FISHERIES DEPARTMENT, WESTERN AUSTRALIA

MONTHLY SERVICE BULLETIN

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STAFF NOTES

The Superintendent (Mr. A.J. Fraser) visited the Bunbury and Busselton districts from February 20 to 22.

The Supervising Inspector (Mr. J.E. Bramley) will commence a fortnight's annual leave on March 11, during which he will attend a Navy refresher course in Sydney. With the approval of the Minister, Mr. Bramley will before returning to Perth spend some time in Sydney, Melbourne and Adelaide with a view to making contact with C.S.I.R.O. and other State fishery administrations.

Resulting from the retirement of Mr. W. Davidson, some temporary staff changes have taken place. Senior Inspector J.E. Munro is acting in charge of the Fremantle district pending the return to Perth of Relieving Inspector A.K. Melsom, who is at present acting as Pearling Inspector, Broome. It is anticipated that Assistant Inspector R.J. Baird will transfer to Broome to relieve Mr. Melsom towards the end of this month. Inspector B.A. Carmichael will act in charge of the Albany district. For a time Inspector H.J. Murray will combine the duties of Metropolitan Inspector and Fauna Warden.

Assistant Inspector T.B. Baines, of Fremantle, and Mr. A.J. Buchanan, of Head Office, will commence annual leave on March 5 and 11 respectively.

The Research Officer (Mr. B.K. Bowen) will fly to Shark Bay on March 28 to board the research vessel "Lancelin" in connection with the prawn investigation programme. He will spend about a fortnight in the Bay.

Technical Officer J. Traynor will leave Perth on March 5 to carry out duck banding in the Wagin and Woodanilling Districts.

Technical Officer J.S. Simpson is carrying out preliminary work in Perth on the construction of a permanent duck trap to be installed at Craig's Lake, Kewdale.

The Superintendent, (Mr. A.J. Fraser) Research Officer B.K. Bowen and Fauna Protection Officer H.B. Shugg, will attend a joint inspection by the Rottnest Biological Station and Fauna Protection Advisory Committees of the research work being carried out on quokka at Rottnest Island on Saturday and Sunday, March 23 and 24.

PERSONAL PARS

Dr. D.L. Serventy, Principal Research Officer of the Wildlife Survey Section, C.S.I.R.O., stationed in Perth, will leave on March 11 by air for Ceduna. After visiting offshore islands, he will fly to Tasmania and is not expected to return to Perth until April 15.

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Dr. R.G. Chittleborough, Research Officer, Division of Fisheries and Oceanography, C.S.I.R.O., with his family will leave Perth on the m.v. "Westralia" on March 8 on transfer to the Division's headquarters at Cronulla.

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Mr. Athol Middleton, formerly hydrologist in the Division of Fisheries and Oceanography, C.S.I.R.O., has tendered his resignation from that service as from March 8. He has been appointed a lecturer in physical chemistry at Perth Technical College.

Mr. K. Godfrey, Technical Officer of the Division of Fisheries and Oceanography, C.S.I.R.O., is expected to return to Perth early this month. Mr. Godfrey left Perth on November 26 last and after spending two days in Cronulla, flew to America and later to London on leave. On January 26 he left London by air for New York, and visited the Marine Biological Laboratory at Woods Hole, Massachusetts. He also inspected shrimp (prawn) fisheries in Louisiana and Texas and tuna boats and processing canneries at centres in California and Honolulu before returning by air to Sydney on February 27. On his return to Perth, Mr. Godfrey will take up duties as Whaling Officer, Western Australia, and will not be available to assist in the prawn investigations.

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The Officer-in-Charge, Wildlife Survey Section, C.S.I.R.O. (Mr. Francis Ratcliffe) will attend a Conference on Vermin Control to be held in Perth commencing March 25. The Conference has been convened by the C.S.I.R.O. and will be attended by representatives of all state vermin control authorities.

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Mr. Nishimiya, of the Japanese Embassy, Canberra, was in Western Australia in February. He called on the Superintendent and later visited Onslow and Broome to obtain information for his Government on the living and employment conditions of Japanese nationals engaged in the pearling industry. At Broome he called on Relieving Inspector A.K. Melsom.

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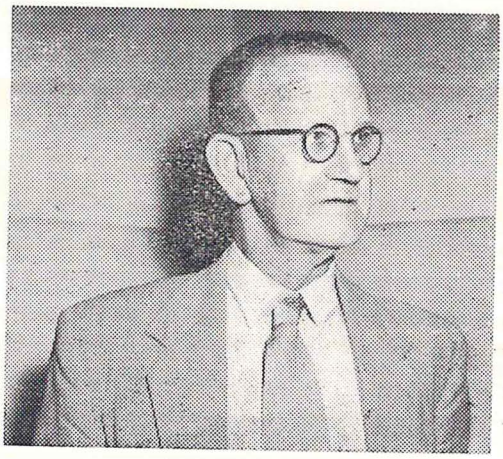
Mr. J.C. Bowes, formerly Chairman of the Australian Whaling Commission, and now Senior Project Officer of the secretariat of the Department of Primary Industry, Canberra, is at present visiting Western Australia. Mr. Bowes, who is at present engaged in investigating the commercial and economic possibilities of the fisheries in relation to disbursement of moneys standing to the credit of the Fishing Industry Trust Fund, has had several conferences with the Superintendent and Clerk-in-Charge.

RETIREMENT OF MR. W. DAVIDSON, INSPECTOR OF FISHERIES, FREMANTLE

On Wednesday, February 27, after almost 38 years of service with the Department, Mr. W. Davidson, Inspector, Fremantle, retired. "Uncle Bill", as he was affectionately known to fellow officers and fishermen alike, was born at Botany Bay, N.S.W., on August 7, 1892. As a three-year-old he came to Western Australia, where his family first settled at Albany and later shifted to the metropolitan area. After completing his education at West Leederville and Perth Boys' Schools, he entered the plumbing trade. In 1916 Mr. Davidson went overseas with the 15th Reinforcement of the 16th Battalion, serving first in Egypt, where he transferred to the 44th Battalion. Later he went to France and was wounded at Pozieres on August 13, 1916. After being invalided in "Blighty", he was sent back to the front only to be invalided back to England again and repatriated to Western Australia, where he was honourably discharged on November 9, 1917.



MR. WILLIAM DAVIDSON

For a short period he followed his trade with the Water Supply Department, and then joined the Fisheries Department on April 4, 1919. He served in almost all districts, the only exceptions being Shark Bay and Broome, but by far the greatest part of his time was spent at Fremantle. When he first came to this Department it comprised a Head Office staff of two (the previous Chief Inspector, Mr. F. Aldrich, and a typiste, Miss C. Jeger), while the field staff consisted of one inspector each at Shark Bay, Albany, Bunbury, Mandurah and Broome, with two at Perth and two at Fremantle.

Mr. Davidson was officially farewelled at a social evening held at the home of Mr. and Mrs. L.G.

Smith in South Como on the night of February 27. The Minister and Mrs. Kelly, and almost all members of the staff, accompanied by their wives and friends, were present. After the Superintendent and other officers had expressed their appreciation of Mr. Davidson as an officer and a man, he was presented by the Minister, on behalf of all those present, with an Astor mantel-model radio, as a token of the affection and esteem in which Mr. Davidson was and ever would be held by his colleagues. In his presentation speech Mr. Kelly referred to Mr. Davidson's long and honorable service as an Inspector. He said the Department and the fishing industry owed much to men like Mr. Davidson, who had really pioneered the way. He wished him many years of happy, healthy retirement.

Mr. Davidson suitably responded.

NEW CHASER FOR ALBANY

The Cheynes Beach Whaling Company's new chaser is expected to arrive at Albany early this month. She is being brought to Albany by officers and crew of the "Cheynes" who were flown to Brisbane last month for that purpose.

Purchased from Whale Products Ltd., which operates the Tangalooma Station off the Queensland coast, the additional vessel will allow the local company to obtain its quota of 120 humpbacks in a shorter period than in previous years. It is understood that it is intended to use both vessels hunting sperm whales, both before and after the humpback season.

FIRST SALMON HAUL

On February 10, Messrs Smith and Pinniger made their first haul for the salmon season when they landed 8½ tons at Parry's Beach, west of Albany. According to reports, fishing had been good at that spot for several weeks - herring particularly showing up well. Some very good catches were also reported from Green's Pool, where the fishing was said to be really good about an hour before sunset.

MOVEMENT OF DEPARTMENTAL VESSELS

The research vessel "Lancelin" will sail from Fremantle for Shark Bay on March 5. Captain H.C.W. Piesse will be in command, with Inspector C.R.C. Haynes as Mate and Assistant Inspector S. LaRoche as crew member.

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The p.v. "Kooruldhoo" will leave for the Geraldton District on March 9, skippered by Inspector G.H. Lyon, with Cadet Inspector R. McKay as crew member.

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The p.v. "Garbo" left Geraldton for Shark Bay on February 15 with Inspector N.E. McLaughlan in charge, assisted by Assistant Inspector M.J. Simpson. When about 60 miles out, the rudder trunk carried away, and what might have been a dangerous situation was averted by the skill and resource of her crew who improvised a jury rudder and brought her safely back to Geraldton eighteen hours later. A new trunk has been obtained and "Garbo" is expected to depart from Geraldton again for Shark Bay about the end of the month.

PEARLING

On page 58 are shown tables of pearlshell production in the Broome area for the last 5 years, together with other statistics associated with the industry. The tables show that the increase maintained in recent years was continued with even greater success last year. The average price of Broome pearlshell was approximately £700 per ton in 1956, an increase of £65 a ton on the previous year's price. This, and the increased overall production and the better take per man and boat, shows that the industry is now in a more healthy condition than it has been for many years.

In Vol. V, No. 4 (April, 1956) of this Bulletin, we published a report of the induction of a complete lugger crew of Greek sponge fishermen into the industry. We understand that these men never really

settled down and, after the death of their head diver in May last year, as the result of an accident while working from the lugger "Postboy", the whole crew walked off and went to Darwin. Consequently, they are not shown in the table of nationalities engaged, although the shell they produced is included in the production table.

In addition to the production at Broome, approximately 55 tons of pearlshell was taken at Onslow, valued at £27,500, and 5¼ tons of trochus, valued at £1,449, was taken at Sunday Island Mission.

INCREASED TRAVELLING, TRANSFER & RELIEVING EXPENSE RATES

An administrative instruction received from the Public Service Commissioner says that, as a result of the biannual review of hotel tariffs, it has been agreed with the Civil Service Association that the daily rates of reimbursement of the above expenses shall be increased on and from January 1, 1957. The new rates will be -

Travelling :

(a) First 14 days in one place - 38/6 a day;

(b) After 14 days in one place - 35/6;

(c) When in the company of a Minister, or an officer whose maximum salary margin exceeds £720 per annum over the basic rate - 41/- per day;

(d) Overnight stay at a city hotel - 51/6 per day.

Transfer Expenses : 14 days at new headquarters - 38/6 per day.

Relieving Expenses : First 21 days at new locality - 38/6 per day.

Officers affected may claim arrears of increase on their next claim form.

Meal, camping and other allowances remain unchanged.

NATIONALITIES ENGAGED

Asiatics :	1952	1953	1954	1955	1956
Chinese	20	46	72	57	83
Malays	61	66	78	76	117
Filipinos	2	2	1	1	2
Indonesians	44	37	28	32	26
Japanese	-	38	39	104	101
Sub Total ..	127	189	218	270	329
Other :					
Whites	5	14	11	19	23
Aborigines	43	58	72	59	88
TOTAL	175	261	301	348	440

AVERAGE TAKE

	1952	1953	1954	1955	1956
Average take per boat (tons)	15.37	17.44	19.46	19.25	21.08
Average take per man (tons)	1.67	1.67	1.81	1.77	1.92

PRODUCTION AND VALUE

Year	Pearl Shell			Men		Boats
	Production		Value	No.	Increase or Decrease %	No.
	tons	Incr. or decrease %				
			£			
1952	292	-5.2%	170,382	175	-12.9%	19
1953	436	+49.3%	276,310	261	+49.2%	25
1954	545	+25.0%	346,065	301	+15.3%	28
1955	616	+13%	392,717	348	+15.6%	32
1956	843	+36.9%	590,100	440	+26.4%	40

ANNUAL DEPARTMENTAL CONFERENCE

The 1957 conference, which was held in Perth in the rooms of the Civil Service Association of W.A., was officially opened by the Minister for Fisheries (Mr. Kelly) on February 25. It will conclude on March 1.

All members of the field staff, with the exception of the crew of the research vessel "Lancelin", who were preparing for sea, the Relieving Inspector (Mr. A.K. Melsom), who was absent at Broome, and Assistant Inspector David Wright, on National Service, were in attendance at the conference. The Superintendent (Mr. Fraser) presided.

In welcoming the Minister Mr. Fraser said the Department had every reason to be proud of its ministerial head. As a life-long devotee of angling, he had through the years developed a keen interest in commercial as well as sport fishing, and despite the fact that he also carried the important portfolios of Mines and Industrial Development, he had always been able to find time to give the fullest attention and most careful consideration to the problems of the fishing industry. He had recently spent three months or so in the United States and Canada, and while there he had gone out of his way to meet executives of the fishing industry, and to visit some of the more important fishing ports and processing plants.

Mr. Fraser also welcomed to their first conference three new field staff members, Cadet Inspectors R.J. McKay, G.J. Hanley and E. Barker, and two new members of Head Office staff, Messrs A.J. Buchanan and J.McK. Mitchell. He said that these young men, if they decided to make the Fisheries Department their career, would find among the staff a very fine spirit of kindliness and co-operation. He himself had found his own job a particularly rewarding and satisfying one, and he hoped the new officers would do the same.

He also referred to the fact that Mr. W. Davidson would retire from the public service in two days' time. The job that Mr. Davidson had done in his 37 years with the Department had, said Mr. Fraser,

been second to none. During the greater part of his career he had been stationed in the Fremantle district. When one considered the problems associated with the Fremantle district, stemming principally from the varied nationalities of the fishermen in that district and a very real language difficulty, the fact that that district was perhaps the best run of all, showed that one had to hand it to "Uncle Bill" for his very fine work. On behalf of the administration he desired to thank Mr. Davidson for his inestimable contribution to the development of the fishing industry of the State.

Mr. Fraser then asked the Minister to open the conference.

Mr. Kelly, in the course of his remarks, said he could not think of any industry in which he had more interest than the fishing industry, which some day, he hoped, would be second to none in the State. He regarded these annual gatherings as being of considerable importance, not only to the administration and the field staff, but also in regard to the development of the industry itself. The opportunity they afforded of exchanging views, outside the conference room as well as around the table, and of hearing reports from the inspectors on developments in the different districts, not to mention the discussions ensuing from talks from Branch Heads in the Department and technical experts from C.S.I.R.O. and elsewhere, had gone a long way towards building up departmental efficiency and, consequently, a well developed industry. In formally declaring the conference open Mr. Kelly said he hoped that the week's deliberations would be harmonious, and that those present would enjoy the social engagements which had been arranged. He regretted that owing to an earlier commitment he would not be able to take part in the annual country v. city cricket match on the following Wednesday.

Apart from those by departmental officers, addresses were given to the conference by Mr. R.W. George and Dr. R.G. Chittleborough, of the Division of Fisheries and Oceanography, C.S.I.R.O., Dr. A. Main, of the Department of Zoology, University of Western Australia, and Mr. Athol Middleton, of Perth Technical College, formerly of C.S.I.R.O. Division of Fisheries and Oceanography.

FISHERIES LICENSES ISSUED DURING 1956

The table below sets out the licenses issued and the value of the boats and gear for 1956. As a comparison the details for 1955 are also shown with the appropriate increase.

Where Issued	Prof. Fisher-man's	Amateur Net Fisher-man's	Fish-ing Boats	Value of Boats £	Value of Gear £
Albany	141	16	74	22,595	41,055
Broome	6	1	-	-	-
Bunbury	73	117	47	23,870	19,110
Carnarvon	4	2	3	-	2,540
Esperance	6	-	2	275	-
Fremantle	495	106	217	815,645	140,985
Geraldton	271	22	167	273,000	74,170
Mandurah	112	92	88	22,978	22,200
Perth	124	732	71	55,505	20,091
Port Hedland	9	1	3	620	-
Shark Bay	30	-	33	27,206	Inclu-ded in Boats
Onslow	5		1	285	
TOTAL	1,276	1,089	706	£1,241,979	£320,151
TOTAL 1955 .	1,159	535	687	£1,128,387	£285,186
Increase	117	554	19	113,592	34,965

TOTAL VALUE OF BOATS AND GEAR 1956 : £1,562,130

TOTAL VALUE OF BOATS AND GEAR 1955 : £1,413,573

INCREASE : £148,557

AUSTRALIAN CRAYFISH PRODUCTION - 1955/56

Overall Australian production dropped approximately one and a half million pounds from the 1954/55 total of 20,131,000 lb. (whole weight) to 18,515,000 lb. in 1955/56, according to the National Bank of Australasia Ltd's January issue of its "Monthly Summary of Australian Conditions".

Exports in 1955/56 totalled 4,400,000 lb. of tails and 295,000 lb. of whole crays - over 94% being consigned to the United States, Hawaii and Canada. Although the total weight exported was 135,000 lb. below the previous year's figure, it yielded a record harvest of $4,300,000 (£A1,900,000) due to an increase of 11% (to 8/4 a lb.) in the average f.o.b. price. Crayfish from Western Australia formed 77% of the total Australian export, although our production was only 57% of the total. The catches in New South Wales and Victoria are all sold locally.

State production figures over the past four fiscal years were as follows -

(Fresh Whole Weight '000 lb.)

	1952/53	1953/54	1954/55	1955/56
Western Australia..	8,099	9,138	10,906	10,530
South Australia ..	3,500	3,850	4,589	4,000
Tasmania..	2,744	2,350	3,259	2,900
Victoria..	756	1,193	832	614
New South Wales ..	528	563	545	471
	15,627	17,094	20,131	18,515

"In the American market", the summary concludes, "the Australian product is subject to intense competition and, if the highest prices are to be received, it is essential that the flesh reach the consumer in perfect condition. This necessitates the utmost care in handling, particularly during the pre-processing stages. As crayfish is something in the nature of a luxury food, it would appear that the maintenance of the industry as a valuable dollar earner will

depend largely on the quality of the product offered."

Under the heading "Disaster Threatens Crayfish Exports", George E. McCadden, writing from New York in the "West Australian" (Perth)*, has endeavoured to show that Australia's dollar-earning crayfish export trade is facing a price crisis - possibly disaster. Buyers, he says, have taken over the rich American crayfish market for the first time since we began exporting in 1948/49.

Mr. McCadden points out that South Africa - for long Australia's major competitor - is not now the only nation with tails in the U.S. market. Several other countries, New Zealand, Cuba, Ecuador, Mexico and the Bahamas - particularly New Zealand - have made rapid strides in the processing of crays. In addition, smaller and largely experimental shipments are now coming forward from India, Portugal, British Honduras, Jamaica, Spain, Iceland, Norway and Turkey.

At the same time, he says, only a few exporters, notably those in Australia, South Africa and New Zealand, pack to the exacting standards of the U.S. frozen food trade.

The chief complaint in relation to the Western Australian pack is that we export far too many "midgets" and "smalls". It seems, says the writer, that a hard core of buyer resistance has developed against Australian tails, and he concludes that although the high standards maintained by the W.A. State and the Federal Governments for the crayfish industry have paid off in the fine reputation for quality our tails enjoy in the U.S. market, we must expect a recession of trade unless (a) the proportion of "midgets" and "smalls" decreases, or (b) we are prepared to accept a lower, more competitive price for our product.

According to press statements a day or two after the publication of this item, both Mr. Eric Russell, of Russell Pty., Ltd., Chairman of the W.A. Crayfish Exporters Association, and Mr. F.R. Lemmon, General Manager of the Geraldton Fishermen's Co-operative, Ltd., denied the possibility of disaster. Mr. Russell is said to have admitted the rise of buyer resistance, and expressed the opinion that prices had

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* February 22, 1957.

gone high enough. Mr. Lemmon said the criticism could serve as a pointer to reforms and that fishing licenses should be restricted.

We know, of course, and the American importers know too, that at the beginning of our export season in January, "midgets" and "smalls" predominate following the "white" crayfish season in December. From then on, however, the take of the smaller sizes drops and the larger sizes (of the "medium", "large" and "jumbo" categories) come into the market.

The Minister for Fisheries (Mr. Kelly) during his visit to the United States last year saw definite evidence of buyer resistance to more highly-priced seafoods. One of his outstanding impressions was that the American public was experiencing economic pressures, and that instead of dining out several nights a week there was a tendency to save food costs by dining at home more frequently. This had the effect of reducing sales of the dearer lines, such as tuna and "lobster", which were eaten principally in hotels and restaurants. Furthermore, a similar note was struck in a report appearing in "Fishing Gazette" (New York) recently, viz., that oyster growers were facing buyer resistance to their highly-priced product. The Department has not been slow to follow this matter up - in fact it has kept in constant touch with developments in the local fishery and with market trends overseas.

Considerable help was recently given to Mr. S.J. Taylor, an honours student in Economics at the University of W.A., in the preparation of a thesis covering an economic survey of the Western Australian crayfishing industry from 1948 to 1955. A paper based on his thesis has now been published. It shows clearly that the capital investment in our crayfisheries has gone along hand in hand with catching effort and efficiency - as catching effort and efficiency improved so did capital investment increase.

It stands to reason that to meet increasing competition each fisherman must increase his catching efficiency or his fishing effort (i.e., by providing more pots, winches for pulling, bigger and faster boats, and so on). Therefore if there is a price

recession the overall catching efficiency of the industry must suffer, because people simply cannot afford to spend money to maintain, let alone increase the efficiency of their methods if they are not making money.

The population of crayfish can obviously never exceed the maximum number which the available food, etc., will support. The duty of the fisheries administration is to ensure, so far as is humanly possible, that that population is kept at its maximum. Our view, and this is largely borne out by production figures, is that the crayfish population has by our somewhat stringent regulations been maintained at a reasonably steady level. The fewer the fishermen operating, the greater each man's share, of course, but each additional unit coming into the fishery means a smaller share for each man. Hitherto we have not felt it desirable, although we possess the power to do so, to take action to restrict or limit the number of fishermen operating in any given area. So long, we believed, as the fishery itself was not becoming depleted of fish (and there is no evidence that it is), it were better that economic rather than legal forces be brought to bear. However, the demand for our crays in the U.S. market has always been so strong that the price offered has continued to creep up. Therefore any losses which, had the price remained steady, would have been incurred by fishermen in increasing their efficiency to meet the competition from greatly augmented numbers of men entering the industry, have been more than offset by the enhanced prices.

It is a fact well known to fishery administrators that efficiency of methods or fishing effort may be increased only so far, and no further. The extent to which both may be increased is limited by the so-called "law of diminishing returns". Given the population of fish is not adversely affected by that effort and efficiency (which appears to be the case with our crayfisheries) it can be assumed that that law will be one of the most important factors in the problem. H. Scott Gordon deals with this subject very ably in the Journal of the Fisheries Research Board of Canada (Vol. 10, 1953, pp. 442-457). He defines the economic objective of a commercial fishery as the achievement of the <u>maximum net economic yield</u>.

Let us examine our crayfisheries in the light of Scott Gordon's observations and of our own knowledge. If the fish population is unlimited, there is no limit to which total production can go - in other words the rate of increase in total catch will be governed solely by the rate at which catching effort is increased. But the crayfish population of this State, or at least in the known crayfisheries, is not unlimited. Hence as the catching effort increases in a virgin fishery, such as the crayfishery was 14 or 15 years ago, while for a time the total catch and the catch-per-man increase, a stage is reached when by reason of the limited population and of the competition from increasing numbers of new fishermen, the total catch reaches its maximum level and the catch-per-man starts to decline - that is, the rate of increase slows down until it stops altogether. But as catching effort increases, costs also increase, and eventually, when too many fishermen have to increase their costs because of the additional fishing effort necessary, the monetary return from catches, if there is no increase in the price received for the catches, overtakes the additional costs incurred, and the fisherman works, if not at a loss, then for a reduced margin of profit.

Whether our known crayfisheries, or any of them, have reached the peak of their production is not certain. But certain it is that from the viewpoint of economic production we are almost on the brink, if we have not already reached it. Certain it is too, that if American prices go back, we shall be over the brink, and there is no doubt whatever that some at least of our fishermen will go to the wall.

These, then, are the problems facing not only the fishermen and the processors, but the exporters as well. It has been suggested to them that to keep their high prices on the U.S. market, some form of trade promotion is desirable. This, they say, would cost more than the results would justify. To the suggestion - and Mr. Kelly found while in America that as often as not Australian tails were sold as South African - that all Australian exporters, irrespective of the State in which their crays are produced, should market their catch under one brand, instead of a multiplicity of brands or no brand at all, the exporters have turned a deaf ear.

DUCK BANDING

A further 311 ducks have been banded since publication of the previous figures in last month's Bulletin. The majority of those recently banded were black duck; actually they comprised 290 out of the total. An item of interest was the banding of 10 white-eyed ducks at Karrinyup Lake. Most of these were immature.

Since banding operations commenced early in December, 703 ducks have been banded, bringing the total since the inception of the scheme to 3,902.

Recoveries : Details of further bands recovered since last published are as follows -

Band No.	Banding		Recovery		Distance Flown
	Date	Place	Date	Place	
			Black Duck		
6363	16/1/57	Yathroo Station	3/2/57	Moore River, 13 mls N. of Mogumber	about 20 miles
1516	28/2/53	Karrinyup	10/2/57 again on 11/2/57	Karrinyup	killed by fox
2866	18/9/54	Glengarry Station	27/1/57	4 to 6 mls from outlet Greenough R.	20 miles
2465	21/2/54	Swamp at Moora	11/1/57	Galena	205 "
6415	29/2/56	Craigs Lake	17/2/57	Chittering Lake	40 "
3747	29/2/56	Queen's Gardens	17/2/57	do	40 "
2417	17/2/54	Cook's Farm, Moora	1/2/57	3 mls W. of Gingin	50 "

Band No.	Banding		Recovery		Distance Flown
	Date	Place	Date	Place	
			Grey Teal		
3013	22/11/54	Lake Mears	4/2/57	12 mls W. Bremer Bay	190 miles
4158	5/12/56	Gundaring	23/12/56	Gundaring	--
3791	11/3/56	Dumbleyung	22/12/56	Dam 12 mls W. Kondinin	65 "
2760	19/5/54	Cape Riche	18/2/57	Kondinin Lake	150 "
3912	26/3/56	Wardering Lake	24/2/57	Boilup Pool 8 mls W. of Kojonup	20 "
3911	26/3/56	do.	do.	Boilup Pool	20 "
3909	26/3/56	do.	16/2/57	Taarblin	45 "
2019	14/12/53	Watson's Lake, Dumbleyung	23/2/57	Bunagarra Lake, Wannamal	190 "
3997	28/3/56	Wardering Lake	22/2/57	Lake Mears	90 "
3169	22/1/55	Yealering Lake	9/3/57	Taarblin Lake	about 25 "
1671	23/3/53	Lake Beer-mullah	1/3/57	Beaufort River	

TROUT ACCLIMATISATION COUNCIL

A special meeting of the Council will be held in Perth on March 17. In addition to the Superintendent, who is Chairman of the Council, the Department will be represented by the Clerk-in-Charge (Mr. B.R. Saville); the

Research Officer (Mr. B.K. Bowen) and Technical Officer J.S. Simpson. It is believed that all trout acclimatisation societies will be represented.

HIRE OF AN OFFICER'S PRIVATE VEHICLE

The Public Service Commissioner has agreed with the Civil Service Association that from July 1, 1956, an officer who has not at any time received any form of financial assistance from the Government to purchase a motor vehicle shall be paid an additional halfpenny per mile when he incurs approved milage.

An officer claiming the additional halfpenny per mile must endorse his claim form with the following certificate -

> "I certify that I have not at any time received any form of financial assistance from the Government of W.A. to purchase a motor vehicle."

Claim forms submitted by officers entitled must bear the certificate whether the claim is for a current period or for the arrears from July 1.

GOOD BREAM IN THE SWAN AND CANNING

According to reports there was some excellent bream fishing to be had in the upper reaches of the Swan and Canning Rivers early in February. Two brothers fishing in the Canning River near the Riverton Jetty caught a three-pounder, two two-pounders and two small bream one Saturday morning and, a week later one of them fishing alone, caught another five fish weighing up to 3 lb. each. The next day the two brothers between them caught 13 fish ranging from ½ lb. to 4 lb. They rigged their lines with french hooks, no sinkers and used prawns as bait. Another keen angler, fishing in the Swan at Belmont, has taken a large number of fish up to 3¾ lb. during the past few weeks.

LARGE BROWN TROUT CAPTURED

Mr. Rod Bath, of Manjimup, fishing in the Warren River at Pemberton, recently landed what must have been a near-record size brown trout. It was 22" long, 13" in girth, and weighed 5¾ lb. Mr. Bath, who had had several previous encounters with big brown trout, would give no hint of where he caught the fish, nor what tackle he used.

LONG SERVICE LEAVE

Commenting on legislative amendments to the Public Service Act, the Public Service Commissioner has, in a recent circular instruction to all departments, drawn attention to the new provisions.

From now on long service leave may be accrued beyond a six months entitlement only on the authority of the Governor in Council and the approval of the Commissioner.

CRAYFISH - SHARK BAY

The L.F.B. "Saturn", whose good catches were reported in the January issue of this Bulletin, has returned to the Shark Bay area to continue testing the new grounds she located previously.

In view of the overcrowding of the Abrolhos and other crayfishery grounds, the "Saturn's" results will be awaited with great interest as other boats may decide to follow her lead and so relieve fishing pressures elsewhere.

THE CLEARING HOUSE

Or Would you Rather be a Fish?

It is, of course, only man's vanity which has convinced him that he is the highest amongst all the creatures of the earth, and that those most like him in the shape of their bodies, the number of their limbs, the position of their features and their ability to make vocal sounds, come next in order of evolution.

I must confess that it was not until I read this book ("The Private Life of Fishes", by M. Constantin-Weyer) that I realised how far from the truth these assumptions are. Of course I knew that evolution was largely a matter of mutations and that the possibilities of variations in a species leading to possible evolutionary changes must necessarily be greater as the number of individuals in the species increase; equally I knew that there had been creatures in the sea far longer than on the land; and it is obvious - when you come to think of it - that the space available for fish is three-dimensional, while that for land animals is two-dimensional only. From which it is apparent that there are far more fish than land animals.

The Inescapable Logic of It

But the logical conclusion that it is to the world of the fish that we must look for the highest diversity of evolution had up to now escaped me.

Indeed in making any assessment of degrees of development, everything depends upon one's standard of values. Heaven knows how we would stand up to any standard which the fish might apply to us! On our part we are capable of judging fish only by our own meagre and subjective ideas. In our ignorance we think that the creatures of the sea are the better, the nearer they approach to human behaviour.

If a seal can catch a ball on the end of its nose, we parade it around the towns and sit around in a circle to watch and acclaim it. Alas, it is not

recorded that the antics of a man have ever afforded amusement to a company of seals.

Yet even by our human standards, there is, as Constantin-Weyer makes clear, much more to fish than most of us have imagined.

More Intimate Disclosures

For instance, the author quotes evidence to show the reasoning power of certain fish, their ability to find a solution when confronted by a situation which is new to them. But it is in a chapter entitled "Intimate Disclosures" that he points most clearly to their human-like characteristics.

Many fish adopt a special colouration during the mating period. The male stickleback acquires gorgeous red patches on the cheeks and stomach and of irridescent green on the back (the latter of which anyhow is better than we can do). He makes a nest with considerable artistry and skill, using a silken thread produced from his own body, and invites the females of the neighbourhood, one after another, into the nest to lay their eggs, which he then proceeds to hatch.

The carp, when in love, is covered with horny pimples - a fact which will give many an adolescent youth cause for thought.

Does a Fish Enjoy its Sex-Life?

Only a French writer, perhaps, could have been so interested - or at least admitted to such interest - in the sexual habits of fish and the amount of enjoyment which fish derive from such activities. The male of the Elasmobranchii - including the dogfish and skate - for instance, more or less winds himself round the female, who remains stretched out and passive, and the male inserts his organs in a manner very similar to that of animals. The horned skates or devil-fish do things in a different way - but the female, belly uppermost, embraces the male closely with her immence fins as he fertilises her.

The male bow-fin makes a nest, invites a female in and then kisses her, snout to snout, until she drops her bundle of eggs into the nest. The male

fertilises them with his milt and, while the female goes about her ways, remains on the nest for about a week to hatch out the eggs. The more than dutiful husband!

Family Life and Baby Sitting

The catfish on the other hand appear to be monogamous - and male and female share the baby-sitting between them. In another species of catfish the male keeps the fertilised eggs in his mouth, as an incubator, and, even when they are hatched out, the small fry take refuge in their father's mouth at the least sign of danger.

Again applying our human standards, we deplore the act of cannibalism, but do we know what the male pike's reactions are to the fate which awaits him when, after ejecting his seed on the eggs which the female has laid, he drifts - tired out by his exertions - to the spot where the female motionlessly awaits him and disappears down the wide open cavern of her mouth. Maybe he thinks it was worth it; perhaps she sheds a tear as she belches; but so, at all events, the future of the species is ensured.

Seahorses dance a ballet in three dimensions - an exquisite courtship, and enchanted fairy play, as Constantin-Weyer describes it - to stimulate the productive work of the hormones. The female's abdomen swells visibly under the sudden pressure of her eggs, the male's ducts let out a drop or two of seminal fluid, and then suddenly the couples twine their tails together. The male half-opens a pocket into which the female lays her eggs, which he has to fertilise and nourish.

Though we may entirely disapprove of the morals of the female Dragonet, it has to be admitted that a similar looseness is not unknown amongst the human race, and she at least gives each male with whom she successively mates the privilege of promenading with her, swimming side by side with pelvic fins entwined "like a man walking arm in arm with a woman", as Professor Bertin has put it. "Other males hover round the happy pair, waiting till it is their turn for a share of happiness."

Scientific Writing Need Not be Dull

The scientists and naturalists are still a long way from knowing everything about the mating habits of fish, as Constantin-Weyer freely admits, and have really only a fragmentary knowledge of the life and habits of fish in general, but this brief glimpse at just one chapter of this most interesting book will be enough to convince the reader that the author has approached his subject with no mere clinical detachment, but with a genuine interest in fish as creatures.

Though written for the naturalist and the angler, the book is written in a refreshing and lively style, unlike far too many scientific tomes, and will be read by the general reader with ease and interest. For most it will throw a light on a world which is largely unknown even to those who earn their living by its exploitation.

J.H.F.

("The Private Life of Fishes", by M. Constantin-Weyer (Richard Bell, 15 s.), post free 15s.7d. from Piscatorial Press Ltd., 110 Fleet Street, E.C.4.)

("The Fishing News" London December 28, 1956)

Shrimp Boats is A'Comin' - There's Shootin' Tonight

A deadly game of hit-and-run, punctuated sometimes by gunfire, has turned a strip of the Gulf of Mexico into a no-man's land. The fight involves an edible treasure - the shrimp.

United States shrimpers want the U.S. State Department to work out an agreement with the Mexican Government, and, until that happens, they want coastguard cutters to protect American fleets.

Trouble started when a section of the gulf off the coast of Mexico was found to be rich in shrimp. Boat operators converged on the shrimp beds from almost every port in the United States.

A hot international boundary dispute developed. Mexico claimed its authority stretched nine sea miles, or about 10⅜ land miles, from its shores. The United States limited the claim to three miles. But Mexico defended its position with gunboats.

Two U.S. coastguard cutters are stationed in the gulf shrimping areas, but they have not intervened, even when a Mexican gunboat chases a shrimper.

£400 fine

A shrimp boat caught inside Mexican waters is taken to the nearest Mexican port, its cargo and some of its gear confiscated and a fine of £400 imposed. Sometimes the boat is held in port for a considerable time, meaning a loss of time and money for the operators.

Some fishermen have found that one arrest is disastrous enough to put them out of business.

("The Fishing News" London December 28, 1956)

Conditions Which Affect Fish Habits and Haunts Described in Survey Published by F.A.O.

How various species of commercial fishes behave under conditions of temperature, currents, and stocks of food encountered in the oceans; and how scientists are gradually building up data regarding the location of high concentrations of fish, are described in a preliminary survey compiled by Mr. Richard H. Fleming, of the University of Washington (U.S.) and by a F.A.O. biologist in Rome.

Between them they give a comprehensive picture of all aspects of this fascinating study. They stress that fishery workers throughout the world are active in efforts to determine the identity and distribution of stocks of fish of economic importance and to measure their magnitude, while determining their seasonal and other changes.

The Food Chains

The authors go on to describe the food chains in the oceans, the first link the phytoplankton

plants and seaweeds, the second link of zooplankton and some omnivorous animals, and the third link the plankton-eating fish. It is calculated that 20 per cent of the annual phytoplankton production passes directly or indirectly through the digestion of commercially caught fish in the North Sea, but because of an insufficiency of fish food the concentrations necessary for commercial operations cannot be permanent, it is pointed out. "These fish may congregate for a short time in a certain place for spawning to graze on an unusally high concentration of food, or for other reasons, but must soon disperse."

Temperature and Environment

Attempts by various research workers to correlate the behaviour of fish with temperature - regarded as the most important environmental factor - are recorded. Changes of temperature in the oceans are subject to many other factors such as currents and other water movements. According to one authority temperature change may act on fish as a nervous stimulus, a modifier of metabolic processes - chemical change of nutriment taken into the body - and a modifier of bodily activity.

Thus the lowest temperature at which a fish may survive depends on its previous acclimatisation. Freezing point of fish body fluids is between 31.1 and 34.4 deg. F., but fish living normally in water 53.6 to 77 deg. F., are killed by temperatures well above 32 deg. F. In the coastal areas of Florida (U.S.) extensive mortality of fish has been recorded when the minimum temperature was as high as 57.2 deg. F.

In the North Sea it has been found that cod can tolerate 37.4 deg. F. and plaice 33.8 deg. F., and that temperatures slightly under 32 deg. F. do not injure the fish. Lowest optimum temperature limit for cod in the Barents Sea is 35.2 deg. F. If the temperature of bottom water is below this, commercial fishing is unprofitable, say the scientists. Yet occasionally cod can be found in water with a temperature as low as 30.9 deg. F., but these fish are usually grazing on krill, which are concentrated in the areas with low temperatures.

From this it is assumed that fish can congregate along the boundaries of the areas with unfavourable

environmental factors if food is present in high quantities in areas with unfavourable conditions for fish.

Effect on Spawning

Long-term temperature increase in the Northern Hemisphere has affected the distribution of fish, according to the experts. They declare that this has influenced spawning on the southward limit, which has been diminished, and on the northward limit, increased; the increase in bottom water temperature can produce changes in spawning grounds; nursery and feeding grounds have been opened to the north; the increase in the amount of food by rise in temperature in higher latitudes and the changes in currents and in amount of nutrient salts present; growth period is prolonged and the limit at which larvae can survive is shifted further to the north.

In autumn and the beginning of winter the fish select progressively lower temperatures, the change being slow in autumn but quite rapid at the beginning of winter. Then in spring, independently of changes in water temperature, the fish select a certain temperature because of its effect on their movement. Near Newfoundland, for instance, it has been found that the best catches are obtained by a temperature of 32 to 37.4 deg. F. in spring and 38.3 to 41.9 deg. F. in summer.

Influence of temperature is much more pronounced during the spawning season. Cod spawn in Motovsky Bay - in the far north - three weeks later than by Lofoten Island and 1½ to 2 months later than in the North Sea.

Other temperature limits for cod spawning are :-

Motovsky Bay 32.7 deg. to 35.6 deg. F., northern Norwegian waters 36.5 deg. F. to 41 deg. F., Skagerrack 2 39.2 deg. F. to 43 deg. F., and Newfoundland waters 37.4 deg. to 41 deg. F.

Abnormal temperatures during the spawning season can delay spawning or force the fish to spawn in other areas than their normal spawning grounds.

Salinity of the water influences the survival of fish with buoyant eggs, and determines the plankton spectrum and thus the availability of suitable food, especially for fish larvae. This influence has been found most pronounced in estuaries and in seas with brackish water, such as the Baltic Sea.

Influence of Light

Another discovery is that the amount of light in early spring affects the survival of fish larvae, it is believed through the amount of organic production, which is directly dependent on the availability of light energy. The amount of light available can influence the maturity time of the fish. It has also been found that adult herring avoid high light intensities and have daily vertical migrations.

The currents in the seas have great influence in the distribution of fish food, and they may carry fish larvae into regions where food and other environmental factors are unfavourable.

Fish usually prefer large zooplankton organisms, most intensive feeding takes place during the day, and is most intensive during the middle neap and middle spring tides. Cod form dense shoals in the Barents Sea when food is scarce and disperse on entering a region where food is abundant. Scarcity of fish food in the autumn affects fish distribution during the winter and spring.

Factors governing migration of many marine fishes are believed to include passive drift with current; search for adequate food; changing physiological needs; and purposeful movements made without regard to environment.

The survey is included in F.A.O. Fisheries Bulletin for October-December, 1956, published by F.A.O. in Rome, price 30 cents (about 2s. 6d.) and obtainable from H.M. Stationery Office.

("The Fishing News" London January 18, 1957)