ENT, WESTERN AUSTRALIA

MONTHLY SERVICE BULLETIN

Number 6 June 1, 1952

STAFF NOTES

Mr. K. F. Rundell, Clerk, Head Office, has resigned from the Public Service. At a gathering in the office on May 30 a presentation was made to Mr. Rundell to mark his association with the Department, and opportunity was taken to wish him well in his new sphere in the Eastern States.

Mr. J. Barakonski has been appointed to the Head Office staff vice Mr. Rundell.

Congratulations are extended to Inspector S.W. and Mrs. Bowler on the birth of another son.

The Superintendent, in the capacity of President of the Australian Public Service Federation, paid a flying visit to Sydney and Canberra last month to attend a meeting of the executive of the Federation. While in Sydney he called on the Superintendent of Fisheries for New South Wales (Mr. T. C. Roughley)

Inspector R. M. Crawford has returned to duty after a holiday visit to Melbourne. Through the good offices of Mr. A. D. Butcher, Director of Fisheries and Game in that State, Mr. Crawford was enabled to see a little of the local fisheries.

Assistant Inspector G. Coombes has been appointed a whaling inspector, and will leave at an early date to supervise whaling operations at Point Cloates during the ensuing season.

The Supervising Inspector is at present at Shark Bay helping Inspector Baird to settle in.

COMMONWEALTH OFFICERS

The University of Melbourne has recently conferred on Mr. Maurice Blackburn, Research Officer, Fisheries Division C.S.I.R.O. the degree of D.Sc. The congratulations of every member of the State Fisheries Department are extended to Dr. Blackburn, who, it will be remembered, recently returned from an extended visit overseas.

Mr. W. B. Malcolm, of the Fisheries Division, C.S.I.R.O. who earlier this year was seconded to Cronulla for several months, is at present visiting W.A. in relation to Australian salmon and ruff investigations. He expects to leave early in June to pursue his investigations in South Australia and Tasmania.

Mr. J. P. Robins, Technical Officer of the Fisheries Division, C.S.I.R.O., who has lately been carrying out research at sea in relation to the tunas in South Eastern Australia, but who very shortly will proceed to the new whaling station at Tangalooma, Queensland, is at present visiting W.A. to inspect local whaling stations. In company with Mr. R. G. Chittleborough, of the same Division, he left for Carnarvon on May 30. Mr. Chittleborough will remain at Carnarvon until whaling operations cease there, and will then probably go on to Point Cloates until about mid-October.

Mr. K. Coonan, Whaling Inspector of the Commonwealth Fisheries Office, arrived in Perth on May 26 for the purpose of inspecting the Cheyne Beach Whaling Co. Pty. Ltd.'s new station at Frenchman's Bay, Albany, preparatory to taking up the position of Commonwealth Whaling Inspector at Carnarvon for the ensuing season. Mr. Coonan was accompanied to Albany by Assistant Inspector G. Coombes of this Department.

WHALING IN W.A.

It is anticipated that whaling operations will commence at Albany and Carnarvon on June 1, whereas the Nor'West Whaling Co. do not expect to get under way at Point Cloates until about June 15.

Inspector G. C. Jeffery, in addition to watching the interests of the State Government on the Albany station, has also been appointed a Commonwealth Inspector by the Federal Government. Reports from Inspector . . Bowler indicate that a number of humpback whales have been observed in recent weeks to the west of the Abrolhos. They were all travelling North.

INSPECTORS' MID-YEARLY MEETING

At the last Annual Conference of Inspectors it was decided that all district inspectors would also hold a mid-year conference for the purpose of meeting Head Office personnel and becoming up to date with current departmental doings. It has been decided that instead of meeting in Perth for these half-yearly meetings, the venue will be changed from year to year to the headquarters of each inspectorial district, so that each inspector will appreciate more fully the difficulties and problems confronting inspectors in other districts. This year it has been decided to meet at Pemberton from June 2 to 5. The following officers will be present - Messrs. Fraser, Brownfield, Bramley, Munro, Davidson, Bowler, Melsom, Murray, Green, Jeffery, Simpson, Piesse and Smith. It is hoped that a resume of the matters discussed at the conference will be published in the next Bulletin.

ANOTHER GOOD SNAPPER HAUL

LFB "Saga", which made a record catch of snapper in the Shark Bay region during March, returned to Geraldton on April 28 with 7,000 lb. of that species in her ice box. This establishes a record for so early in the season.

JAPANESE IN PEARLING INDUSTRY

The Government has agreed to rescind a Cabinet decision issued just after the close of World War II that no further licenses under the Pearling Act be issued to Japanese. This follows a direction by the Federal Government that up to 35 Japanese nationals may be admitted to Australia

for employment in the pearling industry at Broome. Certain stipulations have been made, the more important being that Japanese may be employed only as divers, tenders and engine-drivers on new or repaired vessels not in commission in 1951 or to replace men on other vessels in the three classifications referred to whose proficiency was below the 1951 average, and that the total number of Japanese employed in any of these classifications will not exceed 50% of the total number of other nationalities so employed. Some difficulty is at present being experienced in securing sufficient labour from Koepang, because of the decision of the Indonesian Government to prohibit further Indonesian nationals from coming to Broome to work in the pearling industry. This follows a report submitted by Mr. Oh, a Consular Attache of the Indonesian Government, who visited Broome and Darwin recently and submitted a full report on the conditions under which Koepangers were working and living at those places.

SWORDFISH IN SHARK BAY

Inspector Bowler has received a report from Mr. H. Akerstrom, skipper of LFB "Isobel", that during the course of a visit to Shark Bay in the early part of May, more than 20 swordfish were observed in various parts of the Bay. The size of the fish was said to range from 30 to 60 lb., but unfortunately no information is available as to the species which occurred. If they were marlin, and the occurrence was not merely a flash in the pan, there is little doubt that some of Perth's keen game fishermen will appoint a regular rendez-vous in this area in the not distant future. Further enquiries will be made, and if further information comes to hand it will be reported in due course.

FRESHWATER RESEARCH

For some time the Department has been considering the desirability of establishing some form of freshwater research organization in Western Australia to investigate firstly the ecology of local trout streams and the success of trout planting, and secondly the planting in farmers' dams and the like of suitable fish as a diet variant. The Hon. Minister is anxious to get the investigations going, and a

preliminary meeting of a few interested persons will be held in Perth on June 13. Invitations to this meeting have been issued to the University of W.A., C.S.I.R.O. Fisheries Division and the Government Entomologist.

TRANSPORT OF TROUT FRY

Some months ago a report was made in the Bulletin concerning experimental work being undertaken on behalf of the Pemberton-Warren Trout Acclimatisation Society by Inspector J. S. Simpson of this Department to perfect a trout-fry carrying tank which could be mounted on a three-ton truck. The reason for the experiments was the fact that to carry trout fry in milk cans, which has for many years been the practice in this State and in the Eastern States, is a very costly business requiring constant attention during transit, and it was in the hope that costs could be reduced very considerably that the experiments were undertaken. A report has now been received from Inspector Simpson to the effect that a suitable tank has now been developed and the following summary of the report he has submitted to the Department is published for information:-

The tank is of 150-gallon capacity, and constructed as a cube. The design is an adaptation of a fish-carrying tank described in "The Progressive Fish-Culturist" published by the U.S. Fish and Wildlife Service, Washington D.C., U.S.A. Complete aeration of the water is effected by pumping from one side of the tank through an aspirator and mixing chamber and returning through a narrow slotted fish-tail apparatus on the opposite side of the tank. The power unit is a pump and 1 h.p. Villiers engine constructed as a separate unit, and all connections from the pump to the tank and back to the pump are ordinary garden hose, thus minimising vibration. The aspirator picks up more air than can be absorbed by the water in the tank, but the flow of air can be regulated by a small air cock fitted to the aspirator intake. A short length of 4" pipe, welded in to the lower corner of the tank with a 5' length of rubber hose attached acts as an outlet for both fish and water. When not in use the hose is bent up and fastened to an attachment on the end of the tank thus taking the place of another valve. Yearlings have been transported over distances of up to 270 miles and the fish have been in the tank from 6 to 14 hours with negligible loss

of the fish. Little or no variation in the water temperature takes place while travelling at night, but a rise of approximately 1°per hour occurs while travelling during the day. On a recent trip from Pemberton to Gingin, a distance of approximately 270 miles, an axle of the truck was broken when about 30 miles from its destination, and the outfit stayed for four hours without shade, the temperature rising 15°. When the truck got under way again, the temperature dropped 3° during the remaining 30 miles, but only four fish were dead on arrival. 1 lb. of fish per gallon of water was carried on all trips, and with the exception of the first delivery, when a fault developed in the aspirator, almost 100% survival was achieved. The main difficulty at the present moment is the planting of the fish in the various streams on arrival at destination. Mr. Simpson, and the Trout Acclimatisation Council, both hold the view that this could most easily be overcome by the construction of small holding ponds at each centre, and fish delivered direct from the tank into the ponds and held until such time as it is convenient for members of the various societies to liberate in their streams. Any small permanent stream could be used as a holding pond by the construction of two wooden bulk heads set into the banks and across the stream, 15' or 20' apart and slotted to take a wire screen. As most of the plantings will be made in March, April and May the screen could be removed during the winter months. In cases where water can be piped, a circular earth pond 12' to 15' in diameter and approximately 2' deep and fed by a 2" pipe, should prove quite satisfactory. A pond of this nature was constructed last year by the Murray Trout Acclimatisation Society at Dwellingup, and fry were raised to the fingerling stage over a period of a few months without any very great loss occurring.

THE CLEARING-HOUSE

The following paragraphs culled from overseas and eastern States periodicals are published for information.

Tuna Quest in Australia

(by Aldridge Caldwell)

A can of tuna contains only a small portion of a fish which, when fully grown, weighs upwards of 300 lb. in Australian waters.

The species was neglected until 1950. Scientists had forecast in 1936 that tuna offered great possibilities of development, but other indigenous varieties - pilchard, mackerel, Australian salmon - claimed the attention of Commonwealth fishermen. In August, 1949, when a dearth of these everyday varieties was experienced, a New South Wales meat canning syndicate offered a good price for tuna. Between that date and February, 1950, the syndicate, whose Narooma cannery began operations in 1937, processed about a thousand tons of tuna.

The arrival in late 1950 of the American South Seas Marine Products' tuna clipper "Senibua" to fish Australian waters was a major event. The "Senibua" used trolling gear until a strike was made, when the ship circled and put out live bait to attract the school to the surface. The method was rewarding among dense schools of tuna, but often led to extravagant use of bait with disappointing results. A combination of trolling and live bait from small boats is more effective.

American fishing boats are built on a scale inappropriate to Australia's needs. A fleet of 30 small boats could be bought for the price of the "Senibua", and would probably achieve a higher aggregate catch. The nearness of Australian ports to the fishing grounds obviates the need for large storage capacity and elaborate refrigeration plant.

Eight or nine varieties of tuna are found off the coasts of Australia, some of which offer great possibilities. Striped tuna and southern bluefin are found in commercial quantities off Southern Australia. Even greater quantities of the northern bluefin abound in northern waters; this species would appear to

offer attractive possibilities, for, although it rejects the lure commonly used as bait, it can be netted. It makes a delicious canned product, with a somewhat richer flavour than that of the southern bluefin. When problems of transport and preservation arising out of the immense length of Australia's coastline can be overcome, the canning of this species might prove a major enterprise.

The yellowfin, which approaches the latter in flavour, is difficult to obtain in numbers. The striped tuna is a good canning fish, and representative packs bear comparison with those of Southern California. Tuna found off the western coast of Australia are mostly immature fish of from 6 lb. to 8 lb., though spawning fish of up to 400 lb. have been caught off Albany, Western Australia.

A typical tuna canning factory is the one at Eden, near the Victorian border of New South Wales. Nearly 4,000 tons (7 million cans) of tuna, mackerel and Australian salmon were processed in the company's two plants at Eden and Narooma during the 1949-50 season. Production in 1948-49 was 3 m. cans. The Eden cannery handles about 900 tons of tuna in six months' operations. Owing to labour shortage, the cannery is able to employ only 45 persons. A similar number work at the company's cannery at Launceston, Tasmania, and 70 at the Narooma cannery.

When tuna arrive at the Eden warehouses they are stored at a temperature of -5°F. till they are ready to be processed. There is a refrigeration capacity available of 400 tons. After being gutted, the tuna are weighed, then cooked in a retort holding 80 fish. After cooking for about three hours at 250°F. - the time varies according to the loss of weight - they are allowed to cool for 24 hours. Hand sorting comes next, the division into first and second grades depending on the quality of different parts of the carcass. An average of 500 tuna is handled in a day's operations.

Canning methods and equipment are mostly orthodox, but there is one piece in which the management takes special pride. This is the fish-scaler developed in South Australia, a simple but highly efficient piece of machinery. Centrifugal force is used to hurl the fish against angle-iron scrapers welded to the sides of a drum, and against each other.

An extension of the factory to permit the processing of offal into fish-meal is under way. When this is complete, the only loss will be some steam and a few fish scales. Even the latter will not always be wasted if the company's technicians succeed with their plan to use pilchard scales in the manufacture of essence of pearl, used for making artificial pearls.

The Eden cannery is one of 13 major fish processing plants in the Australian continent. There are five in Western Australia, four in Tasmania, two in New South Wales and two in South Australia.

The canning industry can expand for a long time to come without fear of causing a glut in supplies. Imports of canned fish in 1949-50 were valued at £A.3,013,000. There were no exports. Against this may be set fish "preserved in tins or other airtight containers" officially recorded as 10,886,000 lb. in 1948-49, compared with 603,000 lb. ten years earlier.

The future is still by no means assured. Distribution and seasonal migration of fish in Australian waters have not yet been studied fully. Research is necessary and is going forward on problems of temperature, plankton and food. The Australian fishing industry has nevertheless made great strides in the last decade and there seems no reason to doubt that progress will be maintained. The number of boats and men employed has doubled; the value of equipment is six times what it was in 1939.

(New Commonwealth, London, April 14, 1952.)

"Financial Suicide"

Deadly serious is the situation confronting the Alaska salmon industry as spring thaws the spawning beds and sweetens the salt chuck with the run-off of melting snows.

Salmon will soon be moving from Isanotski to Cape Muzon, but the men who would catch and pack them are as far apart as these two extremities of the Alaskan coast.

Fantastic Increases Asked

In a spring when the Wage Stabilization Board talks of formulae and 12% up, the Alaska salmon canning unions scoff at such childish thinking, thumb their

noses at the federal W.S.B., and demand increases of from 80 to 87% over 1951 levels. (Not in basic rates, of course, but in "fringe" benefits and other hidden hoists.)

The operator opens his mail. In one envelope is an announcement that labor must have fantastically advanced payment. In others from every corner of the country come reports: "Salmon has priced itself out of the market." "Salmon prices must come down, or else....."

Knowing that salmon prices cannot be raised to cover the cost increases which labor's demands would entail, the operator talks of 1952 operations as "financial suicide".

Some sideline specialists will look wise and say that someone is crying "WOLF" again this spring.

The Situation Is Serious

The situation is far more serious than that.

It is serious because Labor's demands and the packers' ability to pay are so fantastically far apart.

It is serious because Labor's demands show no willingness to accept or abide by any ruling of the Wage Stabilization Board.

It is serious because those who know food markets that canned salmon cost increases cannot be passed on to the consumer in higher prices.

It is serious because the outlook for salmon runs - with but few local exception - is for short production, with its attendant high cost-per-case.

It is serious because inflexible charges which the salmon must stand - steamship rates and territorial taxes - already have advanced sharply.

Inter-Union Troubles

It is serious because unions fighting between themselves threaten to create an impossible situation where the canner who seeks to operate courts disaster.

At presstime the situation was too confused for one glimmer of encouragement to penetrate the dismay.

Packers are suing unions for damages sustained in last year's inter-union struggles; unions were suing packers for "run money".

Union leaders were claiming jurisdiction, and threatening to defend it.

The Packers' Lament

Alaska packers studied the situation carefully, and saw only trouble. They wrote the Machinists Union and the Alaska Fishermen's Union a letter in which they said:

"The spread between union demands and the ability of the operators to pay and operate is so great that there has not appeared to be any chance of a settlement under which plants could be opened without risking financial suicide to a majority of owners.

"The situation may result in both cannery workers and union members losing their season. If this should happen, we feel that the fault will be with the union and not with the operators. The union demands are too great."

(Pacific Fisherman, Los Angeles, April, 1952.)

Newfoundland to Use a Plane

Prime Minister J. R. Smallwood told the Newfoundland Parliament last week that an aircraft would be used to spot French and Spanish fishing trawlers encroaching on Newfoundland's fishing territory. It would be in service until a preventive cutter could be put into service.

Foreign fishermen encroaching inside the three-mile limit have spoiled and reduced the catch of local fishermen. The Newfoundland Government has protested to the Canadian Government demanding immediate action in the matter.

(The Fishing News, London, March 29, 1952.)

Australian Cuts Hit Grimsby

Although the final arrangements have not yet been made by the Australian authorities, that country's import cuts have brought to a stand-still - temporarily, at any rate - a nice little export trade which has been built up by about 20 Grimsby frozen-fish firms. The quota defined by the Australian authorities is to be 20 per cent. of the trade a year ago - and there's the rub for the Grimsby firms, for it is only recently that their frozen-fish trade with that country got really into its stride. However, they are hoping that a larger quota will be permitted when the matter is finalised.

Bream is the frozen fish which Australia likes best. Grimsby also exports frozen fish to the United States - but America prefers catfish fillets and there is little demand for bream across the Atlantic.

(The Fishing News, London, April 12, 1952.)

Japan And Indonesian Fisheries

In negotiations between Japan and the Indonesian Reparations and Fisheries Delegation, the Indonesians are reported originally to have wished to exclude the Japanese from fishing within an area of 60 miles of the Indonesian coasts. This suggestion was directly opposed to the principle of freedom of fishing on the high seas recently affirmed by Japan in the Tripartite Agreement between the United States, Canada and Japan.

The Japanese countered with the suggestion of joint investigation and exploitation of Indonesian fisheries with Japanese technical assistance and service in craft and gear. There the matter remains at present.

(The Fishing News, London, April 12, 1952.)

Why Go Short Of Electricity?

(by T. C. Roughley)

The girl screamed and jumped two feet into the air. From my balcony overlooking the shallows of Vaucluse Bay I could see in the water a dark, oval object moving slowly away from her.

The girl had been given an electric shock after having trodden on a numbfish - a nasty but interesting experience.

The numbfish is a member of the family of stingrays, most of which are provided with sharply barbed spines projecting from their whip-like tails. When molested they swing their tails round with great force and transfix their aggressors. These barbs are not actually venomous, for they do not inject any specially prepared poison, but they cause a jagged wound that may be difficult to heal.

The numbfish has a stubby tail and no barb, but it relies on the sudden and quite severe electric shock it transmits to scare off its foes and to secure its food. I do not know if the voltage generated by the numbfish has been measured, but I should imagine it to be between six and twelve volts. Quite enough to give you a fright - if not a light.

I have seen a man's arm contract violently when he prodded a numbfish with a wet stick. If the prodding is continued the current gradually weakens until at last it wears completely out, and a period of rest is necessary before the fish can recharge its batteries.

The "batteries" are modifications of the muscle tissue and consist of an enormous number of hexagonal tubes or columns situated on each side of the body between the head and the greatly enlarged pectoral fins or "wings".

The columns are filled with a clear, jelly-like substance and are divided by thin partitions into a number of small compartments, each containing a flat electric plate, much after the manner of a voltaic cell. They have an abundant nerve supply connected with a special lobe of the brain.

The upper surface of each electric organ is charged with positive, and the lower surface with negative, electricity.

The numbfishes (or "torpedoes," as they are called in Europe) have a wide distribution throughout the world and were well known to the ancient Greeks and Romans, who used them as food. But they were far more valuable for other purposes, and Dioscorides, a Greek medical writer, claimed that the shock of a

torpedo fish relieved chronic headache, and "if the brains of the fish are applied with alum on the sixteenth day of the moon" they will remove superfluous hairs! A contemporary of Dioscorides recommends a person suffering from gout to stand bare-legged on the fish. He would certainly be galvanised into unusual activity.

In addition to the rays there are a number of other fish capable of generating electricity. The shock given by the electric catfish of the Nile, for instance, can be very severe. In this fish, however, the electric organ is developed from the skin and it envelops the whole body like a mantle between the skin and the muscular tissue beneath.

The generation of electricity by fish reaches its greatest intensity in the so-called electric eel found in the stagnant water of the Amazon River, where it usually lies half buried in the mud. This fish, shaped like an eel but more closely related to the carps and catfishes, grows as long as six or eight feet and as thick as a man's thigh.

The electric organs are situated along the sides and belly and extend almost the whole length of the body. They are composed of a great number of prismatic columns divided into discs, as in the numbfish and torpedo, but they differ from these fish by having the positive pole in front and the negative pole behind.

The electric eel swims forwards or backwards with equal ease by means of a prominent anal fin, which can be instantly put in reverse. Specimens have been kept in aquaria in both Europe and the United States, and the securing of their prey in an aquarium in Paris has been described by Professor Louis Roule in the following words:

> Those I kept were fed once a week on live roach which were thrown into their tank. In the twinkling of an eye, the appearance of the tank was utterly changed. Previously it had been peaceful, with the electric eels reposing tranquilly upon the bottom. Suddenly it became the scene of an intense agitation. As the little fish wend down and were scattered in the water, the eels, suddenly becoming active, dashed upon the offered victims, struck them with a flash, and gobbled them down at one gulp. They

were everywhere, darting up and down, from one side of the tank to the other, stirring up the water in every direction. The little fish, thus hunted down, tried to escape, but they were soon caught by the electric discharge, killed or at least paralysed by it, and, turning belly upwards, gradually sank. The eels swallowed them whole, then dashed after others which met the same fate. This extraordinarily sensational chase, in which the pursuer killed the prey by electrical discharge, lasted for several minutes without stopping. Then the eels, gorged and replete, slackened their pursuit. They were growing weary and their electric power was becoming exhausted. They lay down on the bottom again to digest their food in peace, their stomachs swollen out by the copious meal.

The current generated by the electric eel has been estimated at about 300 volts and it is capable of stunning a horse! It radiates outwards from the positive pole in the front of the fish and some of it rejoins the negative pole behind. Animal life that may may come within this sphere is liable to be electrocuted without touching the fish. The current is strongest when the fish bends and thereby brings the two poles closer together.

At the 50th annual meeting of the New York Zoological Society, held in the grand ballroom of the Waldorf-Astoria on January 8, 1946, which I attended, the stage was lit, when the main business of the meeting had ended, by the current generated by an electric eel.

Why not import a few millions of these eels to solve our blackout trouble?

(Sydney Morning Herald, February 10, 1951.)

Fisherman Wins Appeal Against Crown

The Court of Criminal Appeal decided yesterday that it is not an offence for a professional fisherman to have in his possession fish irrespective of whether he proposed to sell it in the established market or not.

The decision arose out of an appeal by Carl Beeston Gow.

Gow was convicted by a magistrate under the Fisheries and Oyster Farms Act of having fish for sale which had not been brought to and sold in the district market.

The fish was seized and forfeited to the Crown.

Gow appealed unsuccessfully to Quarter Sessions.

Government inspectors saw Gow's truck in front of a fish shop at Narrabeen. There was a large quantity of fish in the truck, a set of scales, and newspapers.

The Chief Justice, in a reserved judgment, said it clearly would be nonsense to suggest that in all cases the mere possession of fish intended to be sold before they had been sold in a market would constitute an offence.

Every licensed fisherman obviously intended to earn a livelihood by disposing of his catch by selling it.

But as soon as he took the fish into his boat or otherwise reduced it into possession then he had it in his possession for sale, not immediately, perhaps, but at some subsequent time.

He must then send the fish to the market in order that it might be sold in compliance with the requirements of the Act, and to suggest that the section of the Act was to receive a construction which would make that an offence was clearly absurd.

It was clear that no offence was proved against Gow, his Honor said, because, although he announced his intention of selling some of the fish no sale in fact took place.

The Chief Justice added: "It may possibly be that there is a gap in the Act, but that must be attributed to the language which the Legislature has used, and the Court cannot remould it".

Upheld.

The appeal was upheld with costs.

Mr. Justice Owen and Mr. Justice Herron, in separate judgments, concurred.

(Sydney Morning Herald, May 3, 1952.)

Trends in the Usage of Nylon Twine and Web

We have had many inquiries with regard to nylon fishing gear; its operational efficiency; economical comparison with other twine and cordage. Such matters are evidently of great interest to commercial fishermen, as with operation executives and their staff.

As with all other fishing centres of the world, British Columbia has been active in the testing of nylon web and cordage on our fishing grounds, in which salmon gill-netting, made up from nylon yarn, has been tested out under actual fishing conditions.

One net was tried in the "outside" Fitzhugh Sound gill net fishing off Rivers Inlet. The meshes were 5⅜-inch and the salmon caught averaged 7.3 lbs., compared with 6.6 lbs. for linen net of similar meshes. Fishing was good for both types of nets, but it was found that nylon would catch more of the large fish, due to the greater elasticity of the nylon twine. Incidently, this latter point is found favorable in nylon mountaineering climbing rope; the elasticity is less jarring in the event of a slip by one of the climbers.

Some 20-lb. spring salmon were taken in the 5⅜-inch mesh gear.

Samples of nylon net of smaller twine to obtain the same fineness of the linen net, tried in another B.C. river, resulted in many broken meshes.

It is interesting to note that whitefish gill-netters of the Great Lakes incline to the opinion that nylon might also prove superior to gill-net web.

Nylon web is getting a very complete test this season, for about 75 gill nets from England, United States and Canada are expected to be out fishing. So by September or October we should know more about the possibilities of the practical utility of such web in our B.C. fishery. The important question involved: Will nylon displace linen web?

Many fishermen are reserving judgment at this time in face of the above, and other experimentation.

Even if nylon web proves itself, the fishing industry will be confronted with the economic problem of changing over stocks in inventory. It has been said

that to completely change over to nylon nets would take at least four years, because of present stocks of linen.

Another important point to be considered. With the international situation being as it is, nylon supplies may be short, as defense orders at present are keeping the available supply very short.

Nylon is resistant to bacteria, mildew and rot-inducing organisms, and under normal conditions there is no deterioration from storage, which is cited as a very definite advantage over linen.

Nylon absorbs little water but is 10 to 20% weaker wet than dry.

Nylon twine must be larger to get the same strength as wet linen.

In "Nylon Nets Tested on West Coast," by S. L. Young, published in Trade News, Department of Fisheries, we find that comparative average physical properties of nylon salmon twine, linen salmon twine, and cotton seine twine on an equal weight basis with the values for wet linen salmon twine set arbitrarily at 100 are:

	Nylon	Linen	Cotton
Twine Strength, dry	91	74	23
Twine Strength, wet	77	100	25
Mesh Strength, dry	108	69	28
Mesh Strength, wet	85	110	33
Stretch under breaking tension, dry	385	60	290
Stretch under breaking tension, wet	395	100	360
Toughness, dry	350	45	65
Toughness, wet	300	100	90

Nylon will burn if a match is applied to it but stops burning when the flame is removed. Linen will quickly ignite from a dropped match and break into an uncontrolled fire in a matter of seconds. Few of the common chemicals react with nylon. Gasoline, Diesel oil, lube oil do no harm, but this advantage is of little importance. We understand that alcohol will damage nylon.

The nylon filaments run the whole length of the yarn instead of in fibres as in linen. Nylon appears smoother, and is tougher, and more wear-resistant than linen. Nylon stretches appreciably with high, but not complete elastic recovery. One report states that a sample fished for one season had a permanent stretch of only 1.5%. An 84-inch long sample, slightly higher, 1¾-inch permanent stretch.

The relative cost for nylon is nearly double the cost of linen, with American nylon selling around $7.75 per lb. as these notes were being compiled some time ago. The cost varies with twist and twine.

It is reported that repairs to broken meshes in nylon gear are difficult due to the fraying at the broken or cut ends. Linen does not fray out: is much easier to mend.

Nylon nets are said to catch more fish because the web is cleaner in the water: has no "fuzz" comparable to linen.

To the disadvantage of the nylon has been cited: knot slippage, net repair problems, and higher price of such gear.

In trawl cod-end tests it was found that if the nylon came in contact with rusted metal the fibres quickly disintegrated, due to chemical action.

Fishermen have been reported as claiming that nylon nets are from 2 to 12 times more efficient than linen or cotton nets; require less space to store, but tangle much more.

Norwegian trawling experimental reports indicate catches with nylon trawls about four to five times as large as with ordinary cotton trawls of exactly the same type. In B.C. waters and under local conditions our trawling skippers cannot see how such would be so here. Density of fish schools and nature of bottom, etc., are controlling factors, also, how the trawl is made up, and hung, would be key factors, regardless of material in the trawl. They are, however, open to try out any such new gear.

Fishermen concede, that if nylon continues to retain its strength and stands up under actual use as it has done thus far, the need for replacing nets every few months or each year will soon become

a thing of the past. That is at least their fondest hope.

However, we hasten to add this note: In gill-netting, as with trawling, it is a common hazard to have the web entangled in sunken debris, and the usual hazards of "dead-heads" and "snags". Once the web becomes so entangled it must often be literally cut away or even abandoned, and in such cases the long-lasting merit of the particular material is of no avail. Sharks, dog-fish, sea-lions, etc., can also create the same set of circumstances. In trawling, the gear will often be speculatively set down, even on known bad ocean bottom, with the crew gambling trawl gear against a good successful catch. In this case the cheapest gear is known as being "expendable," whereas with more valuable gear in the cod-end could such a gamble be taken?

With regard to how a gear may fish in the water when made of various materials, we have this on authority from veteran net-men: That any difference in the way that nylon web may lay in the water with reference to the mesh, may be corrected with the hanging of the gear on the lines.

Swedish tests show the advantage of nylon to be: resistance to rot, catching ability when used in snaring gear, and higher tensile strength. Disadvantages are: difficulty in making good knots, loss of strength, 15 to 30%, after 10 to 24 hours soaking in water. Nylon loses 43% strength when knotted, compared with 10 to 35% for cotton.

French nylon thread was made into nets by a Swedish firm. The knots had a tendency to loosen which was eliminated by stretching the nets by a tackle and immediately fixing the knots by soaking the net in boiling water for some minutes. This treatment was successful and no meshes ran during the experimental fishing. The French thread seemed to be too stiff, and another softer type was afterwards delivered.

In two lakes the nylon nets caught twice as much as the cotton nets and in one lake three times as much. The elasticity was 25 to 45% compared with 10 to 23% for cotton. This strength decreased in water 5 to 30%, when the cotton increased 11 to 35%. The knots decreased the strength for nylon by 30 to 48%, and for cotton by 10 to 35%.

Nylon is made in England by the I.C.I. The thread is soft and flexible and the knots are fixed without any treatment. The manufacturers seem to have special methods for treating the raw material to make it directly useful for fishing. Fishermen over here also report good net catching efficiency: three times better results than for cotton.

Nylon is made by Dupont, C.I.L. and I.C.I. - they all work together.

The German synthetic fibre "Piolon" used in fish nets, is in the class as nylon, that is, both are polyamides. Piolon is reported as not being as good as nylon.

There are many pros and cons yet to be heard on this matter of nylon fishing gear. We represent all that we have so far on the subject and this as the result of the many requests received right down the British Columbia coast. In return, we trust that fishermen will co-operate by in turn reporting their experiences with nylon fishing gear.

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

Underwater Photography

It is intended to extend the uses of Underwater Photography in the study of fisheries problems. In the preliminary stages of this development it is planned to use an electronic flash lasting only for 1/5000 part of a second, which should enable photographs to be taken of fast moving creatures before they have time to react to the light. Some of the problems to be studied in this way are: (1) the shape and behaviour of fishing gear and scientific instruments when operated under different conditions: (2) the causes which give rise to echometer traces whose sources have not yet been identified with certainty: (3) the behaviour of different fishes and bottom living animals.

(Scottish Fisheries Bulletin, January, 1952.)