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DEPARTMENT OF PARKS AND WILDLIFE

MENT, WESTERN AUSTRALIA

MONTHLY SERVICE BULLETIN

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Vol. II, No. 11

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STAFF NOTES

The Superintendent (Mr. A. J. Fraser) returned from the eastern States on Friday, October 16, after discussions with State and Commonwealth officers in Sydney, Melbourne and Adelaide.

Miss P. A. Davidson of Head Office resigned from the public service on October 30. Miss Davidson has accepted a position with a private firm of accountants in the city. At an informal gathering she was presented with a pen and pencil set and a box of handkerchiefs and was farewelled by those present. Miss Davidson had been with the Department for over three years and though we were pleased that she was able to further her interests, her departure could not but be suffered with a little melancholy.

Mr. John Barakonski of Head Office is due to return from a fortnight's annual leave on November 2.

Inspector G. C. Jeffery is scheduled to commence three weeks' annual leave on November 23. Inspector A. K. Melsom will relieve him.

Cadet Inspector B. A. Carmichael commenced three weeks' annual leave on October 19.

Inspector S. W. Bowler returned to duty on October 26 after three weeks' annual leave, during which period Inspector A. K. Melsom relieved in Geraldton. Mr. Melsom returned to Perth on October 26.

Patrol vessels "Kooruldhoo" and "Garbo" are being refitted for the crayfishing season at Lancelin and Cervantes Islands. The refitting of the vessels is being carried out under the supervision of Inspector F. A. Connell and Cadet Inspector N. E. McLaughlan, respectively.

M.V. "Lancelin" is at present in Geraldton and is expected in Fremantle this month. Assistant Inspector J. C. Thair will proceed on annual leave as soon as possible after the vessel's arrival in Fremantle.

#### PERSONAL PARS

Congratulations are extended to Mr. Keith Sheard, Officer-in-Charge of the W.A. Branch Laboratory of the Fisheries Division of C.S.I.R.O., who was recently granted a doctorate of the University of Western Australia for his outstanding research work.

Mr. F. F. Anderson, Director of Fisheries, and Mr. E. de B. Norman, Officer-in-Charge, Pearling, of the Commonwealth Department of Commerce and Agriculture, recently visited Western Australia. These gentlemen discussed with Inspector M. Goodlad in Broome and with the Superintendent in Perth aspects of the new Commonwealth Pearling Act.

#### W.A. LEAGUE OF PROFESSIONAL FISHERMEN'S ASSOCIATIONS

The Annual General Meeting of this League will be held in the board room at Head Office on November 3 and 4. The retiring President is Mr. E. C. Harris of Busselton. It is expected that representatives of all the main fishing centres will attend.

#### USE OF BALL-POINT PENS

The Public Service Commissioner recently issued a circular relating to the above. Tests have been carried out by the Director of the Government Chemical

Laboratories in relation to the stability and permanence of inks used in ball-point pens and the investigations revealed that there is a serious fading which contradicates their use for recording anything which should be kept for a lengthy period.

The Registrar-General's Department and the Lands Department have instructed that ball-point pens will not be used in the preparation of documents for those departments. All Inspectors are instructed to use normal black or blue-black ink when preparing any documents that may have to be kept for two years or more.

#### LABORATORY AND FIELD STATION AT ROTTNESST ISLAND

The Minister for Fisheries has announced the establishment of a biological and fisheries research laboratory and field station in the old Naval buildings at Rottnest Island. The station will be used jointly by this Department, the Fisheries Division of C.S.I.R.O. and the University of Western Australia. Accommodation in the buildings will be available to inspectors when on duty at Rottnest and this Department will maintain the buildings and provide some technical assistance. The Zoology Department of the University will use the buildings for biological research into the Rottnest Wallaby. Officers of the C.S.I.R.O. will use the station to centralise its research work in the area on crayfish, ruff and other species. A committee consisting of the Superintendent (Mr. Fraser), Professor Waring of the University's Zoology Department, Mr. K. Sheard of C.S.I.R.O., and a member of the Rottnest Board of Control, will direct the activities of the station.

#### FAUNA PROTECTION ADVISORY COMMITTEE

##### Country Tour and Meetings

At 9 o'clock on Wednesday morning, <sup>October 28,</sup> a party of 7 comprising Committee members A. J. Fraser (Chairman), A. R. Tomlinson, G. E. Brockway, D. L. Serventy, Athol Douglas (of the Perth Museum, who deputised for Mr. L. Glauert), H. B. Shugg (Acting Secretary) and J. Traynor (Fauna Warden), left Perth by road for Kukerin.

Down along the Williams Road the party stopped to inspect some flora and the Chief Vermin Control Officer, on alighting, almost disappeared down a rabbit hole. A few feet away a Varanus gouldii was discovered stolidly surveying the party with unwinking gaze. Many miles farther on another race-horse goanna was seen, but a check of the speedo readings seemed to indicate that it must be a different specimen!

Lunch was taken at Williams and the tour continued through Wagin and Dumbleyung to Kukerin, where accommodation was arranged. The party proceeded on a foot survey on an adjacent reserve and spent an informative couple of hours in field observation. In the evening a meeting of the Committee was held from 7.30 until 9.50 p.m. in the sitting room of the local hotel.

An early breakfast next morning caught one member rather unprepared but nonetheless the party was on the road for Nyabing at 8.30 a.m. Several stops were made to inspect occurrences of mallee, blue mallet, morrell and moort, and Nyabing was reached at 10 a.m.

The Secretary of the Kent Road Board, Mr. Reg. Smith, made the Board's meeting room available to the visitors and after some most appreciated light refreshment representatives of the Board held an informal meeting with the Committee. In addition to the visiting party those present were Messrs. D. R. Moore, L. F. Haddleton and E. Hobley (Road Board members), R. H. Smith (Road Board secretary), V. F. McDougall and R. Aitken. Mr. Moore took the chair and apologised for the unavoidable absence of Mr. Paterson, Chairman of the Board. He welcomed the Committee and gave a brief survey of the local interest in flora and fauna. Mr. Fraser thanked the Board for its hospitality and explained the composition of the Committee and the purpose of the tour. He then suggested that a round-table discussion should take place and this was agreed to. The fauna mentioned included kangaroos, brush, tamar, emus, wedge-tailed eagles, foxes and rabbits. The meeting closed shortly after 12.30 and lunch was taken at the inn, the party being guests of the Road Board. A short visit was paid to the school where Mr. Aitken showed skins of fauna prepared mostly by the children themselves. The most outstanding were a

frog-mouth and a chuditch, or native cat. The latter had had six young in her pouch when taken and these had been preserved in spirit. The children obtain the specimens by salvaging any protected fauna found dead, or vermin shot by farmers.

An interesting field excursion followed when the Committee visited the property of Mr. V. F. McDougall, a local apiarist and an Honorary Warden. Most of the property is maintained as a private fauna sanctuary and left in its native state. Mr. McDougall's three sons, Malcolm, Owen and Lindsay, guided the party and showed the visitors some 15 nests they had previously discovered. Outstanding was a comparatively new Gnow's mound (but occupied last season as broken egg-shells were found near it). The mound was a perfect cone at the time, without the central hollow so commonly seen. It had been constructed in a morrell thicket and the slender trunks of this tree were growing through the mound. Later an adult Gnow was seen near the McDougall homestead. Other nests seen were as follows: Western Yellow Robin, a nest in a "gimlet", 3 ft. 6 in. from the ground, with 2 young; a second nest in a moort with 4 eggs - this is possibly a combination clutch (Serventy & Whittell, Handbook, p. 267, give 2 eggs as the normal clutch). The party was shown fragments of eggshells illustrating a colour phase not referred to in Serventy & Whittell's book, the ground colour being olive (instead of buff); Golden Whistler, in a ti-tree, with 2 eggs; Willy Wagtail, in Moort, 3 young; Black-faced Cuckoo-Shrike, nest in morrell (not examined); Southern Scrub-Robin, on the ground at the base of a moort trunk, one young; Restless flycatcher, in moort, 2 eggs, incubating parent remaining unmoved despite the closeness of our scrutiny; Grey Fantail, in moort, 2 eggs; Common Bronzewing, at least two nests were seen in morrells; Whistling Eagle, a nest in morrell; White-browed Babbler, several old nests. An old nest of the White-eared Honeyeater shown to us was lined with kangaroo fur. Many birds were noted. The most interesting, perhaps, was a Black-breasted Buzzard, which was the first ever seen by most of the party; its diagnostic characters were clearly observed as it flew overhead.

The party returned to Nyabing and proceeded to and arrived at Gnowangerup at 6 p.m. After dinner, the Chairman and Secretary of the Road Board were met and as the Board's office was not available arrangements were

made to hold the meeting at the Bowling Club. The meeting opened at 7.50 p.m., the Road Board representatives being the Chairman (Mr. J. E. P. Wellard), member (Mr. G. S. Hendry) and Secretary (Mr. W. J. Cuneo). A number of the Board's problems with fauna were discussed. The Committee was particularly pleased to hear the Board members state that in their opinion the wedge-tailed eagle should be protected. The members also discussed with Mr. Tomlinson the local spread of myxomatosis and detailed their successful methods of preserving the effectiveness of the virus. Some discussions also took place in respect to the mortality of fish in the estuaries under the Board's control and suggestions were made to avoid a recurrence. The meeting closed at 10.30 p.m.

The next morning the party left Gnowangerup at 9 o'clock and proceeded to Katanning via Tambellup and Broome hill. The Secretary of the Katanning Gun Club (Mr. T. Young) was not able to be present but the Club was represented by Messrs. B. J. Bennecke (President), N. A. Beeck, E. A. Clegg, R. Aitken and J. Robinson. Mr. Job Haddleton was also present. The meeting opened shortly after 11 and the opportunity was taken by the Committee and the Gun Club to have a most informative interchange of ideas, principally on the coming open season for duck shooting. The Gun Club members sponsored (not completely unanimously) a suggestion that night shooting should not be permitted, and that duck shooters should be licensed and the revenue from the fees should be placed in a trust fund for fauna research and conservation. The meeting closed at 1 p.m. Lunch was partaken in Katanning and the party proceeded to return to Perth.

Past Narrogin Mr. Brockway in the leading Land Rover guided the party through a Forests Department morrell plantation at Dryand and the party was impressed with the fine natural and planted morrell stands which constituted an ideal fauna reserve. Five miles from the Dryanda forestry settlement a numbat or banded ant-eater was seen as it scuttled into a hollow wandoo log on the ground. Most of the party caught only a fleeting glimpse of the little animal, and an unsatisfying one, as they peered into the log with a torch. However a mile farther along the road they were privileged to witness something which few naturalists have ever seen, a closeup view of three numbats in the wild. The animals

were frolicking alongside the road and darted with much grace and agility to a hollow wandoo log. However they paused at its entrance and one remained outside for so long that Mr. Douglas was able to approach so near as almost to touch it. The vivid colour pattern, the lithe graceful stance of the little creature, added to by the erect carriage of the tail, with hairs outstanding to form a flattened brush, made an unforgettable picture. The numbat surely must be the most attractive of all Australian marsupials.

The party had tea at North Bannister and reached Perth at approximately 9 p.m.

#### HONORARY WARDENS OF FAUNA

Hereunder are listed the names and addresses of persons who have been appointed honorary Wardens of Fauna under the Fauna Protection Act, 1950.

<u>NAME</u>	<u>ADDRESS</u>
<u>Albany</u>	
Ayres, G.P.	Bornholm, Via Albany.
Lange, B.E.	King River, Albany.
Thorne, O.	Lower Kalgan, Albany.
<u>Balingup</u>	
Blythe, G.A.	Balingup.
Scarr, H.	Box 33, Balingup.
<u>Beverley</u>	
Barrett-Lennard, G.	Annandale, Beverley.
Norris, H.W.	"Mile Pool", Beverley.
Oliver, A.L.	"Beverley Times" Office, Beverley.
Rogers, C.F.O.	Vincent Street, Beverley.
Spaven, H.G.	Box 26, Beverley.
Strange, A.R.	West Beverley
Wood, A.A.	County Peak, Beverley.
Wood, F.R.	Beverley.

<u>Name</u>	<u>Address</u>
<u>Black Range</u>	
Atkinson, J.V.	Barrambie Station, Sandstone.
Fisher, E.N.	Sandstone.
Heath, A.A.	Depot Springs, Sandstone.
Lefroy, W.E. de C.	"Yuinmery" Station, Via Mt. Magnet.
Ross, D.B.	Sandstone.
<u>Broomehill</u>	
Greenslade, V.	Broomehill.
<u>Bruce Rock</u>	
Roberts, D.H.	Sussex Lodge, Bruce Rock.
<u>Busselton</u>	
Reynolds, A.T.P.	"The Island", Wonnerup.
Reynolds, P.L.	Wonnerup.
<u>Collie Coalfields</u>	
Cooley, H.H.	Harris River, Via Collie.
Farrell, F.R.	18 Regent Street, Collie.
Hebb, R.J.	Muja, Via Collie.
MacNish, F.D.	Cardiff.
Marshall, J.	41 Johnston Street, Collie.
Roche, A.R.	P.O., Lyall's Mill, Via Collie.
Stark, C.A.S.	158 Wittenoom Street, Collie.
<u>Cranbrook</u>	
Gillam, A.Y.L. (J.P.)	Cranbrook.
Rodgers, S.T.	Box 14, Cranbrook.
<u>Cuballing</u>	
Knight, S.H.	Campbell Park, Cuballing.

<u>Name</u>	<u>Address</u>
<u>Dalwallinu</u>	
Dodd, V.J.	Kalannie.
MacPherson, L.C.	Ningham Station, Via Wubin.
Myers, F.G.	"Myeralla", Wubin.
<u>Drakesbrook</u>	
Bartle, A.R.	Fouracre Street, Waroona.
Fruin, K.	Green Street, Waroona.
Parker, A.G.	Fouracre Street, Waroona.
Spilsbury, L.T.	McLarty Pine Plantation, Forests Department, Waroona.
<u>Dundas</u>	
Anslow, V.	Robert Street, Norseman.
Fuller, J.J.	115 Roberts Street, Norseman.
Kirkman, D.N. (Dr.)	Norseman.
<u>Esperance</u>	
Douglas, R.J.B.	Esperance.
Paterson, W.S.	Scaddan,
Wittber, R.	C/- Esperance Road Board, Esperance.
<u>Geraldton-Greenough</u>	
Clarke, J.J.	26 Beach Cottage, Geraldton.
Logue, M.L.	Walkaway.
Poole, H.J.	Public Works Department, Geraldton.
Trigg, W.G.	Geraldton-Greenough Road Board.
<u>Gingin</u>	
Harper, H.	"Goodwell", Gingin.
Horton, H.J.	"Curara", Gingin.
Wedge, C.J.	"Yagan", Gingin.
<u>Harvey</u>	
Treasure, G.M.	Willowdale, Via Yarloop.

<u>Name</u>	<u>Address</u>
<u>Irwin</u>	
Copeland, J.W.A.	The Rectory, Dongara.
<u>Kalgoorlie</u>	
Clugston, E.J.	71 Robert Street, Kalgoorlie.
Fletcher, A.J.	230 Egan Street, Kalgoorlie.
Johns, N.H.	64 Federal Road, Boulder.
Mangini, S.D.	Kalgoorlie.
Moore, W.G.	92 Maritana Street, Kalgoorlie.
Usher, E.J.	22 Brown Hill Road, Kalgoorlie.
Wood, P.	134 MacDonalld Street, Kalgoorlie.
<u>Katanning</u>	
Beeck, N.A.	"Summerfield", Katanning.
Bennecke, B.J.	"Cheviot Hills", Katanning.
Clegg, E.A.	Badgebup, E. Katanning.
Smith, J.F.	Oxonia, Badgebup.
<u>Kent</u>	
McDougall, V.F.	"Mormak", Nyabing.
Smith, R.H.	Nyabing.
<u>Kulin</u>	
Dearlove, H.L.	Dudinin.
Freebairn, F.S.	Kulin.
Francis, J.J.	Kulin.
Gaston, M.D.	Kulin.
Hodgson, H.J.	Kulin.
Lamont, J.S.	Holt Rock, Via Newdetage.
<u>Manjimup</u>	
Jones, A.D.	Bailleston Sancturay, Manjimup.
Kelly, A.R.	Pemberton.
Lock, R.G.	"The Cottage", Manjimup.

<u>Name</u>	<u>Address</u>
<u>Merredin</u>	
Maughan, T.A.	Box 103, Merredin.
Mills, H.	York Road, Merredin.
Murfit, H.G.	P.O. Nokaning.
<u>Metropolitan Area</u>	
Stewart, N.E.	152 Marmion Street, Cottesloe.
<u>Mingenew</u>	
Fickling, G.H.	Mingenew.
Wells, R.T.	"Monks Eleigh", Mingenew.
<u>Mount Marshall</u>	
Polkinghorne, I.G.	Welbungin.
<u>Mullewa</u>	
Brenkley, W.	Tenindewa.
<u>Murray/Mandurah</u>	
Blythe, H.B.	Pinjarra.
Dunkerton, J.W.	The Hut, West Murray.
Watson, E.H.	P.O. Box 17, Mandurah.
<u>Narembeen</u>	
Draper, A.T.	Box 95, Narembeen.
<u>Narrogin</u>	
Teague, B.V.	May Street, Narrogin.
<u>Nungarin</u>	
Hutchison, L.McL.W.	Box 15, Nungarin.

<u>Name</u>	<u>Address</u>
<u>Preston</u>	
Keall, S. de la P.	"Queenswood", Via Donnybrook.
Kemp, E.J.	Donnybrook.
Long, Mrs. E.	Emerald Street, Donnybrook.
Martin, W.R.	"Inglewood", Preston Valley, Via Donnybrook.
Mitchell, G.V.	"Bickley Park", Donnybrook.
Parke, J.L.	"Jar-Par", Donnybrook.
Stapleton, E.J.	Noggerup.
<u>Upper Blackwood</u>	
Brooks, G.H.C.	P.O. Box 28, Boyup Brook.
Honey, D.J.R.	"Stockwell", Noggerup.
Mitchell, C.B.	"Carla Mia", Dinninup.
<u>Wanneroo</u>	
Gibbs, C.E.	Gibbs Road, Wanneroo.
Gibbs, E.H.	North Wanneroo.
Gibbs, E.J.	Gibbs Road, Wanneroo.
Perry, B.A.J.	North Wanneroo.
Rees, S.W.	Cnr. Cape & Banksia Streets, Tuart Hill.
Vickery, L.C.	12 mile peg, Wanneroo.
<u>Wickepin</u>	
Gribble, R.C.	"Long Acres", Wickepin.
Lindsey, E.D.	Yealering.
Mutton, A.H.N.	Box 26, Wickepin.
Simpson, A.D.	Box 74, Wickepin.
<u>Yilgarn</u>	
Green, R.A.	Southern Cross.
Hewitt, G.M.	Arian Street, Southern Cross.
Nicholson, W.	Bonnie Doon, Moorine Rock.
Parker, H.A.	Southern Cross.
Price, A.A.	Boddalin.
Roberts, C.C.	Box 10, Bullfinch.
Smith, A.B.	C/- Great Western Consolidated N.L., Bullfinch.
Taylor, J.	Nevoria Gold Mines, Via Southern Cross.

LUXURY YACHT WILL SEEK LOBSTER TAILS

"An American millionaire's former luxury yacht is being remodelled in Darling Harbour to undertake a dollar-earning fishing prospect off the Australian coast.

"She is the 'Norab', and will specialise in obtaining lobster tails exclusively for the American market.

"The 'Norab' (120 tons gross, 120 ft. long), once the last word in luxury, and still very comfortable, has been idle for years in Parramatta River, off Huntley's Point.

"She was built in 1929 at San Diego for Baron Long, millionaire owner of the Los Angeles Biltmore Hotel.

"She came into the Pacific during the war and was used in the islands for a brief period as General MacArthur's headquarters ship, then by the R.A.N. as a hospital ship.

"In her original state she had 11 large staterooms, each with a tiled bathroom and hot and cold running water.

"Three of these staterooms will be preserved with baths and tiles when the 'Norab' goes fishing.

"The conversion for fishing is being done for M.L. Hopkinson and Co. Provision is being made for 2,000 cubic feet of refrigerated space and 800 cubic feet of deep-freeze space.

"The 'Norab' (Baron spelt backward) will retain her name because Mr. Hopkinson believes it is unlucky to make a name change in a fishing vessel.

"With a 300 h.p. diesel engine the 'Norab' will have a cruising range of 3,000 to 4,000 miles, will be equipped with echo sounding machine and will be able to fish in water up to 100 fathoms deep."

The above news item, dated September 29, appeared in the Sydney newspaper "The Sun" and was

forwarded to the Minister for Fisheries (Mr. Kelly) by the Western Australian Government Liaison Officer in New South Wales (Mr. S. W. M. Stilling) who commented as follows -

"I have ascertained from Mr. Hopkinson of Sydney that at present it is not proposed to fish in Western Australian waters, activity being confined to South Australia. He says, however, that it is quite likely he will go to Geraldton, W.A., to fish later on."

COMMONWEALTH PEARL FISHERIES ACT: 1952-53.

Advice has been received that the Superintendent of Fisheries (Mr. A.J. Fraser), the Pearling Inspector, Broome (Mr. M. Goodlad) and the Pearling Inspector, Onslow (Mr. A. H. Clark) have been delegated license issuing powers under the above Act by the Secretary of the Commonwealth Department of Commerce and Agriculture.

Mr. Fraser and Mr. Goodlad have also been authorised to perform certain other duties under the Act.

TROUT

The following report was submitted by the Trout Inspector, Mr. J.S. Simpson, after the delivery of fingerling trout to Albany.

"On Saturday, October 10, I made a bulk delivery of fingerling trout to Albany. I left Pemberton at 5 a.m. and the water temperature in the tank was 56° F. After travelling for two hours the temperature dropped to 53° F. and remained steady at this until I reached the Hay River where I planted some fish. I also stopped at two other small streams to plant fish and, before starting on the final stage of the trip, the temperature had risen to 55° F.

"The water temperature of the Hay River was 56° F. and the small streams 53° F.

"I was met at the Hay River by Mr. G. Brown who directed me where to plant the fish along the Denmark-Albany Road.

"On arrival at Albany I was met by Inspector Jeffery who, with several members of the Albany committee, accompanied me while I planted fish in the King and Kalgan Rivers and Bull Creek. I made these plantings at the request of the committee who, with the exception of Mr. Brown, had never seen fish planted and were anxious to get as much first-hand information as possible.

"There is a considerable amount of interest in Albany at present and it is their intention to have a joint meeting with the Denmark Angling Club in an endeavour to form a Trout Acclimatisation Society."

#### RESOURCES OF THE SEA

In this issue appears the first of a series of four talks by Mr. Keith Sheard. This series has previously been broadcast by the Australian Broadcasting Commission, with whose consent, and that of the Chief of the Division of Fisheries, C.S.I.R.O. (Dr. H. Thompson), the talks are printed.

##### (1) The Great Fisheries

"Here - be fishes". On a sixteenth century map of the North Atlantic the map-maker has written those words across two spaces of sea. One covers the North Sea, the other the Newfoundland Banks - over Canada way. The map is a crude one, but the fishing grounds are carefully marked.

Nowadays we can draw such a map in much greater detail, but the writing in those two spaces could be just the same - "Here - be fishes". Only we would extend them to include the shallower waters of the northern rim of the Atlantic - Labrador, Greenland, Iceland, Spitzbergen, and Bear Island in the far north.

Even if we drew our map on a world scale, and allowed for the great salmon, pilchard and tuna fisheries of the North Pacific, those of the North Atlantic would still be first, just as for hundreds of years, with fishing craft of all nations, the herring and the cod are still supreme.

Of course, there are other fishes in the North Atlantic - the haddock, the halibut, skate, whiting, sole, and plaice, and so on - but these give way to the herring and the cod.

Some idea of their relative importance can be seen from the figures for English fish landings.

Herring - nearly half a million ton a year;  
Cod - a quarter of a million ton;  
Haddock - about 150 thousand ton; and  
Plaice - about 40 thousand ton.

There it is, each year. the English landing of herring is ten or twelve times and the landing of cod, six or seven times that of the plaice.

You can get some idea of the magnitude of the herring and cod fisheries when you remember that the total catch of all the Australian fish species is just about that of the English landings of the plaice, a relatively unimportant fish in those waters.

But the herring!! It has been said that wherever a shoal of herring has touched the coast of Norway there a village has sprung up. That's true, and it's also true that towns have grown, not only in Norway, but in Scotland and England wherever the herring shoals pass year by year.

The numbers of fish in those shoals are vast beyond belief, it has been estimated that one will consist of three thousand million, and that in the Atlantic there are some twenty score such tremendous shoals.

The mind cannot grasp numbers like those but their magnitude might be appreciated by a comparison with the visible stars in the darkened sky. There a very keen sight could distinguish only two or three thousand. If each of those stars were a million herring they would altogether represent just one herring shoal.

Even the 200 inch telescope on Mount Palomar could not distinguish as many stars as there would be herring in one of those great shoals.

Perhaps our Dutch Map-maker was understating things a little when he wrote so simply - "Here - be fishes".

Yet he should have known more than a little about it because even as far back as the fifteenth century a fleet of two thousand Dutch ships of about 90 tons each, say 50 or 60 feet long, used to fish for herring along the coast of Scotland - and that was only a part of their fleet of drifters - each with some hundreds of yards of net trailing from the stern.

Nowadays steam and petrol engines have replaced sail and the herring drifters of all nations work with two or three miles of nets to a ship, and each net twenty to thirty yards deep.

The working of this gear is not easy; and I can't do better than use the words of Michael Graham, an outstanding fisheries biologist, to describe it.

He says: "Madam, your herring may be cheap; but by the Lord and Little fishes it is no cheap man who catches them. Come, in an aeroplane just before dark, and look at the herring-fishing, sixty miles of net to a ten-mile square, three thousand miles of net in just part of the fishery.

"If there is a shift of wind, so that the ships and nets get crossed over each other in the night, the driftermen will sort them out in the morning with perhaps half a gale blowing and will generally lose no more than a quarter of the nets or so. But now and again the shift comes with a full gale and hundreds of fishermen have lost whole fleets of nets and gear in a single night."

And he goes on -

"Even if a skipper can see nothing, not his ship, nor stars, nor buoys, if the herring are swimming he must still shoot his nets or he would be no fisherman. If he and his nets have to go too close to someone else's, or even across them at a pinch; if his action risks

hundreds of pounds of nets; if it causes an international incident and enough blasphemy in the drifter fleet to send the lot of them to hell on the morrow; yet he must have his nets down among the rest and not off the edge of the fishing ground either; for he is a fisherman and the sea is his, and there are hundreds of pounds worth of herring under his keel if he is lucky; and he must believe in his luck".

As for international incidents, the herring fisheries have caused wars. One of the first of these was quite a while ago when Denmark placed a customs duty on the imports of herring in the fourteenth century. The surrounding towns of the Hanseatic League declared war on the Danes: the result seemed to have been a draw as the customs dues were halved.

But the herring story does not end, of course, with the catching of the fish - that's just a beginning. Herring must be sold fresh, gutted, salted, cured or canned. Bloaters, kippers, and red herrings, must be made for distant markets; and they must be canned for long keeping - often in fancy style with tomato sauce, mushrooms and a dozen and one spices.

The drifters move slowly down the coast of Scotland and England. Fishing town after fishing town comes to life as the fish-workers, mostly girls from Scotland, follow them.

And so the fishery and the processing goes on - in the Baltic and in Norway, where the young herring are canned sardine fashion as brilse or brisling, in Ireland and in Iceland and across the Atlantic, in Maine and New Brunswick and in a host of minor places.

As a result mankind presses heavily on the herring - but it has more relentless enemies still. It's the chief food of quite a number of fishes; and of these the cod is first.

But the cod itself is the basis of a great fishing industry, and its beginnings go back into history. Even in Tudor times English fishermen were at work, not only in the North Sea, but off Lapland and the coast of Iceland and out into the Atlantic itself. But, enterprising as they were, the French fishermen had followed the cod across the Atlantic to the

Newfoundland Banks and to Labrador much earlier. In due course this led to the discovery of Canada. In due course it led to friction and a minor war over fishing rights between England and France in the Seventeenth Century (that particular quarrel lasted 200 years and was not settled until 1912), and, in due course it led to the rise and fall of French power in the New World.

It seems strange that wars could develop over a fishery which at its best was a primitive hook and line affair, but there was a very good reason. In the Seventeenth Century Spain held control of the world's gold, but Spain needed large quantities of preserved food, and in those days that meant salted or dried meat or fish. In this class, salted cod was very valuable, so that both England and France used the fish of the Newfoundland Banks as one means of obtaining Spanish gold. Of course there were others but, when plain looting of galleons failed, it was comforting to have a little honest trading to fall back on.

Later the United States took a hand in the fishery and the wonderful Gloucester Schooners - craft which have never been bettered for their purpose - dominated the Great Banks. Carrying numbers of small boats which nested in one another on the deck, and with men of iron to man them, these schooners worked over the fog-covered waters.

It was a grim life and Rudyard Kipling has captured its spirit in his "Captains Courageous".

There was no fishery from the comparative comfort of the deck of a large ship. Instead the fishermen in ones or twos were lowered over the side in small dories, and once there were left alone to set their lines. The dories were sea-worthy enough - they had to be because the men, wearing heavy leather sea-boots and thick clothing, drowned if there were a mishap. Worse still, by the code of the time, the dory-load of cod was lost.

Fogs were common, and each boat had a fog-horn of one kind or another to warn the many schooners of their presence when the cold grey mists came down on the sea.

Nowadays, the cod fishery is chiefly a matter for fleets of trawlers dragging large nets four hours down, then up, and down again, while the tired crew toil, gutting and packing the catch away; working the shallower-ice-free rim of the North Atlantic, the North Sea and the Banks of Newfoundland - banks so prolific that the French still bring back 50,000 tons of fish from there in a year, and theirs is only a part of the fishery.

These are the great fisheries of the cold temperate waters, but there are others - the salmon fisheries of Alaska, Canada and Siberia; the ocean-ranging tuna fisheries of the Eastern Pacific; and the sardine fishery of those waters. This latter fishery was once measured in millions of tons but in recent years it has failed, and there is great argument between various schools of thought as to whether this is due to a natural fluctuation in numbers, or to man - the ruthless predator.

It is an old quarrel, this one. I feel that it is a matter which can only be settled by studying each kind of fish and of finding the laws which each must follow, not by making up blanket sets of rules and expecting all species to follow the one pattern when each is so different in its habits and needs, and in its life history.

We have come a long way from the old map-maker's simple words "Here - be fishes". We have behind us nearly a century of effort in understanding why these areas are so rich, but together with this knowledge has come the replacement of sail by steam, and of steam by the diesel engine. Fishing methods have grown more efficient, the line has given way to the modern trawl with its deadly efficiency. There are even electrical methods of fishing which guide the fish to the net, and ships are multiplying to feed a hungry world. The nations will need all their skill to continue to harvest from grounds where they have not sown or tilled. They are combining to pool their knowledge and have set up International Councils which really work.

Australia has a part in these and our contributions to fisheries knowledge are quite worthwhile, even if our own fisheries are not so great on a world scale they are important to us and they have their grave problems. But that's another story.

THE CLEARING HOUSE

Seychelles Survey Reports Rich Fishing Areas in Indian Ocean

Very large unfished areas exist in the western part of the Indian Ocean where fishing by the simple method of handlines yields catches an hour equal to the average efforts of trawlers on some of the richer fishing grounds in Europe. This is disclosed by the Mauritius-Seychelles Fisheries Survey, two of whose officers, Dr. J.F.G. Wheeler and Dr. F.D. Ommaney, for two years investigated the possibility of exploiting the fisheries of that area of the Indian Ocean on a commercial scale. The project was financed by a research grant under the British Colonial Development and Welfare Acts.

The two scientists sailed about 28,000 miles in a motor-driven 70-ft. Scottish drifter on the survey. The fishing grounds are on a chain of oceanic banks scattered east of Africa in the Indian Ocean. They rise steeply out of deep water and lie in about 30 fathoms.

This is a fascinating account of marine life in the depths of the Indian Ocean and the report is of practical value to the fisherman and to the marine scientist. It includes descriptions of fishing grounds around the little-known remote islands of the Indian Ocean.

There are comprehensive notes on fishing gear, marketing of fish, on sharks, turtles, the problems of poisonous fish, and meteorology.

There is a fishable area of 7,500 square miles within three days' steaming of the Seychelles. The report advises the large scale production of salted fish and shark "which command a vast and ready market in the Tropics". It proposes the tapping of known markets in Mauritius and the Seychelles, and then East Africa, "where the obvious base is Mombasa, with a fresh fish market both there and up-country".

("The South African Shipping News and Fishing Industry Review", Cape Town, September 1953.)

### Slight Increase in Durban's Whale Catch

Up to the middle of August, Durban shore-based catchers had brought in a little more than 850 whales - a figure that is slightly in advance of that at the same time last year.

Although superficially whaling conditions have been good, the local fleet has experienced a considerable number of days when it has not been possible for operations to be carried out owing to strong winds and rough seas.

During July, there was a sudden spurt when catchers encountered considerable numbers of whales and the month's total was a little in advance of last year's.

With the advent of the windy season - from August - it is considered likely that there will not be unusually large hauls made between now and the end of the season. Should conditions continue to remain unfavourable and it is not remunerative to continue operations, the season may end before the statutory date - October 31.

This happened in 1952 when conditions were bad and the season concluded a month earlier than was expected.

("The South African Shipping News and Fishing Industry Review", Cape Town, September 1953.)

### Research Designed to Develop Improvements in Gear and Fishing Methods

What is new in fishing gear and methods? The author outlines various experiments being conducted and discusses needs for various improvements to insure maximum efficiency in locating and catching the products of the seas, lakes and rivers.

by Richard Whiteleather

There isn't much that can be done in the way of improving the design of a fish hook by research. The hook itself is a rather basic piece of gear fashioned out of metal with a barb, point, shank, bend and an eye. A fish strikes at the bait on the hook and is caught. As a matter of fact, fish hooks have been a rather

standard item for thousands of years. One, recently excavated from an ancient Egyptian tomb looks remarkably the same as the conventional hook used today. Probably it was equally as useful, and at the time primitive man was using spears and snares as fish catching implements, the origination of the baited hook represented a tremendous step forward in fishing.

So it is with fiber mesh, another fundamental in fish catching equipment. Dependence on a simple net incorporating the idea of joined meshes, for sifting marine creatures from the sea goes back into history almost as far as man's earliest records. The fish hook and net mesh are still the basic elements upon which our modern day fishery production relies. No one, as yet, has figured out a better means that can be placed into practical application on a commercial scale.

How is it then that commercial fishing is not now a primitive undertaking instead of the present day mechanized operation producing thousands of tons of fish every year?

The advancements have come from developing upon the foundation of the fish hook and net mesh principles a succession of improvements in fishing apparatus along with new ideas as to the application of these basic principles.

### Fishermen's Ingenuity

In the main, everyday fishermen can be credited with the ingenuity which has been needed for bringing about these advancements. In the course of time and by experiment, fishermen have pyramided new ideas on those ideas of earlier fishermen so that each piece of gear has been made more effective for a specific purpose. Thus, each generation of fishermen has witnessed some part of the evolution of fishing gear as we know it today.

For example, the complex purse seine emerged from the simple seine. It is said that the first purse seine was used in our fisheries off Rhode Island in 1826. This type of gear as now used in our Pacific Coast tuna and pilchard fisheries is probably the most highly developed of any. Originally, some fishermen

must have conceived the idea that closely schooled fish could be taken much more readily by rigging a fiber purse line to the bottom part of the seine, thereby, making an inescapable container for the fish surrounded in deep water. Then came the need for determining various weights of twine in the meshes of the different parts of the net where uneven strains take place. A later development with the inception of heavier equipment and larger seines was the wire rope pursing line. And then a fisherman with an eye to greater efficiency of the net came forth with the idea of a purse line on the cork line so that now both top and bottom of the seine is pursed. Still another change in parts of this gear came with the use of a chain bottom line instead of a thread line for smoothness of operation and for economy.

Likewise improvements all along the line have resulted in the present design of otter trawls, traps, trammel nets and other forms of net gear. Nylon, Orlon and other synthetic fibers have made their appearance in fish netting, particularly in gill nets where strength of fine meshes effective in improving catches and less deterioration in the water is an advantage. The hook and line has been teamed with outriggers, spreaders, shock absorbers, and power gurdies for greater trolling effort. The most recent innovation in this field is a foreign manufactured device for applying an electric shock to stun a large and difficult-to-handle victim on the hook. Electric reels have been developed for facilitating the handling of hook and line and are rapidly becoming conventional gear in some bottom fisheries such as the red snapper fisheries. The hook and line has, to a great extent, lost its original simplicity in use.

#### Versatility Still a Problem

Almost every item of modern fishing gear has reached a point where it is relatively effective within the limits of its intended purpose. However, lack of versatility is still a problem in terms of the fisherman's time and money. Gear designed for effectiveness under manifold conditions thereby being capable of adjustment to varying depth of operation and to the taking of several species would be helpful. Some progress has already been made in this direction, particularly in foreign countries. The two-boat mid-water trawl, as originated in Denmark and now used extensively in European fisheries, works quite

effectively especially for herring. A combination of towing speed and weight adjustment enables the trawl to be fished at any predetermined depth.

Word recently has come from Iceland and Sweden that one-boat mid-water trawls have been introduced there.

In Norway the introduction of a sink purse seine has produced some startling results in the cod fisheries. In our own country the application of the electric reel in the Gulf of Mexico red snapper fishery not only has made life easier for the fishermen but has been reported to have increased the catch per vessel. Other gear innovations are undoubtedly in the making and will appear for future trial in the fisheries. Again, these improvements which have proven of commercial value are mostly the product of the fishermen's ingenuity. No doubt other refinements and further alterations of presently used gear will continue to come to light. However, from here on it is most probable that any major change in present concept of fishing gear design will come directly from systematic research. Development of electrical fishing apparatus, for instance, would almost certainly have to be a professional undertaking. Also, analyses of the hydrodynamic factors as involved in new gear design and tank testing of model designs means application of specialised technical skills.

#### Location of Fish Important

No matter how high a degree of efficiency is reached through gear improvement, a positive means of location of fish in the water is still first in importance. We have just begun to touch on this vital factor in commercial fishing. Adaptation of the sonic depth recorder to fish finding has been accomplished with some success. Although this instrument was first designed primarily for navigational purposes, it is an enormous step ahead of visual observation or plain guessing from surface signs about the location of subsurface fish.

There is a constant striving for refinement in sonic devices with some manufacturers currently placing more emphasis on improvement in the fish-finding capabilities of the instruments. Latest models, through the use of a cathode ray tube, make it possible to

scrutinize carefully a vertical range of water layers for the presence of fish. This equipment can be adjusted to examine a particular range in extreme detail. Even as well as this instrument functions, it has a serious limitation in only locating fish within a narrow vertical band of water below the vessel.

#### Experiments in Horizontal Scanning

Some experiments, however, have been carried out in horizontal scanning with the hope of extending the radius of fish location somewhat farther away from the vessel. In most cases wartime underwater scanning devices such as the SONAR or ASDIC have been set up as improvised equipment for this purpose. Here again success has been meager except that reports now coming from Norway state that after several years of research and experimentation a Norwegian fishing vessel is being equipped with modified ASDIC for fish scanning. It is said that this is the first commercial installation on a fishing vessel in that country.

The highly scientific era in which we are now living calls for new technological approaches. The principles of electronics and supersonics in the field of gear experimentation and their use in the development of fish locating and capturing devices introduces complexities that ordinarily do not yield to the old "cut and try" methods. It is rather obvious that application of specialized knowledge is required in the adaptation of these new principles to everyday fishing.

#### Exploratory Fishing Project

The Exploratory Fishing and Gear Development Section of the Fish and Wildlife Service has a small and recently-established gear development station at Coral Gables, Florida. This has been set up in co-operation with the Marine Laboratory at the University of Miami. Here various problems in gear development have been undertaken insofar as a staff of three people and available funds will permit. A 57-foot vessel "Pompano", for carrying out experiments at sea is attached to the station. In addition, the vessels and facilities of the exploratory fishing stations at Seattle, Washington; Pascagoula, Mississippi; and

Portland, Maine, are available for testing and experimenting with ideas which are being developed. These stations work in rather close conjunction with each other since gear development and exploratory fishing are so closely associated.

### Gear Research is Difficult

Gear research is a difficult job even under the best circumstances. Unlike most endeavours in other fields of applied research, direct observation of underwater experimental equipment is impossible except perhaps in cases where the work is confined to a very shallow, clear water area or in tank tests. Frequently, lack of knowledge about the behaviour and erratic movement of fish, for which the gear is being designed, is a further complicating factor. This all adds up to the fact that gear research projects are usually long and painstaking processes of study.

The Service ventured into the field of fish-detecting devices last summer with the first phase of a research project to investigate the possibility of locating schools of fish by listening for them. A chartered vessel was outfitted with special electronic equipment for listening to, amplifying and recording underwater sounds in a frequency range of 10 cycles per second to 100,000 cycles per second. Some echo ranging and echo sounding equipment also was on board.

### Echo Sounding Recordings

A number of recordings was made near schools of fish primarily bluefin tuna and mackerel in the Gulf of Maine and adjacent waters. Because of a scarcity of fish last year it is questionable whether or not enough recordings are on hand to provide the information needed. However, the recordings are being analyzed at the Coral Gables station to determine if they contain sounds made by these fish. If the analyses show that there are characteristic noises associated with a school of tuna or mackerel additional study will be undertaken to develop special devices which will be particularly sensitive to these sounds. Sufficient study along this line possibly may disclose some means of fish locating which can be utilized in commercial fishing operations. If this does not materialize, other approaches to the

problem of fish locating will be taken since general plans in the research programme call for extended work in this field.

### Underwater Television Developed

In order to overcome probably the most burdensome problem in gear development - inability to directly observe the action of sub-surface fishing gear - experimental use of underwater television is also a part of the Service's programme. A television camera and receiving set is being prepared at Coral Gables for this purpose. Considerable adaptation of the equipment to underwater conditions is necessary before it can be adequately used in this type of work. A water-proof housing for the camera is being developed and installation of the receiving equipment aboard the vessel "Pompano" is underway. Recent accounts have indicated that underwater television cameras have yielded rather good preliminary results in various types of fishery studies. If this device can be properly rigged so as to permit continuous observation of mobile fishing gear it will easily rank as the most important instrument by which gear action and fish behaviour can be studied. It will mean that investigators can make quick adjustments to fishing gear to correct deficiencies which are now more or less matters of conjecture among fishermen. After direct observation there can be no argument as to whether the gear functions in a particular way or whether fish escape over the net, under the net, or around it. It will take some experimenting as to the best method of use of the television equipment itself, but at this time there are high hopes that it will be an effective instrument.

### Mid-Water Trawls Needed?

More direct gear experimentation is contemplated in the testing of mid-water trawls and adaptation of some style of this type net to those domestic fisheries where densely schooled fish occur at mid-water depths.

Some work in connection with taking of live bait by means of an electric lighting and pumping combination is being carried on at Seattle. The experiment has not yet progressed to the point where very much comment can be expressed as to the value of a device such as this for taking live pelagic bait for tuna fishing. Investigation into this possibility has just been initiated with the

use of whatever surplus equipment is on hand for a preliminary idea as to its operational nature. Some live bait fish have been taken with this equipment already, however.

Other projects will be undertaken as needs and ideas arise in the future with the hope that findings will be of benefit to the commercial fishing industry. Most other industries have relied on a full understanding of scientific facts and application of those facts through research for the startling advances which have been made in every field. Fishing is much the same as any other business and unquestionably stands to gain from new knowledge that can be applied to produce practical benefits.

("Fishing Gazette", New York, July 1953.)

#### International Regulations Now Effective

##### First Move is Restriction of Net Mesh Sizes

For the first time in the history of the Massachusetts fishing industry, operations of off-shore trawlers have come under international regulation. On June 1st, the most important catch of the fishing fleets - haddock - achieved some measure of conservation from the 10-nation International Commission for the Northwest Atlantic Fisheries, which agreed to establish the use of nets with larger mesh for the protection of the species.

Nets formerly employed in haddock dragging had an average outside measurement of  $2\frac{1}{8}$  linear inches; under the new ruling, net meshing when dry must be a minimum outside measurement of  $4\frac{1}{2}$  linear inches .... and marine supply houses may now sell only the new nets to qualified vessels.

Fishing officials had pointed out that the small-mesh nets had ensnared haddock only a year and a half old ... too small to be marketable. Such small fry, estimated at some 15,000,000 annually on Georges Banks alone, had to be discarded and a vast majority was dead when shoveled back into the sea. By almost doubling the size of the mesh used in the nets, the 15,000,000 baby haddock heretofore destroyed will be allowed to escape. It's believed that if this waste of

young haddock is halted ... allowing for natural mortality .. landings of the fish will increase by 20,000,000 a year. And not only will the haddock catches be greater, but experts say that the larger haddock will bring a better price per pound.

In New Bedford, about 50 draggers (almost 25% of the fleet) have been affected by the 10-nation regulation. Under the ruling, vessels whose haddock catch is more than 10 per cent of the total cargo and/or those catching more than an average of 5,000 pounds of haddock will have to employ the new net size.

On June 1st, dealers did not have enough of the larger mesh webs to meet the demand. It was learned, however, that draggers who had orders in for the new nets could continue using the smaller mesh until their equipment was delivered.

None of the New Bedford owners or captains of draggers complained about adherence to the international agreement, since the only fish they will lose through the wider net openings will be the baby haddock that would have to be discarded anyway.

("Fishing Gazette", New York, July 1953.)

#### New Fish Plant in Toronto Matches Canada's Best

In the first major shift from the Front and Church Streets wholesale food district by any of the old firms White's Fish Co., Toronto, Ont., has moved to its new plant on Fleet St. near Parliament.

Some 400 guests attended "Open house" ceremonies and inspection of the plant and enjoyed a buffet banquet, not so oddly of many kinds of fish delicacies.

The new plant, according to manager R. E. Matthews, is equaled in design, equipment and machinery by only one other on the continent, located in British Columbia. With capacity of 40,000 cubic feet, it more than doubles the capacity of the firm's old building which is 50 years old.

Feature is the huge storage room for frozen fish. Walls, floor and ceiling are hollow, through which cold air is circulated to reduce the inner room to such a

temperature that the fish are kept at 10 degrees below zero - and without becoming dried out.

"The freezing machines do not remove any of the air in the storage room itself, so the fish retain their natural moisture," Mr. Matthews explained.

Stainless steel has been used wherever the product is handled, packed or processed. Concrete floors are chemically treated so they will not absorb water or fish odors. A stainless steel machine pours out 3,000 pounds of scale ice daily for keeping fresh fish cool and in condition.

The plant is served by railway siding, and shipments are passed in or out by electric lift trucks through a doorway only big enough to take packing cases, so that little cold air escapes.

And there can be no rodents, Mr. Matthews emphasized. The new building is vermin proof, one story high, all daylight or cold fluorescent lights, and no cellar. The refrigeration plant is automatic at all points.

("Fishing Gazette", New York, July 1953.)

#### Tagging the Herring

The regular tagging of thousands of herring off the Scottish and Yorkshire coasts is being carried out by fishery scientists to secure more information about their habits.

Mr. Ian Baxter, of the Aberdeen Marine Laboratory, is in charge of the Minch fishing grounds, and Mr. George C. Bolster is directing operations at Whitby.

Fishing Ministry vessels Muirneag II and Onaway are being used. As nets are pulled on board lively undamaged herring are tagged.

To make certain of the co-operation of even the casual finder a reward of 10/- is offered for each herring sent to the named laboratory.

Tags used are of two kinds - a celluloid cylinder, with simple instructions to the finder, and a flat plastic disc attached to the fish by nylon.

The tags do not interfere with the natural movements of the herring.

This work is important. Much has yet to be learned about the mass movement of shoals.

("The Fishing News", London, August 22, 1953.)

### Boning Whiting

#### Lady M.P. Tries New Machine

When touring industrial premises in Aberdeen Lady Tweedsmuir, M.P. for South Aberdeen, visited an Aberdeen fish merchant's premises and herself took a hand at boning whiting. She was seeing for herself the ease with which a new back-finning machine can be operated.

As she took over from the girl operator and boned fish after fish on the machine she remarked that it was "great fun".

Afterwards she met the inventor of the machine, Mr. James M. Campbell (28), 55 Wellington Road, Aberdeen.

The machine is remarkably simple, although experiments have been going on for years in an attempt to produce a satisfactory and economical one. The machine, which can do the work of three block filleters and make a neater job, is very compact. The fins are cut off by means of a circular blade.

Mr. Campbell was formerly a fitter with an Aberdeen engineering firm and he constructed the first machine in his spare time. There are now nine of them in use in Aberdeen with others on order, and he has plans to market them in other parts of the country and abroad, if there is any demand. Meantime Mr. Campbell is manufacturing the machines with the assistance of a man and a boy.

Lady Tweedsmuir, who was accompanied by Mr. E. Warwick, secretary of Aberdeen Fish Curers' and Merchants'

Association, and Mr. John Robertson, Unionist organiser for South Aberdeen, was also shown other filleting and packing processes in the yard by the proprietor, Mr. E. A. Sinclair.

Lady Tweedsmuir also visited the shipyard of Messrs. John Lewis and Sons, Ltd., where she was particularly interested in the new trawler factory ship, "Fairtry", for Messrs. Salvesen's of Leith.

("The Fishing News", London, August 22, 1953.)

#### New Name by Law

In view of the widespread attention drawn to fish nomenclature in Britain, it is interesting that the South African crawfish is to be renamed rock lobster - by order of the South African Parliament. It is explained that this is to "remove misapprehension". To overseas gourmets, apparently, the word crawfish or crayfish, as applied to the South African species is inaccurate and the measure was essential to circumvent legal difficulties associated with marketing the fish as rock lobster.

The United States type of crawfish, as well as being a fresh-water crustacean, is claimed to be inferior in taste to the South African variety and the French crawfish is about the size of a prawn.

At all events the South African variety has been marketed for some years as "rock lobster", and the new Bill brings the law into line with trade practice.

("The Fishing News", London, September 19, 1953.)

#### They Don't Mind the Smell when it Means Money

About 200 Danish fishing vessels are at present employed in catching North Sea herrings for industrial use. For some weeks past enormous herring shoals have been observed, and the herring-fleet has made unusually big hauls.

This herring fishery which is done in the area called the "Bloeden Ground" has been known in Denmark for only a few years.

For the time being Denmark has only nine factories for the production of herring-oil and herring-flour, and the capacity of these factories is insufficient.

Therefore a contract has been made with the gigantic Norwegian floating herring-oil factory vessel "Clupea".

This floating factory can take about 450,000 kilos of herring in each 24 hours.

In the herring season it anchors up at the entrance to the Danish North Sea port, Esbjerg.

The herring smell settles as a fog over the otherwise so clean town, but the inhabitants put their fingers over their nostrils and are happy about the herring fairytale.

("The Fishing News", London, September 12, 1953.)

#### Fish will Remedy Ceylon's Food Problem

Scottish skippers, British engines, and Canadian craft are helping modernise Ceylon's fishing fleets

Mechanisation is the keynote of schemes now being introduced that may revolutionise Ceylon's fishing industry and contribute materially to a solution of the new Dominion's food problem. The dictum that "fish is more nourishing than rice" has caught the imagination of some of the most influential citizens. Uttered in the first instance by Dr. R. N. Gowda, the Madras Minister for Agriculture and Fisheries, in opening the recent Guntur district fisheries' conference, it has been taken up by leading personalities, who are now exploiting its full propaganda value.

Canadian and Norwegian fishing experts are in the forefront of the new drive to put the Dominion's sea-food industry on its feet. Of two motor fishing boats sent by Canada to Ceylon under the "Colombo" plan, one, the "Maple Leaf", a fully-equipped trawler worth Rs 1,500,000 (£112,500) is skippered by Captain W. Ellen, whose home port was Aberdeen and who has had fifteen

years' experience of trawler fishing.

During recent years he owned two trawlers, but has undertaken to serve the Ceylon Government for the next two and a half years. "I thought I would get some experience of fishing in tropical waters", he has explained, adding "the main problem of tropical fishing is to keep the catch fresh."

The "Maple Leaf" is expected to make an annual haul of from 800 to 1,000 tons of fish, and as present methods of catching and marketing fish in Ceylon are hopelessly obsolete, the eventual production by modernised and mechanical craft can hardly fail to outstrip past achievement.

#### Antiquated Methods

To emphasise this figures alone should suffice, for although fishermen are said to number about 70,000, their total yearly contribution to the nation's larder has hitherto not exceeded 40,000 tons.

Another step forward in bringing the country's fishing industry up-to-date is the installation of marine diesel engines in some of the fishing boats in Jaffna, North Ceylon.

The fishery engineer in charge of the scheme, Mr. Alan Glanville, who recently returned to Colombo after completing his Jaffa assignment, spoke highly of the co-operation he had received from the fishermen who would in future have to manipulate the mechanised vessels. "Their enthusiasm", he declared, "affords hope for a rapid development of mechanisation in the area".

He also explained that the reason he had chosen the north of the Dominion for his early experiment was because it was the only locality in which types of boats suitable for the installation of engines were to be found.

But he added that they could be supplied for use in other parts of the country as the idea behind them became more widely appreciated.

The engines selected are of the heavy duty ten h.p. diesel type, some being British and others Swedish in origin, costing between Rs 4,000 (about £300) and Rs 5,000 (£375) each. Boat owners were required to pay the cost of installation - about Rs 400 (£30) in each case.

They will have free use of the engines for six months, but will then be asked to buy them for half what they cost, or alternatively submit to their removal.

But there is one stipulation regarding craft newly mechanised. Their work must be restricted to fishing; if employed in the transport of illegal immigrants - or onions - they will be confiscated by their donors.

#### Method of Fishing

Boats so far chosen for the experiment are known as "karavalai paduvus", or beach seine boats. They are about 40 ft. long, very heavily built, and have a crew of thirty.

Their fishing method is to sail to grounds along the coast, often twenty miles away, where they lay out the seine net horseshoe shape from the shore. The crew then anchor their boat, jump into the water, and, half to each wing, slowly drag in the net.

Latest reports are that most of the fishermen are already themselves operating the engines, though competent officers went with them in the first instance, and taught selected craftsmen how to handle them at sea.

Mr. Glanville has stated that the first boat powered brought in catches twice, and even four times as big as those of sailing vessels, arousing so much excitement that there was an immediate rush by at least thirty owners of the old type of boat anxious to obtain engines.

It is hoped to cope with the demand soon by supplying enough engines at a reasonable price.

Mr. Glanville is impressed by the progress of fishing industry mechanisation, especially in Bombay, where he reports that over a hundred boats were lately fitted with engines, provided by the Government on a subsidy basis. Fishermen in the state are now making three or four times as much money as formerly.

#### Further Development

Ceylon's Governor General, Lord Soulbury, is taking much interest in fishing industry developments in the Dominion, and made special reference to the subject on a recent State occasion.

Outlining the mechanisation experiments already launched, he announced that a Bill to establish a National Fishing Corporation would soon be put before Parliament, adding that amendments to the existing legislation passed last session now provided means of settling all-too frequent disputes regarding fishing rights.

Canada is to give another Rs 25,000,000 (about £1,875,000) under the Colombo Plan for Ceylon development projects, but the value and nature of the additional help that may be afforded the Dominion's fisheries have not yet been disclosed, though it is known that this item is included.

Incidentally it may be recalled that Ceylon some time ago asked the Canadians for boats and equipment worth about Rs 2,000,000 (£150,000) for fisheries development.

#### Question of Cess

At this writing the Ceylon Cabinet is still considering the levy of a cess on fish, a memorandum from the Fisheries Department having put forward a strong case for one of about five cents a pound.

The department argues that its proposal is the simplest and most appropriate that could be adopted in conditions now prevalent in the country, as it would neither dislocate existing trading channels nor affect producer or consumer adversely to any extent.

Such a cess is calculated to raise Rs 3,500,000 a year (£262,500), a third of which would be distributed to the fishermen.

Another third is intended for allotment to groups of fishermen to form the nucleus of a loan fund which they themselves would be taught to administer through an elected executive committee of which the local Inspector of Fisheries would be an ex-officio member.

As for the remaining third it is suggested to apply it as the fishermen's contribution towards national insurance benefits to be annually transferred to the Department of Social Services, after being subsequently augmented from the Exchequer.

Elaborate machinery devised for implementing the fish cess scheme provides for the registration of wholesale dealers, licensing wholesale auctioneers, enforcement of keeping correct accounts, checking such accounts, collection of the cess by the Revenue Department, pooling the proceeds in a separate account with a recognised bank and the annual disbursement of collections to fishermen and the Social Services Department as a contribution from the fishermen towards social amelioration.

Only wholesale transactions would be subject to the levy so that petty hawkers and vendors would have exemption.

### Studying the Fish

With a view to developing trawler fishing from the island Dr. J. C. Medcof, a fisheries biologist recruited under the Colombo Plan, is to survey prospects on the Wadge Bank, off the north-west coast.

He has pointed out that nothing is known at present of the breed, stocks, or movements of fish on the bank, where there is danger of depletion by over-fishing.

Research methods will be applied to beach-seine or net fishing problems, as because of unknown factors this type of shore activity is fast becoming unprofitable.

Inquiry will also be made into the possibility of  
Inquiry will also be made into the possibility  
of developing prawn and lobster fishing which is now  
restricted to lagoons.

Colombo's third big catch of fish, amounting  
to 75 tons, goes to the credit of the Fisheries  
Department trawler "Braconglen", equalling the record  
created by the "Maple Leaf", but below the vessel's own  
biggest haul of 85 tons. As any catch over 70 tons is  
regarded as exceptional for trawlers the size of those  
named, official circles suggest that such catches are  
evidence that Ceylon has some of the best off-shore  
fishing grounds in the world.

#### Fresh Water Scheme

Abandoned some time ago, Ceylon's fresh water  
fish development scheme is to be revived as the result  
of a Ministry of Fisheries reversal of policy. Experts  
have suggested that a change in the varieties of fish  
now being cultivated might be of advantage, and in  
support of their theory they cite the case of the  
gourami.

This breed, said to have been accidentally  
introduced into Kandy, now abounds in all northern streams,  
and has the reputation of being the most edible fish in  
the territory.

Experts have challenged the assertion that fresh  
water fish is tasteless by blaming the cook, and the  
Fisheries Department has agreed to the issue of propaganda  
in support of their contention hoping to restore the  
species to popularity.

("The Fishing News", London, September 12, 1953.)

#### World Fish Catch

According to figures compiled by the F.A.O.  
the world's annual commercial and subsistence catch of  
fish, crustaceans and molluscs (excluding whales and  
other aquatic mammals) amounted to some 25,900,000  
tons. Of this total 15 per cent is landed in North  
America, 23 per cent in Europe and 46 per cent in Asia.

Herrings, sardines, pilchards and similar species constitute 25 per cent of the total. Cod, hake and haddock and similar species 13 per cent, while the fresh water and brackish water fisheries produce 18 per cent.

Forty-five per cent of the world's catch reach the consumer in the fresh state while only 4 per cent is frozen and 7 per cent canned. Thirty-two per cent is utilised by the various curing yards, while the oil and meal reduction industry account for 10 per cent of the catch in addition to a considerable amount of offal and waste discarded in other utilisation processes. The pattern of utilisation varies from continent to continent.

("The Fishing News", London, September 12, 1953)

The Sea can Yield Twice as Much Food, Say the Scientists

The role that products of the sea may play in the future in feeding the human population of the earth was the core of the Institute of Biology's "Symposium on the Biology and Productivity of the Sea" which was held at the headquarters of the Royal Geographical Society on September 18 and 19. Some 19 experts in marine biology read papers covering a wide field of research and investigation of interest to the fishing industry, ranging from phytoplankton and demersal fisheries to whales, seals, shellfish and sponges.

Professor F. E. Fritsch, F.R.S., President of the Institute, said the capacity of the sea to produce was enormous and inherent in it was a complicated food-chain of life in varied forms of which that plenitude in the pelagic zone was only the end-point. The concept of their symposium was to feature aspects of that chain commencing with the holophytic phytoplankton onwards. As man could not alter materially the basic resources of littoral zone or pelagic waters, it was essential, if productivity was to be maintained, that exploitation of the seaweed and fish should be conducted on a scale which would not interfere with their constant replenishment.

### Phyto-Plankton Begins

Professor E. Steemann Neilsen of Copenhagen reported on the Danish "Galathea" expedition in 1950-52, which measured the production of matter by phytoplankton in all oceans of the world - which may seem remote from the practical business of catching fish but is not. This was the first time such research had been adequately carried out.

Mr. R. I. Currie, of the "Discovery" investigations, carried the discussion in his paper on Ocean Fertility. Three factors were essential (1) Light, (2) nutrient salts, (3) turbulence of upper water layers. The all-essential phytoplankton grows in surface water because it needs light.

### Fish as Middlemen?

Dr. C. E. Lucas of the Marine Laboratory of Aberdeen also dealt with this fascinating subject. The fish harvest from the sea today runs into the seemingly huge total of 25,000,000 tons a year, but that represented only, say a ten-thousandth part of marine growth which might be harvested, particularly phytoplankton. "Can we", he asked, "beat fish to the plankton or are they essential middlemen?"

There was the possibility of harvesting phytoplankton direct, but the smallness of the plant and the way it was scattered made this difficult. But experiments were being conducted in the hope of finding economic ways and means of gathering it.

### Demersal Fishing

The paper by Mr. Michael Graham of the Fisheries Laboratory, Lowestoft, on Demersal Fishing was read by D. H. Cushing and illustrated by diagram the relation between mesh size and the intensity of fishing. The material point made was that the size of the mesh used regulated the size and age of the fish that came into the fishery so that the bigger the mesh the older would be the fish. Fishing intensity was represented by the number of ships used or landings per day. The theoretic

maximum yield was controlled in turn by the profit factor. The introduction of the 80-millimetre mesh next April by the North Sea Convention instead of the 70-millimetre mesh would affect the situation, and, as the intensity of fishing as such, was difficult to regulate, would need to be supplemented by other controls otherwise the stock would attract more exploitation.

### Value of Whales

The importance of the whale to the United Kingdom's economy was stressed by Mr. R. H. Clarke. Whereas in 1950 the fish industry's prime return to the U.K. was thirty million pounds sterling, whaling returned eleven million pounds, won by three Antarctic expeditions and three shore stations. In world figures 45,060 whales were taken and provided 425,000 tons of oil.

### Cultivating Shellfish

The practical possibilities of control and culture as applied to shellfish were brought out by Dr. H. A. Cole, lately of Conway, but now of Burnham. This was possible not only in respect of most molluscs of commercial importance (save scallops) but also with prawns and shrimps, especially those which passed most of their life cycle in inshore waters.

### World Survey

Following the papers on individual subjects or problems, a comprehensive survey of "World Food Problems and the Contribution of the Sea to their Solution", by Dr. D. B. Finn, director Fisheries Division, F.A.O., concluded the sessions.

Statistical tables of population increases 1930-1951, the estimated annual catch of fish, and the estimated requirements for fuller nourishment brought out that the target for 1960 was a gross increase on present world production of animal protein of: Meat 30%; eggs, 39%; fish, 47%; and milk, 33%. While that target might not be achieved, it showed the magnitude of the problem.

The world target of 47 per cent. more fish, broke down into these regional requirements: Far East 68 per cent, near East 50 per cent, Africa 75, Latin America 26, Europe 11, North America and Oceania 18, U.S.S.R. 18.

### Not Impossible

Those targets were not so difficult as they might appear, for in many cases the productive power of some nations exceeded present demands. The factors limiting expansion were selectivity of demand, preponderance of species with limited consumer appeal, faulty distribution and international trade restrictions.

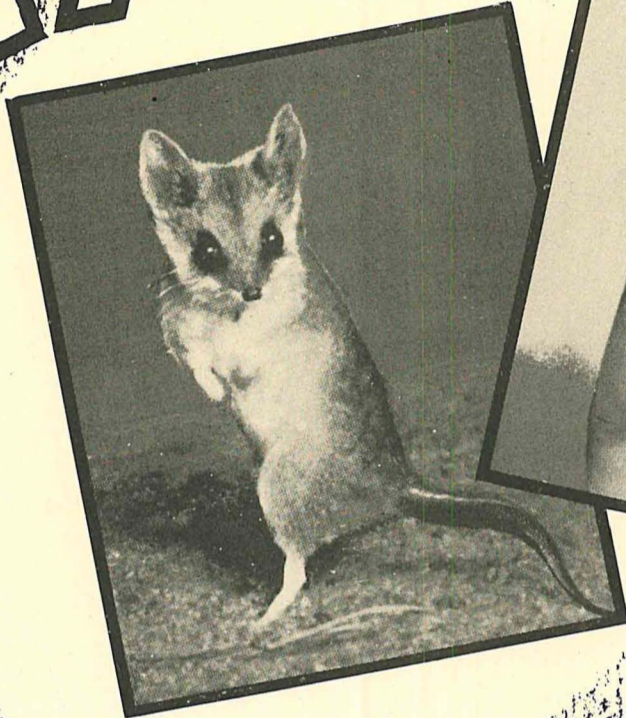
Could those demands be met without endangering stocks? Students of the subject believed the present "take" from the sea of approximately 26 million metric tons of fish yearly could at least be doubled without danger. And the scientific approach now being made suggested even greater possibilities if the concepts of fish catching were replaced by fish husbandry - which would in a manner parallel that of agriculture.

Man had the necessary scientific knowledge now. The real problem was the application of it on the social and economic planes.

The Food and Agricultural Organisation was doing its utmost to spread technical knowledge on fishery development and the Governments of the world were showing growing appreciation. F.A.O., which represented 68 nations, had requests from 35 of their members asking for the appointment of 91 fishery experts and specialists for fellowships and training centres. Probably only one-fifth of these could be satisfied.

("The Fishing News", London, September 26, 1953.)

# Don't KILL THESE!



Photos Courtesy  
S. R. White

## THE DUNNARTS OR POUCHED MICE CAN EAT THEIR OWN WEIGHT IN GRASSHOPPERS IN ONE DAY!

There are two common species of this interesting and useful little marsupial in Western Australia, the one being more or less confined to the coast area and the other ranging into the far interior.

The first of these, the Long-tailed Dunnart is a slender and graceful little animal remarkably mouse-like in appearance, with mouse coloured fur and a long scaly tail. It is however built on finer lines, it has a sharp nose, large beady eyes and large ears.

The other, the Fat-tailed Dunnart, which is illustrated, is not so easily confused with the House Mouse as its general appearance is decidedly brownish and the tail, which is much shorter than that of the House Mouse, is very much swollen towards the base when the animal is in good condition. Both species have the face paler than the back with a dark stripe running from the muzzle through the eye to the ear. The chin and under surface are whitish and the feet pure white.

Both species are voracious and can take an enormous amount of insect food. One observed in the Eastern States, which weighed three-quarters of an ounce, ate in one night lizards and grubs weighing 1 ounce, and one kept in captivity at the Museum accounted for 50 grasshoppers in 24 hours.

The value of these little animals in the grasshopper-campaign can therefore be easily estimated.

