CHAPTER XXIII.

FISHERIES.

§ 1. General.

1. **Fish Stocks.**—Australia possesses a varied native fauna of freshwater and marine fish, including tropical and temperate species. In addition, certain exotic species have become acclimatized in the freshwater streams. The commercial fisheries exploit on-shore, demersal (bottom) and pelagic (surface) stocks. The on-shore stocks are at present of greatest importance.

The Australian marine fauna includes also a number of mollusca (oysters, scallops) and crustacea (crabs, prawns, crayfish) groups which are commercially exploited.

At certain times of the year whales of various species appear off the coasts.

2. **Fishing Areas.**—The principal fishing areas at present are the coastal lakes, streams, estuaries and beaches, from Cairns in Queensland to Ceduna in South Australia, and from Esperance to Geraldton in Western Australia. There are interruptions of variable size; for the most part, these fishing grounds are associated with the coastal streams. The demersal grounds fall into two classes—(*a*) the reefs from which cod and other tropical species are taken in tropical waters, and snapper in temperate waters; and (*b*) the grounds from which flathead, morwong, etc., are taken. The reefs extend intermittently from northern Queensland around the southern part of the continent to Shark's Bay in Western Australia. The flathead grounds lie on the continental shelf off south-east Australia, chiefly from off Crowdy Head to south of Cape Everard and further off the east Tasmanian coast off Babel Island southwards to Storm Bay. Other demersal grounds are known to exist in the Great Australian Bight but as yet are not exploited. The demersal shark grounds lie principally in Bass Strait and on the continental shelf off eastern South Australia. Other grounds have been located off southern Western Australia.

The grounds of existing pelagic fisheries include that for the Spanish mackerel off the north-eastern coast from about Coff's Harbour to Cairns and that for barracouta in Bass Strait and off eastern Tasmania. Horse mackerel is found in the waters of eastern Tasmania, the south-east coast of New South Wales, and Western Australia. Concentrations of other pelagic groups, including tuna and clupeoid species, are reported over the continental shelf at various points.

The pearl oyster inhabits the northern and western coastal waters from Cape York to Shark Bay. Edible oysters are found in the temperate waters of Queensland, New South Wales and Victoria. Some cropping of natural resources takes place in Queensland but the principal cultivation grounds are found in New South Wales. The scallop is found commercially only in Tasmanian waters.

Crabs of various species are found in practically all coastal waters. Prawns are taken in the temperate waters of Queensland and New South Wales. Crayfish are taken on reefs of the continental shelf in the waters of all southern States, the fishery extending (with a major interruption in the Bight) from Port Macquarie in New South Wales to Geraldton in Western Australia.

The whale appearances occur off the south of the continent, extending as far north as southern Queensland in the east and to beyond Shark's Bay in the west.

3. **Fishing Boats and Equipment.**—The fishing equipment includes almost every possible type of gear, and appropriate boats are employed. The on-shore equipment includes mesh-nets, trawl-nets, and traps of various types. The demersal reef-fishery is worked with traps, hand lines and other long lines. The demersal flathead-fishery

is worked by both otter trawl (with V.-D. gear) and Danish seine; in addition some hand-lining is carried out. The demersal shark fishery is worked by long lines. The pelagic mackerel-fishery employs trolling gear with lures of various types, while the pelagic barracouta fishery employs principally barbless jigs. The Commonwealth Scientific and Industrial Research Organization, Division of Fisheries, experimented with purse-seine nets for tuna and horse-mackerel and with drift nets and lampara nets for pilchards. A number of these nets is now on loan to commercial fishermen in New South Wales, Tasmania and Western Australia.

The boats for the on-shore fisheries are almost invariably small vessels fitted with low-power petrol engines. The vessels working the reefs are larger (up to 50 feet) and have more power. The otter trawl vessels are steam trawlers, while the Danish seine vessels are 40 to 70 feet in length with diesel engines. The shark boats have diesel power and range from 35 to 50 feet in length. For the operation of the purse-seine nets, a larger vessel of 75 feet has been secured by a crew experimenting with a 330 fathom tuna purse-seine in Tasmania and an 80 foot purse-seiner is nearing completion and will be used in South Australian waters.

4. **Administration.**—The fisheries are administered at present by State Departments implementing State laws. This administration includes licensing of men and boats, and restriction on fishing by prohibitions against fishing at certain times and places and by certain methods. In some States the quantity, type and construction of gear is subject to limitations and legal minimum sizes are prescribed.

In October, 1946 the Commonwealth Government appointed a Director of Fisheries and established a Commonwealth Fisheries Office in the Department of Commerce and Agriculture to co-ordinate fisheries administration. The functions of this office are set out in § 4, par. 3 hereafter and include fishing in extra-territorial waters, whaling, pearling, etc.

The Commonwealth Scientific and Industrial Research Organization, through its Fisheries Division, is responsible for fishery research (*see* § 4, par. 2 hereafter).

§ 2. Development and Present Condition of the Fishery.

1. **Fisheries Proper.**—(i) *General.* The earliest Australian fishery was on-shore. To this was soon added the demersal reef fishery using lines. At each centre of population this sequence has almost invariably been followed, and expansion of the industry up to about the year 1900 consisted chiefly of the extension of these operations into hitherto unworked areas. The taking of barracouta in Tasmanian waters was begun at least by 1880, if not earlier, but the main development of this fishery occurred between 1915 and 1925.

The first major development of the fishery came with the institution of trawling operations off the New South Wales coast in 1918 by the New South Wales Government, as a consequence of the results obtained from the exploratory work of the Federal Investigation ship *Endeavour*. The State enterprise failed, but the fishery was found very profitable by private enterprise, which had as many as sixteen steam trawlers operating at one time. In 1936 the use of Danish seine vessels began and the fleet of these vessels rapidly expanded, being given an exceptional opportunity by the requisitioning of the steam trawlers by the Navy. Subsequently, practically all the Danish seine vessels were also requisitioned. After the war, vessels requisitioned by the Services were returned to the industry and in 1946 a peak was reached and thirteen steam trawlers and 120 Danish seine vessels were licensed. The total catch of trawled fish in 1946–47 was 16,000,000 lb. However, by the end of 1947 many of these vessels, which had made satisfactory catches in 1946, found that the fish stocks, particularly of flathead, appeared to be seriously depleted. Of the species taken by the trawl fishery, tiger flathead, jackass fish and nannygai are the most important, and of these flathead may be regarded as the prime fish and commands a higher price. Since 1947 the composition of the catch has changed, because of depletion of the flathead stocks, and the lower priced fish have become a larger proportion of the catch. In 1949, twelve steam trawlers and 70 Danish seine vessels were licensed.

In Queensland waters the Spanish mackerel is taken by line fishermen, operating in off-shore waters out to the Barrier Reef between Gladstone and Cairns, with Townsville as the centre. This fishery started in 1930 and by 1942 production had risen to about 1,000,000 lb., but since then the catch has decreased considerably, mainly because the larger vessels then operating in the fishery were commandeered for the Services and smaller vessels have carried on the fishery.

In 1930 the fishery for snapper shark was started in south-eastern waters, particularly off the Victorian and Tasmanian coasts. This fishery extended rapidly its area of operations, particularly in the Bass Strait area and the south-east coast of South Australia, and the catch increased from 23,131 lb. in 1930 to a steady 3,000,000 lb. catch in each year since 1942. Great impetus was given to the fishery during war years by the demand for livers for fish oil production for medicinal purposes. This demand has continued and though the stocks of sharks appear to show signs of depletion, fishermen have been able to maintain the level of production by fishing on new grounds and over a wider area. Livers yield about 1,500 gallons of vitamin oil per annum, and the flesh is sold as " flake " for the most part in the Melbourne Fish Market.

The survey work of the Division of Fisheries of the Commonwealth Scientific and Industrial Research Organization has revealed stocks of various species of pelagic fish. Some of these are now being exploited by commercial fishermen. Tuna of various species are known to occur in Australian waters but, despite extensive surveys, no commercial quantities have yet been taken. Pilchards occur in the southern waters of Australia from Port Stephens to the south-west of Western Australia. Catches have been made by commercial crews using a lampara net and a small purse-seine at Jervis Bay on the New South Wales coast, in Port Phillip Bay in Victoria, at Coffin Bay in South Australia and at Albany in Western Australia. Anchovies in Port Phillip Bay and sprats in Tasmanian waters are caught in payable quantities though there is usually some difficulty in finding a market for them. Horse mackerel have been caught in commercial quantities off the east coast of Tasmania and off Eden in New South Wales. During March and April, 1949, 72 tons were caught in Tasmanian waters.

(ii) *Production.* Production for the year 1947–48 was about 76,000,000 lb., the increase in catch over the previous year being due to the larger catch of Australian salmon in Western Australia and the large catch in Tasmanian waters of barracouta which was canned for oversea export.

The movement in production since 1938–39 is shown by States, in the following table :—

RECORDED PRODUCTION OF FRESH FISH.

('000 lb.)

State.	1938–39.	1943–44.	1944–45.	1945–46.	1946–47.	1947–48.
New South Wales ..	(*a*)29,382	23,802	30,051	30,668	34,157	32,813
Victoria	12,840	9,723	9,310	11,923	11,538	9,745
Queensland.. ..	9,182	7,544	7,197	10,170	10,779	10,508
South Australia(*a*) ..	8,960	4,586	5,345	5,908	5,927	4,750
Western Australia(*a*)..	5,841	2,496	3,001	4,368	5,035	6,953
Tasmania	(*a*) 2,393	5,606	8,786	8,676	7,479	11,288
Northern Territory ..	28	(*b*)	(*b*)	(*b*)	(*b*)	112
Total ..	68,626	53,757	63,690	71,713	74,915	76,169

(*a*) Year ended December previous. (*b*) Not available.

2. **Oysters and Shell Fisheries.**—Initially the Australian oyster fisheries depended solely upon the harvesting of naturally grown stock in littoral and submarine areas. However, the stocks soon deteriorated and attention was turned to methods of cultivation. These have not been successful in Queensland, but in New South Wales there has been constant improvement in methods and the present technique in certain areas is highly efficient. In New South Wales peak production of 76,912 cwt. was reached in 1938, while production in 1947–48 was 58,693 cwt. The production for Australia in 1947–48 was 64,986 cwt. Scallops are taken by dredge in the D'Entrecasteaux Channel in Tasmania.

Cray fisheries have developed greatly in recent years and the development has been such as to permit an export trade of crayfish tails to America. The catch for 1947–48 was considerably higher than in any previous year, Tasmania, South Australia, and Western Australia being the chief centres of production. Details of the crayfish take are shown in the following table :—

RECORDED PRODUCTION OF CRAYFISH.

(doz.)

State.	1938–39.	1943–44.	1944–45.	1945–46.	1946–47.	1947–48.
New South Wales ..	(a)13,467	4,596	6,540	7,427	7,681	13,021
Victoria	6,436	1,824	1,242	2,313	3,956	2,614
Queensland	..	..	..	..	..	..
South Australia(a) ..	22,000	17,200	12,100	18,365	23,375	30,174
Western Australia(a) ..	56,202	39,223	25,131	27,118	53,237	97,328
Tasmania	(a)65,652	63,668	82,762	69,077	92,186	115,791
Total ..	163,757	126,511	127,775	124,300	180,435	258,928

(a) Year ended December previous.

3. **Pearl-shell and Bêche-de-mer.**—Before the war pearl shelling was carried out in the tropical waters of Queensland, the Northern Territory, and Western Australia, mainly by Japanese and Malay divers, using diving apparatus, in waters varying from 4 to 20 fathoms in depth. During the war practically all of these operations were discontinued. After the war the policy of the Commonwealth Government was to prohibit indentured labour, but despite this restriction, by 31st December, 1947, there were 28 boats in commission off the Western Australian coast, operated by 267 men. In Queensland, pearling operations are centred at Thursday Island, where, by June, 1948, 93 boats were being operated, the men engaged numbering 966 including Torres Strait Islanders and Australian aboriginals.

Reference to inquiries into the pearl-shell fishing industry by a Royal Commission in 1912 and by the Tariff Board in 1935, appears on page 1031 of Official Year Book No. 37.

§ 3. Marketing and Distribution.

1. **Marketing.**—The greater portion of Australian fish is sold in metropolitan markets. In Queensland, fish marketing is under the control of a Fish Board, which has representatives of producers, wholesalers, consumers, and a Government nominee as chairman. A central market is located in Brisbane and there are branch markets or depots at 15 centres along the coast. The organization ensures that all fish is marketed through the correct channels, and the board has encouraged to a very marked extent the steadily increasing annual fish production of the State. The fish marketing methods in this State have proved most successful. In New South Wales the central market in Sydney

is conducted by the Chief Secretary's Department, and the port depots in various centres along the coast by fishermen's co-operatives. These co-operatives distribute the fish to local centres and to inland country districts, and send any balance of fish they may have to the central market in Sydney. In Victoria, South Australia, and Western Australia fish is sold in central markets by agents. The greater part of the catch of fish in Tasmania is either processed in canneries in that State or exported to the mainland. There is some interstate movement of fish from the northern rivers of New South Wales to Queensland, from Tasmania to New South Wales and Victoria, and from South Australia to Victoria.

2. **Consumption of Fish.**—Prior to the 1939–45 War, Australians consumed annually the fresh and canned equivalent of about 131,000,000 lb. of round fish, or 19.0 lb. per person. About 70,000,000 lb. was produced locally and the remainder was imported; that is, the average Australian ate about 10.2 lb. of Australian fish a year and the equivalent of 8.8 lb. of oversea fish. During the 1939–45 War, however, the quantity of fish entering civilian consumption in Australia was reduced to approximately 6 lb. (weight in the round) per person annually owing to the decline in local production, the steep drop in the imports of canned fish and the allocation of supplies for the Services and other priority needs. Although fish was in increased demand during the period of meat rationing, it is not, as in many countries, a staple item in the diet of Australia, and is still regarded rather as a luxury. The consumption per head of population during 1947–48 amounted to 5.7 lb. edible weight of fresh fish and 3.5 lb. of canned fish or a total of 16.8 lb. expressed in terms of fish in the round. This represents a total quantity consumed of 128,000,000 lb. in the round of which nearly 80,000,000 lb. was produced locally.

3. **Processing, including Canning.**—The equipment for handling fish has in the past been rather inadequate, but in most States since the war cold storage facilities have been improved and increased. In Queensland and New South Wales particularly, the depots which have been established at fishing ports have been equipped with cold storage space. In several States there has been a development of establishments equipped for snap freezing of fish, in particular the freezing of crayfish tails for export.

In all States there has been a development of facilities for light processing of fish, particularly for smoking.

The output of canneries rose from 3,717,248 lb. in 1946–47 to 9,731,702 lb. in 1947–48, representing an increase of over 260 per cent. Preliminary totals for 1948–49 indicate a further increase in production to about 10,500,000 lb. The quantities of locally-produced canned fish (excluding shell-fish) exported amounted to 883,409 lb. in 1946–47 and 916,199 lb. in 1947–48.

The number of canneries operating in Australia during 1948–49 totalled eighteen. Of these, eight were situated in Tasmania, four in New South Wales and Western Australia and one in South Australia and Victoria. These, however, do not include two factories engaged in the production of fish paste.

4. **By-Products.**—Processing of offal for fish-meals, etc., has been established in certain States. The processing of livers for vitamin-rich oils has been undertaken in several States and oil-production has been favourably developed.

§ 4. Inquiries and Research.

1. **General.** The Australian fishing industry has been the subject of a number of official inquiries seeking an explanation of the very slow rate of development and the unfortunate conditions prevailing within the industry as well as the paucity of supplies available to the public. The first of these inquiries to be noted was the meeting of State and Commonwealth representatives convened by the Development and Migration Commission with the object of reviewing the potentialities of the fishing industry of Australia. The conference which was held in Melbourne in September, 1927, confirmed the importance of establishing a marine biological institution to study the scientific problems connected with Australian fisheries. Committees were formed to discuss all the important problems of the industry and it was unanimously recommended at the second meeting of the conference held in July, 1929, that investigational work should be undertaken by the Commonwealth Government. The second enquiry of importance was that of the Tariff Board held in 1941 when it was concluded that the development of a prosperous fishing industry would be an important contribution to the war effort and that the stage had been

reached when additional Governmental assistance was desirable. The Board recommended that assistance of the Council for Scientific and Industrial Research should be continued and that a Commonwealth fisheries authority should be established.

In 1942 the Division of Fisheries of the Council for Scientific and Industrial Research prepared, on behalf of the Director-General of Manpower, a register of manpower in the industry and made suggestions for its rationalization under wartime conditions. As a result of these suggestions a Controller of Fisheries was appointed to co-ordinate and organize the industry. The programme included the study of production goals, the control and allocation of manpower, fuel and equipment, the organization of co-operatives within the industry and rationalization of marketing and distribution.

2. **Commonwealth Scientific and Industrial Research Organization, Division of Fisheries.**—Acting on the recommendation of the 1927–1929 Conference, mentioned above, the Commonwealth Government entrusted to the then Council for Scientific and Industrial Research the task of establishing a marine biological institution. In its original plans the Commonwealth provided a sum of £80,000, spread over a period of five years, for the following purposes :—(i) to procure a vessel specially designed for the exploration of pelagic or surface-swimming fish, but which could also carry out certain investigations of demersal or bottom-dwelling species ; (ii) to undertake experiments in the canning of fish and the determination of the chemical composition of fish thought to be suitable for the manufacture of fish by-products ; (iii) to determine, by tests, the best methods of curing and preserving fish, especially the more common varieties ; and (iv) in co-operation with the State authorities, to undertake a study of the systems of distribution of fish in each State with a view to improving existing transport and marketing facilities. A research vessel constructed at a cost of £17,000 was commissioned in 1938 and a programme of work was laid down extending over a period of five years. During the first three years the investigation was confined to the south-eastern portion of the Australian coast ; part of the work was extended later to the south-western portion of the Continent. A modern biological laboratory was established at Port Hacking in New South Wales.

The early work led the Council to place this programme on a permanent basis, and the Division of Fisheries has increased its staff and its work to include (1) an exploratory programme designed to survey new areas and study oceanographical, hydrological and planktological conditions and new fisheries, and (2) a biological programme designed to study the important existing fisheries, both marine and freshwater, shell fisheries, and seaweed resources.

Portions of this programme have already been completed, and much information regarding the pelagic fish (tuna, Australian salmon, horse mackerel or cowanyoung, kingfish, pilchards, anchovies and sprats) has been collected. As a result of this work commercial catches of sprats are now being made in Tasmania, and the Division's purse-seine net has been used by a commercial fishing crew to take several catches of horse mackerel in Tasmanian and southern New South Wales waters. After seeing experimental hauls with the lampara net by the crew of F.R.V. *Warreen*, a commercial crew has taken 16½ tons of pilchards near Albany in south-west Australia.

An experimental shipment of the Pacific oyster from Japan is at present under observation in Australian waters to determine whether this oyster could be successfully transplanted to Australia.

Two research stations to be staffed by the Division have been provided by the Queensland Government; one, situated at Thursday Island, is being used for pearl-shell culture research while the other, at Dunwich, Moreton Bay, will be the centre of general fisheries research, although it will be used particularly for oyster cultivation experiments.

Surveys have been made of beds of the seaweed *Gracilaria* and this weed, and other seaweeds, have been used in the experimental production of agar. As a result of these experiments agar is now being produced commercially in sufficient quantities to supply the Australian market.

Of the original purposes for which the Division was planned, three have now passed to other institutions. The work of research in the canning of fish and the best methods of curing and preserving fish have been taken over by the Division of Food Preservation

and Transport of the Commonwealth Scientific and Industrial Research Organization, and the study of the systems of distribution of fish is now handled by the marketing section of the Division of Fisheries of the Department of Commerce and Agriculture.

3. **Commonwealth Fisheries Authority.**—The Commonwealth Fisheries Office, a section of the Department of Commerce and Agriculture, was established as a result of a recommendation in 1941 by the Tariff Board, after a public inquiry into the fishing industry, that a Commonwealth developmental authority should be established. During the 1939–45 War, Commonwealth control of the fishing industry was exercised by a Controller of Fisheries as part of the Department of War Organization of Industry. The Commonwealth Fisheries Office was established in 1946 and a Director of Fisheries was appointed. In accordance with the Tariff Board report, scientific research, as distinct from developmental and administrative functions, was left to the Commonwealth Scientific and Industrial Research Organization, which had established a Division of Fisheries for the purpose in 1937.

After the revocation of Commonwealth war-time powers, the Commonwealth and State spheres were fixed at an interstate conference in February, 1947. The Commonwealth is responsible for extra-territorial waters, whaling, pearling, rehabilitation of ex-servicemen in the fishing industry, fishery training schools, commercial development of fisheries, promotion of uniform conditions governing catches of various species of fish, statistics, information and publications.

In the discharge of its duty to ex-servicemen the Commonwealth Fisheries Office established a Fisheries Training School at Cronulla, New South Wales, and has conducted four training courses. Ex-servicemen were thoroughly trained in all theoretical and practical aspects of the industry which included deep sea training on the School's own training trawlers.

To assist the rehabilitation of the pearling industry the Fisheries Office appointed a pearling officer with a life-time experience of the industry. By the end of the 1948 season 1,176 tons of pearl-shell had been obtained as compared with 2,543 tons in 1938–39.

The Fisheries Office also carried out extensive work preparatory to the re-establishment of coastal whaling in Australia after the lapse of about 20 years. For this purpose it brought a Norwegian whaling expert to Australia on a year's engagement. Following this developmental work by the Fisheries Office, legislation was passed in 1949 to enable a Government Whaling Commission to be established to begin coastal whaling in Western Australia.

The Fisheries Office publishes every second month a technical journal *Fisheries Newsletter*, which is supplied as a technical and information service to all full-time professional fishermen in Australia.

The Fisheries Office is currently engaged in preparatory work to establish pelagic fishing in Australia for tuna and other valuable canning fish.

4. **North Australia Development Committee.**—In 1946 the North Australia Development Committee gave considerable attention to the fisheries resources of North Australia and recommended that a hydrological and oceanographical survey should be made of the area. It also suggested that a biological survey should be made of pearl shell with particular reference to the possibility of instituting pearl shell culture. It recommended that all information regarding the area should be compiled and made available for scientific workers. It also recommended that an economic survey of the fisheries resources should be made, comparing them particularly with those of the Netherlands East Indies.

5. **Whaling.**—The Whaling Industry Act 1949, passed by the Commonwealth Parliament for the development of the whaling industry, provides for the creation of the Australian Whaling Commission consisting of three members with the powers necessary to establish the industry in Australia. It is intended that a shore station will be erected in Western Australia at Shark Bay using three chaser vessels.

The International Whaling Commission, of which Australia is a member, controls whaling in the Antarctic. The Commission held its first meeting in London in 1949 and Australia was represented by the Director of Fisheries.

Since the Japanese were permitted to resume whaling in the Antarctic in 1946, an inspector of the Commonwealth Fisheries Office has accompanied the whaling fleet on each of the three seasons to police on behalf of Australia their observance of the International Whaling Regulations.

§ 5. The Fishing Industry.

1. **Boats and Men Engaged, and Take.**—(i) *General Fisheries.* The returns have been compiled from particulars supplied by the State Departments, and while the data do not generally lend themselves to presentation on a uniform basis, the principal facts are shown in the following tables. In connexion with the lower figure for Australia for 1947–48 shown for men engaged it should be noted that the New South Wales element in this figure relates to the number of fishermen's licences issued and not to the actual number of men engaged and that the number of fishermen's licences issued in New South Wales fell from 4,892 in 1946–47 to 3,419 in 1947–48. This reduction of 1,473 in 1947–48 followed a reduction of 1,155 in the previous year. This marked decrease in fishermen's licences was due to the enforcement of the law restricting the issue of such licences to persons deriving a substantial portion of their income from personal exertion from the capture and sale of fish. In all other States—except in Western Australia where the numbers were practically unchanged—the numbers of men engaged increased in 1947–48.

GENERAL FISHERIES, 1947–48.

Particulars.		N.S.W.	Vic.	Q'land.	S. Aust. (a)	W.Aust. (a)	Tas.	Nor. Terr.	Australia.
No. of boats engaged	..	2,920	1,298	3,363	1,782	674	1,013	9	11,059
Value of boats and equipment	£	1,791,898	660,459	663,696	552,500	248,757	300,000	5,000	4,222,310
No. of men engaged	..	(b) 3,419	2,471	5,676	3,605	1,479	1,689	39	18,378
Total take of—									
Fish	cwt.	292,975	87,005	93,820	42,411	62,081	100,789	1,000	680,081
	£	1,056,383	446,701	496,572	200,000	289,709	329,245	8,500	2,827,110
Crayfish	doz.	13,021	2,614	..	30,174	97,328	115,791	..	258,928
	£	25,284	4,700	..	45,250	77,861	127,370	..	280,465
Prawns	cwt.	12,490	..	2,261	..	264	..	..	15,015
	£	138,731	..	19,020	..	1,477	..	..	159,228
Crabs	doz.	20,184	..	16,492	..	1,083	..	..	37,759
	£	3,026	..	(c) 13,626	..	434	..	..	17,086

(a) Year ended December, 1947. (b) Fishermen's licences issued. (c) Includes £200, the value of 60 turtles.

Figures for Australia for the years 1938–39 and 1943–44 to 1947–48 are shown in the table below :—

GENERAL FISHERIES : AUSTRALIA.

Particulars.	1938–39.	1943–44.	1944–45.	1945–46.	1946–47.	1947–48.
No. of boats engaged	5,462	6,867	8,086	8,594	10,868	11,059
Value of boats and equipment £	649,026	967,598	1,455,001	2,193,349	3,763,998	4,222,310
No. of men engaged(a)	9,081	12,400	14,612	18,429	19,002	18,378
Fish obtained—						
Quantity.. cwt.	612,735	479,971	568,661	640,298	668,885	680,081
Gross value £	1,385,281	1,929,329	2,168,676	2,517,540	2,851,936	2,827,110
Crustaceans obtained—						
Gross value £	134,866	246,576	213,343	210,402	332,799	456,779

(a) *See* letterpress above.

(ii) *Edible Oyster Fisheries.* Edible oyster fisheries are of small dimensions outside New South Wales and Queensland. The available returns show the following takes during 1947–48 in these States :—New South Wales, 58,693 cwt., value £246,710; Queensland, 6,277 cwt., value £15,916. In Tasmania the scallop is far more important than the oyster, and in 1947–48 the take was valued at £33,115.

Figures for Australia for the years 1938–39 and 1943–44 to 1947–48 are shown in the following table :—

EDIBLE OYSTER FISHERIES : AUSTRALIA.

Particulars.	1938–39.	1943–44.	1944–45.	1945–46.	1946–47.	1947–48.
No. of boats engaged	754	816	861	892	845	815
No. of men engaged ..	850	790	813	883	666	626
Oysters obtained—						
Quantity (*b*) cwt.	89,145	55,211	62,518	71,062	75,632	72,456
Gross value (*a*) £	132,201	137,698	204,465	238,919	266,815	295,763

(*a*) Includes scallops in Tasmania, valued at £14,500 in 1938–39; £15,428 in 1943–44; £16,300 in 1944–45: £30,750 in 1945–46; £37,256 in 1946–47; and £33,115 in 1947–48. (*b*) Includes scallops in Tasmainia, 4,723 cwt. in 1943–44; 5,019 cwt. in 1944–45; 8,857 cwt. in 1945–46; 7,920 cwt. in 1946–47; and 7,470 cwt. in 1947–48; 1938–39 weight not available.

(iii) *Pearls, Pearl-shell and Bêche-de-mer—States.* At the outbreak of war in the Pacific in December, 1941, the pearling industry ceased to operate. Operations were resumed in Queensland in 1944–45 but in Western Australia and Northern Territory not until 1946–47. There is no pearl-shell industry in the other States. The following table shows particulars of equipment used, men engaged and production for the year 1947–48 :—

PEARL, PEARL-SHELL AND BÊCHE-DE-MER FISHERIES, 1947–48.

State or Territory.	Boats Engaged.	Value of Boats and Equipment.	Men employed.	Pearl-shell.		Gross Value of Pearls obtained.	Gross Value of Bêche-de-Mer obtained.	Trochus-shell.	
				Quantity obtained.	Gross Value.			Quantity obtained.	Gross Value.
	No.	£	No.	Tons.	£	£	£	Tons.	£
Queensland ..	93	178,650	(*a*) 966	403	218,900	..	500	262	18,120
W. Australia(*b*)	28	63,500	267	320	196,365	1,294	..	10	609
Nor. Territory ..	2	5,000	12	(*c*) 3	60	..	..	..	..
Australia ..	123	247,150	1,245	723	415,325	1,294	500	272	18,729

(*a*) Includes Torres Strait Islanders and Australian aboriginals. (*b*) Year ended 31st December, 1947. (*c*) Hundredweight.

(iv) *Australia.* A summary of the principal statistics relating to pearl, pearl-shell and bêche-de-mer fisheries is given in the following table for the years 1938–39 to 1940–41 and 1945–46 to 1947–48.

Details of exports of these items are given in § 6, par. 3 hereafter.

PEARL, PEARL-SHELL AND BÊCHE-DE-MER FISHERIES : AUSTRALIA.

Particulars.	1938–39.	1939–40.	1940–41.	1945–46. (*a*)	1946–47.	1947–48.
Boats engaged No.	181	167	162	150	127	123
Value of boats and equipment £	168,133	164,456	156,017	51,250	170,820	247,150
Men engaged No.	1,750	1,408	1,540	717	1,141	1,245
Pearl-shell obtained—						
Quantity .. tons	2,543	2,149	2,018	53	309	723
Value .. £	222,281	198,264	245,672	31,800	186,584	415,325
Value of—						
Pearls obtained(*b*) £	3,397	2,620	1,584	..	810	1,294
Bêche-de-mer obtained .. £	8,145	669	6,914	..	2,610	500
Trochus-shell obtained—						
Quantity tons	321	429	276	371	669	272
Value .. £	23,823	36,370	19,286	48,795	59,335	18,729

(*a*) Queensland only available. (*b*) Incomplete; as returned.

2. **Value of Production—Gross and Local.**—(i) *General.* Although statistics of the value of production of the fishing industry have been on an established basis for some years, attention is drawn to the fact that the actual collection of statistics of the quantity of fish taken presents many difficulties and consequently any defects which may occur in their collection must necessarily be reflected in the value of production. Particulars of the value of other materials used in the process of production are not available for all States, so the values can only be stated at the point of production and not on a net basis as has been done with other industries. Variations in the relative proportions of marketing costs to gross production suggest that complete uniformity in method has not yet been attained.

GROSS AND LOCAL VALUE OF FISHERIES PRODUCTION.

(£.)

State.	Gross Production Valued at Principal Markets.	Marketing Costs.	Gross Production Valued at Place of Production.	Value of other Materials used in process of Production.	Net Value of Production.(a)
1946–47.					
New South Wales ..	1,518,000	216,000	1,302,000	104,000	1,198,000
Victoria..	624,094	89,266	534,828	(b)	(b)
Queensland	693,000	150,000	543,000	140,000	403,000
South Australia	288,875	35,492	253,383	(b)	(b)
Western Australia ..	317,394	4,835	312,559	82,170	230,389
Tasmania	347,070	..	347,070	(b)	(b)
Total (c)	3,788,433	495,593	3,292,840	(b)	(b)
1947–48.					
New South Wales ..	1,470,000	246,000	1,224,000	209,000	1,015,000
Victoria..	525,873	75,217	450,656	(b)	(b)
Queensland	783,000	170,000	613,000	160,000	453,000
South Australia	245,250	31,174	214,076	(b)	(b)
Western Australia ..	567,749	3,945	563,804	77,220	486,584
Tasmania	489,730	..	489,730	(b)	(b)
Total (c)	4,081,602	526,336	3,555,266	(b)	(b)

(a) No deduction has been made for depreciation and maintenance. (b) Not available.
(c) Excludes production in the Northern Territory.

(ii) *States, 1938–39 to 1947–48.* In the following table the local value of fisheries production and the local value per head of population are given by States for the years 1938–39 to 1947–48. Local value is gross value less marketing costs and is the value at the place of production. The value of materials used in the course of production is not available for all States and consequently production is valued at that point. These values therefore overstate the net values by the extent of these costs.

LOCAL VALUE OF FISHERIES PRODUCTION.

LOCAL VALUE.(a)

(£).

Year.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	Total.
1938–39 ..	620,000	176,919	277,000	220,401	269,894	90,350	1,654,564
1939–40 ..	508,000	199,632	285,000	202,009	252,837	109,910	1,557,388
1940–41 ..	517,000	244,444	330,000	227,987	251,529	96,830	1,667,790
1941–42 ..	619,000	387,462	185,000	245,301	226,945	109,570	1,773,278
1942–43 ..	830,000	377,418	242,000	277,014	117,202	86,450	1,930,084
1943–44 ..	728,000	345,756	272,000	240,347	160,088	221,350	1,967,541
1944–45 ..	1,023,000	339,043	277,000	163,464	154,527	277,660	2,234,694
1945–46 ..	1,046,000	465,625	437,000	230,631	203,454	217,240	2,599,950
1946–47 ..	1,302,000	534,828	543,000	253,383	312,559	347,070	3,292,840
1947–48 ..	1,224,000	450,656	613,000	214,076	563,804	489,730	3,555,266

LOCAL VALUE PER HEAD OF MEAN POPULATION.

(*s. d.*)

	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	Total.
1938–39 ..	4 6	1 11	5 6	7 5	11 6	7 8	4 9
1939–40 ..	3 8	2 1	5 7	6 9	10 9	9 2	4 5
1940–41 ..	3 9	2 7	6 5	7 7	10 7	8 0	4 8
1941–42 ..	4 5	4 0	3 7	8 1	9 7	9 1	5 0
1942–43 ..	5 10	3 10	4 8	9 1	4 11	7 2	5 4
1943–44 ..	5 2	3 6	5 2	7 10	6 8	18 2	5 5
1944–45 ..	7 0	3 5	5 2	5 3	6 4	22 6	6 1
1945–46 ..	7 2	4 7	8 1	7 4	8 4	17 4	7 0
1946–47 ..	8 9	5 3	9 11	7 11	12 7	27 3	8 9
1947–48 ..	8 2	4 4	11 0	6 7	22 2	37 5	9 4

(a) No deduction has been made for depreciation and maintenance.

3. Fish Preserving.—The attempt to establish the fish preserving industry at the commencement of this century met with little success although a bounty was paid to encourage production. The industry, however, has continued to operate, but there was no marked development until about 1945–46. In that year, production of canned fish amounted to 1,700,000 lb., in 1946–47 to 3,700,000 lb. and in 1947–48 to 9,700,000 lb.

In addition to the canning of fish, other fish products are obtained. The quantities produced during 1947–48 were 865,511 lb. of smoked fish and 1,524,491 lb. of fish paste.

In 1939 New South Wales and Tasmania were the only producing States, but by 1941 the industry had been extended to South Australia and Western Australia. Details of production are given in the following table for the years 1938–39 and 1943–44 to 1947–48.

PRODUCTION OF CANNED FISH : AUSTRALIA.

Particulars.	1938–39.	1943–44.	1944–45. (a)	1945–46.	1946–47.	1947–48.
Number of factories operating ..	3	7	8	11	12	16
Quantity .. lb.	603,302	533,740	1,038,771	1,683,612	3,717,248	9,731,702
Value .. £	13,700	43,856	102,607	147,016	326,078	727,660

(a) Incomplete.

The varieties canned in the various States differ according to the catch available, but separate details for each variety are not available. In New South Wales salmon is the principal variety, while in South Australia there are more varieties, including mullet, salmon, garfish, etc. In Western Australia herrings, crayfish and mullet are included, and in Tasmania salmon and crayfish.

4. State Revenue from Fisheries.—The revenue from fisheries in each State during the year 1947–48 is shown hereunder together with the totals for the previous four years and 1938–39 :—

FISHERIES : REVENUE, 1947–48.

(£.)

State or Territory.	Licences.	Leases.	Fines and Forfeitures.	Other Sources.	Total
New South Wales ..	6,208	11,154	120	894	18,376
Victoria	2,337	68	304	23	2,732
Queensland	7,261	2,332	540	110	10,243
South Australia (a) ..	3,600	..	31	..	3,631
Western Australia (a) ..	2,322	..	28	1,419	3,769
Tasmania	2,983	..	..	399	3,382
Northern Territory ..	39	..	..	..	39
Total, 1947–48 ..	24,750	13,554	1,023	2,845	42,172
1946–47 ..	22,650	16,074	1,404	665	40,793
1945–46 ..	21,557	14,271	1,369	9,540	46,737
1944–45 ..	17,021	12,724	612	861	31,218
1943–44 ..	14,300	13,670	1,092	656	29,718
1938–39 ..	15,563	12,446	1,397	4,867	34,273

(a) Year ended 31st December, 1947.

§ 6. Oversea Trade in Fishery Products.

1. **Imports of Fish.**—The large importations of fish and fish products each year give further evidence of the desirability of developing the fishing industry of Australia. Imports for the years 1944–45 to 1948–49 in comparison with 1938–39 are shown below :—

FISH AND FISH PRODUCTS : IMPORTS INTO AUSTRALIA.

Classification.	1938–39.	1944–45.	1945–46.	1946–47.	1947–48.	1948–49.
QUANTITY (CWT.).						
Fish—						
Fresh or preserved by cold process—						
Oysters in shell ..	635	..	..	..	..	3
Other	83,393	22,711	23,268	46,196	73,060	100,899
Potted or concentrated ..	9,435	18	112	2,153	12,909	3,012
Preserved in Tins—						
Fish—						
Herrings	38,917	362	9,305	45,373	47,236	95,994
Pilchards	(a)	(a)	2,958	68	36,329	3,740
Salmon	166,695	57,423	31,785	10,540	12,031	2,544
Sardines (including Sild)	29,372	265	1,849	7,780	58,733	61,962
Other	14,306	52,913	6,607	9,942	24,432	8,682
Shell Fish—						
Crustaceans ..	6,829	99	260	301	4,627	1,623
Oysters	1,939	2	294	4	1	29
Other	(a)	(a)	111	194	297	100
Smoked or Dried (not salted)	8,122	122	400	6,870	26,090	32,331
N.E.I. (including salted) ..	7,987	1,032	3,879	6,309	3,202	3,319
VALUE (£).						
Fish—						
Fresh or preserved by cold process—						
Oysters in Shell ..	641	4	..	..	..	62
Other	248,742	122,901	147,386	269,247	417,971	631,549
Potted or concentrated ..	111,269	919	6,194	38,676	265,114	68,077
Preserved in Tins—						
Fish—						
Herrings	125,961	2,178	71,780	303,263	470,549	961,471
Pilchards	(a)	(a)	17,902	5,668	303,488	29,798
Salmon	651,838	378,741	162,665	94,115	124,824	26,406
Sardines (including Sild)	165,959	4,231	23,417	118,823	1,061,647	1,269,532
Other	58,247	347,223	116,482	116,160	253,791	124,705
Shell Fish—						
Crustaceans ..	64,011	1,413	4,090	4,494	81,584	31,335
Oysters	12,738	20	3,774	17	19	500
Other	(a)	(a)	794	1,785	2,351	1,278
Smoked or Dried (not salted)	21,483	731	1,613	40,088	146,628	172,694
N.E.I. (including salted) ..	9,965	8,456	29,050	34,110	16,125	23,025
Total	1,470,854	866,817	585,147	1,026,446	3,144,091	3,340,432

(a) Not recorded separately.

Canned fish constituted by far the largest proportion of the imports; salmon from Canada, herrings from Canada and the United Kingdom, pilchards from the Union of South Africa and sardines from Norway were the chief varieties imported. The potted fish came chiefly from the United Kingdom and New Zealand, which also supplied a considerable proportion of the fresh fish imported in 1948–49; the bulk of the remainder came from the Union of South Africa. The small import of oysters was supplied by New Zealand, which has also furnished the bulk of the crustaceans imported in recent years.

2. **Exports of Fish.**—During 1948–49 the exports of fish of Australian origin were as follows :—oysters in shell, 918 cwt., £6,605; other fresh or preserved by cold process, 19,594 cwt., £399,186; potted or concentrated, 1,670 cwt., £47,651; fish preserved in tins, 37,435 cwt., £377,075; shell fish in tins, 176 cwt., £2,529; smoked or dried, 146 cwt., £2,234 and other fish, 1 cwt., £9.

3. **Exports of Pearl and other Shell.**—The exports of pearl, tortoise and trochus-shell of Australian origin are shown hereunder for the years 1938–39 and 1944–45 to 1948–49 :—

PEARL, TORTOISE AND TROCHUS-SHELL : EXPORTS FROM AUSTRALIA.

Article.		1938–39.	1944–45.	1945–46.	1946–47.	1947–48.	1948–49.
Pearl-shell ..	cwt.	52,532	401	959	5,535	15,915	27,885
	£	244,266	5,198	16,917	149,975	408,681	606,767
Tortoise-shell ..	cwt.	4	..	..	3	134	..
	£	151	469	36	155	470	35
Trochus-shell ..	cwt.	9,108	3,481	5,466	16,424	10,096	15,547
	£	34,166	23,040	39,280	81,154	49,888	73,012
Other	cwt.	..	..	243	37	135	157
	£	..	..	3,037	770	1,240	1,564