

CHAPTER XXIII. FISHERIES.*

§ 1. General.

1. **Fish Stocks.**—Australia possesses an abundant and varied fish fauna, which embraces both tropical and temperate varieties and includes destructive as well as valuable species. In rivers and lakes both indigenous and imported varieties thrive. The latter have been introduced and acclimatized for industrial and sporting purposes by Governments and angling societies. Exploitation of the fishing areas is controlled by governmental authority. In some cases the minimum size of the fish to be taken is fixed, and in other cases the taking of some kinds is prohibited during periods prescribed according to the necessity.

2. **Progress of Industry.**—(i) *Transport and Marketing.* Despite the abundance of edible fish, the progress of the fishery industry in Australia has been slow, the difficulties of transport and marketing of the proved supplies presenting the chief obstacles.

In New South Wales, as shown in § 5 herein and § 6 of this Chapter in Official Year Book No. 17, the matter of exploiting trawlable fish was undertaken by the State Government, which also took steps to improve the conditions under which ordinary coastal fishing is carried on. In Queensland, State trawling was undertaken in 1919, and good trawling areas have been located and charted between Cape Moreton and Caloundra.

(ii) *Economic Investigations.* Although valuable work has been carried out by the State Governments in the way of experiment and culture, much yet remains to be done before the industry is at all commensurate in extent with the industrial progress or consuming capacities of Australia. All live fish imported into Australia are examined on shipboard in order to prevent the importation of undesirable fish. With the object of ascertaining the movements of oceanic fishes, and of estuarine fishes which make periodical oceanic migrations, reports are furnished regarding the various kinds of fishes, etc., and their movements along the coast. Details regarding the activities of the States in fish-culture were given in Official Year Book No. 6, pp. 471-2. By arrangement with the Commonwealth Fisheries Department some years ago members of the staff of the Australian Museum, Sydney, accompanied the F.I.S. *Endeavour* on various cruises. Specimens were collected, mounted for scientific purposes, and distributed to other Australian Museums, a considerable number being put aside for the Commonwealth Fishery Museum. As pointed out in § 4, however, this vessel was lost with all hands in 1914.

With the object of reviewing the potentialities of the fishing industry of Australia the Development and Migration Commission convened a meeting of State and Commonwealth representatives. The Conference, which was held in Melbourne during September, 1927, affirmed:—

- (1) The importance of establishing a Marine Biological Institution to study the scientific problems connected with Australian fisheries, and to collect and disseminate authoritative information and give advice on matters concerning the fisheries.
- (2) The desirability of establishing an experimental trawling unit to explore the fisheries resources of Australia.

Committees were formed to deal with important problems concerning the preservation, transportation, marketing and distribution of fish, the canning and curing of fish, the production of fish by-products, the factors of destruction in fisheries, the development of the oyster industry, etc. The reports prepared by these Committees were submitted to a further conference held in July, 1929, at which the Commonwealth Government and all State Governments were represented; it was then unanimously recommended that investigation work should be undertaken by the Commonwealth Government. The Commonwealth Government has entrusted this task to the Council for Scientific and

* A specially contributed article dealing with the Marine and Fresh Water Fisheries of Australia appeared as § 6 of this Chapter in Official Year Book No. 17 (*vide* pp. 752 to 767 therein).

Industrial Research and is providing a sum of £80,000, spread over a period of five years, to cover fishery research and investigation under the following main heads:—(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) the determining, by tests, of 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 the improvement of existing transport and marketing facilities. The construction of a trawler at a cost of £17,000 has been completed and the vessel was commissioned in May, 1938. A programme of work has been prepared extending over a period of five years. During the first three years, the investigation will be concentrated on the south-eastern portion of the Australian coast. After that period, the investigation will be extended, within limits, to the south-western portion of the Continent. Experimental cruises completed so far have revealed the presence of four kinds of tuna (bonito, little tunney, skipjack and yellow-fin) and other commercial species. The erection of a Fisheries Laboratory and Research Station at Port Hacking in New South Wales is expected to be completed by June, 1939.

A Commonwealth Director of Fisheries, who has been entrusted with the task of carrying out these investigations, has been appointed for a period of five years. Other steps have been taken to initiate action according to the programme outlined above including the building up of a staff of trained investigators. It is hoped that, as a result of the knowledge gained from this investigation, the fishery industry of Australia will develop more in keeping with the advancement made by other branches of production.

3. **Consumption of Fish.**—It has been said that the Australians are not fish-eating people, seeing that the annual consumption of fish per head of population in Great Britain is set down at 42 lb., while in Australia it has been estimated at only 13 lb. There are frequent complaints that the distribution service does not give the public adequate opportunity to satisfy its appetite for a fish diet.

4. **Oyster Fisheries.**—Natural oyster beds exist on the foreshores in the shallow waters of inlets and estuaries in several parts of Australia. By husbanding the natural crop, and by judicious transplanting, the output has been very materially augmented. The areas are leased by the Government to private persons, lengths of foreshore being taken up under oyster leases. In New South Wales and Queensland the industry has thriven, and small yields are obtained in South Australia, Victoria and Tasmania.

5. **Pearl-Shell, Pearls, Bêche-de-mer, etc.**—(i) *General.* Pearl-shelling is carried on in the tropical waters of Queensland, the Northern Territory and Western Australia. The pearl oyster inhabits the northern and western coastal waters from Cape York to Shark Bay, a length of shore of over 2,000 miles. The shells are marketed in considerable quantities, and pearls are obtained in Queensland, Western Australia and the Northern Territory. The fishing is generally conducted with the aid of diving apparatus in water varying from 4 to 20 fathoms in depth. In Queensland and the Northern Territory the bêche-de-mer industry is carried on, and tortoise-shell is obtained on the coasts. Experiments have been made in cultivating the pearl oyster on suitable banks. In October, 1911, a pearl weighing 178 grains, and valued at £3,000, was obtained at Broome. Further details regarding pearl-shelling are given in Official Year Book No. 6, p. 463. The value of trochus-shell of Australian origin exported during 1937-38 was £32,147.

(ii) *Royal Commission on Pearl-shelling Industry.* In accordance with the "White Australia" policy it was originally determined that the employment of Asiatic labour in the pearl-shelling industry should be restricted, and ultimately cease, and it was proposed that after 31st December, 1913, permits to bring in Asiatics for the pearling-fleet should no longer be issued. In view, however, of the disorganization of the industry occasioned by the war, the time was extended to the 30th June, 1918, after which date permits to introduce Asiatic labour were to be granted only in cases where the diver and tender of a

boat were Europeans. The Royal Commission appointed in March, 1912, presented its final report in 1916. The Commissioners stated that, though it might be practicable, they did not consider it advisable or profitable to attempt to transfer the industry from Asiatics to Europeans. They further stated that, while the labour employed is almost entirely Asiatic, they did not consider that the "White Australia" policy would be weakened or imperilled by allowing the industry to continue as then conducted.

(iii) *Tariff Board Inquiry.* Arising from an application for the payment of a bounty on pearl-shell gathered by fishing vessels registered in Australia, the industry was the subject of an inquiry by the Tariff Board which presented its report in 1935. The Board did not approve the granting of a bounty but recommended some relief to the industry in the form of the remission of primage and customs duty.

§ 2. 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 have been incorporated in the tables hereunder :—

GENERAL FISHERIES, 1936-37.

| State or Territory. | No. of Boats Engaged. | Value of Boats and Equipment. | No. of Men Employed. | Total Take of— | | Gross Value of Take— | |
|----------------------|-----------------------|-------------------------------|----------------------|----------------|---------------------------|----------------------|---------------------------|
| | | | | Fish. | Spiny Lobster (Crayfish). | Fish. | Spiny Lobster (Crayfish). |
| | No. | £ | No. | cwt. | doz. | £ | £ |
| New South Wales(a) | 1,545 | 114,724 | (c)2,724 | 236,762 | 12,785 | 660,330 | (d)61,623 |
| Victoria.. | 711 | 99,270 | 1,360 | 116,416 | 12,319 | 203,803 | 10,406 |
| Queensland .. | 866 | 74,099 | 1,798 | (e)76,360 | (f)8,111 | (e)156,787 | (g)6,300 |
| South Australia(a) | 950 | 140,000 | 1,450 | 71,500 | 20,000 | 200,000 | 15,500 |
| Western Australia(a) | 276 | 52,138 | 610 | 35,521 | 24,626 | 111,891 | (h)12,116 |
| Tasmania(a)(i) .. | 205 | 56,244 | 290 | 19,914 | 73,997 | 36,082 | 36,998 |
| Northern Territory | 2 | 420 | 5 | 172 | .. | 439 | .. |
| Total .. | 4,555 | 536,895 | 8,237 | 556,645 | 151,838 | 1,369,332 | 142,943 |

(a) Year ended December, 1936. (b) Boats only. (c) Fishermen's licences issued. (d) Including £45,911, the value of 13,960 cwt. of prawns and 10,684 dozen crabs. (e) Includes prawns. (f) Crabs. (g) Including 30 turtles valued at £45. (h) Including prawns, £2,885, and crabs £612. (i) Includes oyster fisheries.

Returns for Australia for the last five years are given in the table below :—

GENERAL FISHERIES.—AUSTRALIA.

| Particulars. | 1932-33. | 1933-34. | 1934-35. | 1935-36. | 1936-37. |
|---------------------------------|--------------|-----------|-----------|-----------|-----------|
| No. of boats engaged .. | 4,348 | 4,278 | 4,272 | 4,589 | 4,555 |
| No. of men employed .. | 8,656 | 8,405 | 8,151 | 7,963 | 8,237 |
| Fish obtained— | | | | | |
| Quantity .. | cwt. 568,324 | 561,035 | 557,214 | 540,167 | 556,645 |
| Gross value .. | £ 1,183,081 | 1,151,812 | 1,159,808 | 1,180,885 | 1,369,332 |
| Lobsters obtained—Gross value £ | 118,183 | 122,409 | 123,296 | 117,058 | 142,943 |

(a) Exclusive of South Australia.

(ii) *Edible Oyster Fisheries.* Edible oyster fisheries are of small dimensions outside New South Wales and Queensland. During 1936-37 the available returns show the following takes :—New South Wales, 62,090 cwt., value £79,823; Queensland, 10,462 cwt., value £13,802. In Tasmania the scallop is far more important than the oyster. In 1936 the scallops taken in Tasmania were valued at £7,800.

Returns for Australia for the last five years are given in the appended table:—

EDIBLE OYSTER FISHERIES.—AUSTRALIA.

| Particulars. | 1932-33. (a) | 1933-34. (a) | 1934-35. (a) | 1935-36. | 1936-37. |
|----------------------------|-----------------|-----------------|-----------------|----------|----------|
| No. of boats engaged | 727 | 662 | 665 | 699 | 711 |
| No. of men employed | 716 | 666 | 675 | 687 | 712 |
| Oysters obtained— | | | | | |
| Quantity cwt. | 63,825 | 57,824 | 58,678 | 63,501 | 74,283 |
| Gross value (b) £ | 94,641 | 77,590 | 78,287 | 89,989 | 102,683 |

(a) Exclusive of South Australia. (b) Including scallops in Tasmania valued at £5,495 in 1932; £6,000 in 1933; £5,500 in 1934; £6,650 in 1935; and £7,800 in 1936.

(iii) *Pearls, Pearl-shell and Bêche-de-mer.* Details regarding the production, trade, etc., for these items, so far as they are ascertainable, are given hereunder. As regards pearls, for obvious reasons no correct estimate can be obtained of the value of those found. Pearl-shell (*Margaritifera*) is widely distributed in North Australian waters over an area facing some thousands of miles of coastline, though not intensively over the whole distance. The north-west beds are the most prolific, but those around and to the north of Cape York are also of importance. There is need for further investigation into the occurrence of this valuable shell, as well as of trochus, green snail, window-pane shell (*Placuna*), the various types of trepang or bêche-de-mer (*Holothuria*), both in tropical Australian waters and those of Papua and the mandated area of New Guinea. Particulars returned for the year 1936-37 are as follows:—

PEARL, PEARL-SHELL AND BÊCHE-DE-MER FISHERIES,(a) 1936-37.

| State or Territory. | Number of Boats Engaged. | Value of Boats and Equipment. | Number of Men Employed. | Quantity of Pearl-shell obtained. | Gross Value of Pearl-shell obtained. | Gross Value of Pearls obtained. (b) | Gross Value of Bêche-de-mer obtained. | Gross Value of Tortoise-shell obtained. |
|-----------------------------|--------------------------|-------------------------------|-------------------------|-----------------------------------|--------------------------------------|-------------------------------------|---------------------------------------|---|
| | No. | £ | No. | Tons. | £ | £ | £ | £ |
| Queensland (c) | 95 | 96,750 | 1,305 | 1,174 | 149,427 | 35 | 5,729 | 19 |
| Western Australia (d) | 36 | 60,435 | 614 | 825 | 102,817 | 5,200 | 86 | 132 |
| Northern Territory | 90 | 30,000 | 322 | 781 | 88,000 | 260 | 680 | 14 |
| Australia | 221 | 187,185 | 2,241 | 2,780 | 340,244 | 5,495 | 6,495 | 165 |

(a) No pearl-shelling industry in New South Wales, Victoria, South Australia and Tasmania. (b) Incomplete; as returned. (c) Also trochus-shell to the value of £37,617 in Queensland. (d) Year ended December, 1936. (e) Also 7 cwt. trochus-shell valued at £30.

The figures for tortoise-shell and trochus-shell as returned are defective, as the necessary information is not collected in full detail. In the following summary of production during the last five years export figures of Australian origin are inserted for both of these items:—

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

| Particulars. | 1932-33. | 1933-34. | 1934-35. | 1935-36. | 1936-37. |
|----------------------------|----------|----------|----------|----------|----------|
| No. of boats engaged | 231 | 237 | 230 | 215 | 221 |
| No. of men employed | 2,064 | 2,339 | 2,599 | 1,991 | 2,241 |
| Pearl-shell obtained— | | | | | |
| Quantity tons | 1,419 | 1,675 | 2,107 | 2,275 | 2,780 |
| Value £ | 214,747 | 202,755 | 201,243 | 239,952 | 340,244 |
| Pearls obtained (a)— | | | | | |
| Value £ | 8,171 | 9,361 | 9,439 | 6,031 | 5,495 |
| Bêche-de-mer obtained— | | | | | |
| Quantity tons | (b) | (b) | (b) | (b) | (b) |
| Value £ | 19,265 | 18,362 | 14,392 | 15,082 | 6,495 |
| Tortoise-shell exported— | | | | | |
| Value £ | 210 | 696 | 747 | 402 | 367 |
| Trochus-shell exported— | | | | | |
| Value £ | 49,525 | 41,596 | 44,694 | 41,590 | 51,209 |

(a) Incomplete; as returned.

(b) Not returned.

2. **Value of Production.**—As the outcome of a series of conferences by Australian Statisticians it is now possible to present the value of production of the fishing industry on a more satisfactory basis than was possible hitherto. It should be remembered, however, that the actual collection of statistics of the quantity of fish taken presents many difficulties and the gross values are not complete in some of the States. Particulars of the value of other materials used in the process of production are not available for all States, and consequently 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, 1936-37.

| State. | Gross Production Valued at Principal Markets. | Marketing Costs. | Gross Production Valued at Place of Production. |
|-------------------------|---|------------------|---|
| | £ | £ | £ |
| New South Wales | 802,000 | 152,000 | 650,000 |
| Victoria | 214,212 | 52,213 | 161,999 |
| Queensland | 370,000 | 34,000 | 336,000 |
| South Australia | 216,675 | 32,006 | 184,669 |
| Western Australia | 232,272 | 7,840 | 224,432 |
| Tasmania | 80,900 | .. | 80,900 |
| Total | | | |
| { 1936-37 | (a) 1,916,059 | 278,059 | 1,638,000 |
| { 1935-36 | (a) 1,743,694 | 291,634 | 1,452,060 |
| { 1934-35 | (a) 1,595,127 | 252,111 | 1,343,016 |
| { 1933-34 | (a) 1,578,328 | 248,603 | 1,329,725 |

(a) Not including production in the Northern Territory of a gross value of £89,440 in 1936-37; £73,109 in 1935-36; £11,526 in 1934-35; and £42,915 in 1933-34.

3. **Fish Preserving.**—To encourage the industry the Federal Parliament provided a bounty of $\frac{1}{2}$ per lb. for fish preserved as prescribed during the ten years 1907-8 to 1916-17. This failed to develop the industry, and was not renewed on its expiration in 1916-17. The amount of bounty paid during the ten years was only £3,005. Consideration of a further attempt to develop this branch of the fishing industry is now receiving the attention of the Commonwealth Government. Details of the proposals are shown in § 1 hereinbefore.

4. **State Revenue from Fisheries.**—The revenue from fisheries in each State during the year 1936-37 is given hereunder:—

FISHERIES.—REVENUE, 1936-37.

| State or Territory. | Licences. | Leases. | Fines and Forfeitures. | Other Sources. | Total. |
|-----------------------------|-----------|---------|------------------------|----------------|--------|
| | £ | £ | £ | £ | £ |
| New South Wales (a) | 1,943 | 9,233 | 545 | 465 | 12,186 |
| Victoria | (b) 1,184 | 15 | 508 | 37 | 1,744 |
| Queensland | 3,277 | 1,747 | 140 | 16 | 5,180 |
| South Australia (a) | 1,400 | .. | .. | .. | 1,400 |
| Western Australia (a) | 1,170 | 556 | 424 | 601 | 2,751 |
| Tasmania (a) | 790 | .. | .. | 151 | 941 |
| Northern Territory | 350 | 1 | .. | .. | 357 |
| Total | 10,120 | 11,552 | 1,617 | 1,270 | 24,559 |

(a) Year ended December, 1936.

(b) Excluding £3,256 received from sporting licences.

Similar particulars for Australia for the last five years are given in the following table:—

FISHERIES.—REVENUE, AUSTRALIA.

| Particulars. | 1932-33. | 1933-34. | 1934-35. | 1935-36. | 1936-37. |
|-------------------------------|----------|----------|----------|----------|----------|
| | £ | £ | £ | £ | £ |
| Licences | 9,428 | 9,545 | 8,976 | 8,445 | 10,120 |
| Leases | 12,508 | 12,319 | 12,265 | 12,517 | 11,552 |
| Fines and Forfeitures | 960 | 957 | 903 | 1,224 | 1,617 |
| Other Sources | 558 | 851 | 842 | 960 | 1,270 |
| Total | 23,454 | 23,672 | 22,986 | 23,146 | 24,559 |

§ 3. Oversea Trade in Fishery Products.

1. Imports of Fish.—The development of the local fishing industry leaves much to be desired, as is evident from the large imports. For the last five years the imports were as follows:—

FISH.—IMPORTS, AUSTRALIA.

Australian Currency Values.

| Classification. | | 1933-34. | 1934-35. | 1935-36. | 1936-37. | 1937-38. |
|--|--------|--------------------|----------------------|----------------------|----------------------|----------------------|
| Fresh (oysters) .. | cwt. £ | 3,367 1,643 | 4,609 2,702 | 4,982 4,044 | 2,349 1,468 | 893 881 |
| Fresh, or preserved by cold process | cwt. £ | 57,346 142,389 | 70,585 204,746 | 85,777 257,870 | 75,910 272,559 | 79,411 288,796 |
| Potted | cwt. £ | 4,900 82,288 | 5,794 96,451 | 7,426 109,943 | 8,419 118,271 | 7,733 109,685 |
| Preserved in tins .. | cwt. £ | 174,982 663,238 | 209,640 817,398 | 246,525 929,344 | 262,360 987,235 | 247,247 1,044,287 |
| Smoked, dried, and n.e.i. | cwt. £ | 8,495 24,602 | 13,340 25,744 | 11,102 20,932 | 14,891 40,944 | 14,172 39,422 |
| Crustaceans | cwt. £ | (a) (a) | 4,393 42,561 | 4,008 38,864 | 4,300 39,369 | 5,793 57,451 |
| Total | cwt. £ | 249,000 914,160 | 308,361 1,189,602 | 359,820 1,369,997 | 368,229 1,459,846 | 355,249 1,540,522 |

(a) Not recorded separately.

Tinned fish constitutes by far the largest proportion of the imports; salmon from Canada, herrings from the United Kingdom and sardines from Norway were the chief varieties imported. The potted fish comes chiefly from the United Kingdom, which also supplied a considerable proportion of the fresh fish imported in 1936-37; the bulk of the remainder came from New Zealand and the Union of South Africa. The small import of oysters is supplied by New Zealand, while Japan furnished 4,672 cwt. of the crustaceans imported.

2. **Exports of Fish.**—The exports of fish are comparatively insignificant. During the year 1937–38 they were as follows:—Fresh or preserved by cold process, 95,775 lb. £5,149; oysters, fresh, 16 cwt., £52; potted or concentrated, £539; preserved in tins, 485,879 lb., £16,167; smoked or dried, 42,332 lb., £1,608; other including salted, 263 cwt., £2,229.

3. **Exports of Pearl and Other Shell.**—The exports of pearl, tortoise and trochus-shell of Australian origin are given hereunder for the five years 1933–34 to 1937–38:—

PEARL, TORTOISE AND TROCHUS-SHELL.—EXPORTS, AUSTRALIA.

| Article. | | 1933-34. | 1934-35. | 1935-36. | 1936-37. | 1937-38. |
|-------------------|------|----------|----------|----------|----------|----------|
| Pearl-shell .. | cwt. | 33,721 | 43,467 | 56,306 | 52,058 | 53,280 |
| | £ | 198,347 | 218,463 | 302,491 | 319,631 | 345,580 |
| Tortoise-shell .. | lb. | 1,292 | 2,229 | 663 | 674 | 1,129 |
| | £ | 696 | 742 | 402 | 367 | 380 |
| Trochus-shell .. | cwt. | 9,128 | 10,111 | 9,260 | 8,847 | 6,370 |
| | £ | 41,550 | 44,694 | 41,590 | 51,209 | 32,147 |

The bulk of the pearl-shell exported during 1936–37 was consigned to the United States of America and the United Kingdom, the respective values of the shipments amounting to £237,105 and £75,140, while trochus-shell to the value of £48,559 was dispatched to Japan.

§ 4. The Development of Fisheries in Australia.

In 1907 the Commonwealth Government decided to demonstrate what might be attained commercially by the application of modern methods in fishery. A Federal Investigation Ship, the *Endeavour*, was constructed specially for the work, and a Director of Fisheries was appointed. Experimental cruises were undertaken, which showed that Australia possesses an asset of considerable value in her sea fisheries. The *Endeavour* was unfortunately lost at sea with all on board at the end of 1914. A description of the trawling grounds discovered, data regarding oceanography to the east of Australia, and a list of the publications of the Department will be found on pp. 333 to 335 of the Official Year Book No. 14.

In accordance with the recommendations of the Australian Fisheries Conference of 1927–29 the Commonwealth Government has decided to continue investigations, and the Council for Scientific and Industrial Research has been entrusted with the carrying out of the fisheries programme. This has been referred to in § 1 par. 2 above.

§ 5. Trawling in Australian Waters.

The State Trawling Industry was established in New South Wales in 1915, and fishing operations were conducted with seven steel steam trawlers. The catches were landed at Sydney and Newcastle, and the fish distributed through retail shops, of which there were fourteen in the metropolitan area, one in Newcastle, and five in country towns. Early in the year 1923 the Government discontinued trawling operations, as the venture was not a commercial success. The operations of the trawlers, however, revealed some of the richest trawling areas in the world, and these localities are being successfully exploited by private enterprise.