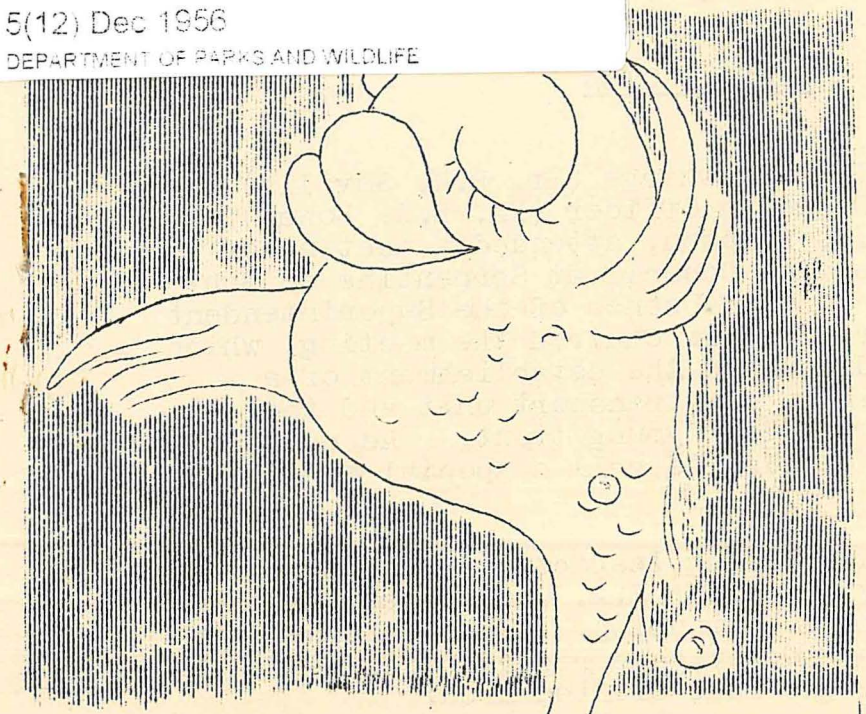
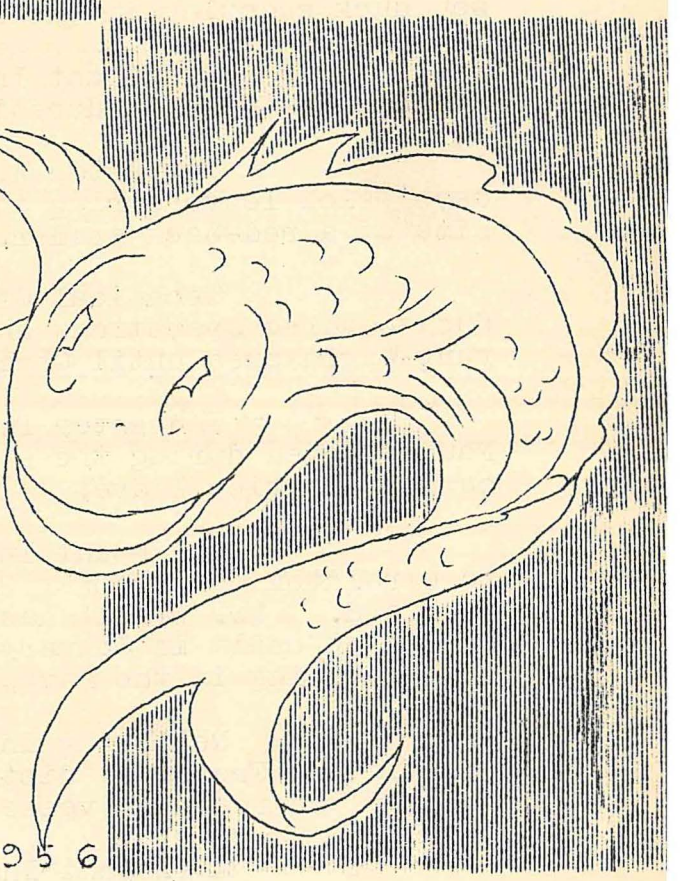


FISHERIES DEPARTMENT
WESTERN AUSTRALIA

MONTHLY Service Bulletin



TO OUR STAFF
FOR XMAS AND
THE NEW YEAR
"The Most"

VOL V NO 12 DEC 1 1956

STAFF NOTES

The Clerk-in-Charge (Mr. B.R. Saville), accompanied by the Research Officer (Mr. B.K. Bowen) and Technical Officer J.S. Simpson, attended a meeting of the Trout Acclimatisation Council at Serpentine on Sunday, November 25. In the absence of the Superintendent (Mr. A.J. Fraser) Mr. Saville chaired the meeting, which among other things discussed the establishment of a holding pond in Perth, a new transport unit and the increasing cost of producing young trout. As no finality was reached, it was decided to call a special meeting later.

The Supervising Inspector (Mr. J.E. Bramley), accompanied by Inspector B.A. Carmichael, visited fishing centres south to Quindalup. They returned via the old coast road to investigate reports of out-of-season duck shooting in the Lake Clifton area.

Assistant Inspector R.J. Baird is stationed at Lancelin for the duration of the crayfish season.

Inspector A.J. Bateman was absent on 10 days' sick leave during the month recovering from the bite of a red-back spider.

Technical Officer J. Traynor has commenced duck-banding operations and expects to be in the Dumbleyung-Wagin area until Christmas.

Inspector B.A. Carmichael is acting as Fauna Warden during the absence of Inspector G.C. Jeffery on long service leave.

Assistant Inspector D. Wright was transferred to Geraldton on November 26 as Assistant to Inspector R.M. Crawford. Mr. Wright has been advised that he will be called up early in January for six months' National Service Training in the Navy.

Relieving Inspector A.K. Melsom is assisting in the Fremantle district and also in the preparation of the research vessel "Lancelin".

Assistant Inspector M.J. Simpson has been assisting Technical Officer J.S. Simpson on trout distribution duties.

Cadet Inspector R.J. Murray has tendered his resignation, his last day of service to be December 7.

PERSONAL PARS

Mr. Peter Scott, C.B.E., D.S.C., Director of the Wild Fowl Trust, Slimbridge, Gloucestershire, a well-known naturalist and painter, visited the State for a few days in November on his way to the Olympic Games in Melbourne to judge yachting events. Mrs. Scott accompanied her husband. After two days visiting lakes in the metropolitan area, Mr. and Mrs. Scott were taken on a week-end trip to Dumbleyung, the Coblinine River and Gundaring Lake for sightings of our wild fowl. On Friday evening, November 16, Mr. Scott gave a public lecture illustrated with kodachromes in the Art Gallery on the work of the Wild Fowl Trust in England. Over 400 people attended and many more were not able to obtain admittance. Mr. and Mrs. Scott left by air for Melbourne on Sunday, November 18.

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Technical Officer K. Godfrey, of the Division of Fisheries and Oceanography, C.S.I.R.O., left Perth for Cronulla on November 28. After consultations at his Divisional headquarters, he will leave for holidays in the United States and the United Kingdom. He expects to return to Perth in the first week in February, 1957.

* * * * * * * * * *

Dr. K. Sheard and Mr. Athol Middleton of the Division of Fisheries and Oceanography, visited Cronulla on official business during the month.

MOVEMENTS OF DEPARTMENTAL VESSELS

The research vessel "Lancelin" is now off the slip and undergoing gear and engine tests preparatory to exploratory trawling and trolling in the waters of Cockburn Sound. She is under the command of Captain

H.C.W. Piesse, with Inspector C.R.C. Haynes as Mate and Cadet Inspector R.J. McKay as crew member.

Supervising Inspector J.E. Bramley, assisted by Inspector N.E. McLaughlan, will take the patrol vessel "Garbo" from Geraldton to Shark Bay about the middle of this month. She will replace the p.v. "Misty Isle", which will be shipped from Carnarvon to Fremantle. She will be stationed in the metropolitan area.

The p.v. "Kooruldhoo" is at sea in the Jurien Bay area. Inspector G.H. Lyon and Assistant Inspector S. LaRoche are her crew.

TROUT DISTRIBUTION

During November, 100,000 fingerlings were delivered to centres at Broomehill, Nyabing, Moora, Narrogin, Cunderdin and Harrismith by Technical Officer J. Simpson, assisted firstly by Technical Officer J. Traynor and later by Assistant Inspector M.J. Simpson. Deliveries of 60,000 fingerlings to Wagin, Highbury and Beverley early in December will complete the transportation of trout for 1956.

With the exception of the delivery to Cunderdin, distribution this year was carried out most successfully. From Cunderdin, however, reports have been received that many fish were lost by farmers who took delivery at this centre. Technical Officer Simpson reports that the only water available there was at an extremely high temperature, and he believes this may have been the cause of the mortality after delivery.

During April and May, 1957, 30,000 advanced fingerlings will be transported to Trout Acclimatisation Societies in Bridgetown, Harvey, Dwellingup and Serpentine. In June the Pemberton Trout Acclimatisation Society will take 15,000 yearlings and 1,000 yearlings will be released at Collie by the Collie Trout Acclimatisation Society.

ESTUARINE RESEARCH PROGRAMME ENDS

After two years' intensive research work, the estuarine research programme, the field work of which was carried out by Technical Officer L.G. Smith, has been completed. The programme called for the taking of large numbers of scale, stomach and gonad samples and length frequencies which were forwarded to Cronulla for analysis. Samples were taken from the Swan River Estuary; Peel Inlet (Mandurah); Leschenault Inlet (Bunbury); Oyster and Princess Royal Harbours (Albany), and Wilson Inlet (Denmark).

Mr. Smith reports that fishermen at the various centres gave every assistance by making fish available for sampling, and that the co-operation received from the Albany Fishermen's Co-operative, Hunt's Cannery, and district inspectors was most helpful. To all concerned we extend our thanks.

Reports based on the evidence collected will be published from time to time.

NEW FISHING-BOAT BERTH FOR GERALDTON

Following a recommendation by the Fishermen's Advisory Committee, supported by the Department and the Geraldton Fishermen's Association, the Minister for Works has approved the construction of a new fishing-boat berth to relieve congestion in the Geraldton Harbour. It is anticipated that it will cost £4,500, which has been set aside for that purpose.

Owing to other commitments, it will not be possible for the Committee's recommendation for the construction of a second slipway to be given effect to this financial year.

SALMON TAGGING

In 1951 Mr. W.B. Malcolm, Research Officer, Division of Fisheries and Oceanography (then Division of Fisheries), C.S.I.R.O., addressed our inspectors outlining

the salmon migration studies which were then being pursued. His full remarks may be found in the Report of the 9th Annual Conference of Inspectors, 1951. The salient features are mentioned again to enable inspectors to appreciate the significance of the South Australian - Western Australian tagging results.

Salmon from South Australia are morphologically, i.e., structurally, indistinguishable from the Western Australian fish. It is therefore considered reasonable to assume that the South Australian and Western Australian salmon are of the same basic stock. It should consequently be possible to demonstrate that there is some mixing between the States.

In South Australia large salmon are virtually unknown, the fishery operating on fish of 2 to 3 lb. at the outside. At the same time, small salmon from 5 to 8 inches in length abound in South Australian waters. In Western Australia, however, the fishery operates on 7 to 8 lb. fish, smaller ones being few and far between. It is true that "salmon trout" do occur in local waters, but one could hardly imagine that the number of "trout" present could account for the large schools of big salmon occurring, and caught, on the south and south-west coast.

With these and other known facts, Mr. Malcolm was able to put forward the following hypothesis. Salmon have a spawning migration along the south coast in a westerly direction, spawning occurring generally in the area between Parry's Inlet and Hamelin Bay. At the time of spawning, late summer or early autumn, the surface current drift changes from west and north to south and east. The eggs and larvae are incapable of resisting this current and consequently drift with it. These eggs and minute larvae drift with the current across the Bight into South Australia. There they grow and gradually move back to this State, arriving in time to undertake their first spawning run. To test this migration hypothesis, it was necessary to carry out a tagging program on the salmon. If fish tagged in South Australia were caught in the West, this would show that the hypothesis was correct.

During the period 1952/54 many hundreds of salmon were tagged in South Australia. If Mr. Malcolm's hypothesis was correct, these tagged fish should eventually

with the general body of salmon, have moved westward to Western Australian waters.

On January 18, 1955, a tagged salmon was caught in Bremer Bay. A check of the records showed that the release site was Ceduna, South Australia, and the date of release January 29, 1952. During February, 1955, a second tag was recovered from a fish caught at Torbay. This fish had been tagged on November 29, 1952, at Kangaroo Island, South Australia. Three more tagged fish were caught in March, and then followed a steady procession of tag recoveries from South Australian fish. From the inception of tagging to November 30, fifty-five salmon caught in Western Australia were tagged in South Australia. One batch of 104 fish was tagged and released at Kangaroo Island on November 29, 1952. Of these, eight have been recaptured in Western Australia. This 7.6% recovery is a truly remarkable result, as it is generally considered that a recovery rate of from 1 to 2 per cent is all that can be expected.

From these results it does seem that the hypothesis put forward by Mr. Malcolm is completely sound.

ANTARCTIC WHALING

Twenty whaling expeditions are scheduled to visit Antarctica this summer. This is one more than last summer. Nine of the ventures are Norwegian, while others are from Great Britain, South Africa, Holland, Japan and the U.S.S.R. Three shore stations will also be in operation.

The 20 factory ships and 3 shore establishments will have a reduced number of chasers - 243 as against 278. This follows an agreement between the whaling companies originally suggested by Norway. It is being done in a concerted effort to bring down costs.

The new enterprise is Japanese. Altogether five fleets will fly Japan's flag this season.

OPEN SEASON FOR WILD DUCKS

The Minister (Mr. Kelly) has announced that the open season for wild ducks will this year commence as follows -

(a) at 6 p.m. on the evening of Friday, December 21, in the Augusta-Margaret River, Balingup, Bridgetown, Bunbury, Busselton, Capel, Collie Coalfields, Dardanup, Greenbushes, Harvey, Manjimup, Nannup, and Preston Road Districts;

(b) at 5 a.m. on the morning of Saturday, December 22, in all the rest of the State.

The open season would not apply, he said, in any of the following areas, which have been set aside as sanctuaries -

(a) The whole of the area within a radius of twenty miles of the General Post Office, Perth.

(b) All municipalities and townsites in the South-West Land Division.

(c) The whole of the Rockingham Road District.

(d) The whole of the waters of Lakes Leschenaultia, Yealering and Seppings, and Bambun, Wagin, Nambung, Mungala, Nannerup and Wardering Lakes, and all land within twenty chains of their shores.

(e) The whole of the waters of the Vasse, King and Kalgan Rivers and all land within twenty chains of their shores.

(f) The whole of the waters of Vasse and Wonnerup Estuaries and all land within twenty chains of their shores.

(g) All the waters of the Leschenault Inlet extending southwards from a line drawn from Waterloo Head (Belvedere) on the West foreshore to a point South-East on the opposite foreshore.

(h) All that portion of the Capel River between the Capel and Stirling Bridges and all land within twenty chains of the river bank.

(i) The whole of the waters of Oyster Harbour and Princess Royal Harbour and all land within a radius of twenty chains of their shores.

(j) The whole of the area of the Yanchep Caves Reserve.

(k) The whole of the Harvey Catchment area.

(l) The whole of the area within a radius of two miles of the Post Office at Mandurah.

(m) The whole of the areas within a radius of two miles of the Post Office at Boyup Brook.

(n) The whole of the area within a radius of 1½ miles from the Post Office at Balingup.

(o) All that portion of the Avon River in the Toodyay District, between the northern boundary of Avon Location 3 and a point opposite road number 2069, and all the land within twenty chains of the river banks.

(p) All that portion of the Avon River from Dumbarton Bridge to the Railway Bridge, north of Toodyay, and all land within twenty chains of the river banks.

(q) All that portion of the Serpentine River from Road 8629 at the southern end of Goegrup (Willies) Lake to Peel Inlet near the Old Mill, and all land within twenty chains of the river banks.

(r) All State Forests, Timber Reserves, town reservoirs and other areas where shooting is prohibited under the provisions of any other Act, Regulation or By-Law.

The Minister specially mentioned the chain of freshwater lakes in the vicinity of Wanneroo. These, he said, were absolute sanctuaries if they lay within a 20-mile radius of the Perth G.P.O. Shooters in this locality should make quite sure that they do not make a mistake.

"We have followed the pattern set in previous years of opening the season a day earlier when Christmas Day falls on a Monday or a Tuesday, to give the shooters a clear week-end in which to get their ducks for Christmas Day", Mr. Kelly continued. "Next year, when Christmas Day will fall on a Wednesday, the opening will revert to the Saturday and Sunday unless a late breeding season occurs", he added.

"I must impress on shooters the importance of co-operating in the Department's research programme", Mr. Kelly said. "The programme is aimed at protecting the future of the sport and is of vital interest to all duckshooters. Scorecards will be distributed in February next and sportsmen are requested to keep a tally of the ducks they shoot, the localities where they are obtained and how their bags compare with other years. Particular care should be taken to ensure that all bands recovered are returned to the Fisheries Department with details of the date and place of recovery."

Mr. Kelly also said that he agreed with the recommendation of the Fauna Protection Advisory Committee to open all the duck shooting preserves this year for the duration of the season. These preserves are Mullet Lake at Esperance, Rowle's Lagoon (north-west of Kalgoorlie), Whitewater and Nonalling Lakes (north of Yealering), Toolibin and Gundaring Lakes in the Narrogin and Wagin districts, and Lake Mears in the Brookton district.

"Finally," Mr. Kelly concluded, "shooters must play the game and abide by the restrictions if duck shooting is to continue as a sport in this State. Immature ducks and parent birds with young should not be molested if the traditional pre-Christmas shoot is to be permitted in future years. It should be clearly understood that the bag limit is 15 ducks a day and the use of spotlights, traps and beaters is completely prohibited, nor does the open season give shooters any right of entry on private property or to shoot on or over roads or privately owned land."

GETTING RESEARCH ACROSS

Fishermen in this State generally have little faith in the fisheries scientist. Having themselves learned their craft as practical men, and in the process achieved a great deal of empirical knowledge of the fisheries and of the movements of fish, they fail to appreciate that a man without any practical fishing experience - and indeed without in many cases having even been aboard a fishing vessel - can possibly tell them anything they do not already know. They do not want theories, they say, but fish.

Discussing this question in its October, 1956, issue, "World Fishing" (London) has quite a lot to say on whether the fishermen are solely to blame for this State of affairs, or whether some of the fault does not lie at the door of the scientist himself. We prefer not to comment, but we publish a lengthy extract from "World Fishing" and leave it to the staff to arrive at their own conclusions on the matter.

This is what "World Fishing" thinks -

"Let there be no mistake about it: the fishery scientist of today is achieving tremendous things. The work of the (Fisheries) Laboratory as a whole stands first and foremost to benefit the practical fisherman. It is therefore all the more unfortunate to record that too many fishermen would appear to take no interest at all in what is being done on their behalf. Typical comments: "The Ernest Holt (a British research vessel) hardly ever tells us where we can catch fish." Or again: "I've been a distant water skipper for 20 years and no scientist can tell me anything about fishing." It is perhaps not fair to generalise, but our experience has in the past shown that a large number of skippers and owners think, if not speak, along those lines.

Where does the fault lie? Largely, of course, with the prejudice and conservatism of fishermen who have had to learn their trade the hard way, and who have no use for ideas, only results. Possibly the scientists are to blame in this respect: they do

not find it easy to talk in terms which can be readily understood by anyone not used to scientific jargon, and when they do, they tend to "talk down" with the unwitting result that they appear to be insulting the reader's intelligence.

The Fisheries Research Bulletin, although a first-class idea, has contained several classic examples of this.

The staff of the Research Laboratory lead a hard life - many of them are at sea in all weathers, doing really valuable work, and we would like to remove the impression which some fishermen seem to have that they are not first and foremost practical men. The Director himself has made this point many times: fisheries research must be practical or it is useless. The whole thing is that possibly because they are scientists, they find it difficult to get this across to the industry.

************* The gulf in understanding between scientist and fisherman must be narrowed if each is to get the best out of the other.

Co-operation is the keynote, and fishermen have to be convinced that it is in their interests to do their part in providing vital information. We do not envisage slick, glossy publicity men, providing pin-ups of plankton, on this job, but an organisation capable of effecting more straightforward liaison and creating goodwill would be invaluable. "

NORTH SEA HERRING

By comparison with Australia's total fish production (51,339 tons for the year ended June 30, 1955) the figures of herring catches alone in the North Sea and adjacent waters are astronomical. Accustomed as we are to indicate our take in pounds, we find the utmost difficulty in visualising the vast quantities of herring landed annually by the fishermen of North-West Europe.

Let us take a quick look at the landings of individual countries in 1954 -

Country	Tons
Belgium	16,543
Denmark *	19,584
Eire	3,346
England and Wales	62,000
France	58,065
Holland	146,639
Iceland	46,944
Northern Ireland	2,952
Norway	1,438,382
Scotland	130,400
Sweden	110,323
West Germany	339,435
Total	2,374,613

* Excludes fish taker for reduction purposes.

Despite these huge annual landings, British scientists do not appear to be at all happy about the situation. Some hold strongly to the view that the trawling for immature herring for treatment at reduction plants indulged in by some of the countries on the Continent is having a detrimental effect on the traditional British drift netting for mature herring for human consumption.

Some of the scientists are convinced that the steady deterioration in recent years of the results from drifting cannot altogether be dissociated from the effects of trawling. Others however have reached other conclusions, based largely on natural changes in conditions which have occurred over the period.

Be what it may, it is indisputable, says "Fishing News" (London),* that Continental trawling has expanded and catches made in the North Sea have increased very markedly.

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* Issue of October 12, 1956.

Facts which stand out following a survey of catches over the five-year period ending December 31, 1954, are that Belgium's landings have risen by 60%; West Germany's jumped by over 50%, and as she possesses by far the largest herring trawler fleet, her total inroads have been quite impressive; Holland's catch has gone up over 40%.

An analysis of where the herring were caught shows that approximately 50% of the 1954 catch occurred in the North Sea. The Norwegian Sea, Kattegat and Skagerrak, the Baltic Sea, N.W. Scotland, the English Channel and Icelandic waters produced the balance in the order stated. What really worries people in Britain is that in this same North Sea trawlers from the Continent have been moving farther and farther south right down even into the English Channel, impinging on what have almost universally been regarded as the traditional fishing grounds of the East Anglian drifter fleet. And the catches hitherto made by that fleet of full, hard herring, just suited for human consumption may, if the trawlers continue their inroads into the young fish, continue to dwindle until the prosperity of the British fishermen is past. Little wonder that scientists and fishermen alike are becoming disturbed.

N.S.W. FISHERMAN LOOKS US OVER

Mr. Donald Mitchelson, of Merimbula, N.S.W., one of the most successful salmon fishermen on the south coast of that State, and the first to "pen" fish to improve their canning qualities, paid a brief visit to Western Australia during November. Mr. Mitchelson, who was accompanied by his wife, daughter and son-in-law, had intended to visit some of the State's salmon beaches and to discuss fishing techniques with local fishermen, but was unfortunately compelled because of his wife's indisposition to return to Perth after he had got as far as Busselton. In company with the Supervising Inspector (Mr. J.E. Bramley) and the Senior Inspector (Mr. J.E. Munro) he visited Lancelin and discussed crayfishing with several men waiting for the first run of "whites". The party returned to the eastern States on November 21.

THE CLEARING HOUSE

Diving Aids May Help Red Sea Fishermen

Modern diving aids, such as goggles, swim fins, exposure suits and under water breathing devices, may help increase the exploitation of Trochus and Mother-of-Pearl shells in the Red Sea, if the recommendations made in a report to the Government of Sudan by the Food and Agriculture Organisation (FAO), Rome, are adopted.

Such aids, states the report, could, if the fishermen were thoroughly trained in their use, "increase their efficiency and bring under exploitation untouched shell-beds beyond the depth of 30 ft., which is the practical limit of present diving activities."

This is only one of a lengthy list of recommendations contained in the report. Others are concerned with the improvement in boats, gear and methods, handling of fish, government activity, training of personnel, etc. Specifically, they cover the use of deep water lines, net fishing in shallow water, multiple trolling with artificial lures, fishing with lights at night, using floating long-lines, set long-lines, nylon drift nets and trammel nets, and a plan of work for a FAO expert to take up in the Sudan.

The report, which was prepared by Mr. Hilmar Kristjonsson, Chief, Fishing Gear Section, Technology Branch, Fisheries Division, FAO, on the basis of a brief reconaissance survey which he made in July, 1955, also includes drawings and specifications for an improved mechanised felukka.

("The Fishing News" London September 7, 1956.)

Grandpa Says .....

How we love to be flattered, and hate to heavily discount that flowery thing we hear about ourselves that isn't true.

("Western Fisheries" Vancouver, B.C. August, 1956.)

New Food May Double Pond Fish Production

A new fish-feeding technique might soon play an important role in providing increased amounts of fish for the protein-shy diets of Asian countries, where population growth is outpacing gains in food production, according to an announcement in New York.

The American Cyanamid Company reported that a series of tests in the Philippines produced healthier and bigger fish.

In the Philippines and most of South-East Asia, pond fish are the only common source of animal protein in the diets. The new fish-feeding technique would permit a doubling of pond fish production even under present conditions, the company estimated.

It is based on use of "Aurofac", a feed-additive combining vitamins and the antibiotic Aureomycin. It is widely used in the United States and Europe as a livestock feed supplement.

("The Fishing News" London September 21, 1956)

Tell Your Customers

Britain's leading medical journal, "The Lancet", states that by eating fish once or twice a week instead of meat, for breakfast, dinner or tea, it is possible to live longer.

In short it says, "feel better - live longer - EAT MORE FISH".

The British Trawlers' Federation featured the Lancet's advice in a series of advertisements recently.

The advertisements "rocked" Britain.

Headed, "How's your Cholesterol Content?" the advertisements struck home to the thousands of people who live in constant fear of "one of the chief killers of this modern age" - coronary thrombosis.

Cholesterol is the name given to the dangerous content of the blood accumulated from eating too much animal fat, contained in such popular foods as bacon, pork, lamb chops and steak.

Specialists, who have been carrying out human feeding trials at Cape Town have the answer to the danger of thrombosis.

It is simply that the oils and fats of fish do not put as much cholesterol into the blood.

Here is something fishermerchants should point out to their customers.

It's a good reason to eat more fish.

("Fish Trades Review" Sydney September, 1956)

U.S. Sport Fishing Big Business

Twenty-five million American anglers and hunters spent nearly three billion dollars for 500 million days of sport and spent an average of $114.42 apiece, a total of $3 billion in so doing in 1955.

A recent survey showed that :

One American household of every three had at least one member who hunted or fished or who did both.

One out of every five Americans 12 years old or older either hunted or fished.

There were 13,133,000 who fished only; 4,104,000 who hunted only, and 7,680,000 who did both.

("Western Fisheries" Vancouver, B.C. October, 1956)

Daffy-nition :

Halibut - Fish with length and depth but no beam.

("Western Fisheries" Vancouver, B.C. August, 1956)

Japanese Interests Seek Subsidy for Foreign Fishing

Fishing companies and fishermen's associations in Japan have jointly established an Overseas Fishery Association, for the purpose of promoting utilisation of Japanese fishing techniques for exploitation of foreign marine resources.

A spokesman of the association said the main objectives of the organisation would be to help larger Japanese fishing companies conclude tie-up contracts with foreign countries and also to encourage smaller fishing enterprises to operate in foreign water through technical cooperation.

He said the association hoped to get a subsidy of 34 million yen in the national budget for the 1957 financial year.

("The Fishing News" London October 5, 1956.)

Mystery Fish

A mystery fish, so rare that it could not be identified, was landed on Grimsby fish market recently from the catch of the Grimsby trawler Norwich City. It was caught at the Kidney Bank off the east coast of Iceland. The fish is about 2 ft. long and has no tail fins, the body tapering away to a point, says the Grimsby Evening Telegraph. There are two long continuous fins, one on top of its body, and the other beneath. It is deep black, speckled with white, and at intervals on the upper fin and body, there are markings in the form of twisted lines. The fish, believed to be a species of viviparous blenny, has been sent to the British Museum.

("The Fishing News London October 5, 1956.)

It Did Happen

Cried a Texan skipper to members of his fishing crew who were shouting harder than they were pulling on the gear. "It's no use yelling at a bunch of steers! You gotta head 'em off!"

("Western Fisheries" Vancouver B.C. August, 1956.)

1956-7 Sardine Prediction Sees Little Change from Last Season

"Sardine availability in 1956-7 closely comparable with that of previous times in Southern California."

"No prediction of any catch for the Central California area."

These were the modest forecasts ventured at the 1956 meeting of the Marine Research Committee in La Jolla, California, just before presstime. The forecast seemed to refer specifically to the potential in Southern California waters and did not predict what might happen in the Northern California area, where there have been no sardines for some years.

Studies by the California cooperative oceanic fisheries investigations on the sardine fishery indicate that spawning in the spring of this year has been comparable to that of last. The 1955-1956 season produced about 74,000 tons. Reports at the La Jolla meeting were that the coming season may produce as much. Last season boats were placed on limits by canneries. Many fishermen believe that if no limits had been placed, the tonnage production for the past season would have been much greater than it was.

John Radovich of the California Fish and Game Department stated that the department's plane spotting indicates the same pattern this past spring for offshore spawning as in the spring of 1955. He stated, however, that it was possible that the population of sardines for commercial fishing might be less than last year. The 1956 sardine is of the 1952 class, he stated, and is larger than those taken in 1955.

Scripp's staff member, E.H. Eahlstrom, reporting on studies of anchovies and Jack and Pacific mackerel spawning, indicated that recent vessel research on pelagic fishes showed large spawning areas in the Gulf of California. His report noted that anchovy spawning is close to shore, while sardine and mackerel spawn are found offshore.

Two large spawning areas for sardines were south of Point Concepcion (1) Central Baja California and (23) Southern California and Northern Baja California.

At the La Jolla meeting, emphasis was placed on the importance of a resumption of a tagging programme on sardines, which has been suspended since about 1942 in Southern California waters.

Gilbert Van Camp, a member of the research committee, asked this question: "Is there any competition for survival between the anchovy and sardine?" The answer from the marine scientists was that in the early stages of the development of the two species, the young sardine and anchovy compete for the same food.

Skipper Radovich of the Yellowfin indicated that the work of the California Fish and Game staff shows the sardine schools, during spawning period, in the spring, concentrate a distance offshore, then move inshore and, at the beginning of the commercial season, begin to disperse and move south.

At the meeting great interest was shown in the experiments by California's Fish and Game, Terminal Island division, on the use of "electric fishing" for schooling sardines. This type of experimentation has been carried on in the open sea with the Yellowfin, using battery--power and a switching device to pulsate the current, producing a 15' effective range with 110-volts.

Because the retirement of the research boat Yellowfin, operated for some years by the California Fish and Game, has become a necessity, Dr. Robert C. Miller, director of the California Academy of Sciences, presented a resolution which called for an "interim" replacement for the Yellowfin and for a long-range, permanent replacement for this vessel which has served the California fishery research for a number of years.

Ray Cannon, who represents the sports fishermen on the committee, emphasised the need for a study of natural mortality statistics of ocean fish as opposed to mortality from fishing, commercial and sport; he also brought before the group the need for compilation of figures, to be incorporated in the committee's annual progress report, of statistics on predation on such fish as sardine, mackerel, and anchovies.

"Is it possible to have a regular report, during commercial fishing seasons, on water temperature, shift in currents, etc., similar to those issued by Japanese publications, on a day-to-day basis, or at least on a timely seasonal basis, for use by commercial fishermen and canners?"

This was a question asked by Mr. Van Camp. Several comments by committee members and scientists indicated that the currents in the area of jurisdiction by the Committee and research groups were not as pronounced as those in the areas fished by Japanese vessels, and hence not as subject to regular reports as Japan's published reports to its fishermen.

("Pacific Fisherman" Portland, Ore. August, 1956.)

Ethics of a Scientist

Ethics must be based upon certain beliefs. I state mine while admitting frankly that I have not ruled my life in complete conformity to them.

I believe that I earn my place in this world by the service I can give, not by what I can take from others. I am a part of humanity. Its health and prosperity are my health and prosperity. I help to build today what my children and my students will use and depend upon tomorrow. I am a part of a living, evolving, functional organism, and as that part I must plan my life.

I believe that my fellow man must serve as I do, and be served as I am. I owe him his due, his place in the sun, for he cannot help me unless I help him.

Because of these beliefs, and because I have chosen to serve as a scientist, I must play my part in making my science effective. I must further its development; must contribute to its store of knowledge; must take part in its activities.

My intellectual lineage is that of free men. My inheritance is from Darwin, Agassiz, and Jordan and from all those great men who have done things and in

turn have left them for me to build on. My debt is to them, and I must keep alive the flame they have kindled. I owe them homage. I must serve no mean politician but rather the great ones in my science. I am a servant of the temple, not of the priest; of the principle, not of the man.

Because of these beliefs and because I am one of a scientific group with a purpose in the world, the success of my fellows in their service is vital to me. I must help them to learn, to do, and to play their part. I must help them by recognising their accomplishments and by giving them their chances. I must not only make my own contributions with my own research, but I must be a teacher for those who can use my help, always maintaining high standards.

Because of these beliefs and because of these duties, I must keep my self respect and that of my fellows. I must act each day in the consciousness of my responsibilities and my privileges as a scientist. I must not consciously permit myself to be used for unworthy purposes. I must not use my place, or have others use it, to defraud, or to render futile the processes of the society upon which we all depend.

Since my value, my worth to my fellows as a scientist, depends upon the contributions to knowledge that I make and upon their acceptance for use, these contributions must be real. They must not be pretense. What I offer must come from me. Since my contributions will be accepted and used only if I am respected and since my opportunities for service depend upon this, I must maintain my standing and my integrity. No false claims, no erroneous conclusions, no false theory, no stolen ideas must come from me.

That my fellow men can recognise me for what I am, so that they can see the metal in the instrument they use, I must not put forth false claims of merit. I must let others praise me if I am worthy. I must be modest in bearing, yet not avoid responsibility nor lack faith in myself or my abilities.

By reason of all these things, what I contribute it must be complete as a contribution and reach those who can use it. I must hold this completeness as a day-by-day objective. My aim must be the project for which I hold responsibility, not the money nor the position. I owe attainment of the objective as payment for the time and money invested in me. I must not labour day by day and leave my labour fruitless. In these things, I carry my own responsibilities; pay my own debts to the world. I am a scientist; not a serf.

W.F. Thompson

("Pacific Fisherman" Portland, Ore. August, 1956)

Electronic Fish Counter Helps Track Spawners

An electronic fish counter has been developed by U.S. Department of the Interior, Pacific Salmon Investigations fish-counting laboratory at Seattle.

The basic element of the equipment is an electronic detector which gives a signal when a fish is between its electrodes. By suitable choice of electrode elements, size and sometimes species of fish may be differentiated and accurate records of passing fish made. Direction and time of passage also are shown. The electrodes are normally installed in tunnels through which the fish must pass.

The device does not use photoelectric methods, hence rocks and water-logged vegetable matter are not falsely counted, and water turbidity offers no problem. The system will work at any depth and in murky water where visual observation is impossible.

The detector utilizes the difference of conductivity between fish and water. By connecting the detectors to a third unit, a logic device, the direction of complete passages may be separately recorded while incomplete passage is ignored.

The detector may also be used as an alarm device to aid in visual counting, alerting the personnel

at the counting board, thus giving them greater freedom between periods of light run. Operation is possible either from batteries or power lines. The high-frequency electric field between the electrodes is less than one-third of a volt in amplitude, well below the threshold of sensitivity of fish.

The basic detector circuit was developed and is to be used as a triggering device for a split-field camera which will photograph fish allowing identification of tag numbers, species, net marks, etc. The potential of the detector as a research and management tool appeared so great, however, that primary emphasis was placed on securing its early commercial availability at a reasonable price without maintenance worries.

The detector may be used with troughs, some crested weirs, posts in stream beds, etc., where tunnels are not desirable. Tunnels are available in transparent, opaque, and pigmented materials to suit a particular installation.

("Western Fisheries" Vancouver, B.C. October, 1956)

Officer's Colds Are More Serious than Seaman's

The medical handbook for the Swedish Royal Navy gives the following instructions for the treatment of colds :

Officers: aspirin, whisky, in severe cases confinement to bed.

Warrant officers: aspirin - in severe cases whisky.

Seamen: in severe cases - aspirin.

("Western Fisheries" Vancouver, B.C. September, 1956)