area being invited to join us in a new international convention. Denmark, France, Iceland, Italy, Norway, Portugal, Spain and the United Kingdom are all signatories to that convention, and the commission has begun its work for conservation. On the Atlantic, unlike the Pacific, the main species are as yet under little regulation and the stocks are not fully utilized. On the inland fisheries of the Great Lakes, our two countries have for some time been discussing the need for a joint conservation programme, and at an early date we look forward to another joint venture, this time in the freshwater fisheries.

The fish, however, still swim in the seas and lakes, as unmindful of our government research and regulation as the palm tree is of the poet who chants its praises.

(Western Fisheries, Vancouver, B.C., August, 1952)

Federal Whaling has Good Profit

The Australian Whaling Commission a Commonwealth Government enterprise operating off the West Australian coast, achieved a net profit of £348,500 last season - from July 1, 1951, to March 31 this year.

This compares with the £119,683 surplus of Nor'-West Whaling Ltd. after taxation of £120,000.

The report of the commission, tabled in the House of Representatives, states that out of the profit, the commission had paid £300,000 of its £1,075,000 original capital advance back to the Government.

The commission struck its profit after allowing for the writing off of £65,000 development expenses and £82,000 for taxes, other than income tax, and depreciation and insurance.

Production and sales by the commission were 5,175 tons of whale oil, 1,783 tons of whale meal and 2,997 tons of whale solubles.

Proceeds from these sales totalled nearly £840,000.

The report states that while the commission does not expect such good results for the coming year because of the drop in whale oil prices and rising wage and supplies costs, there was every prospect that the enterprise would continue to be a good source of revenue for the Commonwealth.

(West Australian, Perth, October 16,1952).