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VALE LUDWIG GLAUERT

On February 1, at Hollywood Repatriation General Hospital, Ludwig Glauert, M.B.E., B.A., F.G.S., died of a heart attack.

Born in Sheffield, England, in 1879, Mr Glauert came to this State in 1908 and took up an appointment as field geologist with the Geological Survey. After his outstanding discoveries and classification of fossils from the Margaret River Caves, Mr Glauert transferred in 1910 to the Western Australian Museum. Subsequently, he was made, in turn, keeper of the biological collections, curator, and finally director, and saw 47 years' service before his retirement in 1956. He served overseas with the A.I.F. in World War I.

His outstanding ability and enthusiasm inspired great interest in natural history in this State, where his name quickly became a byword. He was a foundation member of the Fauna Protection Advisory Committee and a long-time friend of this Department. It was indicative of his sincerity and enthusiasm that he continued, after his retirement, to utilize facilities made available for him at the Western Australian Museum. Always a prolific writer, he published a number of papers after his retirement. Indeed, his last book came off the printing press on the very day of his death.

Mr Glauert received many honours in his time, including the gold medal of the Royal Society of W.A. for distinguished work in science in this State. In 1948 he was awarded the Australian Natural History Medallion. He was also honoured with election to a Fellowship of the Royal Zoological Society of New South Wales, and after his retirement was awarded the M.B.E. for his services to the State and to science in the Queen's New Year Honours List of 1960.

STAFF NOTES

On January 11 the Minister for Fisheries, Mr Hutchinson, the Director, Mr Fraser, Senior Research Officer B.K. Bowen and Supervising Inspector J.E. Bramley, with their wives, were entertained as the official guests of Captain Goro Sakurai, of the "Koyo Maru", Training

Ship of the Fisheries College of the Japanese Ministry of Agriculture and Forestry, which spent a few days in Fremantle.

On February 12, Mr Fraser, with the Chief Clerk, Mr Saville, will attend a meeting of the Pemberton Hatchery Board at Pemberton.

Ten days later - at 3.15 p.m. on February 22 - Mr Hutchinson will officially open the Department's new quarters at Geraldton. The Director and Mrs Fraser will also attend, together with other staff members and their wives, local dignitaries and representatives of other departments and the fishing industry.

On March 7, Mr Fraser will accompany the Minister to Albany to attend a meeting of the Lower Great Southern Regional Council. While in Albany Mr Hutchinson will inspect the area at Two People Bay where the Noisy Scrub-bird was recently re-discovered. On March 11, the Minister and Director will fly to Port Lincoln, South Australia, to attend a meeting of the Southern Pelagic Project Committee. After the opening the Minister, at the invitation of the Premier of South Australia, Sir Thomas Playford, will inspect units of the tuna fishing fleet and tuna processing facilities at that centre. Mr Hutchinson will return to Perth by air on March 14, but Mr Fraser, who will attend most of the meetings of the committee, will not return until March 17.

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We welcome to the staff Captain Frank Galbraith, who has been appointed master of the research vessel "Peron". He will take the place of Captain H.C.W.Piesse, who resigned from the public service on November 23 last to enter the fishing industry.

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Senior Research Officer B.K. Bowen will pay a short visit to Albany on February 14 to check on sampling techniques used in the salmon research programme. After taking a few days' holiday, Mr Bowen will leave on February 26 for the Abrolhos to further the crayfish research programme - particularly in relation to escape gaps in crayfish pots. He will be accompanied by Dr D.W. Goodall, Senior Principal Research Officer of the Division of Mathematical Statistics, C.S.I.R.O. They will join the r.v. "Lancelin" at the Abrolhos. "Lancelin" will be under the command of Mr C.J. Seabrook, Master, accompanied by Mr C.R.C. Haynes, mate, and Cadet Inspector P.A.

Smith, and will sail from Fremantle on February 21.

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Inspector T.B. Baines, of Shark Bay, will commence long service leave on April 1.

Miss Robyn Hall, of Head Office, will commence annual leave on February 11. The Chief Clerk, Mr Saville, will begin annual leave on March 4.

PERSONAL PARS

We wish bon voyage to Mr A.R. Kelly, Executive Officer of the Pemberton Hatchery Board, who with his wife will leave on March 15 for an extended holiday overseas. He will visit four continents - Asia (including Hong Kong, Thailand and India), North Africa, Europe (including the United Kingdom) and the United States of America.

During the course of his travels Mr Kelly will look into the acclimatisation of fish at various centres, keeping in mind the possibility of acclimatising warm water fishes in this State. As chairman of the Pemberton National Park Board he will have discussions with the National Parks administration in the U.S.A., and visit some of the better known parks.

During his absence Mr R.J. Kelly (father of our Assistant Inspector J.T. Kelly) will act as executive officer of the hatchery board.

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Dr R.G. Chittleborough, Senior Research Officer, Division of Fisheries and Oceanography, C.S.I.R.O., arrived in Perth on January 6 on transfer to this State. He will take up work on the juvenile stages of our crayfish, and possibly also continue some research work on sperm whales.

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A number of Dr Chittleborough's colleagues will shortly be visiting this State. They include Dr J.M. Thomson, who, it will be recalled, is project leader of the Western Fisheries Research Committee. He is expected on February 20. Mr I.S.R. Munro, who like Dr Thomson is a principal research officer in the Division of Fisheries and Oceanography, will arrive early in March to take

up a phase of the salmon research programme. Initially he will work on the distribution of salmon eggs in our waters. The third will be Mr T.R. Cowper, Senior Research Officer, who will be collecting blood samples of southern bluefin tuna for a study of antibodies for taxonomic purposes. He will arrive during the first week in March and will work aboard Messrs Poole Bros.' boat which, co-incidentally, is named "Bluefin".

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Dr R.W. George, Curator of Invertebrates of the Western Australian Museum, will leave for Aden by air on February 15 to study and advise on local crayfishes. His visit is being undertaken under the auspices of the Food and Agriculture Organisation of the United Nations. During his absence overseas he hopes to visit Ceylon and Mauritius to make further studies on the coral crayfishes. Several species of coral crayfish exist in more northerly areas in Western Australia, but hitherto no satisfactory method of capture has been evolved.

Dr George was formerly a research officer of the Division of Fisheries and Oceanography, C.S.I.R.O., and has published one or two important papers on the Westralian crayfish. Since transferring to the Museum he has, until very recently, been engaged on a study of the phyllosoma stages of the Western crayfish. His work has been carried out under the aegis of the Western Fisheries Research Committee, assisted by a grant from the Fisheries Development Trust Account. The Department's research vessel "Lancelin" was used for this research.

STAFF CONFERENCE

As all staff have been separately advised, it has been found necessary further to postpone this conference which will now be held at this office on April 22-24 inclusive. District reports, completed as outlined in the previous issue of this bulletin, should be received at this office by the end of this month. Any staff member is invited to send along items for inclusion on the agenda, but they must reach Head Office by April 8.

PARKING RESTRICTED IN STATE HOUSING COMMISSION YARD

Advice has been received from the State Housing

Commission that the available parking facilities cannot cope with the present demand. Parking is now to be restricted to approved vehicles for which a sticker has been issued. The Commission regrets that space is not available for unauthorised vehicles, the drivers of which will need to utilise public parking areas. Officers with approved vehicles are requested to avoid parking their cars in the yard except when really necessary.

SWAN RIVER NOTES

Senior Inspector J.E. Munro reported last month that Swan River fishermen were receiving extremely low prices for their catches. Even good fresh mullet, he said, fetched as low as 4d a lb. Mr Munro added that fishermen were being severely troubled by cormorants, which were causing considerable damage to their gear. He himself had observed flocks of 20 to 30 small black and small pied cormorants and smaller numbers of large pied cormorants around fishermen's nets when they were being hauled.

DONATION FROM I.C.I.

Following a call on the Fauna Protection Officer from Messrs Keith Barker and D. Cumming, of Keith Barker Pty. Ltd., representatives in W.A. of Imperial Chemical Industries of Australia Ltd., sufficient copies of the publication "Australian Waterfowl" have been donated to the Department to allow one copy to be issued to each staff member. This small but very useful book contains a colour plate of each species of Australian wild duck. It was published by I.C.I. in co-operation with the Department of Fisheries and Wildlife, Victoria. Copies will be issued to all staff who have not previously had one. They will be distributed at the staff conference in April.

GERALDTON BOAT HARBOUR IMPROVEMENTS

Mr Hutchinson has received advice from the Minister for Works that additional mooring facilities, at an estimated cost of £16,500, have been approved subject to the availability of funds in the 1963-64 financial year. This decision follows representations by the Geraldton Professional Fishermen's Association for permanent protected berthing facilities for fishing boats at Geraldton. Some months ago a committee consisting of the Principal Assistant Engineer for Harbours and Rivers,

the Director of Fisheries, the Manager of the Harbour and Lights Department, the Harbour Master at Geraldton, and Mr G. Travia (representing the Geraldton Professional Fishermen's Association), agreed that the provision of additional facilities was warranted. It is intended to list the proposed works when the draft estimate for next year's loan programme is being prepared. Mr Hutchinson has advised the Geraldton association that the work will be commenced next financial year provided funds are made available.

INCREASED TRAVELLING EXPENSES

The Public Service Commissioner has advised that following a review of hotel tariffs it has been agreed with the Civil Service Association of W.A. Inc. to increase by 1/6 the daily rates of reimbursement of travelling, transfer and relieving expenses. The increases, which will date from January 1, 1963, have lifted the rate to 53/- a day when overnight travel beyond 15 miles radius of one's headquarters is involved. All future claims should be made at the new rate but no claim need be lodged for retrospective payments. Adjustments will be made in this office in resoect of any January claims which may have been received at the lower rate.

FISHERMEN'S ADVISORY COMMITTEE

The Minister for Fisheries has re-appointed Mr N.H. Wright, of Quindalup, via Busselton, to the statutory Fishermen's Advisory Committee. Mr Wright, whose new term of office commenced from January 1, 1963, will therefore continue to represent the interests of deep-sea fishermen other than crayfishermen.

The other appointed members of the committee are Mr W. Matthei, of Yunderup, representing beach and estuarine fishermen, Mr G. Travia, of Geraldton, representing crayfishermen, and Mr Roland Smith, of Perth, representing persons not commercially engaged in fishing. The Director, Mr Fraser, is the chairman of the committee, while Mr H.B. Shugg is its secretary.

FAUNA NOTES

In the July, 1962, issue we published references to the sighting of black swans in the sea near Broome and Carnarvon. Further reports of swans in the sea have come from Onslow (prior to the cyclone) and from Ledge

Point.

Writing from Onslow, Mr A.H. Clark, the wharfinger and fisheries inspector, said that black swans were quite common in the Ashburton district, both in the sea and in the coastal tidal creeks. They also occurred inland in freshwater pools. Mr Clark said that he had seen a female with six smallish cygnets in the ocean at Onslow. The birds were there for some time and were believed to go into the local creek at night. Odd pairs were seen from time to time in the many creeks. Mr Clark added in his letter (dated December 3) that reports of crayfish in spawn had been coming in and that small groups of flock pigeons were in evidence earlier in 1961.

A fisherman operating about a quarter of a mile offshore and 5 miles south of Ledge Point, on January 3, was surprised to have a visit from a black swan. It spent some time swimming around his boat and appeared to be quite at home in those surroundings.

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Fauna Warden N.E. McLaughlan, with Honorary Warden L. Miller, were told last month of increased numbers of quokkas and numbats in the Willowdale, Hoffmans and Tallanalla areas. The report came from Mr G.M. Treasure, who is also an honorary warden and, like Mr Miller, is an overseer employed by the Forests Department. He said that all the swamps in the area had small quokka populations and that odd numbats were observed on any sandy areas throughout the forest. The greatest number of quokkas he had seen in recent months was six. These ran out of a small swamp when a controlled fire was put through. Mr Treasure attributed the increase in wildlife to the decrease in the number of foxes since the area was baited regularly.

KANGAROO EXPLOITATION

The interest in wildlife displayed by His Royal Highness, the Duke of Edinburgh, during his visit last year gave a fillip to wildlife conservation in Australia. His impending return, in the company of Her Majesty, Queen Elizabeth, should do much to ensure continued interest at the new level. One of the tangible results of this higher level of interest has been the movement, particularly in the eastern States, towards greater control over kangaroo exploitation. Prior to his Australian visit Prince Philip, when speaking at a

banquet given in London for the World Wildlife Fund, had cited the uncontrolled exploitation of kangaroos as an example of indiscriminate hunting. Later, in Canberra, when addressing a meeting of 65 fellows of the Australian Academy of Science, His Royal Highness drew attention to man's responsibility for ensuring the continued survival of our wildlife heritage and referred specifically to the Noisy Scrub-bird and the Short-necked Tortoise. Prince Philip maintained an active interest in the conservation of both species during his stay in this State. One of the guests summoned to Government House to dine with him was Dr D.L. Serventy, a principal research officer of the Division of Wildlife Research, C.S.I.R.O., and a foundation member of the Fauna Protection Advisory Committee. Dr Serventy reported that many topics had been discussed and that Prince Philip had shown great interest in wildlife conservation in this State.

It will be remembered that in the October, 1962, issue of this bulletin, we published a report of the recommendations of the Australian fauna authorities conference held in Hobart in September. That report indicated that delegates had referred to the severe diminution of red kangaroo populations in the lower south-western area of New South Wales, and had expressed the belief that a more cautious approach to marsupial utilisation should be adopted. In fact, Conference recommended that strong measures be taken to restrict the taking of red kangaroos in New South Wales and that other States and Territories review the position in their areas by gathering accurate data.

Since then a new society has been formed in Melbourne. It is titled the Native Fauna Conservation Society, and Dr A.J. Marshall, Professor of Zoology at the Monash University, is its first president. Professor Marshall's immediate action was to send to the Prime Minister a resolution which was carried unanimously by over three hundred people present at the inaugural meeting. The resolution called on the federal authorities to ban the export of kangaroo meat for a period of five years. With this resolution and that of the Australian fauna authorities conference before him, the Prime Minister called for a background paper from the Chief of the Division of Wildlife Research, C.S.I.R.O., Mr H.J. Frith. A copy was subsequently sent to the Premier of each State for comment. A reply drafted by this Department has now been sent by our Premier in the following terms:-

1. Western Australia considers that there is no need to alter the present policies of kangaroo control and conservation. At the same time it supports

the federal authorities conference resolution that additional statistics are required.

2. We regard wildlife as a community resource and consider that it should be managed as such. We therefore support the proposal put forward by Mr Frith and others that the possibilities of farming kangaroos should be investigated wherever it is likely that their protein-productive capacity would make it more economic to harvest them than the usual domestic herbivores, such as sheep.

3. We would resist any attempt to prohibit the export of kangaroo meat or skins.

While these are our considered views we must admit there is a growing concern on the part of some farmers and observers in the south-west for the well-being of the grey kangaroo, especially in some of the open season areas. This concern emphasises our lack of adequate statistics on the population dynamics of the species and highlights the merit of the conference resolution that a careful watch be kept on all commercial exploitation. As Professor Marshall has pointed out, there are compelling examples in history of wild animals which were once amazingly abundant but which became extinct or were brought to the threshold of extinction due to uncontrolled harvesting and interference with their habitat. The North American bison, the Australian koala and the American passenger pigeon have been well cited as examples of this sort of thing.

Arrangements have recently been made for Fauna Warden N.E. McLaughlan and Cadet Research Officer J. Jacoby to co-operate with the research team of the Agriculture Protection Board in checks on the effects of kangaroo control measures to be carried out in the lower Great Southern.

PINGRUP MALLEE FOWL RESERVE UNDER FIRE

On Saturday, March 9, the Minister for Fisheries, Mr Hutchinson, and the Director, will attend a meeting in Albany to hear representations that a large reserve east of Pingrup be amended. This reserve, which comprises over 230,000 acres, was set aside in 1957 to reserve in perpetuity an area of mallee country typical of the more arid southern parts of the State. The reserve is vested in the Fauna Protection Advisory Committee. It is understood that the local authorities,

principally the Shire of Gnowangerup, are anxious to have the reserve amended so that land can be alienated on either side of a proposed main road to connect Newdegate with Jerramongup which, it is said, would pass through the reserve. As the reserve has been declared to be of class "A", Parliamentary sanction will be necessary before alienation may be effected.

PRAWNING LICENSES

In the August and December, 1962, issues of this Bulletin, we referred to the limitation by the Minister for Fisheries of the number of fishing vessels which would be allowed to trawl for prawns in the waters of Shark Bay.

Following further representations the Minister has directed that, for a period of three years commencing with the approaching prawn season, no additional 'outside' licenses are to be issued in regard to trawling in the defined area. The defined areas are the waters of Shark Bay lying east of 112°50' of east longitude and between parallels 24°30' and 27° of south latitude. The Minister has advised that exceptions to this general rule may be made only for additional licenses for on behalf of the two local companies - the Nor'-West Whaling Company and Planet Fisheries Ltd. Even then, in the interest of the fisheries, such exceptions must be kept to a minimum.

GOLDFINCHES

The Chief Vermin Control Officer, Mr A.R. Tomlinson, has supplied some interesting details of observations of goldfinches made by officers of the Agriculture Protection Board. The sightings were made during searches following reports of the occurrence of house sparrows in the Fremantle district. Mr Tomlinson said that so many reports of sightings of sparrows in the metropolitan district proved on investigation to have been inspired by occurrences of goldfinches, that the Vermin Control Officer who operated in the metropolitan area was asked to report on the numbers he saw. During the period from November 1 to November 8 he recorded the following flock size frequencies:-

Flock Size	Frequency of Flocks
Between 5 and 10	3
11 - 20	29
21 - 30	17

Flock Size	Frequency of Flocks
31 - 40	10
41 - 50	3
Over 50	3

The largest recorded flock was sighted on April 25, 1962, when a hundred birds were seen in Cannington. Other districts where large flocks were reported included Fremantle (No. 8 wharf at Fremantle Harbour), Applecross and Karrakatta.

CO-OPERATION

From time to time all members of our staff find themselves in "sticky" situations. This applies particularly to our fauna wardens who are asked to perform an amazing variety of tasks and to turn their hands to many things. Called upon last month to take into custody a large male kangaroo for delivery to the Zoo, Fauna Warden S.W. Bowler and Cadet Research Officer J. Jacoby, found, like Mrs Beaton, that they had first to capture the kangaroo in a yard at Midland and then get it into a vehicle. This sounds relatively simple until one gives some thought to the spring-steel muscles of our large marsupials, the efficient ripping devices they have as claws and nails, and their sometime pugnacious, if not positively pugilistic attitude and stance.

Had they known it they might have drawn hope from Scott's couplet -

"In man's most dark extremity,
Oft succour dawns from Heaven"

but no one thought to read it to them just then. However, with well-girt loins, and armed with ropes and bags, they entered upon the curtilage of the home of Mrs Marshall in whose backyard the big buck was contained. Mrs Marshall was not at home. They were greeted instead by a raucous alarm clock of a galah which called warningly over and over again - "Mrs Marshall", "Mrs Marshall","Mrs Marshall"! Feeling like small boys caught in the headmaster's study, nonetheless these brave hearts continued with their allotted task. They reversed their vehicle to the yard gate, opened it and the back of the vehicle and their hearts were heavy within them as they noted the size of the kangaroo and the small space through which it must be "persuaded" to enter the vehicle.

What can be accomplished if you try, and how easily it can be done if the victim will co-operate, was demonstrated in the next few moments. The kangaroo came up to investigate the vehicle and, after getting one slap on the rump, he shot inside like he must have done many times before as a joey into his mother's pouch. Prepared for a job which might have lasted an hour or so but ever one to seize the advantage in any situation, Mr Bowler quickly slammed the tail gate shut, closed the yard gate and drove off to the zoo with the kangaroo looking over his shoulder at the oncoming traffic.

Whether it wanted to go to the zoo or not we don't know but Mr Bowler said, that unlike our American friends, it obviously liked being taken for a ride!

1963 ABROLHOS SEASON

Three staff members, plus the patrol vessel "Dampier" and her crew will this year police the final days of the close season at the Abrolhos. This procedure, which was designed to ensure a fair and orderly opening, has been in force for several seasons, and has the complete support of the Geraldton Professional Fishermen's Association.

To avoid any serious disruption of the control measures below the 30th parallel, it has been decided that Inspector T.B. Baines, of Shark Bay, Assistant Inspector G.J. Hanley, of Mandurah, and Assistant Inspector J.T. Kelly, of Geraldton, will, temporarily, be assigned to these special duties. Inspector Baines will be stationed at the Easter Group, Assistant Inspector Hanley at North Island, and Assistant Inspector Kelly at the Wallabi Group. The p.v. "Dampier" will be on a roving patrol, principally in the Southern Group.

In accordance with the recommendations of the Fishermen's Advisory Committee, the men will be landed at their respective groups at least a week before opening day. All will return to their normal duties as soon as the season opens.

CLEARING HOUSE

New British Research Vessel

A new research vessel which will be stationed in the Indian Ocean was launched in August at the yard of Hall, Russell & Co. Ltd., Aberdeen. She is the Royal Research Ship Discovery, with eight air-conditioned laboratories, and diesel-electric machinery which will provide not only propulsion but power for all research operations on board.

The Discovery is the ninth exploratory and research ship to bear the name. The first was built in 1602. The present ship is 261 ft. long and has several unusual features. These include a transverse bow thrust propeller which enables the ship to maintain station at low speeds. She is both steam heated for Polar voyages and air-conditioned for the tropics. The eight laboratories are equipped for biologists, chemists, bacteriologists, photographers and electronic engineers.

The ship has been built to the order of the U.K.'s National Institute of Oceanography and is to be used to study movement of currents. She will first go to the Arabian Sea which is described as being particularly suited to research because a complete reversal of wind direction takes place. By studying the response of water movements to this change, much can be learned about mechanism of wind driven currents.

The Discovery will also devote a large part of her time to making measurements of fertility in different areas and to finding out where fish are most likely to be caught as a possible aid to territories looking to more food supplies.

(Shipping News South Africa October, 1962)

New Type of Insulation Tried in South African Trawler

A very effective and easily applied form of insulation has been developed by Imperial Chemical Industries Ltd. Known as polyurethane foam the plastic-based commodity can be sprayed into cavities between metal plates, bulkheads and ship's side plating, into doors and also into rudders. The foam, which is impermeable due to a tough outer skin which forms over the foam, is also very light, an extremely poor conductor of heat, and sets rigidly.

A special gun, manufactured by I.C.I. for the purpose, dispenses the liquid, which, due to chemical

action, foams up in the cavity, increasing its volume by about twenty times.

Many buildings, ship's holds and ocean-going ships' rudders have been treated with polyurethane foam as well as refrigerated road transport trailers and cold stores. During the past few weeks a number of Irvin and Johnson trawlers have been equipped with polyurethane foam insulation in their fish holds.

The liquid is injected through small holes into the cavity formed between the bulkhead or ship's side plating and aluminium plating which is held away from the ship's plating by spacers. The manufacturers claim that an appreciably thinner layer of insulation is required when using polyurethane foam than with other, more conventional, insulation materials. The foam is also exceptionally light in weight.

Foamed Insulations (Pty.) Ltd., P.O. Box 2718, Cape Town, have all equipment for doing the work of applying the insulation on the spot, both ashore and aboard ships.

(Shipping News South Africa October, 1962)

Is There a Breakthrough in Freezing Seafood?

New Scientific Discovery by Gorton's of Gloucester Promises to Keep Frozen Seafood at Peak Freshness.

A revolutionary new process that makes it possible to put sea-fresh frozen fish on the family table anywhere has been announced by Gorton's of Gloucester, Inc.

Known as the Fresh-Lock process, it is, according to E. Robert Kinney, president of Gorton's of Gloucester, Inc., "the solution to a problem that had puzzled Government and industry research technologists throughout the world for nearly fifty years".

That problem was to find a way to retard 'drip-loss' without adversely affecting the storage life of frozen fish and seafood.

'Drip-loss' Eliminated

"The problem of 'drip-loss' from frozen fish has been overcome in the Fresh-Lock process by using a component normally found in fresh fish instead of the

salt-brining method", Earl P. McFee, director of Gorton's laboratory and co-developer of the Fresh-Lock process said. "It is a simple dip technique no more complex than the ordinary, old-time salt-brining. The significant change is in the use of a new and patented brining medium".

This "revolutionary change", which retains in the frozen fish and seafood all the qualities of taste, texture, colour and nutrition found in sea-fresh fish, was accomplished in four years, Mr McFee said.

"The secret of this revolutionary change", he went on, "like secrets of most revolutionary changes, is very simple. The only trick was to discover it. It took two years of actual testing on a laboratory basis to find the secret; then it took two years more to develop it commercially.

"What we had to start with was the known fact that salt was bad for the storage life of frozen seafoods. Certain undesirable changes that take place during the storage period make themselves evident by the presence of drip and deterioration in texture and flavour. In addition to the storage drip, considerable cook-drip separates from the frozen fish during the cooking process. Directly or indirectly, the loss of moisture represented by the drip brings about changes in colour, texture and taste. Rancidity accompanies the discolouration.

"Government reports declare that the elements found in drip loss are those that give the characteristically fresh 'from-the-sea' flavour to seafoods. Laboratory tests show that fish frozen by conventional salt-brining methods lose from two to three times more in total weight than fresh frozen by the Fresh-Lock process. The Fresh-Lock process has eliminated all the undesirable characteristics and that is why we call it a revolutionary change".

According to Paul M. Jacobs, executive vice president of Gorton's of Gloucester, Inc., "all the qualities of flavour, texture, colour and nutrition found in sea-fresh fish and seafood are retained by the Fresh-Lock process.

He then explained:

"This beneficial result has been obtained by employing only components normally found in fresh fish. The Fresh-Lock process adds nothing to the fish, takes nothing

away from it, but saves everything that makes sea-fresh fish a tasty, satisfying, nutritious food. Those wholesome qualities are maintained in the Fresh-Lock fish and seafood even through freezing, thawing and cooking".

Dr Samuel A. Goldblith, director of the Food Science and Technology Department at Massachusetts Institute of Technology, explained the scientific tests.

"Unfrozen raw fish has a firm gelatinous consistency and when squeezed gives off no liquid", he said. "This is because raw fresh fish is firm and moist, not spongy and wet. Frozen fish normally gives off considerable amount of liquid while thawing and when squeezed. This is known as 'drip-loss' and contains important quantities of proteins, amino-acids and other nutrients. Fish frozen by the Fresh-Lock Process, on the other hand, loses virtually no liquid".

Dr Goldblith said 'drip-loss' ran up to 20 per cent of the weight of the fish and was generally thrown away. He performed an experiment to show that the nutritious elements lost in 'drip-loss' were equivalent to the nutriment found in the white of an egg.

Ocean perch was the first product frozen under the Fresh-Lock Process to be put out by Gorton's of Gloucester, Inc. This was about a year ago. Gorton's subjected this Fresh-Lock ocean perch to extensive consumer tests under actual market conditions. Consumer reaction was so favourable, Mr Jacobs said, that orders for ocean perch from wholesalers, distributors and co-ops jumped as much as 36%.

Packaging

New packaging and redesigned labels to make life easier for both the housewife and the retailer have been prepared in connection with the marketing of this new line of Fresh-Lock Process frozen fish and seafood.

Gorton's, the oldest fish processing company in the United States, decided from the start to put out its Fresh-Lock Process line in distinctive new packages that could not be confused with the former production.

"We wanted to make it easy for the housewife to tell Fresh-Lock fish and to simplify her task of getting it from the package and preparing it", Hugh Parkhurst, Gorton's director of purchasing, said: "So, we changed graphic design completely to permit easy recognition and adopted new packages to carry Fresh-Lock Process products

in improved convenient cartons".

The new carton was developed by the Marathon Division of American Can Co. It is a novel, five-colour lithograph packet with a reclosure device that permits taking out only as much fish as is needed for a meal. The rest can be saved for the next time by merely folding back the carton top and putting the package in the refrigerator. At present Gorton is using this reclosure device only on breaded, uncooked portions, but expect to extend the use to other lines as quickly as developments make possible.

(Fishing Gazette New York October, 1962)

Japanese Tuna Fishing Vessel Tests Power Block

The first power block ever to be used in Japan was reported to have been installed this summer on a large surrounding net (probably purse seine) vessel belonging to a large fishing company. This hydraulic power block was imported from the United States and was installed on the tuna vessel Kenyo Maru (240 gross tons) at a cost of about 3 million yen (U.S.$8,333).

The Japanese Fisheries Agency and the Japanese fishing industry reportedly are conducting studies on the possibilities of adopting power blocks and on improving vessel designs and fishing nets in an effort to increase further the operational efficiency of surrounding net gear.

This is bad news for the U.S. tuna fleet. The power block was developed by the U.S. fishing industry. Its use by tuna purse seine vessels made it possible for the U.S. fleet to economically compete with the Japanese by increasing the annual number of trips to the fishing grounds and materially increasing the catch. If the Japanese now adopt these American methods, our tuna fleet will again be faced with disastrous competition.

(Fishing Gazette New York October, 1962)

Tons of Concrete to Attract Lake Trout

More than 200 yards of broken concrete were hauled on barges and dumped about one mile from the west shore of Higgins Lake, Roscommon County, Michigan. The Michigan Conservation Department venture is an attempt to creat an artificial spawning ground for lake trout.

The area measures about half the length and twice the width of a football field in an area where the fish are known to concentrate during spawning seasons. Water temperatures and currents are suitable for trout egg hatching. Material for the project was stockpiled by District 14 of the Michigan United Conservation Clubs. Crevices of the concrete chunks are expected to provide shelter for spawn to protect them against predaceous perch and mud puppies. Skin divers will check the reef for eggs in early November, the fall spawning season.

(Fishing Gazette New York October, 1962)

Wetland Reservation in the United States

Come One, Come All:

Minnesota sportsmen have reason to be proud: their dynamic save-the-wetlands programme has brought into state ownership over 100,000 acres purchased by a surcharge on hunting licenses initiated three years ago. Areas range from twenty to 1,700 acres. Although the primary objective was to preserve breeding habitat for waterfowl, other purposes are superbly served. The same cover that attracts nesting ducks provides year-round roosting cover for pheasants. Some sites support game fish and most yield fur.

A 1961 survey revealed that 181 wetland units in southwestern Minnesota made possible 3,600 hunting days, 1,200 fishing trips, 3,500 trapping trials, 2,100 visits by campers and picnickers, and nearly 1,000 by bird watchers and wildlife photographers.

The Federal Wetland Score:

About 34,000 acres of waterfowl habitat was purchased by the Federal government in the fiscal year ending on June 30. The purchase totals as of June 15 - the latest available to me - were as follows: fee title was secured for about 29,750 acres, 20,000 of which went into refuges and 9,750 into production areas; 4,500 acres were secured against drainage by easements.

This was a slow beginning of the "accelerated" programme of acquisition but it absorbed all available funds. The government loan of $105 million now becomes available and the programme calls for increased purchasing until, by 1964, more than half a million acres annually are being obtained. The final objective remains at about 3 million acres by 1970.

One thing hampering this activity has been an inability to reimburse counties for their losses in tax revenue when land passes from private ownership. The Dakotas and Minnesota have been deeply concerned about this, and in mid-July spokesmen for these states went to Washington to talk the problem over with Congressional committees. A total of six bills dealing with this situation were under consideration; one favoured by the U.S. Fish and Wildlife Service would authorise an annual payment of .75 per cent (or ¾ of a cent per dollar) of the value of the lands to the local taxing authority.

There's a complication, though. What effect would such an arrangement have on acquisition by the states? If the Federal tax compensation were higher than state payments, local purchase plans might be knocked for a loop; if lower, tax officials might rebel. It is no simple problem.

(Field & Stream, New York October/November, 1962)

Capture of Polar Bears

According to figures just issued by the Central Bureau of Statistics of Norway, the number of polar bears caught by Norwegian sealers during the year 1961 was 42, or an increase of 31 over the previous year.

Seal Fishing

It was much less, however, than the total number caught in earlier years. In 1955, for example, the total number of polar bears captured came to 295, of which 46 were taken alive. None have been taken alive since 1958, when only two were captured thus.

In 1961, 57 vessels participated in the seal-fishing activities compared with 69 in the previous year. The total catch, however, was just higher than than of 1960, the number of seals caught being 217,637, including the polar bears.

The greater part of this seal catch consisted of the Greenland seal, of which species over 140,000 were taken. Other species caught were the crested seal, the bearded seal and the ringed seal.

Total value for these amounted to 17,328,000 kroner, (about £A1,100,000) compared with 16,636,000 (about £A1,000,000) in 1960.

(Fishing News London November 30, 1962)

Soviet Experiments in Fish Breeding

The Soviet Union has over 350,000 minor lakes, nearly all of which contain fish, but in comparatively small numbers. In the opinion of the experts, the fish catch could be trebled in these lakes to reach about 200 lb. per 2½ acres of lake surface.

Experiments on this problem have been going on for some time in Leningrad region, where there are about 700 lakes with a total surface of nearly 500,000 acres. The main varieties of fish found there are roach and perch, which are of little commercial value. Attempts to replenish the lakes with new varieties failed, as the roe and larvae were destroyed by the older fish.

Three years ago a new experiment was carried out in one of the remoter forest lakes where the fish were of little value and yield was insignificant. The lake water was poisoned with polychlorpinen, an agricultural pest killer. Several months later, after the poison had ceased to have any effect, carp fry were let out into the lake.

The experiment proved successful and last year there was a good catch. A similar experiment is now in progress in a lake in Karelia.

New breeds of carp are being developed which stand up to winter conditions under ice. The Amur sazan, which thrives in the big artificial reservoirs of the hydro-power dams, has proved to be the most suitable for crossing with carp.

The first experiment along these lines was made 25 years ago by V. Kiripichnikov, head of a laboratory of the U.S.S.R. Institute of River and Lake Fish-Breeding. His crossbreeds stood the first three winters well.

The second generation was bred six years later. The best specimens of that generation were used for the third generation and Kiripichnikov is now working on the fourth.

Early Attempts

The new breed is not yet officially recognised, but Kiripichnikov's breeds are already used in many breeding ponds in the northern lakes.

In 1959 the ponds of Leningrad region yielded

a little over 300 tons of fish. By 1961, when the new breed had spread, the catch was 1,000 tons, and this year's catch is expected to reach 1,200 tons.

A big nursery for breeding these hybrids is being built at the Institute's experimental station at Ropsha. The problem of fish-breeding in the ponds of the northern districts is considered solved. More ponds and large industrial fish-breeding stations are to be built.

The early attempts to breed valuable fish in the huge reservoirs around hydro-electric projects did not yield the desired results. At the Volga power station dam, near Volgograd, for instance, 300,000 sturgeon, beluga and other fish accumulated in one summer, unable to reach their usual spawning grounds. The tunnels and lifts built for the passage of fish were not being used.

The laboratory which plans devices for the protection of fish had to modify the design of the fish lift after making a study of the habits of the fish in passing through the dam.

Last year a modified lift, in which the fish are directed into the lift by means of an electric current, went into operation, and this year there has been no accumulation of fish near the dam.

(The Fishing News London November 2, 1962)

Echoes From the Great Depths

A new record in oceanographic surveys in the Pacific has been created by HMS Cook, one of the Royal Navy's survey ships. On November 2 the ship discovered a new greatest depth in the world's oceans. A corrected sounding of 6,297 fathoms (37,782 ft.) was recorded by deep echo sounding machine in a position 6 degrees 6 minutes North, 127 degrees 25 minutes East in the Mindanao Trench.

HMS Cook's sounding survey has revealed the existence of a narrow trough some 15 miles long, in the North-South direction, and 1½ miles to 4 miles wide with a depth exceeding 6,000 fathoms (36,000 ft.). This new sounding is 263 fathoms (1,578 ft.) deeper than any previously recorded depth. This again shifts the location of the greatest known depth in the world's oceans from the Marianas Trench where, in the Challenger Deep, the

U.S. Bathyscaphe Trieste descended to the sea bed in 5,967 fathoms (35,802 ft.) in 1960, and where in 1959 the Russian research ship, Vitiaz, reported a depth of 6,034 fathoms (36,204 ft.).

(The Fishing News London November 30, 1962)

Gulf Prawning Survey

Commercial prawning experts from Queensland and N.S.W. recently examined the possibilities of establishing a prawning industry in the Gulf of Carpentaria (Qld.).

Dinny Markwell (of D.C. Markwell), Tweed Heads, one of the group, will return to the Gulf next March in a refrigeration ship and may open a base there.

"We are almost sure there are enough prawns up there to start commercial prawning", he said. "Some reports we've heard of the area are almost too good to be true".

Mr Markwell said Queensland prawners were being forced to look for new grounds.

Ground outfished

The 500 prawning boats operating between Tin Can Bay near Gympie and Ballina in northern N.S.W. had outfished these southern waters.

West Australians have found new grounds that are yielding 1,000 lb. per boat per night and these West Australian prawns are selling here at cheaper rates than our own prawns", Mr Markwell said. "This is proving harmful to our industry".

(Fish Trades Review Sydney November, 1962)

Electronic depth sounders that record the ocean floor to depths of more than a half-mile with an accuracy measured in inches have been ordered from the Raytheon Company by the U.S. Coast and Geodetic Survey.

(Shipping News South Africa October, 1962)