MONTHLY SERVICE BULLETIN

Vol. III, No. 4 April 1, 1954

STAFF NOTES

The Superintendent, Mr. A. J. Fraser, and the Clerk in Charge, Mr. B. R. Saville, together during March visited Albany in connection with the salmon season and later called in at the Pemberton Trout Hatcheries to discuss the organisation of trout distribution.

Mr. B. R. Saville intends to take his annual leave following the Easter holidays.

Mr. H. B. Shugg was appointed to the position of Senior Clerk in Head Office on the 11th March.

Assistant Inspector Neil McLaughlan commenced annual leave on the 22nd March.

Miss Shirley Norwood has tendered her resignation as from the 15th April. Her betrothed is Frank Silva, late of the Agriculture Department, but now a commercial artist with Claude Neon. Officers who will not be fortunate enough to attend the farewell function to Miss Norwood will no doubt join with us in extending to Shirley and Frank sincere good wishes for their future happiness.

LEGAL CORNER

Fisheries Regulation 13

Some confusion still exists in connection with the interpretation of this regulation that establishes the priority of fishermen desiring to shoot their nets in the same area.

Priority exists only among those fishermen who are currently licensed and who have a bona fide crew of licensed fishermen and a licensed and properly marked boat. Among these men it is simply a case of "first come first served".

Each may take his turn, but he can only shoot and haul his net once and then must allow the fisherman who next arrived to take his turn. If, within 24 hours, he has not shot and hauled his net he forfeits his turn.

Each fisherman is protected against interference either on the grounds where he and his crew remain or from "blocking" or obstructing his haul in any manner during the whole of his turn.

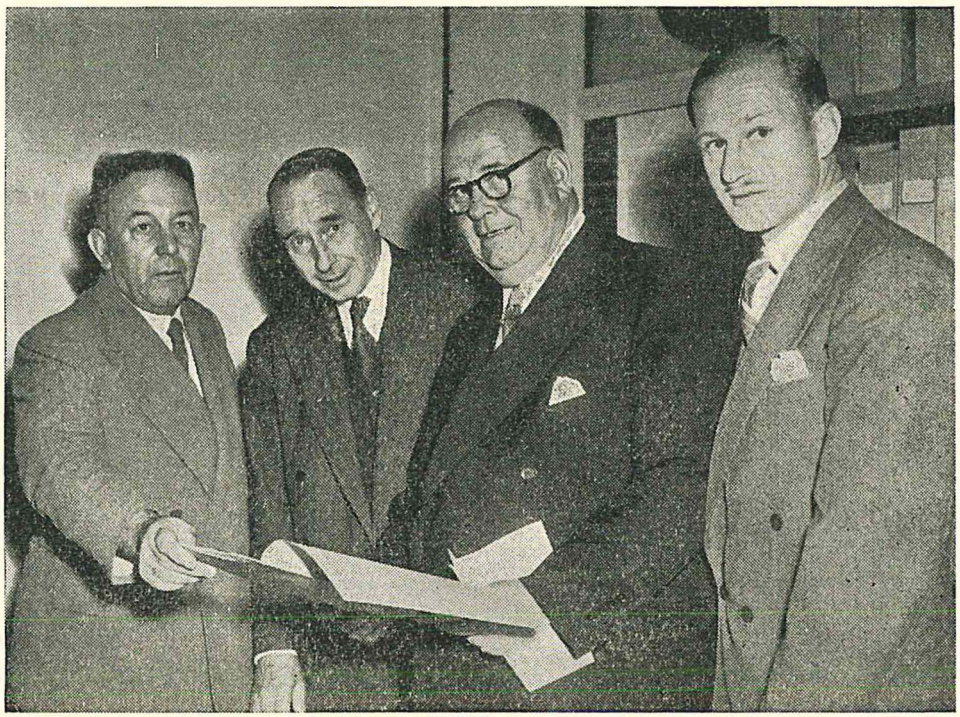
It also provides that any fisherman who feels aggrieved by the act of any other fisherman during the period of his occupancy of the ground may, with the approval of the Minister, take civil action at the fisherman's expense.

This regulation has been tested in court and found valid.

Fauna Protection Act

Doubts have arisen concerning the authority of the Fauna Protection Act in certain circumstances. Briefly the two points which occasioned most concern were (a) the protection afforded fauna on property owned by the Commonwealth and (b) the application of our Act on reserves and parks, etc., set up under the authority of some other Act.

Personalities at Interstate Fauna Conference, Melbourne, February 8-12, 1954



Left to right: Mr. A. J. Fraser, Chief Warden of Fauna, W.A.; Mr. L. E. Chapman, Under Secretary, Chief Secretary's Department, Victoria; Hon. L. W. Galvin, M.L.A., Chief Secretary of Victoria, who opened the Conference; Mr. A. Dunbavin Butcher, Director of Fisheries and Game, Victoria, who presided.

(Photo courtesy "The Age")

The Solicitor General advised that in his opinion the Fauna Protection Act applied to Commonwealth-owned land such as GardenIsland until the Commonwealth Government introduced contrary legislation. He also considered that our Act takes precedence in the protection of fauna over any board of control or local authority by-laws.

HONORARY WARDENS OF FAUNA

Hereunder is a further list of names and addresses of persons appointed and the road districts in which they are situated.

Road District	Name	Address
Bridgetown	Jones, W.G.A.	Box 89, Bridgetown.
Capel	Brockman, F.E.	"Minninup", Capel
"	Payne, N.R.	Boyanup.
"	Roberts, F.G.	P.O. Box 1, Capel
"	Roberts, W.F.	Properjohn Rd., Capel
"	Scott, E.E.A.	"Maryville", Elgin.
Coolgardie	Lister, G.F.	Widgemooltha
"	Moran, P.A.	Coolgardie
Dundas	Charsley, P.A.	Norseman.
Esperance	Kent, M.N.	Box 45, Esperance
Halls Creek	Bleischwitz, A.	"Balgo", Via Derby
Kalgoorlie	Stewart, R.S.	Cundeelee Mission, Zanthus
Manjimup	Bashford, J.	Northcliffe
Metropolitan	Brice, W.M.	North Fremantle
"	Buller, K.G.	Perth Museum
"	Douglas, A.M.	West Midland
"	Ford, J.R.	East Fremantle
"	Ford, W.C.	East Fremantle
Morawa	White, S.R.	Morawa
Nannup	McClellan, L.J.	Glen Karri, Nannup
Pingelly	Graham, F.J.	West Pingelly
"	Pennington, A.S.	do.
"	Sewell, C.A.	do.
"	Turton, W.T.	do.
"	Watts, L.S.	do.
Wickepin	King, N.E.	Yealering
"	Sibley, A.J.	Yealering.
Wyndham	Noseda, B.	Kalu buru Mission, Wyndham

CONVICTIONS RECORDED

January 1 to March 31, 1954.

Date	Defendant	Court	Charge	Result
27.1.54	Sideris, A.	Bunbury	Undersize fish	Fined £4
27.1.54	Littlefair, A.F.	do.	Fish in closed waters & not licensed	" £7
8.3.54	Cappelluti, S.	Fremantle	Undersize crayfish	" £5
20.1.54	Glass, W.A.	Geraldton	do.	" £6
4.3.54	Tipping, P.	do.	do.	" £20
4.3.54	Burton, N.	do.	do.	" £5
4.3.54	Basile, V. (Snr,)	do.	do.	" £5
4.3.54	Finlay, S.	do.	do.	" £5
4.3.54	Merendino, V.	do.	do.	" £5
4.3.54	Kannikoski, L.	do.	do.	" £5
23.3.54	Mitchell, W. Hubert	Perth	Fish in closed waters	" £7
23.3.54	Mitchell, Donald A.	do.	do.	" £7
23.3.54	Mitchell W. Andrew	do.	do.	" £7
23.3.54	Mitchell, W. Andrew	do.	Assault Inspector	" £10
23.3.54	Harris, H.	do.	Undersize fish	" £5
23.3.54	Stewart, E.	do.	do.	" £2

ABROLHOS ISLAND CRAYFISH SEASON

Inspector Bowler reports that the day after the opening activities were in full swing.

Eighty-six boats and 129 men were reported to be working in the Islands. The first of the catch was landed at Geraldton on the 16th March. The carrier boat "Pacific" brought 74 bags from the Southern Group, the "Linda" landed 162 bags from Wallabi Islands and "Ngardie Mar" landed 40 bags from North Island and the Wallabi Islands. The crayfish landed at Geraldton were in good condition with the exception of those from the North Island which had 50% mortality.

The price of crayfish in Geraldton has fallen to 1/6d. per lb. - a drop of 4d. a lb. on the old rates.

PUBLIC SERVICE RECLASSIFICATION

A reclassification of all officers was published by the Public Service Commissioner on March 26, with effect from January 1,1954. The following table sets out in skeleton form the new establishment of the Fisheries Department, as well as the titles and emoluments of all its officers. Certain less important information contained in the printed list has been omitted, but metropolitan officers who are desirous of studying the reclassification as published should make contact with either Mr. Saville or Mr. Bramley, both of whom have been supplied with copies. Country officers should see the list at the office of the local Clerk of Courts.

The Department has now been divided into branches - Administration, Research and Inspection. Certain officers previously classified as inspectors, but whose duties have materially changed, have now been suitably re-designated and transferred to the Research Branch. Pending the appointment of a Research Officer - a new position which has been created - the Superintendent himself will control the branch. Mr. Saville is in charge of the Administration

Branch and Mr. Bramley of the Inspection Branch. Each of these officers is fully responsible for the running of, and for the discipline of the personnel in, his branch.

The Public Service Appeal Board Act, 1920-1950, provides that any officer may appeal to the Public Service Appeal Board against the Commissioner's reclassification. All appeals must be lodged with the secretary to the Board not later than April 26, 1954. Should an officer desire information as to the procedure to be adopted he should write to Mr. Saville forthwith.

Name of Officer	Title of Office	Classification on January 1, 1954		
		Division, Class and Group	Gross Salary	Allowances
ADMINISTRATION				
Fraser, A.J.	Superintendent	A.I.3	1,520	
Saville, B.R.	Clerk-in-Charge	C.II.6	1,090	
(Vacant)*	Senior Clerk	C.II.3	...	
(Vacant)	Clerk +	C.II.1	...	
Bartholomew, I.	Clerk	C.IV	611	
Bowen, B.K.	Clerk	C.IV	763	40e
Norwood, S.M.	Typist	C.V.	526	
(Vacant)ø	Typist	C.V.	...	
RESEARCH				
(Vacant)	Research Officer+	P.II.2/7	...	
Piesse, H.C.W.	Technical Officer & Master, Research Vessel	G.II.4	995	
Crawford, R.M.	Mate, Research Vessel	G.II.1	880	
Smith, L.G.	Technical Officer Grade 1	G.II.3	975	
Traynor, J.	Technical Officer Grade 2	G.II.1/2	915	
Simpson, J.S.	Technical Officer Grade 2	G.II.1/2	915	

Name of Officer	Title of Office	Classification on January 1, 1954		
		Division, Class and Group	Gross Salary	Allowances
INSPECTION				
Bramley, J.E.	Supervising Inspector	G.II.4	995	
Munro, J.E.	Senior Inspector	G.II.3	955	
Goodlad, M.	Inspector, Grade 1	G.II.3**	975	15++
Davidson, W.	" , " 1	G.II.2	915	
Murray, H.J.	" , " 1	G.II.2	915	15++
Bowler, S.W.	" , " 1	G.II.2	915	15++
Melsom, A.K.	" , " 1 (Relieving)	G.II.2	915	
Jeffery, G.C.	Inspector, Grade 2	G.II.1	895	15++
Connell, F.A.L.	" , " 2	G.II.1	895	40øø
Bateman, A.J.	" , " 2	G.II.1	895	40øø
Green, A.V.	" , " 2	G.II.1	880	15++
Baird, R.J.	" , " 2	G.II.1	880	
(Vacant)	" , " 2+	G.II.1	...	
(Vacant)	" , " 2+	G.II.1	...	
Gallop, J.L.	Assistant Inspector	G.VII.1/2	763	15++
Thair, J.C.	" "	G.VII.1/2	742	
Sinclair, V.J.	" "	G.VII.1/2	727	15θθ
McLaughlan, N.E.	" "	G.VII.1/2	727	40øø
Carmichael, B.A.	Cadet Inspector	G.VII.1	675	
Simpson, M.J.	" "	G.VII.1	611	
(Vacant)	" " +	G.VII.1	...	

*H.B.S. Shugg appointed to position 11.3.54
+ New office created at Reclassification
ø C.M. Paramor acting.
θ Qualifications allowance
** Classification to be reviewed when position vacated.
++ Allowance for duties under Marine Act
øø Special allowance
θθ Temporary allowance

FAUNA PROTECTION ADVISORY COMMITTEE

A meeting of this Committee was held at Head Office on 25th March. The principal items discussed concerned the reports being received from honorary wardens, matters relating to reserves and sanctuaries, open seasons for kangaroos and emus in the South-West and aspects of the application of the Fauna Protection Act.

The Committee decided to carry out a tour of inspection in the Murchison area in June next and to hold its next meeting while on tour. Before then the Secretary of the Committee and the Fauna Warden are to investigate the kangaroo and emu problems in certain districts in the lower South-West where open seasons were proclaimed last year.

A review of the reports submitted by honorary wardens has been prepared and will be supplied to all appointed honorary wardens, to Fisheries Inspectors and to fauna authorities in the eastern States.

DUCK BANDING

The Fauna Warden, Mr. J. Traynor, left Perth on the 4th March for the Wagin district.

Although banding had been quite successful on Lake Wardering last year, Mr. Traynor found conditions far less satisfactory this year. Hundreds of black duck were present at Wardering but did not enter the traps at all freely.

An inspection was made of surrounding lakes including Quarbin , Norring and Little Norring and, in an effort to improve results, the traps were shifted from Wardering to Quarbin. However only one mountain duck was banded there. The ducks left the lake in the morning and returned in the evening but varying conditions tended to keep them away from the traps. Altogether a mere 41 ducks were banded in the area in a fortnight and it was decided to return to Perth.

The traps were set up in Queen's Gardens on the 20th March but up to the end of the month only another 86 ducks were ringed.

On the 31st March Mr. Traynor proceeded to the Gingin district to inspect lakes Nambung and Beermullah to see if conditions were more favourable there.

RECOVERIES

Since the publication of the last Bulletin the rate of recovery of rings seems to have increased and the following have been received in this office.

No.	Date Ringed	Place Where Ringed	Date Recovered	Place Where Recovered	Distance Travelled
		BLACK DUCK			
1441	24.2.53	Karrinyup	12.2.54	Marrinup, S.E. Pinjarra	55 miles
2106	8.1.54	Karrinyup	--	Wanneroo	--
1873	23.4.53	Queen's Garden	4.3.54	Strawberry	190 "
2140	9.1.54	Lake Karrinyup	6.3.54	6 miles E. of Bindoon	45 "
2385	16.2.54	Moora	14.3.54	Qualen Lake	75 "
2269	23.1.54	Lake Karrinyup	5.2.54	Hyde Park	4 "
1535	4.3.53	Queen's Garden	23.3.54	Queen's Gardens	--
2483	8.3.54	Wardering Lake	21.3.54	15 miles S.E. of Narrogin	35 "
(Grey Teal) 1625	21.3.53	Big Booting Swamp, Beermullah	14.3.54	Lake Mears	115 "

No.	Date Ringed	Place Where Ringed	Date of Recovery	Place Where Recovered	Distance Travelled
2201	19.1.54	Karrinyup	15.3.54	1 mile up Avon River from Beverley	70 miles
2474	5.3.54	Wardering Lake	29.3.54	1 mile from Norring Lake, 12 miles S.W. of Wagin	6 miles
2421	18.2.54	Cooks Farm, Moora	28.3.54	Dam in Eradu 35 miles E. of Geraldton.	140 "
		GREY TEAL			
1389	14.2.53	Wardering Lake	14.2.54	Karnup	115 miles
1383	14.2.53	Wardering Lake	19.3.54	4 miles S. of Minah Siding	125 "
2056	18.12.53	Dawson's Lake, Dumbleyung	23.12.53	Dam 11 miles along Esperance Rd. from Ravensthorpe	145 "
		MOUNTAIN DUCK			
2015	14.12.53	Watsons Lake, Dumbleyung	16.3.54	Norring Lake, Wagin	25 miles

It is interesting to note that bands have been returned from areas further north and further east than previously. This is in keeping with the more widespread condition of ducks this year.

LOSS OF "DIANE"

A report has been received from Inspector S. W. Bowler that this registered crayfishing boat, G100, struck a submerged reef and was wrecked at the Abrolhos Islands at 5 p.m. on the 18th March. At the time of the accident the owner, Mr. Jack White of Geraldton, and his wife were crayfishing near Gun Island in the Southern Group when the boat struck and a large hole was torn in the bottom. Mr. and Mrs. White were rescued by Mr. A. Davis, who was crayfishing nearby, but the "Diane" soon foundered and no trace of it has been found since, despite the efforts of fishermen who made a search on Mr. White's behalf.

The "Diane" was an auxiliary launch with a length of 19 feet and a beam of 8 feet.

WESTERN AUSTRALIA'S FISHERIES - PRESENT AND POTENTIAL

(This brief note was prepared for the information of recent visitors to the State. It is published for the information of the staff.)

Fishing today constitutes one of Western Australia's major industries. In 1953 the production of the fisheries proper - comprising fish and crayfish - was valued at £1,300,000; of the whale fisheries £1,200,000; and of the pearlshell fisheries £300,000 - a grand total of £2,800,000.

This was not always the case. In fact fisheries development, phenomenal since the war, did not actually achieve momentum until during the war itself. Restriction of imports and the needs of the armed forces called for the discovery of new sources of supply of foodstuffs of all kinds, but particularly of canned foods. Fish canning started about 1943, and it was this new undertaking that really provided the impetus for the developments which followed.

Before the war the majority of fishermen confined their activities to the west coast estuaries,

the south coast inlets and odd sea-beaches. They caught principally mullet, yellow-eye mullet, tailor, whiting, salmon trout, sea herring, and the like. Their catch, to which was added snapper, jewfish and crayfish taken seasonally by a relatively small number of deep-sea fishermen, fell far short of Western Australia's domestic requirements. The fishermen themselves were largely on the bread-line, and even if they had the will they did not then possess the finance to provide the bigger vessels and modern equipment necessary to exploit the offshore fisheries. That came later.

It has been mentioned that the introduction of canning provided a stimulus for general fisheries development. At first operations were restricted to the Perth herring or gizzard shad, or, as it is more popularly known, the "bony". This was a reasonably common species in the Swan River, Peel Inlet and Leschenault Inlet. Hitherto the fishermen had had little use for it because of its poor marketability, but tests showed that it could be converted into a most acceptable canned product, and the new cannery immediately went into production. The canning of crayfish quickly followed, and special exemption from service with the armed forces was accorded to crayfishermem. Next, experiments were made with Australian salmon, and a satisfactory pack was achieved just about the end of the war. The quality of the local product was somewhat inferior to overseas salmon - Australian salmon is not a salmon at all; it is a perch! - but at this time imported lines were completely unavailable. For years starved of canned fish housewives all over the Commonwealth quickly snapped up all the Western Australian manufacturers could produce, and it was this avid public demand which gave rise to the salmon fishery which today plays such an important role in the fisheries of the south-west and south coasts. Although as is usually the case with migratory fishes the annual production of this species is subject to somewhat violent fluctuations, the take in the peak year (1948) reached very nearly 2,500 tons. Pre-war it was unsaleable.

The rise of the crayfish industry has been equally spectacular. Originally, crayfishermen

operated only at Fremantle, Geraldton and Houtman Abrolhos, a group of islands lying from 30 to 60 miles west of Geraldton. The production pattern did not alter with the introduction of canning. The only crayfish cannery was at Geraldton and only crays from Geraldton and the Abrolhos were processed - the whole of the Fremantle production was sold on the local market. Soon after the war there was an influx of buyers from the United States looking not for canned crayfish but for frozen "tails". The prices offered were attractive, so attractive in fact that the cannery was unable to compete. Canning ceased entirely, and Geraldton quickly geared itself to the production of tails.

But Fremantle, Geraldton and the Abrolhos were not the only centres where crayfish could be caught. All the nearer ocean waters along the whole coastline between Port Gregory and Murray Bight were known sources of this much-sought-after crustacean. Almost overnight new de-tailing plants sprang up at Geraldton, at Fremantle and on the mainland near Lancelin Island. In addition, a number of larger, more modern fishing vessels were equipped with improved refrigeration and commenced de-tailing, packing and freezing at sea in the vicinity of Cervantes Island and Green Islets, about 100 miles north of Fremantle. Today production is of the order of 8 million pounds annually, the export value of the tails being upwards of £2½ million.

What of the future?

It is beyond doubt that with efficient management and adequate protection of the crayfish stocks we can hold what we have. True, there are signs of strain evident in the crayfisheries, and maintenance of the present level of production will necessitate the introduction of controls, however unpopular these may prove. Certain restrictions, based on scientific research, have already been imposed and others are under consideration. Some jeremiahs, relying wholly on their own opinions as to the effect of the intensity of fishing and the recent temporary closing down of the once lucrative

fishery at Hopetoun, have frequently predicted the early end of the salmon fishery. But scientific investigation of the fishery shows that only a very small proportion of the vast salmon schools which towards the end of each summer travel from South Australia to Western Australia on their spawning migration, and then back again later in the year, ever comes within reach of the fishermen's nets, but instead travel far out to sea. There is little cause for concern over either of these fisheries.

But when we speak of the future, we perhaps think in terms of the potential of the fisheries rather than their maintenance.

What are the potentialities?

Future development presents many problems. Western Australia's coastline is 4,500 miles in extent. Some is situated in the tropics, some in the zone of temperate conditions, some in an area washed by the colder Southern Ocean currents and battered by seas roaring in from the south polar regions. Population is sparse, except in the area lying between Geraldton and Albany; communications are not highly developed; the only real market for fresh fish is at Perth. It is an unfriendly coast, with many reefs and few harbours. So although there are untapped resources in the sea we must have boats, big boats, that can spend much time at sea, can ride out any storm and can carry large catches for distances up to a thousand miles, before we can think of tapping them. We must have more people in the North-West and South- ast, for before processing can be carried out economically in these remote places a female labour force must be readily available. Without big boats - and big boats cost huge sums these days - and an adequate pool of female labour, there does not seem to be any immediate prospect of cashing in on the resources of the North-West or South-East.

There is another limiting factor. When Nature endowed the fisheries of Western Australia, she did so with a very sparing hand. In the North Sea, and in the North Atlantic and the North Pacific, she was most liberal-handed. There production reaches

millions of tons annually, but whereas we have any number of different species - about 750 all told - there is a relatively small number of individuals of each species. On the other hand, in the great fisheries of the Northern Hemisphere there is a comparatively small number of species, but the number of individuals of each species is colossal. The fewer the species the fewer and consequently less costly the catching techniques required. Seldom do two kinds of fish behave in exactly the same way, and specialised methods must be employed in the capture of each species. With so many species in our waters, we would require an enormous number of different types of gear to catch all the kinds we have here, and it would simply not pay. Whatever is done in the way of development must therefore be directed to the capture of just a few species, species whose capture would not result in uneconomic fishing.

Trawling appears to have possibilities. By this method bottom-living fish are caught by a trawl-net dragged along the bottom in depths of 100 fathoms or more by a special type of vessel. The great area of continental shelf, i.e., that part of the sea-bed contiguous to the coast which is not at a greater depth than 100 fathoms, which lies off the north-west coast, was explored by a Japanese trawling expedition in the immediate pre-war years. Reports now made available seem to indicate the occurrence of good fish in reasonable quantities. The area in question is remote from Perth, and the prevailing climatic conditions would require rapid chilling of the catch. This means big boats. In recent years two old trawlers operated on the south coast from Albany eastwards to the South Australian border. The catches of even these outmoded vessels encourage the belief that with more modern ships a profitable fishery could be established.

There are possibilities also in fishing for tuna. This fine food fish - the American "chicken of the sea" - is a surface living form, and hooking or purse-seining methods would be adopted. The main occurrences are in the tropics and sub-tropics, and large vessels capable of freezing and carrying large catches would be necessary.

Another kind of tuna is found off the south coast, although whether it is in sufficient abundance to warrant the establishment of a fishery is not yet known.

Another surface-living fish which occurs in considerable abundance off the south coast is the pilchard. This is the sardine of commerce. While by using the lampara, a modified form of purse-seine, fair quantities have been taken off Albany at different times and an excellent canned product prepared, there has been a disappointing public demand for canned pilchard. This is undoubtedly due to the fact that the oblong can which seems to be the hall-mark of a good "sardine" pack and the absence of which seems to arouse suspicion in the minds of shoppers, is not available in Australia. Nevertheless, there is little doubt that as soon as oblong cans start to come off the production lines of local canister makers, the pilchard fishery will come into its own.

Concurrent investigations on the prawn resources in nearer ocean waters are giving most encouraging results. In Exmouth Gulf and in Cockburn Sound prawns of three or four commercial varieties have been taken by means of small trawls. The largest of these prawns - taken in Cockburn Sound between Garden Island and Kwinana - measured 9 inches in length. Fishing tests in both areas are continuing, and although it is as yet too early to state positively that worth-while fisheries will arise, the possibilities are certainly heartening.

It would be unfair to conclude this brief review without a note of warning. Contrary to general belief Western Australia's fishery potential is not unlimited. Fishing in this State cannot be regarded as a get-rich-quick-Wallingford profession, nor can profitable fisheries be developed the easy way.

W.A. FISH PRODUCTION

The following figures relating to the State's fish production in 1953 are published for information. The 1952 figures are also given for purposes of comparison -

SPECIES	1953 lb.	1952 lb.
Crayfish	7,985,391	8,415,425
Salmon (incl. Salmon Trout)	3,685,977	3,008,837
Ruff	1,063,165	780,249
Snapper	791,732	679,801
Mullet, River or Sea	465,419	529,990
Cobbler	460,408	503,359
Whiting, Sand	295,342	351,650
Jewfish	226,504	267,266
Mullet, Yellow-eye	323,341	253,042
Pilchard	30,385	177,980
Trawled Fish	--	137,897
Shark	185,329	128,297
Tailor	119,300	127,030
Trevally (Skipjack)	74,608	65,133
Garfish	48,649	53,970
Bream, Yellow-Fin	64,289	44,409
Pike	24,808	38,187
Samson Fish	20,348	30,320
Prawns	35,406	28,213
Whiting, King George	79,541	22,690
Crabs	38,442	21,403
Perth Herring	6,142	21,273
Cod (various species)	12,658	15,525
Bream, Black	5,871	13,508
Leatherjacket	13,127	12,953
Groper	12,144	12,235
Yellowtail	10,346	11,337
Mackerel, Spanish	14,976	10,858
Snook	7,255	8,527
Tarwhine (Silver Bream)	12,743	7,087
Skate	4,943	6,984
Mulloway	5,687	5,556
Sweep	4,135	5,356
Flathead	20,643	20,971
Tuna	5,624	2,156
Squid	5,322	4,094
Other species	5,422	10,516
TOTALS:	16,165,422	15,834,084

Increase - 331,338 lb. = 2.09%

SCIENCE IN AUSTRALIA

From Nature, No. 4387, November 28, 1953. Vol.172

The visit of H.M. the Queen and the Duke of Edinburgh to Australia is a good occasion for British scientists to consider the short history of science in that country; for it is an exciting history and instructive in many ways. It is only 174 years since Joseph Banks proposed to a committee of the House of Commons that a colony might be established in Australia, to offset some of the embarrassments which the War of American Independence was causing in England; and it is only 165 years since Captain Phillip entered Port Jackson and settled with 717 convicts, 18 officers and 191 marines on the low rocky shores of Sydney Cove. Under such unpromising conditions the Commonwealth of Australia was born. While Captain Phillip and his staff were tentatively exploring the rocky forests and scrub which surround Port Jackson, James Hutton in Scotland published his "Theory of the Earth", Henry Cavendish was reading papers to the Royal Society, and William Smith was setting to work on his geological map of Britain. It would have needed a bold prophet to predict at that time that in five generations Australia would occupy a high and honourable place in world scholarship.

How has this impressive transformation occurred? The critical move was made about a century ago, when the citizens of Sydney and Melbourne each made a decision which turned their colonies from mere military and trading centres into the mainstream of civilisation. In both cities universities were founded: The University of Sydney in 1850 and the University of Melbourne in 1853; and this happened at a time when there were only four universities in England and none in Wales. There was no meanness about the foundations. At a time when the University of Sydney had less than a hundred students, a hall and quadrangle were built there which would not look out of place in the Broad at Oxford, and the university buildings at Melbourne, if less impressive, are no less dignified. Adelaide and Tasmania followed suit. At the turn of the century Australia had four universities; it now has eight - including one postgraduate university - for a population

considerably smaller than that of Scotland; and one student in about 270 of the population compared with one student in about 550 of the population in Britain. Until comparatively recently these universities were the only centres for science and scholarship in Australia. Once the initial enthusiasm had waned they were not well financed, and they had therefore to economise in the only way universities can - by having too few teachers; and this in turn hampered research. But they gave a sound training to undergraduates and sent many young men to complete their scientific apprenticeship in Britain. Besides the universities there were the State Departments of Agriculture, but these were of necessity concerned with short-term projects. Their staffs worked under constant pressure to solve day-to-day problems, and naturally they became more expert in applying science to practice than in extending the frontiers of science itself.

In 1900 the colonies of Australia coalesced to form the Commonwealth. The pattern of this inevitable but long-delayed development has had a profound effect on science in Australia; for the States retained many powers which (to an outside observer) would have been better handed over to the central government. For example, agriculture and forests remained the concern of the States; so did minerals and artesian water; so did education; and by and large State policy was narrower, more parochial, less far-sighted than Federal policy, and certainly not so well financed. Some of the consequences of this were serious to science. There was at the outbreak of war in 1939 no Federal geological survey, no Federal control of forestry, and no Federal aid to education; and in none of these fields did the States consider it was worth while to spend much money on research.

Australia's scientific life was saved by the Council for Scientific and Industrial Research, set up in 1926 under the Federal Government. It began as a modest organisation to do long-range research into problems of primary production. By the time the War had ended and the C.S.I.R. was twenty years old, it had become one of the largest and most distinguished scientific organizations in the world. Its annual budget ran into six figures. Its division covered not

only agriculture but also radiophysics, food technology, fisheries and industrial chemistry. Its policy was to give its staff the maximum freedom to do long-range research even though it might offer no immediate prospect of benefit to Australian agriculture or industry. The wisdom of this policy has been abundantly demonstrated. Improved yields in crops and wool and meat alone must have paid many times over for the whole cost of running the Council since 1926. A survey of its work during 1951-52 appears on p.978.

The architect of this scientific oragnization is Sir David Rivett, who left the chair of chemistry in Melbourne to become its chief executive officer. It must have given him deep satisfaction to come from his retirement and take the chair, in July 1951, at a seminar called "Science in Australia", on the occasion of the fiftieth anniversary of the founding of the Commonwealth. The proceedings of that seminar have recently been published. They contain addresses on the contemporary state of various sciences in Australia and a discussion on "A Scientific Policy for Australia". The addresses contain none of the complacency which the British (still deplorably out of touch with life in the Commonwealth) sometimes associate with their cousins in the southern hemisphere; indeed, some of them are refreshingly self-critical. There is only a pardonable minimum of self-congratulation; and it is abundantly clear that the Australian scientist is aware of the shortcomings of science in Australia and is resolved to overcome them.

For shortcomings there undoubtedly are. The most serious of them is a by-product of the very success of the C.S.I.R.O.; for the Council has so fostered fundamental research that it now has a near-monopoly of it. It is, of course, easy enough to improve on history after the event; but one cannot avoid the conclusion that if twenty-five years ago the Council had adopted a policy of co-operation with the universities, science in Australia would rest on much firmer foundations that it in fact does. Looking back on those days, one now realizes that the prime function of the Council was to establish a tradition for scientific research. The universities were doing very little. The State Governments were doing none. The

Council had a choice of two ways of accomplishing its function. The quick way was to isolate itself from the universities with their swollen student populations, and from the States with their restrictive obligations to do remedial work for agriculture and industry, and to set up teams of research workers under good conditions in separate institutes. The slow way was to realise that good science can be done only by well-trained men, and accordingly to put resources into the universities, building up research units (as the Agricultural Research Council does in Britain) in close proximity to undergraduates. The Council for Scientific and Industrial Research chose the quick way. The result of this choice is that science in universities has been weakened by the Council, not strengthened; and as a consequence the training of scientists is incommensurate with the demand. The mere "planting" of a C.S.I.R. Division near a university department (as has happened with the Soils Division in Adelaide and the Radio-physics Division in Sydney) merely exacerbates the inequality of opportunity for research of a university lecturer compared with a C.S.I.R. officer. A more intimate integration of research and teaching was needed, and the continued absence of this led to the opinion (perhaps unjustified) among the universities that they had been "let down" by the Council; at any rate, the Council has certainly suffered some embarrassment in recruiting Australian graduates, due directly to its long enjoyment of a monopoly in scientific research. In justice to the Commonwealth Scientific and Industrial Research Organization (C.S.I.R.O.), which is the new administrative form of the Council, it must be emphasized that a great effort is being made to repair these earlier omissions. In Sydney and elsewhere, units of the Organization are established in university departments, and they share in the teaching and in the direction of research.

A second shortcoming of science in Australia is that many of the large industrial firms have their headquarters in Britain and do all their important research there. Consequently, there is no body of industrial research in Australia to match its astonishingly rapid development of industry. As the writer of the introduction to "Science in Australia"

says, "very few of the major companies, which are now well established, have paid more than lip service to research activities". This circumstance reflects upon science in universities too; for the bright industrial scientist is impelled to look to the United Kingdom for a good job.

Finally, there is an impediment, rather than a shortcoming, to the development of science in Australia which it is our business in Britain to remove; and it is high time we removed it. The first-class Australian graduate has no sooner taken off his gown at the graduation ceremony than he has his eyes on the sailing lists for Britain; and by one means or another most first-class science graduates manage to get to Britain. This is due to a combination of sentiment for "home" and admiration for British science; and it is altogether admirable. But it is depressing for the Sydney or Melbourne Professor who is trying to build up a research school. The time has come when exports of brains should be more nearly balanced by imports, for Australia has great opportunities to offer British graduates, especially in biology, geology, geography and anthropology. In equipment and laboratories its universities compare favourably with most in Britain. There is (contrary to the assertion of one speaker at the seminar) a new spirit of <u>esprit de corps</u> among scientists in Australia; and it is an invaluable experience for a young man to put in some years of research and teaching in the Commonwealth. On p. 132 of "Science in Australia" there is a rueful table complaining that only 30 per cent. of lecturers in Australian universities had overseas training. Is it too much to hope that the time may come when we in Britain criticise ourselves because only 30 per cent. of our university lecturers have Commonwealth experience? This is no capricious musing. Upon that hope being fulfilled may depend the stability of the British Commonwealth.

[1] Science in Australia. proceedings of a seminar organised by the Australian National University on the occasion of the jubilee of the Commonwealth of Australia. pp. xxxi+192. (Melbourne; F.W. Cheshire, 1952.) 30s.

SALMON

The 1954 season bids fair to chalk up a new record in the salmon catch. From beaches along the south-west and south coasts over 1,000 tons of salmon have already been taken.

PRAWNS

The research vessel "Lancelin", captained by Mr. H. C. W. Piesse, netted some fine specimens of prawns in the waters of Cockburn Sound between Garden Island and Kwinana recently. Some of those taken measured up to 9" in length and are thought to be a species similar to King Prawns.

TROUT ACCLIMATISATION

A meeting of the Trout Acclimatisation Council was held in the board room of the Fisheries Department on Saturday, March 6. Various policy matters were discussed bearing in mind the opinions expressed at the December meeting of the Council which were reviewed in the January Bulletin.

It was decided that planning and general control and publicity of trout acclimatisation would be handed over to the Council and this Department would arrange the distribution. The Clerk-in-Charge, Mr. B. R. Saville, will now organise all the administration of distribution but the field work will continue to be the responsibility of Technical Officer J. S. Simpson.

Funds collected from the sales after the present holdings are distributed will be handed over to the Council.

THE CLEARING HOUSE

Background to the New Mesh Regulations

by R.G.R. Wall

The countries of Western Europe have, some at their doorsteps and others little distant, a shallow shelf forming one of the finest fishing regions of the world, especially for variety and quality of fish. This is the North Sea and the adjoining waters, which are fished in common by those countries. Already by the beginning of this century some of these grounds had shown that they could no longer yield the former reward to unlimited numbers of fishing vessels (which even then were increasing in catching power) using nets of so small a mesh that they caught some of the fish when they were still very small.

A Turning Point

Over the years this situation spread and the danger grew, being no more than temporarily arrested by the respite given to grounds during the two world wars.

There is now hope that April 5 this year will prove a turning point in the fortunes of the North-west European fisheries. For on that day the 12 countries which are signatories of the International Fisheries Convention of 1946 will put into effect agreed measures for the protection of the white fish stocks.

The countries which are acting together are Belgium, Denmark, France, Iceland, the Irish Republic, the Netherlands, Norway, Poland, Portugal, Spain, Sweden and the United Kingdom. It is hoped and expected that Western Germany will be joining the company.

From April 5, 1954, the fishermen of all these countries will be required to observe in common agreed minimum sizes for meshes of trawl and seine nets, and minimum size-limits for fish retained on board and landed for sale. In the waters around Iceland, off Northern Norway and at Bear Island and

beyond, the minimum mesh sizes will be 100 mm. for seine nets and 110 mm. for trawls.

In the rest of the Convention area, including the waters around the British Isles, the North Sea, the English Channel, the Irish Sea and at the Faroes, the minimum size of mesh will be 70 mm. for seine nets and 75 mm. for trawl nets; but after a transitional period of two years the minimum size for trawl nets for these waters will be raised to 80 mm. As to the size-limits for the various species of fish which the Convention prescribes, these have been the law in Britain since 1948.

This has not been easily brought about. It is some 30 years since voices were first raised in favour of international regulation of the size of mesh to avert overfishing. Scientists - and indeed fishermen - pointed the way with experimental work which showed what might be achieved. The nations themselves sat down in conference in the 1930s, but the tentative agreement they reached was never ratified.

Now they have succeeded. That they have done so is a tribute to the enlightenment of their fishing industries quite as much as to the good sense of Governments; for without the understanding of the fishermen it would be useless to make rules regulating the mesh of nets and impracticable to apply them. It is no small thing that all the fishermen of all the seaboard countries of Western Europe will now be allied together in the practice of sound measures for conserving the white fish stocks on which their living depends.

What results will the new mesh sizes bring? Immediately, of course, some sacrifice. We have to wait for the small fish now too often caught to grow larger and swell future catches. The immediate sacrifice may be less in some fisheries than in others. Equally, some fisheries are likely to show greater improvement when the new mesh sizes have had time to produce their effect. Among the species that should yield the greatest improvement are the haddock, the hake and the sole. Scientists report

from the North Sea a very good showing of small and medium haddock which the new mesh should spare to give a good crop during the next two or three years' fishing. The cod and the plaice fisheries are expected to show smaller benefits from the present increases in the mesh sizes.

Particular species apart, it has repeatedly been shown, both in scientific and commercial tests, that trawls fish better when the mesh is larger and catch more of the valuable medium-sized fish there are on the grounds, so making up at least in part for the loss of the small fish.

The mesh regulations will cover a vast expanse of sea - in effect, the whole of the North-east Atlantic and its dependent waters - in which the fisheries are of diverse nature and differing types of gear are used. So the mesh rules cannot be uniform over the whole area. A large mesh that is right for the distant waters would not do in the North Sea. The seine net, too, is to be given what appears to be a 10 mm. advantage over the trawl net. Actually, that has been done in the cause of equality: the scientists have demonstrated by experiment to the satisfaction of the Permanent Commission that a seine net and a trawl will make the same size-selection of fish on a round when the trawl mesh is 10 mm. larger than the seine mesh.

The Permanent Commission will be carefully watching the new mesh sizes in application and will study and assess their effects. The Commission looks for the understanding co-operation of the fishermen in this international plan, founded as it is on experiment and science, to improve their catches and their livelihood.

("The Fishing News", London, January 29, 1954.)

Scrabster

A lobster found among a catch of white fish at Scrabster (Caithness) last week had yellow and brown spots on the body and yellow and brown rings on its feelers, which were about a foot long, and no claws. At the Scottish Home Department's Marine Laboratory

Aberdeen, it was identified as a spiny lobster (Palinurus bulgaris). It is sometimes caught on Scottish grounds, but seldom off the Caithness coast.

("The Fishing News", London, January 29, 1954.)

Canada to Help Fishermen

The Canadian Federal Government is planning help in extending Canadian fisheries markets. Proposals include a "pilot plant" to discover better production methods, modernised fishing vessels, research on locations of fish, and the placing of some remotely situated fishermen in communities with better equipment. Modern production methods are particularly needed in Newfoundland, says the Fisheries Department, who hope that the plan will result in bigger catches there at lower per-unit cost.

100,000,000 Dollars

The cost of the proposed developments in Newfoundland is estimated at 80 million to 100 million dollars(£20 to £30 million sterling), to be spent in the next 10 to 15 years.

A recent report on Newfoundland fisheries said that in 1951 there were more than 20,000 fishermen in Newfoundland and Labrador, and that the number was declining as new employment became available. The average fisherman's income at that time was less than 1,500 dollars (about £500) a year. The report recommended more efficient equipment, the fishermen to be relieved of processing their catches, implying concentration of fishing fleets near processing plants.

("The Fishing News", London, January 29, 1954.)

Suspicions Frustrate Fair Profit Plans

says Ian Class

Surveying the distribution side of the fish trade in an annual review, Mr. Ian Class, President of Hull Fish Merchants' Protection Association Ltd., states that the trade had a bad time in 1953.

"Faced with a more plentiful supply of meat and other foods", he declares, "fish has to force its way into the shopping bag by virtue of palatability and price.

"Pre-war prices have, of course, gone for ever, and the removal of the food subsidies will have an undoubted beneficial effect on sales, as shoppers come to realise what world prices really are, yet quality still leaves much to be desired.

"The larger portion of the Hull catch finds its way into the fish frier's pan, and here the increase in overheads is really frightening; what might be had for 3d. a few years ago now costs 1s., and shillings are by no means as plentiful as they were.

"Merchants costs are rising still, with the one bright spot in this connection the slashing reduction in freights, 40 per cent, made by the railways to 28 selected stations, in a real attempt to recapture some of the traffic which has been lost to road haulage.

"Still, when all is said and done, the main cause of the merchants' difficulties is one within their own control; reckless price cutting appears to be the only form of competition known to them so far.

"Attempts have been made in the past to formulate schemes to guarantee a fair margin of profit, but mutual suspicions and jealousies have invariably deflated them. There are signs at long last, however, that the necessity for some form of regulation is appreciated, and it is hoped that something acceptable and workable will be presented to the business within a very short time.

"A few die-hards will have to be brought to the realisation of the fact that the old days of 'I'll run my business just as I like' are gone for good; that the public interest must come first, and that good wages cannot be paid unless there is a profit on the operations of the businesses."

("The Fishing News", London, February 12, 1954.)

New Craft Evolved from South African Trials

Nearly 14 years ago a curious model craft streaked across the surface of Zeekoe Vlei, near Cape Town, its insect-like "feelers" probing the water, its hull riding clear of the surface. It was the first secret test, before Royal Navy officers, of the Hook Hydrofin.

Since then, in the face of prejudice and innumerable difficulties, its inventor, Christopher Hook, has travelled halfway round the world, and has found, in the United States, backing and official encouragement for his project.

Hook, who envisages the building of passenger and freight craft of all sizes capable of travelling at 50 knots and more, tells below the story of what happened after he left Cape Town.

by Christopher Hook

I did not know it at the time but the work of Alexander Graham Bell of telephone fame was well known to the Admiralty, so they were unlikely to be impressed by such feeble beginnings even if supported by Commander (now rear Admiral) W.A. Bishop and Cape Town's Professor Goodlet. "Meets no naval requirement present or foreseen" was the curt verdict which cut off all assistance on orders from Vice-Admiral Tait. About that time I met Mr. A. McGuigan who has remained in contact, but there was not much more that I could do in South Africa.

Fantastic Outfit.

So I moved on to Kenya, where the Kenya and Uganda Railways, under instructions from Sir Reginald Robins, provided me with workshop help and at least a chance to show my skill. Later, in Nairobi, with a team of four natives, two Italian prisoners and a Sechellois in a workshop owned by an Indian, I managed to raid the Salvage dump and brought back a Walrus (36 ft. flying boat) hull, a radial aircraft engine (with plenty of missing parts that the Italians replaced) and ten complete wings for a total cost of some £30.

What a fantastic outfit! Instructions had to be given in Italian, Swahili and French and all building had to be designed to use the fittings we extracted from the aircraft wings.

When all was ready I railed my contraption down to Mombasa where, for launching and testing assistance I had to be content with my four Kenya boys since, this being an important naval base, my Italians could not be admitted and had to stay in Nairobi.

Those boys had never seen any more than a mountain stream before and did not even know the water of the sea was salty. However they learnt quickly and were all swimming within a week. The assembly job from a sandy beach with no facilities whatever was nearly all done by swimming and using the tide. Our "results" under such conditions were not much to brag about, however interesting they may have been from the point of view of design experience.

Embarrassing

I was supposed to ring up the officer of the port of Kilindini and tell him each time I intended to demonstrate. Half an hour later an M.T.B. would nose round the point and wait, but demonstrating was very far from my thoughts and the presence of the Navy was so embarrassing that we did most of our work at the crack of dawn or late on Sunday nights when the phone, conveniently, did not answer.

Finally, in 1945, I scuttled ship and sailed for England, giving my first lecture at Cape Town University on the way when the subject was set as a result, as thesis for the B.Sc., exams. I had found out by then what Bell and the Italians, Forlannini and Crocco, had done before me and the latter I was to meet later at a convention at Farnborough. I was learning that "fools rush in where admirals fear to tread" to misquote slightly, and I began to get a glimpse of the big lump I had bitten off .....

Cowes as a choice was bad. Running on hydrofoils right past the Royal Yacht Squadron "castle" was certainly a bit too much. But by then

I needed financial assistance and chances had to be taken, even the risk of annoying their lordships. My wife's South African diamond was long since sold and the going was hard since the war was over and the Admiralty had no money.

I received considerable assistance from the R.A.F. and the seaplane tank at Farnborough where a series of tests were run with a model I supplied. As a result of this, much better progress became possible and an 18 ft. air-drive boat was built which still failed to operate at first, due to air entrainment to the foils. Since this problem must account for many failures in this field I will describe it in more detail:

It is now well known that an aeroplane flies more because of lift created on the upper side of the wing than by pressure on the underside. This upper side lift is in reality a partial vacuum generated by the acceleration of the air flow over the cambered upper surface. So with a similar wing in water, with this difference, that the negative pressure values are greater and they occur very close to the free surface where air can easily rush in to fill them. When this happens the water flow is no longer deflected downwards over the camber but sails happily over the air pocket and as a result all upper side lif (about 2/3ds of the total) is destroyed so long as the air remains.

The study of all this was so new and the absence of technical information so complete that even the Farnborough aerodynamicists, who came to watch, were mystified by the apparent refusal of the hydrofoils to lift the hull when the speed, angle of attack and area indicated that they should. However, by a return to model-testing and by methods invented for the purpose that reproduced exactly the same loading conditions to reduced scale the key was found, and a silver streak of air was seen to dart downwards each time the model lurched.

Dangerous Region

With great relief, we returned to the drawing board to re-hash completely the foil mounting

design so as to remove them from the dangerous region beneath the strut and place them forward, where any air would get "washed away" before it could reach the top camber. Rebuilt to this design, the 18 ft. boat lifted full height first time the throttle was opened up, much to the disgust of the prophets of doom!

By this time I heard that the U.S. Navy was issuing contracts for hydrofoil work and I started to receive copies of technical reports through the U.S. Naval Attache in London, so when, after demonstrating to the French Navy in Toulon (when a light cruiser put to sea to carry the scientific team that came down from Paris) it became obvious that money would not be forthcoming for some time in Europe, I decided to head for the U.S.A. as soon as an opportunity should arise.

An expedition to Holland came next where I was invited to work au pair in Roosendaal to build and demonstrate another air drive Hydrofin and some more precious experience was gained. I also visited Germany and stayed a few days with the German designers who had built some large hydrofoil boats during the war but were then prevented from working by the Allied ruling that no "ships" were to be built with speeds over 8 knots. This interchange of information was to be of the greatest value to me later on.

When war ended a British Naval commission had visited these yards and had seized and taken away all parts, boats, designs and technical reports. The test tank at Hamburg had been destroyed. For a long time nothing whatever was done, but eventually a small boat was tested. It was noted that in following seas these boats with hydrofoils of fixed angle of attack would tend to sit down while their stability in waves was strictly limited.

For Rough Seas

They had been designed, after all, for high speed dashes down the Channel in chosen weather and not for patrol work in all weathers, as was required of the British Fleet. As a result, the Admiralty took the view that no system of hydrofoils could be of much use in rough seas.

The R.A.F. took another view, and men trained in aircraft design know well that such a radical modification as variable incidence suitably controlled can change completely the characteristics of an apparatus. However, the hydrofoil boat came under Admiralty, not R.A.F. control and so nothing could be done, and my departure for the U.S.A. was the only solution.

With the U.S. consul in Southampton I was careful to avoid mention of the fact that I had a "novel" type of boat. I asked only for a visitor's visa to the National Motor Boat Show as an exhibitor and I sailed just before Christmas 1950 on the s.s. Washington with a sports model Hydrofin in the hold.

Representatives of the Naval Tank Test Basin arrived and watched my cine film of the boat in action with great interest. When the Show closed, arrangements were made for my financial support in Annapolis and Washington for five weeks while demonstrations were run for about 100 naval and other scientists, including a German who had been in charge of the German hydrofoil programme and who stated openly that their boat had nothing like my performance in rough water.

Smoother Ride

Since then the official "Bushipe Journal" and the "Rudder" have indicated the U.S. Navy's interest in the Hydrofin. The uses and the actual naval activity are not explained, but it is stated that hydrofoil boats are of interest to the Navy and have Naval uses as well as offering great possibilities for maritime transport; that there are several designs of which the German surface-piercing Vee foil and the totally-immersed incidence-controlled foil are the two main ones; that the latter offers less resistance, therefore better economy and a smoother ride in rough water; and that Hook's Hydrofin is a successful example of the latter.

Short Range Transport

What then are these advantages and what will they mean in terms of transport over water?

To quote from the "Bushipsˮ article by Cdr. J. J. Stilwell, if we consider two boats each of 50 ft. long, one conventional and the other hydrofoil, we will obtain the following characteristics:

	Conventional	Hydrofoil
Length	50 ft.	50 ft.
Weight	45,000 lbs.	49,000 lbs.
Power	1,500 HP	1,500 HP
Top Speed	40 knots	60 knots*

* Power required at 40 knots: 800 HP.

As will be seen, one can have either more speed for equal power or equal speed for less power. However most men agree that the extra speed or the reduction of power is not, by any means, the most interesting aspect of hydrofoil travel but rather the prospect, now open, for smooth travel similar to low altitude flight with the complete elimination of all pounding and rolling.

After the naval uses, probably the most important are those of inter-island short range transport, where all the advantages of the helicopter can be offered at about 1/6th of the capital outlay and half the expense per passenger mile. Quick to see this have been the Texasoil-well service companies, who operate transport boats for crews and parts to oil-well rigs that lie some 45 miles offshore, exposed to rough seas where seasickness or delays in getting highly-paid experts to shore often mean heavy financial losses for the Company.

It is not proposed to compete with either aeroplane or rail, and so in Africa where railways are mostly laid from coast to hinterland, the hydrofoil boat can link small localities coastwise with profit particularly where they lie close enough together for the aeroplane to be unable to compete. In aircraft, distances of less than 100-200 miles cannot be linked economically, while helicopters are still far too costly to be a paying proposition.

New Mode of Travel

In this respect "Aviation Week" quotes A. F. Mouragues, former Governor of French Sudan, as giving air transport as the key to Africa's future

and saying "Strangling bottlenecks of bad roads, long distances and feeble capacity of railroads will be broken."

Now in regions of sea, great lakes or large rivers, everything that aviation can do the hydrofoil boat can do cheaper, safer and on a larger scale. Already a German hydrofoil boat company which was forced to move to Switzerland to escape the eight knot law has carried 14,000 passengers and covered some 22,000 nautical miles of commercial exploitation. Plans are on foot for a merger of interests with this firm at the time of writing.

Nobody is advocating the conversion of normal shipping to the hydrofoil method, nor do we claim in any way to have eliminated the boat, but rather to have introduced something new, just as the autobus never claimed to have eclipsed the locomotive but only to provide a new instrument that extends the railroad system. In the same way the helicopter does not eliminate the aeroplane, or the bicycle, or the motor car. They fit into a more complete and more useful network of transport tools at the service of man. In doing this they have their place.

("The South African Shipping News and Fishing Industry Review", Cape Town, February, 1954.)

The Australian Pearling Industry

A recent proclamation by the Federal Government of Australian sovereignty over the resources of much of the Arafura Sea, focused international attention on the sovereign rights of nations over the submerged area surrounding their seaboard. Further proclamations by the Government have prohibited the taking of pearlshell, trochus, beche de mer and green snail from northern Australian waters by pearlers, both Australian and foreign, except under license. Regulation of pearling operations, by defining the size of shells and specifying the areas for fishing, has been taken to ensure the conservation of the natural resources of the Australian Continental Shelf, rather than to protect the small but profitable Australian pearling industry.

Production Trends

Before the war, substantial quantities of shell were won from the Continental Shelf by Australian pearlers. In 1938/9, mother of pearl production of 2,543 tons, was valued at £222,281. But more significant was the large proportion purchased by the United States of America which in pre-war years took about 70 per cent. of Australian production.

With pearling operations curtailed during the war, supplies to the market in the immediate post-war years, in common with other raw materials, were inadequate and prices rose sharply to artificial levels. Encouraged by profitable returns, production soon began to recover and with luggers operating from Thursday Island and Broome, the principal centres of the industry, and from Darwin and Onslow, output rose from 309 tons in 1946/47 to over 1,500 tons in the ensuing three years. This increase however, rather than being distributed throughout the industry, was mainly due to expansion at Thursday Island which in 1949/50 produced approximately 1,200 tons or 80 per cent. of the season's total production.

But production costs were also rising, and with greater competition from plastic substitutes, prices for pearl shell dropped sharply in 1949. At the same time considerable increase in the demand for trochus shell lifted prices for that product to more attractive levels and many pearlers were induced to convert their vessels to trochus operations despite the discouragement of the Fisheries Division of the Department of Commerce. In an industry in which the supply of labour has never been abundant, the decline in production was further accentuated by the larger crew of about 20 hands required for trochus operations, in comparison with the 10/12 needed to man a pearling lugger. The recovery of mother of pearl production up to 1949/50 and the decline in the following year, together with the production and value of trochus shell are shown in the accompanying table.

But whilst the output of pearl shell declined in 1950/51 to 1,091 tons, trochus production that year increased by more than 100 per cent., rising

from 577 tons to 1,287 tons. When the trend continued the following year, concern was felt that the low pearl shell output would have a deteriorating influence on the stability of the market and that the higher prices commanded by pearl shell would induce more manufacturers, particularly in the United States of America, to use plastic buttons. With demand for trochus abating efforts were renewed to persuade operators to return to pearling. The 1952/53 season commenced with 50 pearling luggers operating from Thursday Island as compared with the 36 boats of the previous season, and with minor changes in other centres. The subsequent rise in production to 962 tons as shown in the accompanying table, should however be treated with a measure of reserve as the figure has been calculated on a calendar year basis, but as operations are concentrated heavily in the July-December period, the discrepancy should be neither large nor misleading. Production however remains well below pre-war levels and much less than the peak post-war figure.

Production of Mother of Pearl and Trochus

Year	Pearl Shell		Trochus	
	Quantity tons	Value £A	Quantity tons	Value £A
1938/39	2,543	222,281	322	-
1946/47	309	186,584	669	59,335
1947/48	726	415,325	272	18,729
1948/49	1,346	573,785	414	28,170
1949/50	1,542	551,715	577	51,682
1950/51	1,091	508,230	1,287	228,325
1951/52	853	458,852	1,176	234,332
1952/53	962	511,570	n.a.	n.a.

Export Markets

Though the industry is small, employing few people and using relatively little capital, it makes a useful contribution to the country's overseas earnings as only small quantities are held for use on the home market.

Contracts for much of this year's production are held with manufacturers in the United States of America who have consistently been the principal buyers of Australian mother of pearl and trochus and who in recent years have purchased over £1 million of Australian mother of pearl per annum. The United Kingdom and Germany have bought substantial portions of production, usually from 10-15 per cent., whilst many other European countries have also made smaller purchases.

The importance of the industry to the north coast of Australia has led the Australian Government to consider means by which it may be expanded. A research vessel is maintained for surveying extensive areas of the sea bed and for locating new shell patches. Research is also made into the biology and distribution of various species of shell to assist in the determination of variation in the quality of shell, pearl yield and age compositions of various populations. In the laboratory, biological studies of the growth rates, sex ratios and changes, and experiments in artificial fertilisation are being continued.

By these means and a policy of conservation, it is hoped to protect the natural resources of the Continental Shelf from uncontrolled exploitation. The Australian Federal Government, confident of its correct interpretation of international law, recently consented to Japan placing the case before the International Court of Justice for clarification. The discovery of oil reserves off the coastal limits of the American continent has given prominence to this new form of boundary determination and the fate of Australia's action will be awaited with interest by those countries contemplating similar action.

("Monthly Summary of Australian Conditions",
Melbourne, February 1, 1954.)

This Guy's New Engine Was a Community Affair

The Kermath people of Detroit, Michigan, recently reported a most "extraordinary transaction" involving the sale of a Kermath Sea Jeep by its Canadian office.

The unusual part of the purchase was the method in which payment was made. The Canadian office received a registered letter enclosing a cheque for $75 from the purchaser; 69c. in stamps; an unemployment insurance cheque; two baby bonus cheques; five old age pension cheques; three family allowance cheques; an election fee from a Reverend; and a hundred and some dollars in cash. These cheques were received from 14 different people.

This customer's new Kermath seemed to be a community project.

("Western Fisheries", Vancouver,B.C., December, 1953.)

Swedish Tuna Shocker "Pacifies" Hooked Fish

A Swedish manufacturer has signed a contract with the German inventor of the "tuna shock" to produce and export the new fishing device. The "tuna shock" is an electric implement used to shock fish after they strike a trolling line. Swedish vessels have used the gear to catch large tuna and have reported very few fish escape once they are hooked.

The electric device does not occupy much room, consisting of only a converter and control box. Three cables are connected to the control box and three lines may be fished simultaneously. The lines have floats with different colours. When a float disappears indicating a strike, the electric current is switched on. The shock leaves the fish unconscious and easy to pull in. Current from the vessel's 24 volt battery is boosted to approximately 200 volts, which goes out to the hook when the fish strikes.

To prevent members of the crew from getting shocked, a locking device is employed which stops the gear from working when the hook is out of the water.

("Pacific Fisherman", California, February, 1954.)

Lobster Tail "Splits" Introduced by Stix

Robert L. Stix, head of Robt. L. Stix, Inc., New York sea products importer, and a former Seattle frozen fish sales manager, returned recently from a

trip around the world announouncing a new item in his line - "Baffin Brand" lobster tail "splits", which are divided lengthwise before freezing. They are packed in the most southerly plant of this sort in the world, and are offered as an answer to a problem in popularizing lobster tails.

("Pacific Fisherman", California, February, 1954.)

British Firm Makes Plastic Net Float

A new fishing net float made of an expanded plastic material and possessing unusual buoyancy, has recently been put on the market by a British firm.

According to the manufacturers, no repairs or maintenance are needed for the new float which is very light in weight, vermin-proof, odorless, non-inflammable, resistant to gasoline, oil, and most chemicals. It will not support the growth of molds or bacteria.

Tests were carried out by the Norwegian fishery directorate with various floats sunk to depths of about 400 feet. It was found that cork floats became waterlogged, that Norwegian plastic floats were compressed to less than half size, and that the new British plastic floats were the only ones to be completely unaffected.

("Western Fisheries", Vancouver, B.C., January, 1954.)

Australia Buys Salmon from U.S.S.R.; Not B.C.

Australia bought some 2,686,000 lbs. of canned salmon from Soviet Russia during the 1952/3 trade year, ending last June, but only 115,000 lbs. from Canade, her commonwealth sister country.

The United States' canned salmon trade with Australia was negligible - 327 lbs.

The predilection of Australia for the Russian fish came at a time when Canada had a heavy surplus of salmon for sale, and was seriously beset by the decline of its overseas markets.

("Pacific Fisherman", California, February, 1954.)