

DEPARTMENT  
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STAFF NOTES

The Chief Clerk, Mr E.R. Saville, will resume duty on May 7 after annual leave. Another to resume duty this month after leave is Assistant Inspector D.H. Smith, of Fremantle.

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Senior Inspector J.E. Munro, of Perth District Office, will commence ordinary leave on May 7. Others to enjoy leave this month will include Fauna Warden N.E. McLaughlan and Cadet Inspector Ian Cardon, whose leave commences on May 14, followed by Assistant Inspector G.J. Hanley and Cadet Inspector P.K. Enright, on May 28. Officers who will be absent on leave next month include Assistant Inspector L.R. Frizzell, from June 4, and Inspector G.D. Houston and Assistant Inspector D.P. Gordon, from June 11.

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Cadet Inspector P.A. Smith, who is on leave following an operation, will return to duty on May 16. He will be stationed in the metropolitan area.

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Inspector A.V. Green, of Mandurah, who was discharged from hospital early last month, is still on sick leave and the date of his return to duty is uncertain. He is experiencing trouble with his injured knee.

(64)

Research Officer B.K. Bowen and Technical Officer J.S. Simpson paid a routine visit to the Geraldton district immediately after Easter in furtherance of the crayfish research programme. Mr Bowen's next visit to Geraldton will take place on May 22 when he will collect further length- and weight-frequency data.

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Research Officer R.J. Slack-Smith returned to Perth on April 17 after spending some weeks on R.V. "Peron" in Shark Bay. He will remain in Perth for some time while working up the data collected. He will probably rejoin "Peron" about the end of June.

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Miss H.M. Sivwright, Library Assistant, of Head Office, will commence one week's leave on May 21.

#### Meeting of Crayfishing Interests

Just as this issue was being "put to bed", a meeting of crayfish processors and exporters and fishermen was called by the Minister for Fisheries (Mr Hutchinson) for the primary purpose of discussing the processing of undersize and borderline fish and the marketing of underweight tails.

For some time the Minister and departmental officers have been perturbed at the increasing volume of seizures of craytails weighing less than the prescribed minimum of 5 oz. Approximately 500 boxes of tails, valued at between £12 and £15 each, have been impounded by inspectors because each contained underweights in excess of one-twentieth of the total number therein - vide section 24A (2) of the Fisheries Act.

It was hoped that by asking representatives of various sections of the industry to meet around a common table it might be possible to secure their co-operation in plans designed to overcome the situation, and to agree among themselves that some at least of the responsibility for conserving the crayfisheries, which constitute the largest unit fishery in Australia, rested on the people who were profiting most from them.

On the following pages is the transcript of the notes taken at the meeting. Because of the great importance of this fishery, the discussions have been reported in some detail.

NOTES OF MEETING BETWEEN THE MINISTER FOR FISHERIES  
(HON. ROSS HUTCHINSON, D.F.C., M.L.A.), AND  
REPRESENTATIVES OF THE CRAYFISHING INDUSTRY, HELD AT  
THE FARMERS' UNION, 239 ADELAIDE TERRACE, PERTH, AT  
10.30 A.M., ON TUESDAY 1st MAY, 1962.

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The Minister was attended by the Director of Fisheries (Mr. A.J. Fraser), the Senior Research Officer (Mr. B.K. Bowen) and the Supervising Inspector (Mr. J.E. Bramley).

There were 26 industry representatives present, including fishermen, freezer-boat operators, processors and exporters.

In opening the proceedings, the Minister said -

" Gentlemen, I am very pleased indeed that there has been such a good response to my invitation to representatives of the crayfish industry to be present this morning.

The purpose of this conference is to discuss certain aspects of the crayfishing industry, with particular regard to the taking and marketing of undersize crayfish and crayfish tails, and generally dealing in undersize crayfish.

There are, I feel, a number of misconceptions as to the role the Fisheries Department plays in regard to the working of the crayfishing industry. Some people seem to feel that the Department is a sort of grand bogey man, with a number of bogey men as its officers, there for the sole purpose of hitting hard at fishermen, processors or exporters. Many people regard the Fisheries Department and its officers as an unnecessary imposition on the industry, but that the Department should solve all the problems associated with the industry. Some people, moreover, believe that the Department should solve the problems in the particular way in which a particular group wants them solved, without regard for the industry as a whole, or for the requirements of other sections or groups.

There is, however, a sizeable percentage of people who do realise clearly the real part that the Department must play. Suffice it to say that the Department's purpose is to assist. It can and does assist with measures designed to conserve the crayfisheries off our coastline, and assists in the control of those crayfisheries. I want to go back in time some two

years ago, when virtually every section of the industry was saying the Department must do something more to conserve the crayfishing industry. Although it was at that time acknowledged that this was a profitable industry, and that all sections were doing well, everybody was worried about the taking of undersize crayfish, which was rife.

Penalties were not severe enough, it was said, and good processors were forced to resort to wrong practices because unscrupulous people were indulging in unscrupulous practices.

We all agreed that something must be done to assist in the conservation of the crayfisheries, to assist fishermen to have a continuity of livelihood, to assist those people who had considerable capital involved, and to ensure that they continued to get returns from their capital over a long time.

We introduced legislation to try and get some teeth into certain provisions in the Act. By and large all sections of the fishing industry hailed the amendments we put through, but we still found that there was a large number of people who continued to break the law. However, when the new law was applied, and the Department brought to book people indulging in the taking of small crayfish, and marketing underweight tails, many felt that the law was unduly severe. Perhaps your particular objection was to the two legal sizes for crayfish - firstly, that there should be a weight measurement of 5 oz. for a tail, and secondly, a 3" carapace measurement for entire fish. It seems some of you feel there is a great disparity between the two. Mr. Bowen, our senior research officer, can, if desired, give some information in regard to the spread in weight of tails taken from fish of the same size. I think you must agree that a line must be drawn. Investigations show that there will always be differences between the two. We must have two measurements, unless we have more inspectors than we have processors. I hope you do not ask me to appoint more inspectors, as it is not possible.

It is the Department's responsibility to do many things. It helps control the industry, it helps fishermen, it helps processors, it helps conserve the industry. I must say this, though, that I feel it is the responsibility not only of the Department to do these things, but also a responsibility, a very vital responsibility, rests on all

sections of the industry to assist the Department to do what is right. I believe the industry, that is, the Department, the fishermen, the processors and the exporters, are all partners in this, with the State of Western Australia as a whole, and at this point, which could almost be danger point, the whole industry can be placed in jeopardy unless we all get together and do the right thing.

I think it is the responsibility of each section of the industry to police the actions of its own members. It seems that one section frequently imposes a form of blackmail on others.

I think the majority of you will appreciate that various persons in the industry try hard to cheat the Fisheries Department. By cheating the Department now they are only cheating themselves in the future. That is a deplorable state of affairs. You all know some of the extraordinary measures resorted to by certain persons to continue to take and deal in undersize crayfish. Legislation always lags behind the real needs of the situation. We in the Department have striven to prepare legislation to meet certain situations. This is of course checked by legal men, who put up the legislation in legal form. Unfortunately, however careful one is there are always loopholes, and people with clever lawyers are able to find these loopholes.

I think we will not be able to arrive at any decisions this morning, but I would like all who wish to speak to do so. I must say that I myself, and the Department, have given consideration to a number of proposals; we have considered reducing the legal weight of tails, but have hardened against that, because if we do there will still be underweight tails and greater numbers still of immature crayfish will be processed. Some scientific observers believe that the 3" crayfish is not completely mature.

Although there is much more I could say, perhaps I could just reiterate what I said earlier, that we all are partners in what is a great industry, and a profitable industry, and let us see that it remains in that condition. Perhaps human nature, being what it is, will ultimately destroy it, but it is, and will continue to be, the Department's aim to see that the industry continues for the existing fishermen, and their sons, and their sons' sons. I end what I have

to say at this point, by making a very strong appeal to every section of the industry to co-operate with the Department.

Please have no fears in advancing any of your views. I want you to give me some idea of what you think about what I have said. If you have any opinions as to whether changes might be made, let us hear them. No on-the-spot decisions will be made, but every consideration will be given to the suggestions put forward. When you leave this meeting I would like you to convey to those whom you represent, those emphatic points which I have tried to make to you. The meeting is now in your hands.

Mr. G.G. Humphries (The Crayfish Exporters' Association), said that the body he, with Mr. Eric Russell, represented was essentially concerned with exports, and that although quite a number of its members were also processors, the submissions they made dealt purely with the difficulties of exporting.

He said that the present methods of inspection after the fish had been processed and loaded into cool store presented serious difficulties to the exporters. He would deal with them under three headings.

In regard to sales and contracts, Mr. Humphries said that practically without exception all sales were made forward and these were very seldom for the run of the catch, but for specific quantities of midgets, smalls and other sizes. When the market was difficult, members generally desired to ship the whole of their current stocks on vessels which were scheduled for early sailing. All members knew what their stocks in cool store covered, and when an inspection was carried out within 24 to 72 hours of a vessel loading, and certain sizes eliminated by inspectors, it had the effect of upsetting selling contracts and giving buyers an opportunity of rejecting the goods should anything go wrong in the market. To eliminate this risk exporters were forced to incur additional expenses by cabling for the necessary approval to amend the quantities sold.

So far as shipping was concerned, the speaker said that seizure of boxes of tails within a short time of sailing date complicated the position as far as the cool stores were concerned, in that although they had the whole of their loading programme arranged, they were compelled to alter their arrangements at the eleventh hour. The effect, in short, was that all exporters were forced to keep

greater stocks in store, with increased storage charges, than would otherwise be necessary, simply because they did not know when the Department would inspect.

The third heading was Finance. Mr. Humphries said that the financing of crayfish was a big operation, and it would be appreciated that with up to 50,000 cases in store at a time, representing in value up to £750,000 or more, exporters were forced to depend on their bankers for finance. Already there had been queries, as naturally the banker desired a fair margin of safety on the advance made against cool store warrants. It followed that the banker, if stocks were to be subjected to a second inspection, which had nothing to do with quality, he was being placed in the position where he might have to eliminate the whole of the midget category from any advances which he made. Under present conditions he was never sure whether they were likely to be seized by the Department or not. All exporters had managed to get past this position so far, but it could become a serious problem.

In conclusion, Mr. Humphries said his Association felt that the regulations prescribing a minimum tail weight of 5 ounces threw the whole onus of seeing that this provision was complied with on the exporter and the processor, and had the effect of making their business transactions more difficult than they otherwise would be. The Association fully appreciated the necessity of protecting and conserving the fishery for crayfish, and it appreciated the efforts which the Government had made in endeavouring to establish a sound policy.

The 3-inch carapace measurement was, in the speaker's opinion, quite satisfactory, but the many difficulties encountered in obtaining the minimum prescribed weight of 5 ounces made this regulation most unsatisfactory. His Association suggested that such a regulation led to wastage and destruction of a greater number of underweight fish than if this regulation were not in force.

The members of his Association felt that as they were primarily exporters, they were not in a position to suggest regulations, as freezer-boat owners, land plant processors and mercantile brokers had differing ideas on how the regulations should be framed. They did however stress the difficulties with which the exporter was faced, and asked that the Department find some other means of protecting the industry. This could probably be done by increasing its patrol staff, by closer inspection at the source, and possibly by strict regulation of landing-places and processing establishments. It was not fair that the onus should rest on the buyers only.

Mr. Eric Russell (The Crayfish Exporters' Association), said that he had little to add to what Mr. Humphries had said. He said the chief concern of the exporters was that live crayfish were frequently passed by an inspector as correct as to carapace length, but on later inspection, in the form of boxed tails, they were confiscated as underweight.

The Minister asked Mr. Humphries whether he thought an inspection should not be made of boxed tails, and what minimum tail weight was suggested in lieu of 5 oz.

Mr. Humphries said that if whole crayfish were passed by an inspector at a plant, and inspectors were permanently on duty at plants, a second inspection should not be necessary. In regard to tail weight, he said 5 oz. was a satisfactory minimum in many respects, but it did create some dissatisfaction. He was not prepared to suggest the correct legal weight.

Mr. F.R. Lemmon (Geraldton Fishermen's Co-operative Ltd.), said his company was most upset about the dual legal minima. He then read a letter he had written recently to the Director of Fisheries. The following is a lengthy extract -

"..... In your first letter, dated 15th March, received by us on 17th March, you advised that 30 cases had been seized on 8th February 1962. In view of the fact that 5 weeks elapsed before we were notified of this seizure, it prevented us from taking corrective measures from the opening of the Abrolhos Islands Season on 1st March. However, from receipt of your advice we have maintained a careful check, and we now have in store at Geraldton 3,313 tails weighing  $996\frac{1}{2}$  lb., for an average of 4.668 ounces per tail, despite the fact that the intake of crayfish into our factory has been checked for size by either your Department's inspectors or our own men. We appreciate that it is impossible for your inspectors to visit our premises every day, and on the occasions when they have not been able to attend, our own men have carried out the measuring of whole live crayfish.....

We have not received a copy of the Act governing this "under 5 oz." regulation, and should be pleased if you would make one available to us. Quite frankly, we do not know where we are. When we pack a 25 lb. case of tails, we add 10 oz., this being  $2\frac{1}{2}\%$  to allow for shrinkage in freezing,

and at the moment, when we pack a 5 oz. tail it is logical to presume that it will lose  $2\frac{1}{2}\%$  in freezing, or one eighth of an ounce, so when this tail reaches Fremantle it only weighs  $4\frac{7}{8}$  ounces and is therefore subject to seizure by your officers. We feel that if a crayfish passes the legal carapace measurement of 3", the tail should also be legal. We fail to understand why your Fremantle inspectors can reject a tail which has come from a crayfish passed as legal length by your Geraldton inspectors.

The vast majority of Geraldton crayfishermen have always been conscious of the necessity to preserve the industry by not attempting to market undersize crayfish, and we have been led to believe that this "under 5 oz. tail" regulation was brought in as a measure against freezer-boat operators, who are not subject to check by your inspectors at the time of processing, whereas our land-based factory is open for inspection by your men every time we receive crayfish.

This seizure of under 5 oz. tails at Fremantle seems quite wrong to us because once the crayfish are passed as legal length at Geraldton we have paid for them, then the cost of processing, freezing, and cartage to Fremantle is an added expense.

From the figures quoted above we are already over £5,000.0.0. out of pocket, brought about by (1) Price paid for whole live crayfish (2) Cost of processing labour and packing materials (3) Cold storage charges and cartage costs to Fremantle, and (4) Loss of proceeds from sale of tails. Therefore, because this situation has not been brought about by any intention on our part to break any lawful regulation, we respectfully ask that the 136 cases of tails be released to us for sale. "

The Minister asked Mr. Lemmon whether he considered there should be one criterion only - the 3-inch carapace measurement.

Mr. Lemmon: Yes, sir - the one countermands the other.

Mr. J.C. Bowes (James, Bowes Pty. Ltd. - processors) said the case presented by Mr. Lemmon was an excellent one, and he agreed entirely with what he had said. Mr. Bowes said he desired to stress something which had been apparent to him for a long period, that the Fisheries Department and its officers were doing an excellent job in an endeavour to conserve the crayfish industry. Any person who would contest that would be not well balanced.

Unfortunately, there were "Ned Kellys" in the industry who used every subterfuge to defeat the Department. If we were to live in this industry, we must have conservation measures. If this particular regulation was not operating as well as he thought it should, and frankly he did not think it ever would, that was not something to be taken up as a cudgel with which to beat the Director of Fisheries. Everybody made mistakes, and he, with all due deference, said that this regulation was a mistake. He said he strenuously maintained that one cannot make something legal by one process and then declare it illegal by another.

Mr. Bowes said that all kinds of snide practices were being indulged in to enable undersize crays to be handled. Fishermen were continually being approached to do all kinds of things, and therefore the Fisheries Department has to use all the power it possessed to guarantee the future of the crayfisheries, which were of considerable economic importance.

He said he had been pleased to hear the Minister say that with a 3" carapace measurement there was some overlapping. He agreed with Mr. Lemmon entirely that there would never be satisfaction as long as this weight criterion existed. He said without fear of contradiction that there were poor grounds and good grounds. Fish from some areas were poorer in quality and produced a lighter tail than fish of similar size from other areas.

Mr. Bowes said he would not be brave enough to suggest that the measurement be altered, but there had to be assistance to the Fisheries Department from the industry, and there had to be more honesty within the industry. Too many of the people in the industry were inclined to say, "I am without sin".

The Minister: The last two speakers have expressed strong disapproval with the 5 oz. tail. What should be in its stead? Can you offer anything?

Mr. F.K. Abbott, fisherman, Two Rocks, said that conservation was one thing he came to speak about. The fishermen were not as greatly concerned with the 5 oz. tail weight as with conserving crayfish there. One could harvest only a certain amount. The more harvested in one day, the less in the future. He thought that the amount of gear in the water was far too great for proper conservation. The smaller boats worked a reasonable number of pots, but now larger boats were coming in and putting down eight and ten times as many. The quantities of crayfish caught had a serious effect on the stocks. A

few years ago nobody set a large number of pots, and there was plenty for all. Now the big boats were flooding the grounds, and leaving nothing. There was no conservation on the grounds themselves.

Mr. P. Hope Dongara - Port Denison Fishermen's Association, said his Association felt that all crayfish processed on shore should be subject to carapace measurement only. There could be some means of identifying those that had been passed by an inspector, perhaps by a stamp.

Mr. F. Pensabene, W.A. Freezer-Boats Association, said that because the freezer-boats were not subject to as rigid inspection as shore-based plants, a small amount of underweight tails was thrown away. That, however, was no problem, it was the undersize crayfish that inspectors never saw.

Mr. Lemmon had given figures of underweight tails from "size" fish. That was a problem, but not a big one. He felt sure that it could be sorted out. The real problem was the number of undersize crayfish taken.

Mr. G. Powell, E.M.S. Pty. Ltd., and associated companies, freezer-boat operators, said the question of whether it should be tail weight or carapace measurement was a very vital one to his companies a year ago. Twelve months ago they were prepared to take this matter to Court, because it was very vital to them. There were then two bases of measurement, a tail length and tail weight, and they could not see how, if they caught a crayfish of legal size, and it then legally belonged to them, how they could finish up with an undersize tail and be liable to penalties. They had supported the Fisheries Department all along, because they were very much in sympathy with the Department. He had said again and again that breaches of regulations should be met with punitive action.

Mr. Powell asked whether any thought had been given to escape slots in craypots to allow small fish to escape.

Mr. Fraser: We have given that a deal of consideration.

Mr. Powell: I believe it has been used overseas. It is a completely new line of approach, and it could do away with all our problems. As things are now, an undersize crayfish is taken out of the sea and is then thrown out, probably destroyed, and thus lost. If you prevent that crayfish from being pulled from the sea, you have accomplished something.

Mr. Fraser: We have thought of and discussed this for a number of years. It has not unfortunately been possible to test the efficiency of escape gaps.

Mr. Powell: If you would like, we could do this for you.

The Minister: Thank you for the offer, Mr. Powell. We will probably avail ourselves of it.

Mr. Humphries: How would Mr. Powell's Association feel about being required to come in to a specified landing place to have crayfish measured?

Mr. Pensabene: Freezer-boat operators are not "Ned Kellys", but are people who think that the way they are doing their work is the best way. We would not like to have to bring our crayfish into a shore landing place. It would be impossible to get the crayfish from the pots, bring them to shore, and then take them back alive to the boats for processing.

The Minister: If we dispense with the weight measurement, how can we control the taking of undersize crayfish?

Mr. Pensabene: The only thing is an increase in the minimum size of the carapace.

Mr. M.G. Kailis, processor, Dongara, said he wondered whether sufficient research had been done before arriving at the 5-oz tail weight. He said that at certain times of the year there was a tendency for crays to be poor in quality, especially after the whites had disappeared. As the season progressed, the condition improved.

He wanted to know what the 5-oz. tail was protecting.

The Minister: We felt there had to be ways of catering for both the whole crayfish and the tail.

Mr. Kailis said that the constant excuse was there were not enough inspectors. If the Government could not afford more, then perhaps the processors could pay a levy for the purpose. The processors should not be expected to do it themselves. There should be an inspector at each plant.

Mr. J. Amear, of Wheeler Bros. and Amear, freezer-boat operators and processors, said the Department had done them a very good turn by

this new rule. Nowadays they were not embarrassed with bags of undersize crayfish. Certainly the 5-oz. tail weight had developed in the freezer-boat men a much happier frame of mind.

Speaking of undersize crayfish, he said that the Fremantle processors were hit hard last year with undersize crayfish.

Now every single fish processed by his firm was measured. Men had been put on to measure those crayfish, and sort them out. In addition inspectors were at his plant frequently, and it has now been possible to achieve a better control over their fishermen. He had had "Ned Kellys" in their teams, but they had been straightened out. Co-operation with the inspectors, and advice to those doing wrong, had done much to improve the situation, and they had a happy Association.

Mr. A. Buongiorno, (Crayboats Co-operative Pty. Ltd.), said that he felt the introduction of the standard crayfish 3" gauge had been a retrograde step. The old method of measuring was much simpler and consequently more effective. The new gauge had resulted in the bringing in of at least a percentage of undersize crays. He recommended that the old method be reverted to.

Mr. Buongiorno said that for proper conservation of the crayfishery all waters within 3 miles of the coast should be closed absolutely against the taking of crays, excepting during the white crayfish season, i.e., from November 15 to December 31 in each year. There was no need to conserve the white crayfish. It came and it went, it had a heavier, better tail.

He said that as a processor he was most meticulous in his upholding the regulations. The processors should not be penalised for having fish received from fishermen - it was the fishermen who should be checked. The Fisheries Department should not say it could not afford extra inspectors. This was a five-million pound industry, and the industry paid taxes. The Federal Government should see that the Fisheries Department had the money and had the men, for the few miserable pounds that it would cost.

Mr. S.J. Davey, (Golden Gleam Fish Processing Co. Pty. Ltd., Geraldton, crayfish processors), said he fully supported the remarks of the processors who had already spoken, and that he had experienced much the same difficulty with the tail weights. He thought the regulation a dangerous one from the processors' point of view. He said dangerous with all deference to certain operators. There were some very bad

operators. They knew this because they had talked to men who had worked for them in the past. He himself had tested 67 lb. of undersize crayfish. He had de-tailed these, and rejected only 14 tails. He mentioned this to show what the Minister, Director and staff of the Fisheries Department already knew, that one could get a "weight" tail from undersize fish.

Mr. Davey continued that he thought this new regulation, although all appreciated its purpose, was reacting unfairly on the industry, and was giving unscrupulous operators the greater opportunities of doing what everybody knew a lot of people were doing, dealing in undersize crayfish.

He said he was at a loss to suggest the best method of control. At the same time he felt he would like the Minister to give serious consideration to finding some other method rather than have two different measurements.

Mr. Russell: I would like to ask a question. One or two have asked whether it would be possible to do away with the weight and increase the carapace measurement. Could that be answered?

The Minister: You cannot do away with the weight measurement because of freezer boat activity. Their activity ensures that some other measure must obtain.

Before I ask anybody else to speak, might I ask you at this point of time, whether you, as a group, would like to meet as a group, elect a chairman of your own, and try to find a solution for yourselves? You may have this room. Think it over and let me know a little later.

Mr. Kailis: I would like to ask a question. Is the key to the whole conservation problem protection of undersize crayfish? Mr. Buongiorno spoke on closing all waters inside 3 miles. I think that this is entirely wrong.

The Minister: The Department has tried several ways, research, seasonal closings, etc. We have not achieved perfection yet. Indeed, sections of the industry are not perfect in their doings, I am sure, nor in their approach to the problems of the industry. I would like to see better co-operation in all regards.

I would like you now, as there do not seem to be any other speakers, to take back to those whom you represent, the points that

have come out at this meeting, tell them some of the problems that face the Department, as well as those which face yourselves.

As Minister for Fisheries I do not wish to act harshly towards any individual. I only want to try to ensure that the fishery will have a long life, and a profitable life. At the same time we want to listen to your problems, and try to assist you to resolve them. No easy solution seems to be in the offing. Do you wish to stay?

Mr. Powell: Would it be of any value if instead of coming back after lunch, some sort of advisory committee is set up to act with the Research Officers?

Mr. Davey: Has the Department any plan in mind as a basis for us to work on?

The Minister: We have been trying to get this law working. One of the reasons I have asked you to meet is to see whether you can help us or suggest some improvement.

Mr. Abbott: Would the Department consider reducing the amount of gear used?

The Minister: We have given a great deal of consideration to that and to many other things, but have not come up with any completely satisfactory solution.

Mr. Abbott: It appears that conservation is not being worried about, it is only how much money can be made.

The Minister: Your proposition is only partly right.

Mr. Abbott: How many pots may be used is already regulated in the Eastern States.

The Minister: Some of the other States feel we are handling the situation well.

Mr. Fraser: The Tasmanian Department imposes a fee on pots.

Mr. Abbott: That would make it easy.

The Minister: This is one of the matters on which it would be interesting to have the view of the industry.

Mr. J. Puppazzoni, Managing Secretary, Fremantle Fishermen's Co-op. Society, Ltd., said there had been many speakers, but there had been very few suggestions put forward. He suggested that all present go back to their various Associations, discuss these things, and then come forward with some suggestions from their Associations.

The Minister: That is an excellent idea.

Mr. Powell: I think we could do that.

Mr. Lemmon: I think the only answer is one measurement.

The Minister: Is there any seconder to the proposition about having a second meeting?

Mr. Pensabene: A second meeting, with you chairing it? I will second that.

The Minister: If you feel that a second meeting is warranted, I will agree, but you may think that what has been said is sufficient.

Mr. Bowes: Whilst agreeing that another meeting is desirable, the thing in my mind is who will attend the meeting?

The Minister: I think that I may, in my capacity as Minister, and with the approval of the mover and the seconder, say that I do not think we should proceed with the motion. I shall have my officers look over what you have said, and if we feel that there is the necessity for a further meeting, then we shall call one. If I think it is essential to get together again, I shall arrange it.

Mr. Lemmon: May I suggest that the various groups go back and get together with their own members, and if they can formulate some basis to work on to put it forward.

The Minister: By all means. If you have anything you wish to send down to me, do not hesitate to do so.

Mr. Lemmon: I would like to speak on insurance of boats. I think you know there have been a lot of losses lately. Could I ask you to look at the question with a view to taking the matter up with the State Government Insurance Office, in the hope that they will give a reasonable premium rate to fishermen. It is quite right, the private insurance companies have lost a lot of money, but I feel that the State Government Insurance Office could come in to take the matter up. The present premium of 11% is a killer.

The Minister: I shall have a look at it.

Mr. Humphries: I would like to take the liberty of moving a vote of thanks to the Minister for calling this meeting, and listening to the troubles and difficulties of the various sections of the industry. Personally I do not think that anything but good can come out of this, and I think that you will have the support of the members of the industry in what you do to benefit it. I think we can go back to our members and later send your officers a little bit they can get their teeth into. I do thank you on behalf of everyone present, and ask them to accord you a vote of thanks in the usual manner.

(ACCLAMATION)

The Minister: Gentlemen, thank you for your vote of thanks. I do hope that we may be able to help you in some way. Thank you for your attendance.

(MEETING CLOSED AT 12.40 P.M.)

#### NEW PATROL VESSEL

The construction of the Department's new patrol vessel is proceeding on schedule. It may be recalled that the contract was let late in March to Back Bros. & Co., of North Fremantle, and stipulated that it must be completed within six months. No troubles of any consequence have been encountered and it is expected that she will be handed over within the prescribed time.

She will be a 40-ft. craft, with a beam of 12 ft. Her waterline length will be 36 ft. and her draft 3 ft. She will be powered by a matched pair of General Motors Series 53, 4-cylinder marine diesels and fitted with 2:1 reverse reduction gear boxes. She will cruise at about 10 knots.

Of carvel wooden construction, with a raised deck, the vessel will be internally divided into five watertight compartments. These will be a fore peak cable locker; a forward 2-berth cabin; washroom and water closet; a wheelhouse with galley and dinette situated on top of the motor room; an open self-draining cockpit; and an aft peak store and steering compartment.

PERSONAL PARS

Mr C.G. Setter, Director of the Fisheries Division, Department of Primary Industry, last month spent three days in Broome en route to Perth from Thursday Island and Darwin, where he had been looking into aspects of the pearling and pearl culture industries. He reached Perth on April 5 and called on the Director, among others, before returning to Canberra.

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Three wise men from the East will visit us this month. The first two will be Mr P.D. Lorimer and Dr Bruce Malcolm. Mr Lorimer is Technical Adviser to the Fisheries Division, Department of Primary Industry, Canberra. He will arrive on May 1 and stay for approximately three weeks. During that period he will be acting as observer on the aerial tuna survey to be carried out on behalf of his Department. Dr Malcolm, as most staff already know, is Research Officer in the Division of Fisheries and Oceanography, C.S.I.R.O., Cronulla, N.S.W. He will also arrive on May 1. Dr Malcolm will visit Albany on May 4, and Busselton on May 7 in connection with the salmon research programme. He will return to Perth on May 11 and to Cronulla on May 16.

The third will be Dr J.M. Thomson, Principal Research Officer, Fisheries Division, C.S.I.R.O., who is project leader of the western fisheries research programme. He will arrive on May 12 on the second of his quarterly visits to supervise and correlate the crayfish, prawn, salmon and whale research projects being carried out under the auspices of the Western Fisheries Research Committee. Dr Thomson will return to Cronulla on May 20.

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Two of the appointed members of the Fauna Protection Advisory Committee will make trips overseas in the next few weeks. The first will be Mr J.B. Higham, of Albany, who will sail in the "Canberra" from Fremantle on May 9 for an extended holiday in the United Kingdom and on the Continent. The second will be Dr D.L. Serventy, Principal Research Officer, Wildlife Survey Section, C.S.I.R.O., who will fly to Ithaca, New York, U.S.A., on June 5, to attend a meeting of international ornithologists. He will return to Perth via the United Kingdom and will possibly visit the Continent as well. Dr Serventy expects to be absent from the State for five to six weeks.

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The Director (Mr Fraser), who has been a member

of the W.A. State Committee of C.S.I.R.O. for the past 10 years, notified the Organisation's Executive when re-appointments were being considered earlier in the year that in consideration of his many other commitments he was unable to accept membership for a further term.

#### FAUNA PROTECTION ADVISORY COMMITTEE

The bi-monthly meeting of the Fauna Protection Advisory Committee was held at Head Office on April 13. Items of particular note in a long agenda were conservation of rare fauna (i.e., the Short-necked Tortoise and the Noisy Scrub-bird), conservation of fauna on Houtman Abrolhos, an application to have the Oobagooma Pastoral leases, West Kimberley, made a sanctuary for fauna by agreement, and conditions to be imposed in respect of forthcoming collecting expeditions being organized by the British Museum (Natural History). A separate note on the latter appears elsewhere in this issue.

From May 9 to 11, the Director, as Chairman, will lead the Committee on visits to a number of centres in the South-West. He will be accompanied by the Committee's Secretary, Mr H.B. Shugg, and by members Dr D.L. Serventy, Principal Research Officer, Wildlife Survey Section, C.S.I.R.O.; Mr A.J. Milesi, Fire Control Superintendent, Forests Department; and Mr A.H. Robinson, of Coolup.

With Mr H.O. Webster, who rediscovered the Noisy Scrub-bird, they will visit the area which it has been suggested should be reserved to protect this and other rare species, including the Western and Rufous Bristle-birds, the Western Whipbird and certain small marsupials. At Wagin, the Committee will meet representatives of the Shire Council in an on-the-spot discussion on the future use of Wagin Lake. The Council wishes to establish a rubbish disposal site at the Lake, which has been reserved for the preservation of native game for almost forty years. Later the Committee will inspect a number of sections of the Dryandra State Forest in respect of which applications for alienation have been received. The Committee's interest, of course, will be the value of the areas concerned to fauna conservation. They will be piloted by the Forests Department's officer in charge, Mr J.H. Currie, who has invaluable personal knowledge of the area. It is said to be one of the last strongholds of a number of species of rare fauna, including that attractive little marsupial, the Numbat, or Banded Antecater.

The Committee will return to Perth on the evening of May 11.

CHRISTIAN NAMES AND SURNAMES

The Director, Fisheries Division, Department of Primary Industry, in a recent letter, pointed out the difficulties which his office was having in differentiating between the christian names and surnames of some licensees. He quoted, as an example, the following -

YKOV        CVITAN  
ZIVOIIN    CUEIIC  
ILORIONE AMATO

It is difficult, obviously, for recording officers in Head Office and Canberra to decide which names are which. In all cases such as this, licensing officers are directed to underline the surname. They must, of course, make a point of finding out from the licensee which is his christian name and which his surname.

BRITISH MUSEUM TO COLLECT IN AUSTRALIA

Five separate expeditions, each of six to nine months' duration, will be undertaken in Australia between September and November this year. They will be conducted by the British Museum (Natural History), which is aiming to improve its collection of Australian bird specimens. Information to this effect has been received from the Prime Minister's Department, Canberra, which has been approached by the Director of the British Museum, Dr T.C.S. Morrison-Scott. His Excellency the Governor General (Lord De L'Isle) is a member of the Standing Committee of the Trustees of the British Museum, and it is understood that the approach was made to the Australian Government through him.

The Secretary of the Prime Minister's Department advises that the greater part of the money for the expeditions has been provided by an Australian resident in England, Major H.W. Hall, O.B.E., M.C. Specifically, the aims of the expeditions will be -

1. To obtain specimens of birds (whole specimens, skins, skeletons, eggs, nests, parasites, and anything else of interest) for the study collection of the British Museum (Natural History) and various Australian museums.
2. To explore the principal vegetation associations, and in particular those parts of Australia the birds of which are least well known and which may have forms of special interest.

3. To investigate any aspect of bird biology which can reasonably be undertaken without prejudice to the main purpose of collecting specimens.
4. To make comparative studies of the birds, in their behaviour and ecology, with those of other avifaunal regions.

The proposed expeditions were considered at the last meeting of the Fauna Protection Advisory Committee. Subsequently recommendations were made for the consideration of the Minister. In its consideration of the matter, the Committee felt it was constrained to keep in mind the conservational needs of the fauna of Western Australia, the requirements of Australian scientific workers, and, to a lesser degree, the demands of the Western Australian Museum. The comprehensive recommendations of the Committee were accepted by the Minister and subsequently conveyed to the Commonwealth authorities. In brief they were:-

1. The series of expeditions would be welcomed to Western Australia and afforded assistance and co-operation.
2. Restrictions applying to local scientific collectors would apply to all visiting collectors. So far as birds were concerned, these were -
  - (a) each collector should be separately licensed;
  - (b) no fauna should be collected on any sanctuary;
  - (c) all holotypes of species and syntypes of subspecies and duplicates (one pair in each case) of any rare species (other than the rare and vulnerable species which are not to be taken under any circumstances) shall be donated to the Western Australian Museum;
  - (d) no person should take or have in his possession, whether living or dead, or keep in captivity or confinement, any specimen of the following species which have been classed as rare and vulnerable -
    - (i) Short-necked Tortoise (Pseudemydura umbrina)
    - (ii) Noisy or Western Scrub-bird (Atrichornis clamosus)
    - (iii) Bristle-bird or Western Bristle-bird (Dasyornis brachypterus)
    - (iv) Rufous Bristle-bird (Dasyornis broadbenti)
    - (v) Ground Parrot (Pezoporus wallicus)
    - (vi) Western Whipbird (Psophodes nigrogularis)

- (e) in the case of the Black and White Wren (Malurus leucopterus) not more than one pair, a male and a female, may be taken;
  - (f) no fauna, whether dead or alive, may be taken out of the State except by the authority of a license;
  - (g) all collectors and members of the expedition shall comply with the provisions of the Fauna Protection Act and Regulations;
  - (h) returns setting out the number of each species taken, the place where they were taken and all other details required, shall be forwarded within one month of the time stipulated by the Chief Warden of Fauna.
3. To protect future scientific workers in Australia, all material collected shall be made available on loan to scientific workers in Australia, if so requested.

In making its recommendations, the Committee drew attention to the plight of Australian scientists who needed to refer to type specimens held by the British Museum (Natural History). Heretofore, it said, unless an Australian scientist could afford the journey to London, he could not obtain type or photographic material of Australian species held there, and was thus seriously handicapped. The Committee pointed out that on the other hand the Western Australian Museum was prepared to lend type material in its possession to other museums, and in fact frequently did so. It expressed the hope that the co-operation which the British Museum parties might expect in this State would lead to an alteration in the British Museum's policy regarding the loan of material, so that holotypes and other specimens of Australian animals already in its collections might be borrowed by Australian museums. The Committee stated that this policy had in the past been a source of much resentment among Australian scientific workers, who had found it exceedingly difficult to complete taxonomic revisions without the material they needed.

#### FISHING BOAT BEACHED AT MYALUP

Inspector T.B. Baines, of Bunbury, has reported that the fishing boat "Castanet" drifted on to the beach on a spit three miles north of Myalup Beach at approximately 3 a.m. on April 19. Owned by Mr J. Henricksen, of Kirup, and valued at £2,000 the "Castanet" is a 32-ft. craft with a beam of 11 ft. Mr Baines said that at the time of the

mishap Mr Henricksen was asleep on board the vessel but escaped unscathed. An attempt at salvage would be made as soon as the weather permitted.

NOTES ON FAUNA OBSERVATIONS

(a) Wild Turkeys -

Assistant Inspector E.H. Barker reported on April 7 that on his last patrol between Lancelin Island and Snag Island he saw 8 bustards in close proximity to the Jurien Bay airstrip. Two more were seen outside the Cockleshell Gully homestead of Mr W. Gregson, while several other lone birds were sighted during the course of the trip.

(b) Black swans at Point Walter -

The Fleet Maintenance Officer, Mr A.J. Bateman, reported that on the morning of the Head of the River race he sighted two adult black swans and three cygnets adjacent to Point Walter spit. They were still there at midday, he said, despite the heavy traffic. They took little notice of the traffic except to shift from one side of the spit to the other.

(c) Senegal Doves at the Chapman River -

Mr Bateman offered another interesting observation made on a trip to Shark Bay. On March 13 he sighted four or five Senegal doves near the Chapman River crossing between Geraldton and Northampton. It is the most northerly sighting of this species that we have received. This dove appears to be spreading throughout the settled areas of the State. The birds seen by Mr Bateman were possibly the same ones as those observed at the same spot by the Fauna Protection Officer (Mr Shugg) when he accompanied members of the Fishermen's Advisory Committee to Port Gregory on March 5. It was the only group Mr Bateman saw north of Geraldton.

(d) Hoary-headed Grebes at Harvey Estuary -

Fauna Warden S.W. Bowler noted what he described as an unusually large number of hoary-headed grebes at the Harvey Estuary near Island Point between April 20 and 22, 1962. He actually observed two groups of the birds, the first one comprising approximately 311 birds, while the second contained an estimated 73. Both groups kept separate from each other and the individuals in them were closely packed. Mr Bowler added that in the last week of April, smaller rafts of the species were sighted on the Swan and Canning Rivers, but the largest of these contained only an

estimated 11 birds. Since then other observers have reported larger numbers on the Como foreshore.

#### WHALE QUOTAS ANNOUNCED

The Director of the Fisheries Division, Department of Primary Industry, has advised that the 1962 quotas for the humpback whaling season have been set by the Minister for Primary Industry, Mr Adermann.

The Cheynes Beach Whaling Company, at Albany, has been allotted 100 humpback units, while the Nor'-West Whaling Company, at Carnarvon, has a quota of 450. The numbers allotted this year are similar to the initial quotas announced last year when the Cheynes Beach Company was allotted 105 and the Nor'-West Whaling Company 450.

#### BOTULISM - NO MASS MORTALITIES

In spite of the particularly dry conditions obtaining since last July, comparatively few cases of botulism in waterfowl were reported to the Department last summer. The conditions which favour the growth of the particular bacterium which generates the toxin are very poorly understood. The absence of mass mortalities this year might, or might not, have been occasioned by the earlier drying out of waters at a time when temperatures were higher. Dr N.F. Stanley, Professor of Microbiology at the University of Western Australia, and an authority on virus diseases, says that the type of botulism which affects birds is not harmful to humans. On the other hand, fish have been recorded as having been poisoned by strains of botulism which would affect humans, and if any great mortality of fish is noted in the Swan River, Head Office should be advised immediately so that the information can be passed to Professor Stanley, who is desirous of studying the question fully. Samples of the dead fish should be taken provided they are not grossly putrefied.

#### FAUNA PROSECUTION AT CARNARVON

Inspector H.D. Kavanagh, of Shark Bay, reports that two men were charged in the Carnarvon Court, in April with having committed a breach of the Fauna Protection Act. The men had been apprehended by a police officer while shooting Black swans and were subsequently found guilty. They were Antonio Ranieri who was fined £20 and Sebastiano Poalillo who was fined £10. In addition, each had to pay 8/- costs. The case was handled by Honorary Warden A.R. Whitworth and heard before Mr N.J. Malley, S.M. The fines

imposed indicate that the Courts do not treat lightly offences against the law established to provide protection to our valuable and attractive fauna.

#### TORTOISE HUNT

One of the intriguing mysteries surrounding the Short-necked Tortoise has been its paradoxical survival in a limited area. In the opinion of Dr A.R. Main, Reader in Zoology at the University of Western Australia and a deputy member of the Fauna Protection Advisory Committee, it is likely that the tortoise emerges from aestivation after the first heavy rains and peregrinates at random after the fashion of frogs. To test this supposition, Fauna Wardens S.W. Bowler and N.E. McLaughlan have spent many hours searching likely areas since the year's first rains fell at Easter. Although their searches have been unsuccessful to date, they will be continued sporadically at all hours in an effort to establish whether the species survives in any areas outside those which are being reserved.

Assistance in the conduct of the searches has been promised by the W.A. Naturalists' Club and any members of the staff who wish to participate should contact the Fauna Protection Officer. Volunteers need to be prepared to traverse densely vegetated swamps and burnt country.

#### JAPANESE QUIT AUSTRALIAN PEARLING GROUNDS

The Japanese Government has informed Canberra that the Pearl Shell Fishing Co. of Japan will not be sending a pearling fleet to operate in Australian waters during 1962. Advice to this effect has been received from the Commonwealth Department of Primary Industry with the notation that it was most unlikely that any other Japanese vessels would desire to fish for pearl shell in their place.

#### STAFF POSTINGS

Relieving Inspector G.C. Jeffery, who was posted to the Mandurah district for a period last month following Inspector Green's accident, was later transferred to Fremantle to take over that district while Senior Inspector A.K. Melsom was absent on annual leave. Inspector E.I. Forster was transferred to Mandurah from Perth on April 27 and will remain there until Mr Melsom's return from leave frees Inspector Jeffery to take over the Mandurah district again.

SERVICE OF SUMMONS

In view of the itinerant nature of the fisherman's calling, it was arranged two or three years ago that responsibility for the service of a summons taken out against a person for a breach of the Fisheries Act would be accepted by the Department. Until that time service had always been effected by the Police, but in a great many cases police officers were not aware of an offender's whereabouts, and it was not a simple matter to ensure personal service. Nor was it always possible, when the purpose of the constable's visit was made known to the wife of the fisherman, or to some other person residing at his usual place of abode, to secure information as to his whereabouts.

In the majority of cases a fisherman's actual place of work is known to one or another of the Department's inspectors. Hence to simplify service, and to ensure that no undue delay would occur in bringing cases to Court, the Department, as already indicated, decided to take over the duty of serving summonses.

Section 56 of the Justices Act provides that a summons must be served upon the person to whom it is directed by delivering a duplicate thereof to him personally, or if he cannot be found, by leaving it with some person for him at his last known place of abode.

We are advised by the Crown Law Department that in the view of a senior metropolitan magistrate, which is supported by the Chief Crown Prosecutor, this does not mean that if the defendant is out for the moment, or cannot be found for the particular moment, the summons may be left with some person for him at his last known place of abode. This latter mode of service, we are told, is available only if, after due diligence, the defendant cannot be found. In other words, section 56 requires the person serving the summons to make search for the defendant - not perfunctory but "diligent" search - before leaving it at his last known place of living.

To simplify court process, therefore, and to avoid the necessity for calling as a witness the inspector who served the summons to prove that he had made "diligent search", it is desirable, although the form of certificate does not provide for it, that the fact of this substituted service be endorsed on the summons. In future a statement in or to the effect of the following words should be written below the certificate on the back of the summons when it has not been served personally - "I have made diligent search for the within-named defendant, but I have not been able to find him - (Signature)". The certificate itself must also be completed and signed.

## CLEARING HOUSE

### Prawn Farming Shows Promise

Three Australians are at present making the world's first attempt to mass-breed prawns in captivity. They hope to show that large-scale prawn farming on a sound economic basis is possible along a vast stretch of the eastern Australian coast, and although the effort is still in an experimental stage, the indications are that it will be successful.

The men are Dr Albrecht Adelbert Racek, a lecturer at Sydney University's Department of Zoology; Mr Bruce Wilsher, formerly a factory foreman and at present a worker on an oyster farm, and Mr Robin Austin, a skilled and enthusiastic amateur marine biologist.

Dr Racek started his prawn investigations in 1953, when employed by the Fisheries Department of the New South Wales Government. He already knew of one species of prawn that bred in enclosed waters. This is the greasy-back (Metapenaeus mastersii), a prawn, found only in Australia, that breeds freely in estuaries and lakes on the east coast from southern New South Wales to central Queensland.

Dr Racek first saw the possibility of prawn farming by the mass-breeding of captive stock when he studied the situation at Lake Innes, on the north coast of New South Wales, near Port Macquarie (275 miles north of Sydney). This had been a landlocked freshwater lake till 1928, when local farmers dug a canal to drain the lake into the estuary of the Hastings River and as a result the level of the water fell by several feet. Now its depth is only some 2 ft. over a large area of "unfathomable" mud.

The lake soon became populated by greasybacks in such massive numbers that, because of undernourishment caused by limited food supplies, or inbreeding, or both, the prawns rarely reached ripe adulthood. They usually grew to a length of between  $2\frac{3}{4}$  in. and 3 in., while properly developed male greasybacks measure from  $3\frac{1}{2}$  in. to  $3\frac{3}{4}$  in. and females up to 6 in.

It was impossible to fish the lake: the water was too shallow for a boat and the mud put wading out of the question. Dr Racek therefore recommended adoption of an Asian method for Lake Innes, but for various reasons his plan was not adopted.

### Great interest

Meanwhile, Bruce Wilsher, a soldier serving with the Australian Forces in Japan, visited the Hiroshima district where he inspected, with great interest, a farm in

which trapped offshore prawns were fattened in several ponds of 2-3 acres in extent. This gave him the incentive to study the prospects of prawn farming in Australia.

With the idea of following the Japanese system, Wilsher leased a large section of mangrove swamp at Taren Point, on a southern fringe of Greater Sydney. This area is in Botany Bay, close to the estuary of the Georges River.

Now a factory foreman, Wilsher could not afford to hire a bull-dozer, so with axe, pick, shovel and wheelbarrow he set about the stupendous task of partially clearing his lease and digging two ponds, each measuring 75 ft. by 40 ft. and 5 ft. deep. The backbreaking effort at Taren Point in his off duty hours occupied his every weekend, holiday period and many afternoons and early evenings for 18 months.

#### World's first

While engaged on this task he read about Dr Racek's proposals for Lake Innes and called upon him for more information about prawn farming. Dr Racek persuaded Wilsher to abandon his plan to trap and fatten young offshore school or tiger prawns in his ponds and to begin true farming with inshore greasybacks that breed naturally in enclosed waters. Thus he would be the world's first true prawn farmer.

In November, 1958, Wilsher procured 300 pairs of breeding prawns from Lake Macquarie, about 65 miles north of Sydney, and released them in his ponds. During the following weeks Dr Racek found that the stock was breeding prolifically. Before long, several hundreds of thousands of infant prawns were populating the ponds. Soon they were between a quarter and a half-inch long.

At this stage they had shed their shells many times as they developed into demersal creatures easily recognisable as prawns. Their diet slowly underwent the usual changes from herbivorous to omnivorous, and on to carnivorous with the onset of adulthood. Dr Racek and Wilsher supplemented the natural available food with chopped liver and crayfish meal in the pools.

Unfortunately, lack of scientific knowledge, plus ignorance of the food requirements of the rapidly growing youngsters, were the joint causes of extremely high mortality. The oxygen in the water became depleted and the prawns died by hundreds of thousands. One pond was opened to the sea and many of the still-living prawns left for the bay. But many stayed on, reaching full maturity once the pressure had been removed from the food and oxygen resources. Some prawns also reached maturity in the fully enclosed pond.

Possible

These facts made it clear to Dr Racek and Wilsher that prawn farming was possible but it was obvious that the two original ponds were not big enough for the populations that they were called on to support. These ponds, incidentally, still exist, containing progeny of the first migrants.

In 1959, Mr Robin Austin joined the venture. Then Mr Clarence Lewis, an oyster farmer at Woollooware Bay, Taren Point, close to Wilsher's original ponds, expressed interest in the work and said that he was keen to see it continue under the supervision of Dr Racek.

Mr Lewis provided a shallow tide-fed estuarine pond covering an area of 10 acres and rich in weed and both animal and vegetable plankton.

In August, 1960, the trio made a plan to coordinate their efforts. Wilsher was to be responsible for the lease, Austin for stocking and Dr Racek for biological supervision. The main purpose at this stage was to find out more about the economics of the project.

Stocking began on September 6, and small quantities of breeding prawns were periodically released until Christmas. Altogether, 900 pairs of migrants were introduced into the pond. Early in 1961, microscopic examination of water samples showed the presence of large numbers of prawn larvae. A little later hundreds of thousands of infants, each measuring about a quarter-inch long, had developed to the demersal stage. Subsequent investigations revealed a huge population of healthy young prawns growing to adulthood.

Confident

Dr Racek and his associates were confident that the experiment would prove to be a great success. But an unknown factor then thrust its way into the proceedings. When the three men made an assessment of part of the pond in August, 1961, they found that the population had only tripled itself. Earlier indications had been that the original population would have multiplied several thousand times.

Seeking a reason for this devastating result, the experimenters came to the conclusion that water pollution from chemical and other factory waste had probably caused the enormous mortality in the pond.

Sufficient was achieved, however, to convince the three that true prawn farming was filled with the best of

prospects. Wilsher is now seeking a lease at Lake Macquarie and Austin on the north coast of New South Wales. Dr Racek will still act in a supervisory capacity. The new areas will be well away from industrial districts.

Discussing the disappointing outcome at Woollooware Bay, Dr Racek said: "The number of prawns we can raise in ponds of given sizes is one of the vital facts we are trying to establish. It is known that a female prawn is capable of spawning twice a season at the rate of about 250,000 eggs each time. As with all animals of high fecundity, the mortality is enormous, but from 5,000 to 10,000 eggs may develop into individuals. We do not yet know what order of population will emerge under the conditions in the pool. Mortality may be higher or lower than elsewhere.

"We may also find it hard to maintain food supplies. Prawns need different diets at different times of their lives. The young are plankton-eating vegetarians. It is, therefore, necessary to increase the productivity of plankton in enclosed ponds and this calls for complex procedures, including the use of fertilisers.

"As the growing prawns pass through the omnivorous stage to become almost entirely carnivorous, we will have to depend more on such prepared foods as liver meal. The successful use of this system of feeding on a commercial scale can be decided only by experiment."

#### Filling the gap

Dr Racek sees farming as a means of filling a gap in the existing Australian prawn industry.

"Today's harvest by the usual means depends to a great extent on weather and other conditions outside of the control of prawn fishermen," he said. "Supplies, as a result, vary greatly. Glut and scarcity follow each other in a monotonous cycle. Prawn farming would play a major role in stabilising the industry. Harvests could be gathered when prawns from the usual sources are scarce."

(World Fishing

London

April, 1962)

#### Crazy Idea Led To World's First Pearl Shell Farm

The first farms in the world for the cultivation of black lip pearl shell have been started in Dongonab Bay on the Red Sea coast of Sudan.

The story behind this unique development goes back

60 years when Dr Cyril Crossland, an eccentric English biologist, started experiments in cultivation of pearl shell in the Red Sea. After many years he was able to cultivate the shell, Pinctada margaritifera, but with the fall in demand for it, and a general lack of interest in his "crazy" work, he left the Sudan and nobody carried on his experiments.

About four years ago, William Reed, a young Australian from Queensland, was sent to the Sudan by the Food and Agriculture Organization. The Sudanese government had asked the Organization for aid in developing the shell fisheries, first to help the skin divers and, later, to see to what extent the pearl shell resources could be developed.

"We surveyed the natural resources of the black lip pearl shell along the Sudan coast of the Red Sea, and found that there was not sufficient for a great increase in production," said Bill Reed, who recently returned to Rome on completion of his assignment. "In fact, we found they were being overfished. It was at this point I studied the notes and reports left by Dr Crossland, whose work I knew about, and, in agreement with officials of the Fisheries Department of the Sudanese government, decided that pearl shell farming was the answer to our problem.

"So we took up Dr Crossland's work where he left off and in the past few years we have developed a very simple technique. This consists, generally speaking, of first collecting larvae of the black lip pearl shell on bamboo frames and then transferring them to an under-water nursery. This nursery is made up of wire netting trays on which we place the larvae and provide cover to protect them from predatory fish and carnivorous molluscs."

A government demonstration farm was first set up to show the local fishermen that this method of cultivation produced a rich harvest.

"About 20 local fishermen, mostly in family groups of about four, have taken up cultivation so far," said Mr Reed.

For fuller account see Fishing News International, January 1962 issue.

(\* This is the principal species fished at Broome.-Ed.)

Japan - A Fishing Giant

From Japan, a country which could be tucked comfortably into a corner of Mainland China, her nearest competitor, comes almost 20 per cent of the world's yearly catch of fish.

Japanese boats roam the world: they travel from the steamy heat of the Indian Ocean to the frigid stretches of the Antarctic; from the Bering Sea to the South Atlantic, a whole continent away.

Her fishermen bring back a catch which is almost as impressive in its variety as in its size. Japanese statistics of 1957 list 30 separate types, ranging from tiny sardine and anchovy through mackerel, salmon, flounder, halibut and cod to sword fish, shark and tuna.

A million and a half people (fishermen and their families) are involved in this operation which, in 1960 (latest figures available) produced a world record of 6.2 million tons of fish, valued at \$920 million.

The fishing industry in Japan has had a long and often interrupted history. Archaeologists estimate, from the character of shell mounds around her coast, that the Japanese have been active fishermen for 4,000 years.

In 1905 the country had some 420,000 fishing boats but only 50 of them were powered. Only 400,000 tons of fish were caught in a year, compared with today's more than six million tons. Gradually the boats were mechanised until, in 1940, Japan produced four million tons of fish in a year and had almost 75,000 powered boats.

This progress was interrupted by the war when most of the country's larger boats were taken for military use and finally lost. The remainder could not make good catches because of fuel shortage and scarcity of fishing materials, and because fishing port facilities had been destroyed. In 1943 there was a rapid disappearance of sardine which, during the period 1933 to 1936, had made up nearly half the total fish production.

Consequently, the catch decreased sharply toward the end of the war with a total production figure of only two million metric tons - almost the same level as 1910-1920.

Rehabilitation

In 1945 the Japanese Government drew up an urgent rehabilitation plan for the reconstruction of the fishing

fleet. The programme took two years to achieve, and by the end of 1947 the number of powered boats reached its pre-war level. By 1948 Japan had become the world's largest fishing nation.

By 1959 her fleet had been enlarged to a total of 400,000 vessels, of which 170,500 were powered. Japan now owns some 30 per cent of the world's fishing boats, in number, if non-powered vessels are included.

In 1952, Japanese boats were released from a strict control of their fishing grounds imposed by the allied nations; they began to fish for salmon and king crab in the North Pacific, and Japanese tuna ships exploited new grounds in the South Pacific, Indian and Atlantic Oceans.

The full potential of all the Japanese fishermen is still far from realised, and is a question of great concern to the Government.

Fishing families account for 84 per cent of the "management units" of the industry, but they produce only 18 per cent of the total revenue from fish. Fisheries enterprises, defined as those owning fishing boats of more than three tons, comprise only 16 per cent of the total number, but produce 82 per cent of the total revenue.

Several factors have acted as stimulants in making Japan a fishing giant. Less than 30 per cent of her land area is cultivable, and her people have been forced to turn to the sea for food. Her mainlands are washed by both the warm Kuroshio current and the cold Oyashio current, providing habitation for almost every variety of fish.

For instance, in northern waters such as those of Hokkaido and north-eastern Honshu, salmon, herring, saury, cod, flatfish and squid live.

In the warm southern and western waters, anchovy, mackerel, yellowtail, tuna, bonito and many others are found. Japan is by its geographical nature a fishing country. All year round, except for the typhoon season in the fall, the weather is good and seas are calm, and the coastline provides a multitude of natural shelters for fishing boats. The sea is regarded as a rather friendly element, and Japan is a sea-minded and fish-eating nation.

#### Fish eaters

With the pressure of population (100 million in 365,000 square kilometres) as an added motive, the Japanese have become the world's largest fish-eaters.

Europeans eat meat five days a week and fish two days; in Japan the figures are reversed.

Fish consumption per person per year in Japan is about 60 kilograms; in the Netherlands, as an example of a European country, it is about 9.5 kilograms.

When Japan began to modernise her fishing operations, she had a well-developed engineering industry, which permitted her to provide parts for virtually all kinds of boats, engines, radios, fish-finders, navigational equipment and fishing gear needed, without relying on outside help or imports.

Japanese fleets operate in almost all areas of the world. The fishermen seldom emigrate as do European fishermen, but often operate under the Japanese flag.

It is said that fishermen have "hunters' minds", and it is especially true for Japanese fishermen. Their main concern is to find good fishing grounds. They are tough and hardworking, and are often - in the case of those who work on the tuna vessels in the Atlantic - away from home for more than two years at a time.

There are 150 Japanese fishing vessels permanently abroad, with base ports in Latin America, the Near and Far East, the Caribbean and Mexico, Australia and the Mediterranean.

Operations in Central and South America are nearly all joint ventures with large firms in those countries; in south-east Asia, Japanese boats operate under charter contract, and in Europe by sales contract. Some 100 tuna boats and ten trawlers operate in the Atlantic Ocean.

### Overseas

Overseas fishery agreements are carried out in several ways; through joint companies which conduct fishing and processing operations; in the form of contracts or concessions to supply fishery products to local markets or processing plants or for export; through technical assistance; through exploratory fishing; through refuelling or transshipment bases; or by providing markets in a foreign port for fish taken by the Japanese high-seas operation. A single agreement in a foreign country may consist of one or more of these arrangements.

Some joint fishing enterprises are conducted at the request of a foreign country to train nationals in modern fishery methods and to provide fish for the local market or for export.

Joint fishery companies are in operation in about 15 countries. Joint companies involve capital provided by the foreign interests, with the Japanese furnishing technical direction, vessels and gear.

Japanese fishery experts and expeditions have been furnished to under-developed countries on request and have co-operated with the Food and Agriculture Organization in its technical assistance programme.

Refuelling and trans-shipment bases, such as that at Mombasa, Kenya, may obviate the necessity of a long trip home for Japanese vessels. The ships buy fuel and provisions and transfer their catches to a refrigerator ship for ferrying back to Japan. At bases such as those in Italy, the catch is sold within a quota and under permit; the ships refuel and return to the fishing grounds.

A contract in Haiti provides for the Japanese boats to supply fish to local markets and to sell tuna for trans-shipment to a cannery in Puerto Rico.

Japan operates more than 30 whale, tuna, crab and salmon factory ships which freeze, salt or tin their catch at sea. In addition 10 large stern trawlers of 2,000 gross tons catch bottom fish and make fishmeal at sea. These boats range over the seas of the world from the Antarctic to the North Pacific, and from the Indian Ocean to the Atlantic.

Their operation has mainly developed since 1952, when restrictions on high-seas fishing imposed during the war were removed. Factory ships were first used to help solve the problem of the post-war restrictions on harbour facilities in foreign countries.

Whalers travel to the Antarctic, the Bering Sea and the coastal waters around Japan.

#### Factory ships

They operate as a fleet, with one large factory ship of 10 to 30,000 gross tons, and about a dozen smaller catcher boats of some 500 to 700 gross tons, which transfer their catch to the factory ship. The factory ship processes oil and freezes whale meat for human consumption, and these are taken back to Japan by transport ships.

The fleet is at sea some six months at a time, including about two months for travel to and from Japan. The factory ships are manned by about 400 men and cruise at 15 to 16 knots.

The salmon factory ships also travel very long distances to fishing grounds in the North Pacific between Alaska and the Kamchatka Peninsula. One factory ship has a fleet of 25 to 30 catcher boats. According to a treaty between Canada, Japan and the United States, Japanese boats fish only in the western part of the area. The factory ships are equipped to tin, freeze and salt the salmon, which is then taken back to Japan by transport ships when the factory boat has taken on a full load.

The salmon are caught during migration by means of a drifting gill-net, a long rectangular net hung in the water, into which the salmon swim and are entrapped by their gills.

The crab factory ships operate in Bristol Bay and Okhotsk Sea. A factory ship is accompanied by catcher boats which set "tangle nets" on the sea bottom, into which the crabs walk and are entangled. The factory ship is equipped with boilers. The crab legs and claws - the only part of the crab used for meat - are boiled and split and the meat removed and canned.

Another venture for factory ship operations which has developed in the last few years is bottom fishing in the Bering Sea. The bottom fish in the area were known to be extremely abundant, but factory ship operations had not been a paying proposition and they were left unexploited.

In 1960, as many as 30 fleets were engaged in this fishing and produced about 600,000 tons of fish, including flat-fish, cod, herring, shrimps, etc. The fish were frozen or processed into fishmeal on board the factory ships.

### Education

With all these developments, Japan still looks to further expansion and improvement in the future.

Besides Tokyo Fisheries University and Shimonoseki Fisheries College, which are totally devoted to education and training in fishing methods, processing and fish culture, there are about 15 universities which have a department of fisheries where courses on fisheries biology and technology are available.

At a more practical level, there are about 60 fisheries high schools throughout the country. A number of universities and high schools have their own training boats to train seamen of a high calibre as prescribed by a national seamen's law.

There are also facilities for training students from abroad.

Modern developments also include research. The waters around Japan are divided into eight regions with one national research station in each region.

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### Scent and Salmon

#### Concocting a Lure

Many years ago it was discovered that the scent of human hands immersed in a creek was sufficient to stop a run of salmon up it from ten to fifteen minutes but that if the scent was masked by rubbing oil of mint, liquorice, musk, garlic, etc., on the hands, the run would not be affected at all.

Later it was demonstrated that if the noses of salmon, netted below the confluence of two streams, were plugged, they would, when released, swim about in a confused way unable to select their own streams.

These facts were taken into account by a firm in British Columbia which was carrying out research work with the object of concocting a lure for the use of commercial salmon trollers, and their efforts were directed not only to producing a bait essence with the attraction of natural feed, but an effective deodorant that would combine with it.

It took them ten years to find what they were after, but in the end they succeeded, and now they have produced a paste which is attractive to salmon and which can be rubbed on hooks with bare hands without lessening its attractiveness.

The paste is a turquoise colour and it will emulsify in depths up to 30 fathoms, disperse the flavour of feed and attract fish to the hooks. It is called Stacmac Fish Lure and is available from Stacmac Products, P.O. Box 176, North Vancouver, British Columbia, Canada.

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### Boatbuilding Material

A boatbuilder in the South of England has built three 34 ft. hulls of an entirely new material called

Seacrete - a derivative of concrete.

The exact method of construction has not been divulged, but it is generally supposed that the Seacrete mix has been sprayed or trowelled on to a light steel framework and allowed to set hard, forming a seamless hull one inch thick. There are no frames visible on the inside of the hulls.

The cost of building such hulls by this method with the new material is claimed to be considerably less than the cost of building in wood, glass reinforced plastic or steel by conventional methods, and it is also claimed that Seacrete possesses many other advantages over conventional materials.

The weight of a boat built with it is similar to that of one built of wood or glass reinforced plastic, and lighter than that of a steel boat. It is corrosion and rot proof, immune to attacks by borers, and fireproof. As a Seacrete boat is a homogeneous structure built in one piece, it has no scarphs, fastenings or rivets that may require attention.

Seacrete has low thermal conductivity and there is likely to be little condensation inside a hull built of it. Since its use does away with the necessity for internal frames, a boat built of it has more space inside. It is highly resistant to damage by impact or abrasion, but a hull built of it can be repaired simply and quickly if it does suffer damage. A boat of Seacrete also requires no maintenance other than painting for the sake of appearance.

If all these claims are justified in practice, Seacrete may turn out to be a most useful material for building low-cost fishing boats for use in tropical waters and elsewhere. It might also prove to possess advantages for building superstructures in steel fishing vessels and for lining fish rooms and refrigerated compartments, etc.

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Naturalist's Notebook by Eric Hardy

Scents

A fish has many ways of detecting chemical differences in the water it haunts. Its gills have special chloride-controlling cells which function to adjust balance between the greater chemical concentration of seawater which it must drink in certain amounts, and its own body fluids.

The nasal apertures also conduct water to olfactory sense cells and though their chemical stimuli will differ somewhat from those affecting the taste-cells on the fish's lips, there is much in common between the senses of taste and smell with fishes. Catfish, carp and some others that are hypersensitive to odours have taste-buds scattered all over their bodies, especially on the barbels at their lips. The sense may be fatigued very quickly. Some scents, perhaps akin to predators, repel fish; but Dr Coppleson found little security in chemical repellants in his study of sharks. Indeed, one cannot generalise too much about fish. When Australian experimenters used skin-divers to fire tranquillizing drugs into sharks in an attempt to stun them, the drugs only stimulated the sharks into greater activity. Presumably the drugs were not strong enough.

### Hybrid

How often do fish hybridise? The Russian achievement of breeding a new type of salmon by hybridising the masu and humpback (pink) species of Pacific salmon has aroused interest in the possibility of crossing other near-relatives in fish species. Hybridisation is much commoner amongst freshwater fish than amongst seafish and about a dozen crosses are known to have occurred naturally in British freshwaters alone, but few biologists have ever claimed to have traced a hybrid in catches of seafish trawled every year.

Hybrids between salmon and trout are weaklings which seldom reach maturity, but plaice-flounder hybrids have, however, been taken several times in the Baltic Sea, though much rarer in the North Sea. They can be produced artificially.

The hybrid Pacific salmon is claimed to weigh more than three times either of its parent stock, attaining an average of ten pounds. But as hybrids are sterile, their value is limited unless by chemical stimulation of the chromosomes in their cells they are made fertile, or a new species in effect is created.

Salmon-hatcheries are much more favoured for stocking salmon-rivers in Asia than in Britain. The advantage there is obvious. Experiments in the crossing of salmon and sea-trout have been undertaken by the Salmon Research Trust of Ireland, using eggs from a small grilse. Rainbow and brown trout have, of course, been hybridised, but their sterility always necessitates repetition to maintain a stock.

Bureau of Outdoor Recreation Established  
in Interior Department

Carrying out President Kennedy's instructions regarding the co-ordination of Federal outdoor recreation programmes, Secretary of the Interior Stewart L. Udall on April 2 signed an order establishing a Bureau of Outdoor Recreation in the Department.

President Kennedy has announced that Dr Edward C. Crafts, of Chevy Chase, Md., is being appointed Director of the new bureau. Crafts, a career Federal employee, is now serving as Assistant Chief of the Forest Service of the Department of Agriculture.

The Outdoor Recreation Resources Review Commission recommended the creation of the bureau in its January 31 report, and President Kennedy in his special message on conservation, transmitted to Congress on March 4, said the recommendation would be adopted.

In the message, President Kennedy said, "This bureau will carry out the planning functions already assigned to the Department of the Interior and will administer the programme of Federal assistance to State agencies ... This new bureau will serve as the focal point within the Federal Government for the many activities related to outdoor recreation."

Besides administering the current state co-operative services under 1936 legislation and the proposed state assistance programme on which legislation will soon be submitted, the new bureau will assist the Secretary in carrying out his Federal outdoor recreation co-ordination responsibilities, sponsor and conduct recreation research, conduct recreation resource surveys, develop a nationwide recreation plan, and disseminate outdoor recreation information.

Secretary Udall said a nucleus organization is being formed and a number of the functions of the Park Service's Division of Recreation Resource Planning are being transferred to the new Bureau. The new Bureau will co-ordinate recreational planning, rather than carry out land-management functions of existing agencies.

Secretary Udall created the new bureau under the authority conferred on him by Reorganization Plan No. 3, approved by the 82nd Congress in 1950.