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SECTION XI.

FISHERIES AND PISCICULTURE.

§ 1. Commercial Fisheries.

1. **Early Fishing Excursions of Malays.**—Economic fisheries in Australia date back to a period long before the exploration of the northern and north-western shores of the continent by Tasman and Dampier. The Malays of Macassar, in their proas, made fishing excursions amongst the reefs and shoals skirting the coast, collecting and curing trepang and bêche-de-mer, a practice continued up to the present time. They arrive ordinarily at the beginning of the north-west monsoon, and return to Macassar after a few weeks, as the south-east monsoon sets in. Besides the bêche-de-mer, the Malays barter rice, tobacco, and gaudy handkerchiefs for tortoise-shell, pearl shell, and seed pearls, collected by the aborigines.

2. **Fish Stocks.**—Australasia, extending from 10° to 45° south latitude, produces an abundant and varied fish fauna, embracing both tropical and temperate characters, including destructive, as well as edible species, and on its shores both crustaceans and amphibians. In the rivers and lakes indigenous varieties thrive side by side with imported ones, introduced and acclimatised for industrial and sporting purposes by Governments and angling societies. Exploitation of aquarian products—for some classes of fish for the whole year, for others during the breeding season only, or until a certain size is attained—is, where necessary, expressly forbidden; areas are closed against net-fishing, and a minimum size of mesh for nets is sometimes fixed. Even where the State has not interfered, the sea-fishers in some districts have made regulations for the purpose of controlling the market supply, and these they rigorously observe.

3. **Economic Fisheries.**—Australia's food fishes, though abundant, have not led to the development of an industry of national importance, though fresh and salt water fisheries pay handsomely in other countries, and could no doubt do so in Australia. It has been authoritatively stated that "The collection and distribution of the knowledge of the world's work in fish-culture would make an acre of water more valuable than an acre of land, and the toilers of the sea could reap manifold their present harvest." This would involve also better arrangements for the distribution of fish than exist at present.

4. **Lake and River Fishing.**—Lake and river fishing take even lower industrial rank than marine fishing, though local catches furnish on the aggregate a not inconsiderable amount of food supply.

5. **Distribution of Supplies.**—The economic arrangements as to distribution impose at present serious difficulties on the development of fishing generally, since there is a wide divergence between the price paid by the consumer and the return received by the producer.

6. **Oyster Fisheries.**—Natural oyster beds, whose ample product is of excellent quality, exist in the shallow waters of inlets and estuaries of several parts of the Australian foreshore. By husbanding the natural crop, and by judicious transplanting, the

oyster output has been very materially augmented. The areas are leased by the Government to private persons, lengths of foreshore being taken up and profitably exploited.

7. **Pearl-shelling.**—Pearl-shelling is carried on in the tropical districts of Queensland, South Australia (Northern Territory), and Western Australia. The pearl oyster inhabits the northern and western coasts from Cape York to Shark Bay, a length of shore of over 2000 miles. Along the north coast the pearls taken are small, and their aggregate value inconsiderable; but the shells are marketed in considerable quantities, the industry giving directly and indirectly employment to a large number of people, mostly Japanese, Chinese, and Malays. The Shark Bay pearling industry, however, is carried on for both gems and shells. The fishing is now generally conducted with the aid of diving apparatus, in water varying from four to twenty fathoms in depth. The inshore banks and shallower waters have been almost entirely worked out, and the deeper waters, from three to twenty miles off shore, are now being worked.

In tropical Queensland pearl-shell diving is actively pursued, and is by far the most important of the fishing industries, Torres Straits being the centre of production. With it the pursuit of *bêche-de-mer* is carried on, and tortoise-shell is obtained on the coasts. The industry is supervised by the Marine Department, which administers the Fisheries Acts. A statutory limit is fixed for the minimum size of shell that may be gathered. Experiments have been made in cultivating the pearl oyster on suitable banks. A small variety has been discovered at Stradbroke Island, in Moreton Bay, but the commercial value of the produce is small.

The discovery of mother-of-pearl shell in Port Darwin Harbour in 1884 caused a rush of pearling boats from Torres Straits. But the muddiness of the water, rendered almost opaque by the heavy tides, prevented the divers from satisfactorily working the area and led to an abandonment of the industry within three years from its birth. Prospecting in new patches has since being carried on and the industry has been revived. In addition to pearl and trepang fishing, dry-salted fish is also exported from the Territory.

In Western Australia the centres of the industry are Broome, Cossack, Onslow, and Shark Bay. There are two distinct species of mother-of-pearl shell exported. The principal trade is done in the large shells (*Meleagrina margaritifera*), limited in distribution to tropical waters and extending in habitat from Exmouth Gulf northwards. It is laid under contribution for the larger manufactured articles, such as dessert and fish knife and fork handles, large buttons, and inlaid work. The largest and finest pearls are obtained from it. The second species is that known commercially as the Shark Bay variety (*Meleagrina imbricata*). It is of smaller size and used chiefly for the manufacture of small buttons. The pearls found are of varying value. The Shark Bay pearl-shell is collected by dredging in the deeper waters and gathered by hand from off the shallow banks at low tide.

The system of licensing boats and men engaged in the pearling industry restricts, in the States where it is in force, indiscriminate exploiting of the areas, and returns a small revenue.

§ 2. Fisheries Statistics.

1. **Departmental Estimates.**—Statistics of the fishing industry have not hitherto been systematically collected. The returns given below have been furnished by the States departments, and estimates, where they have been made, are official. The data do not lend themselves to presentation on a uniform scheme, and are therefore given for the individual States.

2. **New South Wales.**—Much of the information must be regarded as approximate only. An estimate of the number of men employed during the years 1901 to 1906 gives an annual average of 1730, with 849 boats in use; the average annual quantity of fish marketed per year was 5,790,400 lbs., value £193,013. In 1907, the estimated number

of men employed was 1935, and of boats, 1025, and the take of fish was 124,078 baskets, estimated to contain an average weight of 75 lbs. each.

**GENERAL FISHERIES (EXCLUSIVE OF EDIBLE OYSTERS) NEW SOUTH WALES,
1901 TO 1907.**

—	1901.	1902.	1903.	1904.	1905.	1906.	1907.
Total take of—							
Fish ... Baskets	90,618	118,823	141,280	125,290	123,222	128,854	124,078
Crayfish ... Dozen	2,161	4,148	4,436	2,757	7,104	4,916	7,075

**FISHERMEN'S AND FISHING BOAT LICENSES, NEW SOUTH WALES,
1901 TO 1907.**

Licenses.	1901.	1902.	1903.	1904.	1905.	1906.	1907.
Fishermen's ...	945	1,204	2,076	2,095	2,091	1,986	1,935
Fishing boat ...	441	518	1,043	1,019	1,061	1,047	1,025

REVENUE FROM FISHERIES, NEW SOUTH WALES, 1901 to 1907.

Year.	From Licenses.	From Leases.	Fines and Forfeitures.	Oyster Spat.	Total
	£	£	£	£	£
1901	791	3,567	148	*	4,514†
1902	950	3,987	103	*	5,040
1903	1,080	4,248	32	72	5,432
1904	1,010	4,646	193	231	6,080
1905	1,037	4,587	130	75	5,829
1906	1,043	4,796	58	234	6,131
1907	983	4,824	67	344	6,218

* No oyster spat was sold until 1903. † Includes £8 from other sources.

EDIBLE OYSTER FISHERIES, NEW SOUTH WALES, 1901 to 1907.

Year.	Number of Leases Granted.	Areas under Lease for Oyster Culture.		Oysters taken.	
		Deepwater.	Foreshore.	Quantity.	Value.
		Acres.	Yards.	Bags.	£
1901 ...	239	6½	341,644	18,473	27,709
1902 ...	202	6½	382,069	16,157	24,235
1903 ...	121	6½	391,942	13,593	20,389
1904 ...	219	...	435,550	12,613	19,000
1905 ...	123	27	404,064	13,858	20,787
1906 ...	155	64	467,592	15,006	22,509
1907 ...	303	65	553,975	14,406	25,210

Considerable proportions of the foreshores and shallow areas of the river estuaries are excellent natural oyster-beds, and with constant attention to them the annual yield of oysters could no doubt be materially increased. As the table shews, it was less in the years 1903 to 1907 than it had been in the two preceding years.

3. **Victoria.**—In 1908 a Fisheries Committee investigated the conditions of the fishing industry in Victoria. The scope of the inquiry covered questions as to the permanent and temporary closing of areas against fishing; the length and number of nets to be used by any one party; poaching; the destruction of cormorants; and the

handling, freight, and marketing of fish. As a result of this inquiry legislation is proposed that is expected to result in the industry being considerably developed in the near future.

GENERAL FISHERIES (EXCLUDING EDIBLE OYSTERS), VICTORIA, 1901 to 1907.

Year.	No. of Boats Engaged.	Value of Boats and Equipment.	No. of Men Employed.	Total Take of		Value of Take.	
				Fish.	Lobsters.	Fish.	Lobsters.
	No.	£	No.	cwt.	doz.	£	£
1901	622	28,094	982	72,517	19,003	45,017	6,269
1902	668	32,780	1,038	111,579	19,359	68,194	6,381
1903	651	33,163	1,084	116,750	18,823	70,252	6,258
1904	654	34,610	1,089	113,650	20,560	67,009	8,014
1905	660	34,600	1,039	96,000	19,662	58,230	7,496
1906	693	33,789	1,120	91,700	20,517	55,640	8,720
1907	726	38,666	1,153	99,707	24,889	60,442	6,179

Licenses to net in certain waters are issued without fee. These are not annual, but are supplemented every year by new issues. It is proposed to make the registration annual, and impose a fee.

FISHERMEN'S AND FISHING BOAT LICENSES, VICTORIA, 1901 to 1907.

Licenses.	1901.	1902.	1903.	1904.	1905.	1906.	1907.
Fishermen's licenses to net	46	38	175	185	67	39	176
Fishing boat	19	22	42	40	36	38	80

The increase in 1907 was caused through a court case calling attention to the fact that the necessary licenses had in many cases not been taken out.

Annual leases have been granted to oyster fisheries, but the return is insignificant.

EDIBLE OYSTER FISHERIES, VICTORIA, 1901 to 1907.

Year	1901.	1902.	1903.	1904.	1905.	1906.	1907.
Number of leases granted	5	5	4	4	2	Nil	Nil
Length of foreshore in leases ft.	86,610	39,480	7,800	7,200	3,000	...	...

No separate revenue is credited to fisheries. the small amount derived by way of fines being credited to general revenue.

4. **Queensland.**—Prior to 1907 no account was kept of the value of boats and equipment, but an approximation believed to be very close was furnished. An estimate was made of the total take of fish, giving 1450 tons as the annual average for the years 1901 to 1906, corresponding to an average annual value of £20,300. In 1907 the take was 1625 tons, of an estimated value of £24,437. There are no lobster fisheries. The amount put up in the fish-preserving establishments is not great, but the demand for fish locally tinned is growing. The quantities and values of oysters from 1901 to 1904 given are those exported. In 1905 and 1906 the information was not recorded, and no records were kept of those placed on the local market. The figures for 1907 give total production. The length of foreshore under lease cannot be accurately given. The deep water in Moreton Bay and Sandy Strait is leased as dredge sections, which extend across the channels to the islands, and contain from 100 to 1000 acres each. Within these sections the majority of the oyster banks (ground containing up to 30 acres lying within two feet below low-water mark) are situated on the foreshores of the islands, and on the mud and sand flats.

GENERAL FISHERIES (EXCLUDING EDIBLE OYSTERS, PEARLSHELL AND BÉCHE-DE-MER), QUEENSLAND, 1901 to 1907.

Year.	No. of Boats Engaged.	Value of Boats and Equipment.	No. of Men Employed.	Total Take of Fish.	
				Estimated Annual Average.	Estimated Annual Average.
1901 ...	240	£ 5,850	496	29,000 cwt.	£20,300
1902 ...	313	8,240	602		
1903 ...	326	8,700	602		
1904 ...	245	7,357	498		
1905 ...	272	7,600	511		
1906 ...	251	6,795	446		
1907 ...	242	6,596	497			32,500 cwt.	£24,437

FISHERMEN'S AND FISHING BOAT LICENSES, QUEENSLAND, 1901 to 1907.

Licenses.	1901.	1902.	1903.	1904.	1905.	1906.	1907.
Fishermen's ...	496	602	602	498	511	446	497
Fishing boat ...	240	313	326	245	272	251	242

REVENUE FROM FISHERIES, QUEENSLAND, 1904 to 1907.

Heads of Revenue.			1904.	1905.	1906.	1907.
			£	£	£	£
From licenses ...	...	...	5,902	6,080	5,278	6,208
„ leases ...	...	...	1,983	1,486	1,768	1,514
Fines and forfeitures ...	...	...	2	...	16	40
Other sources ...	...	...	110	127	100	159
Total ...	...	...	7,997	7,693	7,162	7,921

Figures for revenue given in the previous edition of the Year Book were exclusive of pearl and edible oyster fisheries.

EDIBLE OYSTER FISHERIES, QUEENSLAND, 1901 to 1907.

Year.	Number of Boats Engaged.	Value of Boats and Equipment.	Number of Men Employed.	Number of Leases Granted.	Oysters Exported.	
					Quantity.	Value.
					Cwt.	£
1901 ...	83	£ 4,510	127	575	21,658	14,370
1902 ...	118	4,645	189	679	20,682	16,120
1903 ...	132	4,800	172	635	19,482	15,887
1904 ...	109	5,215	171	652	23,900	20,073
1905 ...	130	5,075	200	675	*	*
1906 ...	144	7,025	200	714	*	*
1907 ...	149	8,000	212	924	†60,000	†37,500

* Information not recorded. † Oysters taken.

PEARL-SHELL AND BÉCHE-DE-MER FISHERIES, QUEENSLAND, 1901 to 1907.

Year.	Number of Boats Engaged.	Value of Boats and Equipment.	Number of Men Employed.	Pearl-shell.		Bêche-de-mer.		Tortoise-shell.	
				Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
				Tons.	£	Tons.	£	lbs.	£
1901 ...	359	99,300	2,188	924	105,403	52	7,399	5,579	1,935
1902 ...	343	82,800	2,187	961	129,267	71	9,444	3,608	1,521
1903 ...	354	93,300	2,308	970	165,551	59	7,270	2,801	1,326
1904 ...	378	105,900	2,509	798	108,130	45	5,865	2,209	1,027
1905 ...	366	104,400	1,321	543	62,736	105	10,624	2,413	1,320
1906 ...	211	63,300	1,314	444	47,423	131	13,938	3,659	2,007
1907 ...	211	63,300	1,420	577	70,495	338	30,033	3,095	1,927

Prior to 1907 no record was taken of the value of pearls obtained, and it is impossible to estimate it. The value in 1907 was approximately £30,000.

5. **South Australia and Northern Territory.**—Prior to 1906 there are no records of the number and value of boats, number of men employed, and take and value of fish. In the year named 558 men and 479 boats were engaged, the value of boats and equipment being £15,377. In 1907, 633 persons and 512 boats were engaged, and the value of boats, equipment, etc., was £21,570. In 1906 the take of fish was 14,569 cwt., valued at £16,770, and 2229 cwt. of lobsters, valued at £1578; in 1907, 20,734 cwt. of fish were taken, and 230 cwt. of lobsters, the values being £25,121 and £369 respectively. The Act imposing licenses was passed in 1904. In 1905, 600 fishermen's licenses were issued, 686 in 1906, and 840 in 1907. The revenue from general fisheries was £552 in 1905, made up of £551 from licenses and £1 fine; £330 in 1906, £267 being from licenses and £63 fines and forfeitures; and £286 in 1907, all from licenses. There are two fish-preserving establishments in the Northern Territory.

From oyster fisheries the revenue in the years 1901, 1902, 1903, and 1904 was only £6 altogether, derived from leases. In 1905 it was £19, all from licenses; in 1906 £17, and in 1907 £21, from the same source. Revenue amounting to £34 was also collected from licenses for Northern Territory in 1907. The figures for edible oyster fisheries, as completely as they can be furnished, are:—

EDIBLE OYSTER FISHERIES, SOUTH AUSTRALIA, 1901 to 1907.

Year.	Number of Boats Engaged.	Value of Boats and Equipment.	Number of Men Employed.	Number of Leases Granted.	Length of Foreshore leased.
1901 ... ..	...	£ ...	...	1	100 feet
1902 ... ..	...	...	...	1	100 "
1903 ... ..	...	...	...	1	100 "
1904	5	550	6	1	100 "
1905	7	720	8	1	100 "
1906	6	620	8	1	100 "
1907	4	730	6	2	15 miles

The oysters taken in 1907 were 416 bags, valued at £728.

FISHING INDUSTRY, NORTHERN TERRITORY, 1901 to 1907.

Year.	No. of Pearling Boats Engaged.	Value of Pearls Taken.	Pearl-shell.		Tortoise-shell.		Dried Fish.		Bêche-de-mer.	
			Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
1901	51	£ 2,000	Tons. 141	£ 17,168	lbs. 80	£ 50	lbs. 28,336	£ 342	Tons. 64	£ 2,628
1902	58	956	138	20,497	...	...	32,144	422	121	6,110
1903	56	1,183	126	28,391	...	...	40,096	581	105	3,870
1904	56	1,000	133	18,526	...	...	29,680	428	44	1,865
1905	52	...	115	14,352	130	50	56,672	1,046	62	2,929
1906	24	175	57	7,835	...	...	43,232	858	94	6,056
1907	31	200	64	8,805	342	115	38,976	822	20	898

Not more than half the fleet of boats were engaged in pearling operations during the year owing to the low price of shell, to shelling grounds being limited, and to scarcity of suitable labour. Some new grounds were discovered during the latter end of 1907, which will increase the number of boats engaged, and augment the output. The whole of the trepang industry is in the hands of Europeans. The closing of the coast against the Macassar proas must necessarily cause a shrinkage, but it is expected that in the course of a year or two, this will prove a great boon to local boats, inasmuch as it will give the fishing grounds time to recoup.

6. **Western Australia.**—In Western Australia the fishing industry has attained considerable importance, as will be seen from the tabular statements below:—

**GENERAL FISHERIES (EXCLUDING EDIBLE OYSTERS AND PEARL-SHELL)
WESTERN AUSTRALIA, 1901 to 1907.**

Year.	Number of Boats Engaged.	Value of Boats and Equipment.	Number of Men Employed.	Total Take of		Value of Take.	
				Fish.	Lobsters.	Fish.	Lobsters.
		£		Tons.	Doz.	£	£
1901	218	8,000	400	1,300	6,610	39,000	1,983
1902	205	8,400	453	1,500	6,900	45,000	2,070
1903	250	10,400	590	1,500	6,990	45,000	2,097
1904	251	11,000	605	1,700	7,500	46,000	2,250
1905	249	11,300	545	1,351	7,000	40,530	2,000
1906	237	12,000	504	1,316	7,000	39,480	2,100
1907	235	16,500	504	1,500	9,707	50,000	2,912

**FISHERMEN'S AND FISHING BOAT LICENSES, WESTERN AUSTRALIA,
1901 TO 1907.**

Licenses.	1901.	1902.	1903.	1904.	1905.	1906.	1907.
Fishermen's	400	453	590	605	545	504	504
Fishing boat	218	205	250	251	249	237	235

REVENUE FROM FISHERIES, WESTERN AUSTRALIA, 1901 to 1907.

Year.	From Licenses.	From Leases.	Fines and Forfeitures.	Total
	£	£	£	£
1901	870	187	13	1,070
1902	920	200	20	1,140
1903	943	231	25	1,199
1904	951	443	42	1,436
1905	927	195	24	1,146
1906	1,000	375	250*	1,625
1907	326	361	100	787

* In 1906, 3000 yards of net were forfeited.

PEARL AND PEARL-SHELL FISHERIES, WESTERN AUSTRALIA, 1901 to 1907.

Year.	Vessels.		LABOUR.										Quantity of Pearl-shell.	Value of Pearls.	Value of Pearl-shell.	Value of Beche-de-mer.
			White.	Aboriginal.	Asiatic.						Total Labour.					
	Chinese.	Japanese.			Malay.	Manilla.	Others.	Total Asiatic.								
	Number.	Tonnage.									Tons.	£	£	£		
1901	232	3,330	132	65	11	280	699	307	61	1,358	1,555	832	30,637	95,568	120	
1902	267	3,753	154	75	12	362	787	294	72	1,527	1,756	970	45,080	142,615	162	
*1903	337	5,083	193	59	15	665	1,031	283	71	2,065	2,317	996	42,648	128,589	nil.	
*1904	403	5,737	217	78	12	812	1,235	286	60	2,405	2,700	1,340	41,140	129,099	nil.	
*1905	323	4,441	167	69	8	616	1,082	232	54	2,192	2,228	1,155	41,685	119,786	1,645	
1906	368	5,118	181	95	16	815	1,021	211	116	2,179	2,455	1,246	59,349	132,065	547	
1907	383	4,354	245	50	100	1000	700	400	5	2,205	2,500	1,393	64,690	169,815	nil.	

* Incomplete.

7. **Tasmania.**—There are no licenses charged against fishermen or fishing vessels, and consequently no records are kept regarding their numbers or value of equipment. The estimated number of boats engaged in the industry is eighty-one, average crew two men, average value per boat £70. The license revenue is almost entirely obtained for rights to angle for salmon and trout with rod and line. Oyster fisheries are not worked except in a most primitive way. The estimate of fish marketed at Hobart in 1907 was £8853.

REVENUE FROM FISHERIES, TASMANIA, 1901 to 1907.

Year.		From Licenses.	Fines and Forfeitures.	Other Sources.	Total.
		£	£	£	£
1901	...	569	8	75	652
1902	...	598	4	18	620
1903	...	715	14	4	733
1904	...	665	21	...	686
1905	...	607	7	...	614
1906	...	595	1	...	596
1907	...	595	1	...	596

§ 3. Oversea Trade.

That the development of the fishing industry in Australia leaves much to be desired is evident from the fact that the import of preserved fish into the Commonwealth is large, the export inconsiderable. The figures for the trade are as follows:—

IMPORTS OF FISH, COMMONWEALTH, 1901 to 1907.

Classification.	1901. ¹	1902. ¹	1903.	1904.	1905.	1906.	1907.
Fresh (oysters) cwt. ...	...	...	7,269	9,468	8,195	9,225	12,288
" " " £	3,185	4,264	3,526	4,309	3,564	4,075	5,607
Fresh, smok'd, or preserv. by cold process cwt. ...	...	...	8,391	8,403	11,386	9,591	14,060
" " " £	6,639	6,282	14,623	12,060	16,507	14,632	28,524
Potted " " cwt. ...	...	...	...	...	...	...	...
" " " £	3,434	3,765	12,898	9,747	8,508	11,934	13,364
Preserved in tins } " " " } " " " }	cwt. 135,300	132,526	cwt. 118,602	106,007	120,213	135,872	127,555
Dried or salted... }	£320,725	293,463	£272,572	249,054	288,371	310,656	316,320
" " " }			cwt. 20,913	15,736	16,992	17,336	14,843
" " " }			£30,905	24,662	27,898	29,729	27,252
Total ... cwt. ²	135,300	132,526	155,175	139,614	156,786	172,024	168,746
" " " £	333,983	307,774	334,524	299,832	344,848	371,026	391,067

1. Quantities for 1901 and 1902 are not available for the first three items. 2. Exclusive of first three items for 1901 and 1902, and of potted fish for 1903 to 1907.

The countries of origin of fish, preserved in tins, and dried and salted, are shown in the following table:—

IMPORTS OF PRESERVED FISH, COMMONWEALTH, 1901 to 1907.

Country whence Imported.		1901.	1902.	1903.	1904.	1905.	1906.	1907.
United Kingdom	cwt.	67,203	74,619	86,174	70,888	54,852	69,453	73,483
"	£	158,008	161,741	173,836	138,534	105,155	131,023	151,976
Canada	cwt.	6,709	4,791	5,723	8,564	20,665	15,861	13,308
"	£	15,259	10,746	12,470	23,148	54,132	39,455	36,366
Hongkong	cwt.	1,764	2,034	1,743	4,261	3,833	3,244	2,695
"	£	5,497	6,213	5,428	11,235	10,614	8,438	8,444
New Guinea	cwt.	1,336	2,821	2,273	942	...	1,004	584
"	£	4,772	4,659	3,988	2,311	...	2,000	1,431
New Zealand	cwt.	1,250	1,282	1,295	942	1,439	1,239	2,325
"	£	3,496	4,821	4,082	4,643	7,439	4,517	7,553
Other British Poss.	cwt.	888	359	229	257	290	209	832
"	£	2,568	1,126	702	701	639	618	2,186
Belgium	cwt.	258	265	209	495	576	1,247	916
"	£	1,066	1,007	954	1,434	2,130	3,693	3,556
China	cwt.	900	1,123	1,524	1,111	641	396	317
"	£	3,747	2,932	2,995	2,772	1,196	1,365	1,073
France	cwt.	772	1,541	4,901	312	940	542	202
"	£	4,212	5,394	19,707	1,538	3,632	2,014	895
Germany	cwt.	1,130	1,113	2,652	1,748	2,333	3,945	3,778
"	£	4,564	3,919	6,174	6,052	7,527	13,234	13,609
Japan	cwt.	185	114	485	881	110	248	245
"	£	728	261	1,074	2,282	265	574	660
Netherlands	cwt.	...	...	25	36	166	617	390
"	£	...	...	31	65	727	2,492	1,363
Norway	cwt.	364	1,259	1,011	1,034	1,571	2,267	1,338
"	£	1,507	2,379	3,397	4,130	6,635	9,941	5,307
Portugal	cwt.	318	208	1,933	1,172	1,701	5,972	3,876
"	£	1,520	632	6,167	3,582	5,774	15,896	11,892
United States	cwt.	51,859	39,625	28,851	28,999	47,754	46,559	37,667
"	£	112,551	85,607	60,819	70,987	109,485	104,013	95,845
Other For. C'ntries	cwt.	353	1,372	482	101	334	405	454
"	£	1,230	2,026	1,653	302	919	1,112	1,458
Total Quantity	cwt.	135,289	132,526	139,515	121,743	137,205	153,208	142,410
Total Value	£	320,725	293,463	303,477	273,716	316,269	340,385	343,614

EXPORTS OF FISH, 1901 to 1907.

Article.		1901. ¹	1902. ¹	1903.	1904.	1905.	1906.	1907.
Fish, smoked, or preserved by cold process	cwt.	...	...	70	35	179	264	160
"	£	376	957	117	48	287	468	296
Preserved in tins, dried salted, etc.	cwt.	...	...	4,131	2,713	6,234	6,107	8,651
"	£	13,216	19,172	15,413	12,485	22,499	24,559	38,977
Total	cwt.	...	...	4,201	2,748	6,413	6,371	8,811
"	£	13,592	20,129	15,530	12,533	22,786	25,027	39,273

1. Quantities for 1901 and 1902 are not available.

A considerable development has taken place lately in the fish preserving industry. Two factories were opened in the Northern Territory of South Australia in 1907, and a large output resulted from the operations of those previously established. There is, however, an excess of imports over exports amounting to more than £350,000.

EXPORTS OF PEARL-SHELL AND TORTOISE-SHELL, 1901 to 1907.

Article.	1901.	1902.	1903.	1904.	1905.	1906.	1907.
Pearl-shell ... cwt.	33,212	40,986	41,163	42,171	47,648	35,632	41,244
„ ... £	202,402	288,593	368,569	244,679	252,895	212,242	252,063
Tortoise-shell ... lbs.	*	*	3,326	3,616	4,139	4,835	3,566
„ ... £	2,237	1,778	1,576	2,167	2,812	2,507	2,192

* Quantity not available.

§ 4. Development of the Industry.

1. **Transport and Marketing.**—The large importations of fish into the Commonwealth indicate the scope for the development of the local fishing industry. Where quick transport by rail or steamer is not provided, the catch of fish in tropical or subtropical waters can only be locally consumed, since speedy marketing is essential. Adequate refrigerating apparatus on railway waggons and coasting steamers, and quick transport to centres of population might, however, alter the economic condition in a satisfactory direction. At the present time the natural wealth of Australia in fish is exploited only to a very slight extent.

2. **Experiment and Culture.**—(i.) *The Existing Fisheries.* In many respects the fishing industry is capable of modification and development. A good deal has been effected by the State Governments in the way of experiment and culture, but much yet remains to be done before the industry is at all commensurate with the industrial development and consuming capacities of the Commonwealth. The existing fishing is inshore, the supplies being obtained from the vicinity of river estuaries and lakes. Deep-sea fishing, as established and carried on in older countries, is, so far, practically non-existent in Australia.

(ii.) *New South Wales.* In New South Wales, trawling experiments have shewn that considerable areas along the coast are suitable, but practical work on commercial lines is yet undeveloped. The stocking of rivers and lakes was begun by private enterprise, since which Government aid has been granted, and eminent success has been attained, among other fish, with the Californian rainbow trout. Young fry are distributed annually from the trout hatchery at Prospect, and the natural reproduction of the fish in the streams that issue from the mountain ranges is regarded as a valuable asset. In 1902 attempts were successfully made to transport European fishes alive to Australia. A marine hatchery and biological station has been completed at Gunnamatta Bay, Port Hacking, by means of which it is proposed to gradually acclimatise suitable fishes. The natural oyster beds are also being extended.

(iii.) *Victoria.* In Victoria very little has been done in the way of hatcheries and culture, and that little has been mainly the work of private individuals and angling clubs. The Government has, however, incurred the expenditure of a sum of money on hatcheries with good results. Fry and yearlings are distributed, and one consignment of the latter was despatched from the Geelong hatchery and liberated without loss at Mundaring, Western Australia. Trawling experiments were conducted some years ago, but the results were inconclusive.

(iv.) *Queensland.* In Queensland artificial hatching was undertaken by the Acclimatisation Society of Southern Queensland. Here, also, the American rainbow trout has succeeded, fry being distributed from the hatchery at Spring Creek, Killarney. The lung-fish, formerly known only in two streams, has been successfully transplanted

to several other streams. Oyster beds are also being developed in several parts, and improved methods of culture have largely increased the output. The trawling experiments of 1901 and 1902 point to the improbability of a great trawling industry being established. The trawling area off Queensland would be a mere strip, because of the presence of the coral region immediately to the north and the fact that the sea deepens very rapidly to the east.

(v.) *South Australia.* In South Australia the indiscriminate exploitation of the Port Lincoln and adjacent oyster beds led to the necessity for their being closed from time to time to prevent the district from being altogether worked out. The future outlook has in this way been improved as regards oyster culture. The South Australian fishing grounds have been stated to be most desirable areas, only wanting men and boats to ensure a large take. Trawling by private individuals has led to satisfactory results.

(vi.) *Western Australia.* In Western Australia the coastal waters have been examined to ascertain whether suitable trawling grounds exist. The Acclimatisation Committee has successfully hatched and liberated trout, the Mundaring weir being stocked with the Loch Leven variety. Perch were stocked in the lakes near Wanneroo Caves.

(vii.) *Tasmania.* Considerable distributions of ova and fry are annually made from the River Plenty in Tasmania. Besides the supplies to Tasmanian waters, the northern States are also recipients of ova.

(viii.) *Commonwealth Investigations.* The Federal Council had power to legislate with regard to fisheries in Australasian waters beyond territorial limits. In the second session (opened 16th January, 1888), an Act was passed to regulate pearl-shell and bêche-de-mer fisheries in Australasian waters adjacent to Queensland, and in the third session, opened shortly afterwards, the Act was made applicable to Western Australia. It was not till the present year, however, that the Federal Government commenced operations in regard to fisheries. A fisheries investigation vessel has been built and launched at Sydney. Its general object is to find out what fish occur around Australian coasts, and how to catch them. Trawling, whereby the fish are disturbed by a large bag-shaped net which is drawn along the sea-bottom, and caught and retained in a trap arrangement at the tail-end of the net, will form one of the branches of experiment. Work will be carried on in all known and recognised methods of capture, including long-line and drift-net fishing, etc.; and survey will be carried out, so as to get information as to the nature of the bottom. The New Zealand Government is experimenting with a view to the introduction of Northern Hemisphere fish into the waters surrounding the shores of the Dominion.

(ix.) *Inquiries by Scottish Fishermen.* In the latter half of 1908 a delegation of Scottish fishermen visited Australia to make inquiries regarding the possibility of the remunerative working of the Australian fisheries. They appeared to be impressed with the excellence of the fishing grounds, and will probably report favourably on the proposal to settle colonies of fishermen, with their wives and families, on the coast, and establish industries for fish catching, smoking, curing, etc., and for manufacturing fertilisers, fish oils, and fish cakes.

§ 5. Fish Preserving.

Bounties have been provided by the Federal Government for fish preserving. These, together with the increased yield that may be expected as a result from the fisheries investigations now being conducted, will probably lead to a considerable output and consumption of locally preserved fish. The abundance of fish in Australian waters offers excellent opportunities for the institution of preserving establishments, particularly in those coastal districts which enjoy a temperate climate. Up to the

present but little development has taken place. The establishments for fish preserving at the present time are very few:—

NUMBER OF FISH-PRESERVING ESTABLISHMENTS, 1901 to 1907.

State.	1901.	1902.	1903.	1904.	1905.	1906.	1907.
New South Wales	3	3	2	2	2	2	1
Victoria ...	...	...	...	...	...	...	...
Queensland ...	3	3	4	4	4	4	4
South Australia...	...	...	...	...	...	...	2*
Western Australia	2	2	2	3	3	3	3
Tasmania ...	...	...	...	1	1	...	...
Commonwealth	8	8	8	10	10	9	10

* These are in the Northern Territory.