

SECTION XXVI.

LOCAL GOVERNMENT.

§ 1. Introduction.

1. **Early History of Local Government.**—In previous issues of this book, a description was given of the systems of Local Government and their development in the several States of the Commonwealth, and at the same time a comparison was made between the Australian and Continental systems. The early history of Local Government in Australia was also dealt with. Owing, however, to considerations of space, these matters have been omitted from the present volume, and the reader is referred to Year Book No. 5, pages 972 to 975.

§ 2. Local Government Systems.

1. **New South Wales.**—(i.) *Development of Local Government.* The history of Local Government in New South Wales has been given in previous issues of this book (see No. 6, page 966). It is not intended to repeat the information in this issue.

(ii.) *Present System of Local Government.* The law relating to local government in New South Wales is now contained in the Acts of 1906, 1907, 1908 and 1914. Practically the whole of the State, with the exception of the Western Division, has been brought under the operation of these Acts.

(a) *Areas Incorporated.* Prior to the year 1907 the total area incorporated formed a very small part of the whole area of the State, as may be seen in the following statement:—

AREAS INCORPORATED IN NEW SOUTH WALES, 1860 to 1906.

Year	...	...	1860.	1870.	1880.	1890.	1900.	1906.
Area incorporated—sq. miles	...	...	409	649	1,482	2,387	2,763	2,830
<i>Total area of State (exclusive of Lord Howe Island), 310,367 square miles.</i>								

The areas incorporated in 1906 in each of the three territorial divisions of the State were as follows:—

NEW SOUTH WALES.—DISTRIBUTION OF INCORPORATED AREAS, 1906.

Division.			Incorporated Area.	Unincorporated Area.	Total Area.
Eastern	...	Sq. miles	1,977	93,742	95,719
Central	...	"	571	88,579	89,150
Western	...	"	282	125,216	125,498
Total			2,830	307,537	*310,367

* Total area of State, exclusive of Lord Howe Island, the area of which is 5 square miles.

The total area incorporated under the Local Government Act 1906 to the end of the year 1916 was 183,521 square miles, of which 180,655 square miles were comprised within shires and 2866 within municipalities. The areas incorporated comprise the whole of the eastern and central divisions of the State, with the exception of Lord Howe Island, the islands in Port Jackson, and the quarantine station at Port Jackson.

(b) *General.* The above Act came into operation on the 1st January, 1907; it provided for the continuation of existing shires and municipalities, for the creation of new ones, and for their reconstitution by uniting, dividing, altering, or converting areas.

Each shire is divided into three ridings, and each municipality may be divided into wards by petition of the council or a majority of the ratepayers to the Governor. The councils consist, in the case of shires, of either six or nine councillors, and in the case of municipalities, of from six to fifteen aldermen. A summary of the functions of councils, their powers and duties, together with a detailed statement of rates, ratable property, and endowment, will be found in previous issues of the Year Book. (See Year Book No. 5, pages 977 to 979.)

(iii.) *Shires*.—The total area of the 136 shires constituted under the new system is 180,655 square miles, and the population on the 31st December, 1916, was 646,320.

The shires vary in area from 36 square miles in the case of Ku-ring-gai, immediately north of the metropolis, to 5730 square miles in the case of Lachlan in the Condobolin district.

(a) *Valuation and Rates Levied*. The unimproved capital value of the shires in 1916 was £105,697,791, as against £104,745,633 in the preceding year. It is not possible to give the improved capital value or the assessed annual value, as the shires are not compelled to make these valuations, and in many cases do not make them. The total amount of all rates levied was £651,437.

(b) *Revenue*. The principal heads of revenue for the last five years are shewn in the following table:—

NEW SOUTH WALES.—INCOME OF SHIRES, 1912 to 1916.

Particulars.*	1912.	1913.	1914.	1915.	1916.
<i>General Fund—</i>	£	£	£	£	£
General rates ...	517,025	561,378	608,009	610,407	633,973
Government endowment...	372,952	134,635	146,077	163,211	143,259
Public works ...	45,152	62,453	197,754	192,319	205,277
Health administration ...	4,886	4,864	4,889	4,620	4,087
Public services ...	9,232	10,305	10,069	9,711	11,162
Shire property ...	8,768	10,159	13,738	12,512	12,449
Miscellaneous ...	5,648	6,814	6,742	7,613	7,507
<i>Special and Local Funds</i> ...	35,835	45,903	57,714	65,293	75,309
Total revenue...	999,498	836,511	1,044,992	1,065,686	1,093,023

* The receipts for Public Works, Health Administration, Public Service, etc., include Government grants during 1916 amounting to £188,175.

(c) *Expenditure*. The following statement shews the expenditure of shires during the years 1912 to 1916 inclusive:—

NEW SOUTH WALES.—EXPENDITURE OF SHIRES, 1912 to 1916.

Particulars.	1912.	1913.	1914.	1915.	1916.
<i>General Fund—</i>	£	£	£	£	£
Administrative expenses ...	83,721	91,450	95,760	87,527	100,224
Public works ...	773,479	707,923	801,542	813,400	843,803
Health administration ...	7,199	7,699	8,064	8,049	8,513
Public services ...	15,809	14,751	14,757	17,935	15,229
Shire property ...	10,419	11,251	15,277	14,644	14,969
Miscellaneous ...	8,430	9,975	9,275	9,855	17,510
<i>Special Local and Loan Funds</i>	34,268	43,041	51,796	67,025	78,649
Total expenditure...	933,325	886,090	996,471	1,018,435	1,078,897

(d) *Assets and Liabilities.* The financial position of the shires at the end of the year 1916 was strong, as there was an excess of assets of £437,011. The following table gives particulars of assets and liabilities as at the 31st December, 1916 :—

NEW SOUTH WALES.—ASSETS AND LIABILITIES OF SHIRES, 1916.

Assets.			Liabilities.		
<i>General Fund—</i>			<i>General Fund—</i>		
Outstanding rates	...	£52,647	Temporary loans	...	£45,895
Stores and materials	...	15,606	Sundry creditors	...	51,931
Bank balance	...	134,184	Due on contracts	...	230
Sundry debtors	...	13,761	Due to trust fund	...	172
Land	...	18,536	Other	...	104
Buildings	...	92,195	<i>Special, Local and Loan Funds</i>		54,445
Plant and property*	...	174,497			
Furniture	...	17,926	Total	...	†£152,777
Other	...	4,211	Excess of assets	...	437,011
<i>Special, Local and Loan Funds</i>		66,225			
Total	...	£589,788	Total	...	£589,788

* Including saleyards, pounds, baths, public watering-places, ferries, wharves, etc.

† Includes £78,603 for outstanding loans.

(iv.) *Municipalities.* Including the City of Sydney there were 185 municipalities in New South Wales at the end of 1916; of these, forty were in the suburbs of Sydney and eleven in the district of Newcastle and suburbs. Since the 1st January, 1908, under the Local Government Act 1906, suburban and country municipalities must levy a general rate on the unimproved capital value of all ratable land, and may levy additional general, special, local, or loan rates on either the unimproved or improved capital value. Municipal rates, until the year 1915, were charged on the annual value in the City of Sydney, and an additional rate was also levied on the unimproved capital value, but from 1916 the rates are levied on the unimproved capital value only. The only rates based solely on the assessed annual value are those charged by the Metropolitan and Hunter Water Supply and Sewerage Boards.

(a) *Capital Value, Area, Population, and Rates Levied.* The following table shows the improved capital value, the area, population, number of buildings, and amount of rates levied in municipalities for the years 1901 and 1912 to 1916 :—

NEW SOUTH WALES.—MUNICIPALITIES, IMPROVED CAPITAL VALUE, AREA, POPULATION, NUMBER OF BUILDINGS, AND TOTAL RATES LEVIED, 1901 and 1912-16.

Year ended 31st Dec.*	Sydney and Suburbs.					Country.				
	Improved Capital Value.	Area.	Population.	Number of Dwellings.	Total Rates Levied.	Improved Capital Value.	Area.	Population.	Number of Dwellings.	Total Rates Levied.
	£	Acres.	No.	No.	£	£	Acres.	No.	No.	£
1901 ...	88,118,600	91,220	†487,900	94,907	277,457	36,429,600	1,732,302	371,330	73,862	127,564
1912 ...	124,875,964	95,259	683,780	§	770,879	48,314,203	1,826,795	444,190	§	373,765
1913 ...	137,795,263	95,259	713,260	§	880,908	50,451,471	1,769,155	456,050	§	401,594
1914 ...	158,764,693	95,259	739,210	§	1,038,224	55,883,063	1,769,155	457,150	§	450,140
1915 ...	169,778,544	95,259	748,940	§	1,076,885	57,949,558	1,769,155	456,000	§	454,511
1916 ...	176,659,505	95,259	750,260	§	1,153,987	59,422,910	1,742,275	446,800	§	485,104

* Prior to 1908 the municipal year ended on the first Monday in February, since when the municipal year closes on 31st December.

† Census, March, 1901.

§ Not available.

The following table gives a comparison of the unimproved and improved values for the years 1912 to 1916 inclusive :—

**NEW SOUTH WALES.—MUNICIPALITIES, UNIMPROVED AND IMPROVED
CAPITAL VALUES, 1912 to 1916.**

Year.	Sydney.	Suburbs.	Metropolis.	Country.	Total.
UNIMPROVED VALUE.					
	£	£	£	£	£
1912 ...	23,988,480	27,193,577	51,182,057	20,352,473	71,534,530
1913 ...	23,837,157	28,240,971	52,078,128	20,807,126	72,885,254
1914 ...	27,395,826	31,979,353	59,375,179	22,573,671	81,948,850
1915 ...	27,226,283	33,403,223	60,629,506	22,843,195	83,472,701
1916 ...	31,168,904	34,719,417	65,888,321	23,378,626	89,266,947
IMPROVED VALUE.					
1912 ...	57,395,288	67,480,676	124,875,964	48,814,203	173,690,167
1913 ...	64,080,440	73,714,823	137,795,263	50,451,471	188,246,734
1914 ...	75,786,580	82,978,113	158,764,693	55,682,063	214,446,756
1915 ...	78,580,300	91,198,244	169,778,544	57,949,658	227,728,102
1916 ...	80,264,720	96,394,785	176,659,505	59,422,910	236,082,415

(b) *Revenue.* The Local Government Act 1906 prescribed that there should be a general fund in each local government area (municipality and shire), also special funds for specified purposes. The regulations under the Act prescribed the system of accounts to be kept. This system differs materially from the old "cash" system of receipts (cash actually received) and disbursements (cash actually expended).

Prior to 1908 the municipal year ended on the first Monday in February; now it ends on the 31st December. In all statements of municipal accounts for the year 1908, therefore, the period referred to is from the 4th February to the 31st December, except in the City of Sydney, which does not come under the provisions of the Act of 1906 and where the accounts are kept for the calendar year. The first complete year for which financial particulars are available for the municipalities is the year 1909. Particulars of revenue for the year 1916 are given in the following table :—

NEW SOUTH WALES.—MUNICIPALITIES, REVENUE, 1916.

Particulars.	Sydney.	Suburbs.	Country.	Total.
	£	£	£	£
General fund	1,197,985†	724,638	480,451	1,205,089†
Trading accounts ... ..		...	148,327	148,327†
Special and local funds		59,089	300,321	359,410†
Loan funds		73,638	68,045	141,683†
Reserve and Renewals Account		5,464	30,104	35,568†
Gross revenue	1,197,985†	862,829	1,027,248	3,088,062
Deduct transfers* ... ..	...	44,773	47,280	92,053
Net revenue	1,197,985†	818,056	979,968	2,996,009

* Transfers from various funds to loan funds for principal, interest, and capital expenditure.
† The City of Sydney accounts were formerly kept on a cash basis, i.e., the actual receipts and disbursements were shown; but the figures since 1914 show total revenue and expenditure for the year. Items of revenue and expenditure for the City of Sydney cannot be allocated to the different headings shown for municipalities. ‡ Exclusive of Sydney.

(c) *Expenditure.* Reference has already been made to the system of accounts prescribed by the Local Government Act 1906 (see paragraph (b) hereof). The following table gives particulars of expenditure of municipalities for the year 1916 :—

NEW SOUTH WALES.—MUNICIPALITIES, EXPENDITURE, 1916.

Particulars.	Sydney.	Suburbs.	Country.	Total.
	£	£	£	£
General fund	1,087,273†	704,855	476,749	1,181,604†
Trading accounts ... ..		...	114,243	114,243†
Special and local funds		57,654	280,542	338,196†
Loan funds		113,941	53,555	167,496†
Reserve and Renewals Account		662	8,531	9,193†
Gross expenditure	1,087,273†	877,112	933,620	2,898,005
Deduct transfers* ... ..	...	44,773	47,280	92,053
Net expenditure	1,087,273†	832,339	886,340	2,805,952

* Transfers from various funds for principal and interest on loans. † See note † to preceding table. ‡ See note ‡ to preceding table.

(d) *Assets and Liabilities.* The financial position of the municipalities as at the 31st December, 1916, is shewn by the following statement of assets and liabilities of the various funds :—

NEW SOUTH WALES.—MUNICIPALITIES, ASSETS AND LIABILITIES, 1916.

Particulars.	Sydney.	Suburbs.	Country.	Total.
	£	£	£	£
Assets—				
General fund	10,005,232*	407,715	507,364	915,079†
Trading accounts ... ..		...	169,784	169,784†
Special and local funds... ..		38,845	1,572,196	1,611,041†
Loan funds		172,496	646,771	819,267†
Reserves and renewals account		4,802	22,778	27,580†
Total	10,005,232*	623,858	2,918,893	13,547,983
Liabilities—				
General fund	9,751,011*	180,721	94,636	275,357†
Trading accounts ... ..		...	87,115	87,115†
Special and local funds... ..		11,125	1,405,118	1,416,243†
Loan funds		869,408	676,370	1,545,778†
Reserves and renewals account		4,802	22,778	27,580†
Total	9,751,011*	1,066,056	2,286,017	13,103,084

* See note † to last table on preceding page. † See note ‡ to last table on preceding page.

2. *Victoria.*—(i.) *Development of Local Government.* In Victoria there are now two types of municipal institutions, (a) boroughs, including cities and towns, and (b) shires, and although they are now dealt with by the same Act, their origin was distinct, and in the early days of their development they were provided for by independent enactments. Melbourne and Geelong, the latter of which was for many years the second largest town in the State, having been incorporated under special statutes prior to the establishment of a general system of local government, are not subject to the provisions of the Local Government Acts except in a few comparatively unimportant details. Melbourne was incorporated as a town in 1842, and as a city in 1847; Geelong was incorporated as a town in 1849, and proclaimed a city on 14th December, 1910.

The earlier history of legislation in Victoria relative to Local Government, more especially with reference to the institution of Road Districts, their displacement by Shires, and the constitution of Urban Municipal Districts and Boroughs, has been fully dealt with in previous issues. (See Year Book No. 5, p. 992.)

(ii.) *Present System of Local Government.* Local government is now administered under the Act of 1903 throughout the whole of the State, with the exception of French Island.

(a) *Constitution of Municipalities.* Provision is made for the continuation of municipalities established under previous Acts and for the constitution of new ones.

Definitions of shires, boroughs, and townships have been given in previous issues of this book (see Year Book No. 6, page 978), together with the conditions necessary for their constitution.

(b) *Municipal Councils, etc.* Considerations of space prevent more than a passing reference to the following subjects, which were dealt with in previous issues of this book:—The constitution of municipal councils, their functions and powers, including the power of raising loans, the qualifications necessary for the exercise of the municipal franchise, and the definition of ratable and unratable property. (See Year Book No. 5, pp. 994 to 996.)

(c) *Endowment.* The legislation dealing with municipal endowment prior to 1907 is referred to in previous issues. (See Year Book No. 5, p. 996.) In 1907, under the Municipal Endowment and Reclassification of Shires Act of that year, a new classification was adopted under which the amount of the endowment is to be allocated. In addition to the endowment of £50,000, the municipalities received from the Government during the financial year 1916-17 a sum of £71,529 out of the Licensing Act Fund as the equivalent for (a) fees for licenses, (b) fees for the registration of brewers and spirit merchants, and (c) fines, penalties, and forfeitures incurred under the Licensing Act 1915. Under the Act of 1907 the endowment is payable in equal portions in March and September of each year. No city or town is entitled to receive any part of the endowment. The distribution amongst the boroughs and shires is based on the amount of general and extra rates received in the twelve months ending on the preceding 30th September according to the following scale:—To every borough or 1st class shire, 3s. in the £; to every 2nd class shire, 5s. in the £; to every 3rd class shire, 6s. in the £; to every 4th class shire, 8s. in the £; to every 5th class shire, 10s. in the £; to every 6th class shire, 12s. in the £.

For the three financial years commencing the 1st July, 1907, however, the amounts were definitely fixed by Act No. 2129, and for the seven succeeding financial years by Acts No. 2267, 2334, 2407, 2475, 2562, 2805 and 2872 respectively.

(iii.) *Boroughs and Shires.—Number, Population, and Value of Ratable Property.*—The following table shews the number of cities, towns, boroughs, and shires, their estimated population, the number of ratepayers and dwellings, and the value of ratable property for the years 1901 and 1913-17 inclusive:—

VICTORIA.—PARTICULARS OF MUNICIPALITIES, 1901 and 1913-17.

Year ending 30th June.	Number of Municipa- lities.	Estimated Population.	Number of Ratepayers (both sexes).	Estimated Number of Dwellings.	Estimated Value of Rateable Property.	
					Total.	Annual.
CITIES, TOWNS, AND BOROUGHES.						
1901	58	627,237	153,783	130,358	£ 67,302,423	£ 4,765,632
1913	61	777,696	200,272	160,246*	127,743,501	7,270,972
1914	61	802,479	203,773	178,195	137,649,219	7,790,654
1915	61	825,078	209,276	185,330	147,205,224	8,218,040
1916	52	824,170	208,759	186,740	149,235,137	8,335,553
1917	51	829,368	213,520	188,528	154,105,571	8,587,302
SHIRES.						
1901	150	571,683	159,128	122,645	£ 106,839,331	£ 5,771,865
1913	147	583,909	173,271	125,879*	160,128,933	8,152,473
1914	147	600,431	175,637	137,187	164,268,467	8,255,505
1915	147	608,828	181,480	138,462	167,405,523	8,517,938
1916	141	617,587	184,374	141,893	169,724,979	8,606,509
1917	139	618,896	187,894	142,511	172,309,539	8,732,116

* Census figures.

(iv.) *Municipal Assets and Liabilities.*—The assets of municipalities may be classified under three heads—(a) the municipal fund, (b) the loan fund, and (c) property; the liabilities under two heads—(a) the municipal fund, and (b) the loan fund. The following table shews the amount of municipal assets and liabilities for the years 1901 and 1912 to 1916:—

VICTORIA.—MUNICIPAL ASSETS AND LIABILITIES, 1901 and 1912-16.

Items.	1901.	1912.	1913.	1914.	1915.	1916.
ASSETS.						
MUNICIPAL FUND—	£	£	£	£	£	£
Uncollected rates	187,205	111,405	108,686	120,200	147,886	146,491
Other assets	122,581	522,911	582,451	652,530	760,685	392,876
LOAN FUND—						
(a) Sinking funds—						
Amount at credit	675,310	896,185	924,952	878,322	839,951	792,445
Arrears due	1,391	1,759	438	1,327	1,826	834
(b) Unexpended balances	394,136	237,202	167,952	351,923	378,278	209,363
PROPERTY—						
Buildings, markets, etc.	2,507,441	3,365,638	3,534,691	3,799,038	3,863,556	3,750,947
Waterworks	197,875	182,835	184,842	180,485	175,267	177,050
Gasworks	63,732	86,872	96,933	103,435	99,107	105,124
Total	4,149,471	5,404,807	5,600,975	6,087,260	6,266,056	5,575,130
LIABILITIES.						
MUNICIPAL FUND—	£	£	£	£	£	£
Arrears due sinking funds	1,021	1,759	438	1,327	1,326	834
Overdue interest	9,413	15,619	18,005	19,771	13,776	14,456
Bank overdrafts	157,046	234,154	201,142	206,694	213,330	252,130
Temporary Government advances	20,901	...	...	...	...	...
Other liabilities	91,396	288,368	364,287	356,884	410,576	221,183
LOAN FUNDS—						
Loans outstanding	4,253,304	5,011,950	5,259,138	5,617,056	5,739,084	5,869,260
Due on loan contracts	52,826	102,135	128,051	69,181	237,765	15,888
Due on current contracts	51,134	73,768	74,770	74,451	71,729	73,005
Total	4,637,041	5,727,753	6,045,831	6,345,364	6,687,586	6,446,756

(v.) *Revenue and Expenditure of Municipalities.* The following table shows the revenue from various sources, and the expenditure under various heads, of municipalities during the years 1901 and 1912 to 1916 :—

VICTORIA.—REVENUE AND EXPENDITURE OF MUNICIPALITIES, 1901 and 1912-16.

Items.	1901.	1912.	1913.	1914.	1915.	1916.
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SOURCES OF REVENUE.

	£	£	£	£	£	£
Taxation ... { Rates	722,346	1,103,210	1,199,874	1,251,649	1,277,063	1,346,439
{ Licenses	104,499	102,297	103,528	108,106	104,634	105,772
{ Dog fees	14,965	20,438	21,483	21,907	20,158	20,528
{ Market and weighbridge dues	49,623	74,029	71,937	70,690	63,646	63,812
Government endowments and grants...	175,972	161,513	160,949	144,374	140,545	74,372
Contributions for streets, etc.	24,999	64,646	59,172	63,260	52,472	52,045
Sanitary charges	48,253	74,058	80,194	83,982	85,971	91,125
Rents	54,117	81,725	78,016	76,803	72,133	59,006
Other sources	89,210	263,600	324,496	354,427	388,850	441,128
Total	1,283,984	1,945,516	2,099,649	2,175,028	2,205,472	2,254,227

HEADS OF EXPENDITURE.

	£	£	£	£	£	£
Salaries, etc.	139,270	176,489	167,180	192,066	199,872	206,353
Sanitary work, street cleaning, etc. ...	132,542	198,006	203,757	206,271	225,919	236,766
Lighting	86,059	84,410	87,395	89,926	93,381	95,420
Fire brigades' contributions	16,769	25,946	27,101	28,361	30,277	32,086
Public works { Construction	244,315	335,717	339,158	315,480	274,593	238,773
{ Maintenance	345,334	736,457	753,083	814,459	811,608	847,505
Formation of private streets, etc.	23,350	66,735	56,600	70,465	62,012	68,024
Redemption of loans	27,745	61,782	70,506	80,576	92,738	101,461
Interest on loans	197,810	217,933	224,479	239,737	252,912	262,760
Charities	13,407	18,441	16,429	18,026	19,406	18,801
Other expenditure	103,403	129,190	126,376	151,613	174,945	180,018
Total	1,330,004	2,051,106	2,092,064	2,206,980	2,237,663	2,287,967

3. *Queensland.—(i.) Development of Local Government.* The existing scheme of local government in the State of Queensland is regulated by the provisions of the Local Authorities Act 1902, with its amendments in 1903, 1905 and 1910. A summary of these Acts and of the earlier legislation under which the system of local government in Queensland was inaugurated and developed, will be found in previous issues of this book (see Year Book No. 5, p. 1013).

(ii.) *Present System of Local Government.* The principal features of previous enactments as to the division of the State into local areas are retained in the Acts of 1902 and 1910, but such areas are in future to be of two classes—(a) towns and (b) shires. All municipalities formerly constituted as boroughs become towns, except Brisbane, Rockhampton, and Townsville, which are declared to be cities, and all shires and divisions become shires. The Governor-in-Council may, after giving notice in the *Gazette*, constitute, unite, divide, or abolish areas for the purpose of forming new areas, and may by proclamation constitute a town or city.

(iii.) *The Municipal Councils.* All local areas are governed by councils, the members of which are called aldermen in the case of cities and towns, and councillors in the case of shires. City and town councils are composed of either seven, nine, or eleven members, as declared by Order-in-Council, but if the local authority has wards, three members are assigned to each ward. Shire councils are composed of five, seven, or nine members, as declared by Order-in-Council, but if the shire is divided the number cannot be more than three for each division, and need not be the same for every division.

In previous Year Books allusion has been made at some length to the powers and duties of municipal councils, as well as to loans, valuation, rates and franchise. It is not proposed to repeat this information in the present issue.

(iv.) *Area, Population, Number of Dwellings, Rates, Assets and Liabilities of Cities, Towns and Shires.* The following table gives particulars of the area, population, number of inhabited tenements, assets and liabilities of cities and towns, and of shires, for each year from 1912 to 1916 :—

QUEENSLAND.—PARTICULARS OF CITIES AND TOWNS AND SHIRES, 1912 to 1916.

Year.	Municipality.	Area.	Population.	Number of Inhabited Dwellings.	Capital Value.	Assets.	Liabilities.		
							Government Loans.	Other.	Total.
		Square Miles.	No.	No.	£	£	£	£	£
1912	Cities and Towns	366	250,743	48,932	14,626,306	1,439,226	218,948	850,031	1,068,979
	Shires ...	669,528	393,173	83,021	40,365,614	426,694	141,288	84,894	226,182
	Total	669,894	643,915	131,953	54,991,920	1,865,920	360,236	934,925	1,295,161
1913	Cities and Towns	404	273,874	56,632	15,708,680	1,515,104	231,458	919,973	1,151,431
	Shires ...	669,490	399,305	84,805	41,272,641	467,182	203,109	93,410	296,519
	Total	669,894	673,179	141,437	56,981,321	1,982,286	434,567	1,013,383	1,447,950
1914	Cities and Towns	418	279,794	59,398	16,075,729	1,635,685	240,319	1,047,739	1,288,058
	Shires ...	669,476	411,093	87,144	44,596,193	455,476	159,359	97,454	256,813
	Total	669,894	690,887	146,542	60,671,922	2,091,161	399,678	1,145,193	1,544,871
1915	Cities and Towns	400	289,441	61,140	16,401,175	1,691,800	249,675	1,132,546	1,382,221
	Shires ...	669,494	428,007	89,919	45,622,388	499,390	178,634	127,618	306,252
	Total	669,894	717,448	151,059	62,023,563	2,191,190	428,309	1,260,164	1,688,473
1916	Cities and Towns	395	295,495	58,223	16,361,028	1,741,355	258,225	1,170,038	1,428,263
	Shires ...	669,499	420,377	91,297	45,919,033	552,750	190,752	133,352	324,104
	Total	669,894	715,873	149,520	62,280,061	2,294,105	448,977	1,303,390	1,752,367

(v.) *Receipts and Expenditure of Cities, Towns, and Shires.* The following table shows the receipts and expenditure (including loan moneys) of cities and towns and of shires, as well as the total receipts and expenditure of all municipalities, for each year from 1912 to 1916 :—

**QUEENSLAND.—REVENUE AND EXPENDITURE OF CITIES AND TOWNS
AND SHIRES, 1912 to 1916.**

Year.	Municipality.	Receipts.				Expenditure.					
		From Govern- ment.	From Rates.	From other Sources.	Total.	On Public Works.	Loan Redemp- tion.	Office Expenses and Salaries.	Other Ex- penses.*	Total.	
1912	Cities and Towns	£ 32,591	£ 341,469	£ 83,827	£ 458,187	£ 365,439	£ 22,388	£ 30,542	£ 74,447	£ 492,816	
	Shires ...	30,969	322,049	54,201	407,219	311,580	12,020	51,612	56,771	431,983	
	Total ...	63,560	663,518	138,028	865,406	677,019	34,408	82,154	131,218	924,799	
1913	Cities and Towns	20,274	379,865	83,211	483,350	381,100	24,599	36,916	66,377	508,992	
	Shires ...	29,717	362,108	66,170	457,995	338,178	14,457	62,676	56,185	471,496	
	Total ...	49,991	741,973	149,381	941,345	719,278	39,056	99,592	122,562	980,488	
1914	Cities and Towns	31,725	421,329	92,203	545,257	495,067	21,210	38,766	89,707	644,750	
	Shires ...	41,413	394,373	64,760	500,546	387,021	16,496	64,789	48,876	512,183	
	Total ...	73,138	815,702	156,963	1,045,803	882,088	37,706	103,555	138,583	1,162,933	
1915	Cities and Towns	27,439	433,139	97,245	557,823	493,900	18,635	39,553	87,623	639,711	
	Shires ...	36,736	415,371	62,665	514,772	390,701	15,088	67,485	60,706	533,980	
	Total ...	64,175	848,510	159,910	1,072,595	884,601	33,723	107,038	148,329	1,173,691	
1916	Cities and Towns	29,541	460,252	86,139	575,932	478,962	20,221	50,388	87,970	637,541	
	Shires ...	23,680	443,843	63,351	530,884	366,007	13,587	82,240	71,902	533,736	
	Total ...	53,221	904,095	149,500	1,106,816	844,969	33,808	132,628	159,872	1,171,277	

* Including interest on loans.

4. **South Australia.**—(i.) *Development of Local Government.* In the latter part of 1839 the first municipal law was passed in South Australia, which was thus the birthplace of municipal government in the Commonwealth. On the 31st October, 1840, the principles of self-government were practically adopted in Adelaide by the election of a mayor and council consisting of nineteen members, and the system has since been extended throughout the settled parts of the State by the formation of district councils and municipal corporations, which are the two types of local authorities now in existence.

(ii.) *District Councils.* The first District Councils Act was passed in 1858, was amended in 1862, and was further amended and consolidated by the District Councils Act of 1876, which provided for the continuation of existing districts and for the establishment of new ones by proclamation on the petition of the ratepayers. The revenue of the councils consisted of rents, profits, and income from lands vested in the councils or over which the councils had the control and management; fines and penalties enforced under the Act; fees for licenses; and general and special rates and loans. Provision was made for the election of councillors, their number, qualification, and retirement; for the election of auditors; the meetings, powers and functions of councils; the appointment of constables; revenue and expenditure; assessment of rates; and for making by-laws for various purposes. The Act of 1876 was amended from time to time, and was finally amended and consolidated by the Act which is now in force, namely, the District Councils Act 1887, which has in turn been amended in the years 1889, 1890, 1897, 1904, and 1905. These Acts were again amended by the Local Government Act 1910. The District Councils Consolidation Act 1914 embraces in one Act all the provisions of the above-mentioned Acts with emendations and additions. Subsidies of 25 per cent. on current rates collected are paid to corporations under Act 481 of 1899, and to district councils under Act 1182 of 1914. Votes are annually provided by Act of

Parliament of about £180,000, for payment to corporations and district councils as a contribution towards the cost of main roads throughout the State and other roads in newly-settled areas.

The powers and duties of district councils, together with the qualification necessary for councillors and electors, have been given *in extenso* in previous issues.

(iii.) *Municipalities.* Municipalities were first established under the Municipal Corporations Act of 1861, which, after providing for the extension of the powers and duties of the Corporation of the City of Adelaide, authorised the Governor, on petition of a majority of not less than two-thirds of the property-owners, to constitute any town, district, or place within the province, as a municipality. This Act and its amendments were consolidated in the Municipal Corporations Act 1880, which was amended from time to time until the year 1890, when it was repealed and its provisions consolidated by the existing Act, the Municipal Corporations Acts of 1890, which was in turn amended in 1893, 1896, and 1903. These Acts were again amended by the Local Government Act 1910.

A brief description of the Municipal Corporations Act of 1890, as well as the functions of municipal councils, will be found in previous issues of this book.

(iv.) *Finances of District Councils and Corporations.* The subjoined tables shew the amounts of assessments and the revenue and expenditure of district councils and of corporations for the financial years 1901 and 1913 to 1917; the figures given are exclusive of the Main Roads Funds, particulars as to which may be found in the section of this book on "Roads and Bridges."

SOUTH AUSTRALIA.—ASSESSMENT, REVENUE AND EXPENDITURE OF LOCAL AUTHORITIES, 1901 and 1913-17 (EXCLUSIVE OF MAIN ROADS FUNDS).

Year.*	Amount of Assessment (Annual Value).	Revenue.				Expenditure.	
		From Rates.	From Subsidies.	Other Sources.	Total.	On Public Works.	Total.
DISTRICT COUNCILS.							
	£	£	£	£	£	£	£
1901	1,412,507	63,321	15,225	51,919	130,465	65,406	128,499
1913	2,295,546	123,317	29,589	36,000	188,906	150,997	196,190
1914	2,435,655	132,277	38,397	32,878	203,552	145,282	196,408
1915	2,601,298	128,859	34,999	27,574	191,432	152,951	204,358
1916	2,662,066	148,895	34,487	27,135	210,517	136,380	189,582
1917	2,704,374	155,677	36,674	30,143	222,494	161,886	205,079
CORPORATIONS.							
	£	£	£	£	£	£	£
1901	1,177,850	87,289	9,733	49,342	146,364	55,533	146,091
1913	1,777,623	157,014	19,948	64,701	241,663	186,246	264,528
1914	1,896,273	168,041	23,821	63,026	254,888	176,952	266,202
1915	1,918,256	173,941	22,669	66,887	263,497	169,926	288,629
1916	2,006,802	176,870	23,448	67,136	267,454	160,516	270,929
1917	2,354,649	189,594	24,084	77,517	291,195	199,532	289,235

* Up to and including the year 1903, the financial year for Corporations ended on the 31st December, but after that date ends on the 30th November. The financial year for district councils ends on the 30th June.

5. *Western Australia.*—(i.) *Types of Local Authorities.* In this State there are three forms of local authorities, namely :—(i.) Municipalities, (ii.) Road Districts, and (iii.) Local Boards of Health. The first Municipalities Act was passed in 1871, but only a few districts were incorporated under it. In 1895 a more comprehensive measure, the Municipal Institutions Act, was passed, and after being amended from time to time was consolidated by the Municipal Institutions Acts 1902 and 1904. In 1906 the most recent enactment, the Municipal Corporations Act, was passed, repealing and consolidating previous enactments. The whole area of the State outside incorporated municipalities

is divided into road districts, which are administered under the Roads Act 1911. In municipalities the councils act as Health Boards for the purpose of administering the Public Health Act, while outside municipalities local Boards of Health may be formed. In 1904, another local government measure, the Water Boards Act, was passed, under which Boards may be appointed for the control of waterworks, and rates may be levied for the purpose, the maximum being fixed at two shillings in the pound of ratable value.

(ii.) *Municipalities.* These are now regulated by the Municipal Corporations Act, which came into force on the 1st January, 1907. Provision is made for the continuation of existing municipalities, and the Governor is authorised to constitute new municipalities on petition signed by at least fifty property-holders in the district proposed to be incorporated; to unite adjoining municipalities on petition under their common seals; to sever any portion from a municipality on petition signed by a majority of the ratepayers, and to annex such portion to a contiguous municipality or road district.

(a) *Municipal Councils* consist of a mayor and councillors, the number of which depends upon the population of the municipality; if the population is less than 1000 there are six councillors, if from 1000 to 5000 there are nine councillors, and if the population is over 5000 there are twelve councillors, or three for each ward. Any male ratepayer of the age of twenty-one years, if a natural born or naturalised subject, is eligible for election as mayor or councillor, except ministers of religion, uncertificated bankrupts, prisoners, and certain other persons who may be disqualified on the ground of interest.

The duties and powers of municipal councils, the levying of rates, the qualification of voters and the classification of municipalities in Western Australia are fully referred to in previous issues. (Year Book No. 5, p. 1025.) Consideration of space prevents their inclusion in this edition.

(b) *Government Subsidies.* Amounts are granted annually to municipalities by way of subsidies on the amounts of rates collected. To entitle any council to participate in the allocation of the annual Parliamentary vote the council must have levied a minimum general rate of one shilling in the pound. The maximum subsidy payable to any one municipality is £3000, and the minimum is £75. Apart from the above, amounts voted by Parliament for special works in municipal districts are often entrusted to the councils for expenditure under approved conditions.

(iii.) *Area, Population, etc., of Municipalities.* Returns regarding the area, population, and valuation of municipalities are defective. They are shewn in the table hereunder:—

WESTERN AUSTRALIA.—NUMBER, AREA, POPULATION, NUMBER OF DWELLINGS, AND VALUATION OF MUNICIPALITIES, 1901 and 1912-16.

Year ended the 31st October.	Number of Muni- cipalities.	Area.	Population.	Dwellings.			Amount Payable in respect of Rates.
				Occupied.	Unoc- cupied.	Total.	
	No.	Acres.	No.	No.	No.	No.	£
1901	42	71,721	*96,807†	†20,989	†967	†21,956	†
1912	38	71,203	154,005	32,727	1,613	34,340	152,143
1913	33	76,290	153,673	32,082	1,609	33,691	156,537
1914	33	67,290	158,664	32,864	1,033	33,897	163,597
1915	31	67,290	155,334	†	†	33,542	172,720
1916	30	60,160	152,671	†	†	33,763	168,148

* Census figures 1901. † Returns for thirty-nine municipalities only. ‡ Not available.

Complete particulars of improved or unimproved capital values are not available. In the year 1914 the capital value of ratable property in municipalities was £24,382,980; in 1915, £24,921,422; and in 1916, £26,817,864.

(iv.) *Revenue and Expenditure of Municipalities.* The following table gives particulars as to the revenue and expenditure of municipalities during the years 1901 and 1912: to 1916 :—

**WESTERN AUSTRALIA.—REVENUE AND EXPENDITURE OF MUNICIPALITIES,
1901 and 1912-16.**

Year ended the 31st October	Revenue.				Expenditure.			
	From Rates.	From Govt. Grants.	From other Sources.	Total.	Works and Improvements.	Disbursements in respect of Loans.	Other Expenses.	Total.
	£	£	£	£	£	£	£	£
1901*	78,021	66,860	82,228	227,109	111,241	23,809	79,365	214,415
1912 ...	148,538	25,902	†834,991	1,009,431	78,576	104,475	735,907	918,958
1913 ...	153,966	19,382	347,323	520,671	159,445	104,091	286,619	550,155
1914 ...	153,686	13,142	479,797	646,625	223,098	115,924	304,823	643,845
1915 ...	170,675	10,309	465,810	646,794	190,739	129,103	382,784	702,626
1916 ...	166,617	9,462	437,258	613,337	120,411	127,559	370,390	618,360

* Incomplete. † Including £255,000 loan, raised for purchase of electric light and gasworks..

(v.) *Assets and Liabilities of Municipalities.* The following table gives particulars respecting the assets and liabilities of municipalities at the end of each financial year: 1901 and 1912 to 1916 :—

**WESTERN AUSTRALIA.—ASSETS AND LIABILITIES OF MUNICIPALITIES,
1901 and 1912-16.**

Year ended the 31st October	Assets.					Liabilities.		
	Balance in Hand.*	Value of Property owned by Municipalities.	Accrued Sinking Funds for Redemption of Loans.	Other Assets.	Total.	Outstanding Debts and Bonds.	Other Liabilities.	Total.
	£	£	£	£	£	£	£	£
1901† ...	37,259	214,984	42,311	13,432	307,986	321,000	19,762	340,762
1912 ...	108,162	1,154,568	221,477	53,032	1,537,239	1,459,282	50,814	1,510,096
1913 ...	78,066	1,188,068	249,376	66,271	1,581,781	1,468,780	55,887	1,524,667
1914 ...	78,790	1,231,891	283,855	90,768	1,675,304	1,606,966	76,647	1,683,613
1915 ...	16,732	1,280,912	268,911	103,409	1,669,964	1,690,074	74,392	1,764,466
1916 ...	17,233	1,438,246	286,485	86,158	1,828,122	1,813,426	68,897	1,882,323

* Including bank balance, cash in hand, and fixed deposit. † Incomplete.

(vi.) *Road Districts.* The whole area of the State, outside incorporated municipalities, is divided into districts, the executive powers being vested in elective boards. These districts were originally formed solely for the purpose of controlling roads and bridges, but their powers and duties have been extended, so that at the present time they correspond closely to the shires of the other States of the Commonwealth. The enactments at present governing the administration of the Road Boards are the Roads Act 1911, the Parks and Reserves Act, the Cattle Trespassing Act, the Width of Tyres Act, the Cart and Carriage Licenses Act, and the Dog Act. The general powers and duties of the Boards are described in previous issues of this book.

(vii.) *Boards of Health.* These may be established under the Public Health Act 1911, which came into force on the 1st June, 1911, either within or outside of municipal boundaries. In the former case the Act is administered by the municipal councils, while in the latter case districts whose borders are continuous with road districts are administered by the local authorities. Those not continuous with road districts are administered by special Boards. The revenue of these Boards consists chiefly of moneys received:

from health rates and sanitary fees, and the largest item of expenditure is directly connected with the sanitary service. The following table shews particulars of the receipts and expenditure of the various Boards—both municipal and extra-municipal—during the years 1901 and 1912 to 1916 :—

**WESTERN AUSTRALIA.—RECEIPTS AND EXPENDITURE OF LOCAL HEALTH
BOARDS, 1901 and 1912-16.**

Year ended the 31st October.	Revenue.			Expenditure.		
	From Public Health Rate.	From other Sources.	Total.	On Sanitary Services.	Other Expenses.	Total.
	£	£	£	£	£	£
1901	15,230	17,477	32,707	18,787	12,992	31,779
1912a	f47,354	g60,525	107,879	69,703	40,552	110,255
1913b	f55,637	g62,931	118,568	72,286	41,874	114,160
1914c	f53,470	g61,801	115,271	62,831	47,484	110,315
1915d	f42,904	g61,393	104,297	70,963	36,890	107,853
1916e	f43,942	g59,441	103,383	68,749	29,971	98,720

a Exclusive of 15 inactive boards and 1 that sent in no return. b Exclusive of 3 boards which did not furnish returns and 14 boards which were inactive. c Exclusive of 13 inactive boards. d Exclusive of 13 inactive boards. e Exclusive of 8 inactive boards. f Including sanitary rates. g Including sanitary fees and charges.

On the 31st October, 1916, there were thirty Local Boards of Health within municipalities, and on the 30th June, 1916, sixty under control of Road Boards, and thirty-three extra-municipal Boards. In and after 1911, the financial year of Municipal Local Health Boards ended 31st October, and that of extra-municipal Boards, 30th June.

6. *Tasmania.*—(i.) *Development of Local Areas.* In this State the city of Hobart was incorporated by special Act in the year 1852, but it was not until 1858, when the Rural Municipalities Act was passed, that a general scheme for the establishment of municipalities was extended throughout the State. This Act was amended from time to time without, however, altering its chief characteristics. In 1869 a Roads Act was passed, and after being amended at various times was consolidated in 1884. Under the provisions of these Acts parts of the State were placed under the control of Town Boards and Road Trusts. The general rate under the Municipalities Act was limited to one shilling and sixpence in the pound of annual value, while special rates could be levied in rural districts, provided that the general and special rates together did not exceed one shilling and sixpence in the pound.

(ii.) *Acts now in Force.* In 1906 the whole of the Acts dealing with local authorities were amended and consolidated by the Local Government Act of that year. The whole State, with the exception of the urban municipalities of Hobart and Launceston, is divided into municipal districts, and every Rural Municipality, Town Board, Main Road District, Road District, Local Health District, Fruit District, Rabbit District, School District, and Public Recreation Ground District included in any municipality established by the Act is abolished. Each district is incorporated and is under the control of a warden and councillors, who, in addition to the specific duties and powers imposed and conferred by the Act of 1906, are vested with powers and authorities under the following Acts :—The Codlin Moth Act 1888, the Rabbits Destruction Act 1889, the Public Health Act 1903, the Education Act 1885, the Roads Act 1884, the Rural Municipalities Act 1865, the Police Act 1905, the Town Boards Act 1896, the Public Recreation Grounds Act 1888, the Cemeteries Act 1865, and the Californian Thistle Act 1883. The Governor is authorised to unite, subdivide, or abolish municipalities or wards on petition, and may

do so without petition if in any municipality there is at any time no council or an insufficient number of councillors to form a quorum. The Act of 1906 was amended in 1908, and again in 1911.

(a) *Formation of Councils.* In the case of municipalities not divided into wards, the council is to consist of the number of members, being a multiple of three, assigned to it by the Governor, while the councils of municipalities which are subdivided consist of three councillors for each ward. Any resident elector is eligible to act as a councillor unless he is disqualified as being an interested person, a bankrupt or convict, or as undergoing a sentence of imprisonment, or as insane. The warden is elected by the councillors from their own body.

° The functions of councils, their borrowing powers, the levying of rates, and the constitution of local and water districts have been referred to in detail in previous issues.

(b) *Qualification of Electors.* Both owners and occupiers of property within a municipality are allowed plurality of votes according to the following scale:—

Annual Value of Property	Under £30.	£30 to £80.	£80 to £160.	£160 to £240.	£240 to £360.	£360 and upwards.
Number of Votes	1	2	3	4	5	6

In the case of joint owners or occupiers the number of votes according to the above scale is equally divided as far as possible, and the vote or votes which cannot be so divided may be given by such one of the joint owners or occupiers as may be appointed by the others. The provisions of the Acts relating to voting by post at parliamentary elections may be made applicable to any municipal election on the petition of the council to the Governor.

(iii.) *Annual Value, Revenue, and Expenditure of Municipalities.* The following table shows the annual value, total receipts, and expenditure of municipalities for the years 1912 to 1916 inclusive:—

TASMANIA.—ANNUAL VALUE, REVENUE AND EXPENDITURE OF MUNICIPALITIES, 1912 to 1916.

Year.	Number of Municipalities.	Annual Value of Ratable Property.	Revenue.				Expenditure.†	
			From Rates.	From Govt.	From other Sources.*	Total.		
		£	£	£	£	£	£	
1912	...	51	1,524,789	159,290	26,051	107,935	293,276	276,794
1913	...	51	1,583,739	178,749	17,510	114,046	310,205	336,509
1914	...	51	1,766,099	185,954	14,416	169,825	370,195	349,186
1915	...	50	1,654,654	190,491	14,651	172,006	377,148	394,374
1916	...	50	1,717,878	188,939	12,753	216,880	418,572	510,977

* Including sums derived from loans. † Including repayments of loans.

According to the latest estimate made by the Commissioner of Taxes the capital value of ratable property in 1911 was £30,924,993.

(iv.) *Total Revenue and Expenditure of Local Bodies.* Particulars as to Road Boards and Road Trusts are given in the chapter of this book on "Roads and Bridges." In addition to the local authorities already mentioned, Marine Boards have been established at seven ports in Tasmania for the purposes of constructing and maintaining wharves and jetties and of controlling all matters relating to shipping in the respective ports. Twenty water trusts and forty cemetery trusts have also been established in connection with municipal bodies. The subjoined statement shews the total revenue and expenditure for all local bodies, exclusive of all amounts contributed by the general Government, during each financial year from 1913 to 1917 inclusive:—

TASMANIA.—REVENUE AND EXPENDITURE OF ALL LOCAL BODIES, EXCLUSIVE OF AMOUNTS CONTRIBUTED BY THE GENERAL GOVERNMENT, 1913 to 1917.

Particulars.	1912-13.	1913-14.	1914-15.	1915-16.	1916-17.
*REVENUE.					
Marine Boards and Lighthouses	£ 72,671	£ 73,805	£ 77,732	£ 93,488	£ 82,285
Municipalities†	267,225	292,795	355,779	362,497	405,819
Cemetery Trusts	1,147	1,149	1,391	1,320	1,275
Water Trusts	2,805	2,934	2,508	2,364	2,365
Total	343,848	370,683	437,410	459,669	491,744
†EXPENDITURE.					
Marine Boards and Lighthouses	£ 78,322	£ 63,304	£ 103,202	£ 144,805	£ 102,666
Municipalities†	270,743	318,999	334,770	379,723	498,224
Cemetery Trusts	856	963	1,032	1,499	1,425
Water Trusts	2,065	2,228	2,228	1,966	1,813
Total	351,986	385,494	441,232	527,993	604,128

* Exclusive of amounts contributed by the general Government. † Exclusive of expenditure from Government contributions. ‡ Including Road and Bridge Trusts, and Town Boards.

§ 3. Water Supply, Sewerage and Drainage.

1. **New South Wales.**—(i.) *Sydney Metropolitan Board of Water Supply and Sewerage.* Prior to the year 1888 the main water supply and sewerage systems of Sydney and suburbs were under the control of the City Corporation, while several of the suburban councils had constructed local systems, but in that year the Government, with the object of placing the administration of both water supply and sewerage systems throughout the County of Cumberland under the control of an independent body, passed an Act authorising the establishment of the Metropolitan Board of Water Supply and Sewerage. This Board consists of seven members, three of whom are appointed by the Government, two by the City Council, and two by the suburban and country municipalities in the County of Cumberland. The Board is under the general supervision of the Minister for Works—a provision considered necessary since the loan expenditure of the Board forms part of the public debt of the State.

(a) *Present System.* In the year 1850 authority was given by the Legislative Council to the City Corporation to construct water and sewerage works. Under this authority a water supply scheme was adopted and carried out, at a cost of nearly £1,750,000, by which the waters of the streams draining into Botany Bay were intercepted and pumped into three reservoirs. This system has now been superseded, the metropolitan water supply being at present obtained from the watersheds of the Nepean, Cataract, and Cordeaux Rivers. The principal reservoirs in connection with the scheme are the "Cataract" and "Prospect" dams. A fuller description of these dams will be found in previous issues of this book (see Year Book No. 5, p. 984), but their dimensions are here given :—

SYDNEY WATER SUPPLY.—CATARACT AND PROSPECT DAMS.

Dam.	Height above Foundation.	Width at Top.	Thickness at Bottom.	Length.	Area of Reservoir.	Capacity of Reservoir.
	Feet.	Feet.	Feet.	Feet.	Acres.	Gallons.
Cataract ...	192	16½	150	811	2,104	20,743,200,000
Prospect ...	85½	30	523	7,300	1,266½	11,029,200,000*

* Of which 5,527,000,000 gallons are available by gravitation.

(b) *Aqueducts and Mains.* The water is drawn off from the Prospect reservoir by a canal, five miles in length, to the Pipe Head Basin, situated 16½ miles from Sydney. It is then conveyed for a further distance of five miles to Potts' Hill reservoir, which has a capacity of 100,000,000 gallons, covers twenty-four and a half acres, and is designed to tide the city over any interruption of supply from Prospect, and to prevent fluctuation of pressure. Thence the water passes through a screening tank, and proceeds towards the city in two 48-inch cast-iron mains. A fuller description of the system of reticulation adopted will be found in previous issues.

(c) *Service Reservoirs.* In connection with the water supply there are in all thirty-five service reservoirs, with a total maximum capacity of 67,395,000 gallons.

(d) *Revenue, Expenditure, and Capital Cost of Sydney Waterworks.* The following table gives particulars as to the revenue, expenditure, and capital cost of the metropolitan waterworks for 1901 and 1913-17.

SYDNEY WATERWORKS.—REVENUE, EXPENDITURE, AND CAPITAL COST, 1901 and 1913-17.

Year Ended 30th June.	Revenue.	Working Expenses.	Capital Cost exclusive of Items on which Interest is not charged.	Percentage of Working Expenses to Revenue.	Percentage of Revenue to Capital Cost.	Interest Payable on Capital Cost.	Net Profit after paying Working Expenses and Interest.
	£	£	£	%	%	£	£
1901 ...	203,348	49,270	4,300,552	24.22	4.72	152,333	1,745
1913 ...	361,187	126,795	5,907,125	35.11	6.11	200,918	33,474
1914 ...	410,823	145,948	6,257,976	35.52	6.56	223,144	41,731
1915 ...	441,966	159,687	6,644,289	36.13	6.65	235,949	46,330
1916 ...	470,744	165,210	7,192,472	35.09	6.54	261,335	44,199
1917 ...	468,537	177,977	7,769,200	37.98	6.03	306,198	-15,688†

* Rate reduced from 7d. to 6d. from 1/7/08, and meter rents abolished. † - Signifies loss.

(e) *Quantity of Water, Number of Houses, and Population Supplied.* The following table gives various particulars for the years 1901 and 1913-17, shewing the increase in the supply of water in Sydney and suburbs:—

SYDNEY WATERWORKS.—NUMBER OF GALLONS, HOUSES, AND POPULATION SUPPLIED, 1901 and 1913-17.

Year Ended 30th June.	Number of Houses Supplied.	Estimated Population Supplied.	Average Daily Supply.	Total Supply for the Year.	Aver. Daily Supply.		Mains Laid.
					Per House.	Per Head of Estimated Population	
	No.	No.	1000 Gallons.	1000 Gallons.	Gallons.	Gallons.	Miles.
1901	98,298	491,000	21,583	7,877,677	219	43.95	40
1913	155,213	776,065	32,594	11,896,810	210	41.99	100
1914	166,112	830,560	36,540	13,337,000	220	44.00	102
1915	175,758	878,790	37,548	13,705,061	210	42.72	183
1916	183,598	917,990	39,380	14,374,000	214	42.89	183
1917	193,643	908,215	39,637	14,467,000	204	40.94	194

(f) *Other Water Supply Systems under the Metropolitan Board.* In addition to the main metropolitan water supply system there are certain other systems within the County of Cumberland managed by the Metropolitan Board. (a) The Richmond waterworks are entirely unconnected with the Sydney supply. Water is supplied to the town by a small pumping station on the left bank of the Hawkesbury River, just below the confluence of the Grose and Nepean. (b) The Wollongong waterworks are also unconnected with the Sydney supply. The source of supply is the Cordeaux River and the catchment area is 2400 acres in extent. The total capacity of the reservoir is 173,000,000 gallons and the total length of the main about nineteen miles, exclusive of the extension to Port Kembla and Unanderra. (c) The Manly waterworks are supplied by a special catchment area of about 1300 acres, and are also connected with the metropolitan system by a 10-inch main from Mosman. (d) The water-supply for the districts of Campbelltown, Camden and Narellan, and Liverpool is not drawn from the main Sydney supply through Potts' Hill, but is received by gravitation from the upper canal at Prospect. For further details of these water-supply systems see previous issues.

(ii.) *Metropolitan Sewerage System.* The system which is now under the control of the Metropolitan Board of Water Supply and Sewerage will be found fully described in previous issues. (See Year Book No. 5, p. 986.)

(a) *Revenue, Expenditure, and Capital Cost of Sydney Sewerage Systems.* The following table gives particulars as to the revenue, expenditure, and capital cost of the metropolitan sewerage systems for 1901 and 1913-17:—

SYDNEY SEWERAGE SYSTEMS.—REVENUE, EXPENDITURE, AND CAPITAL COST, 1901 and 1913-17.

Year ended the 30th June.	Revenue.	Working Expenses.	Capital Cost, exclusive of Items on which Interest is not Charged.	Percentage of Expenditure to Revenue.	Percentage of Revenue on Capital Cost.	Interest Payable on Capital Cost.	Profit or Loss after Payment of Working Expenses and Interest.
	£	£	£	%	%	£	£
1901 ...	125,290	45,395	3,066,147	36.23	4.05	106,475	—26,580
1913 ...	266,292	91,094	5,083,263	33.95	5.27	171,957	3,241
1914 ...	297,840	104,543	5,448,968	35.10	5.46	193,389	— 92
1915 ...	344,489	111,809	5,775,094	32.45	5.96	205,928	26,752
1916 ...	363,799	120,244	6,114,072	33.05	5.95	224,551	19,004
1917 ...	387,333	138,416	6,722,313	35.73	5.76	269,723	—20,806

NOTE.—The minus sign represents a loss.

(b) *Number of Houses Drained, Population, and Length of Sewers in Sydney Metropolitan Sewerage Systems.* The following table gives particulars as to the number of houses drained, the population, and the length of sewers within the Sydney metropolitan area for 1901 and 1913 to 1917:—

SYDNEY SEWERAGE SYSTEMS.—NUMBER OF HOUSES DRAINED, POPULATION SERVED, AND LENGTH OF SEWERS, 1901 and 1913-17.

Year ended the 30th June.	Number of Houses Drained.	Estimated Population Served.	Total Length of Sewers.	Total Length of Storm-water Drains.	Ventilating Shafts Erected.	Sewers Ventilated.
	No.	No.	Miles.	Miles.	Feet.	Miles.
1901 ...	75,416	370,000	515.62	25.91	194,667	450
1913 ...	114,690	573,450	890.53	52.24	401,344	853
1914 ...	118,643	593,200	930.06	53.15	408,778	871
1915 ...	124,759	623,795	972.14	53.65	427,552	915
1916 ...	129,650	648,250	1,022.15	54.08	443,134	953
1917 ...	136,409	682,045	1,085.45	59.55	475,474	1,030

(iii.) *The Hunter District Water Supply and Sewerage Board.* The waterworks of the Lower Hunter were constructed by the Government under the provisions of the Country Towns Water Supply and Sewerage Act of 1880. In 1892 a special Act was passed establishing an independent Board to control the water-supply works. Fuller reference is made to the constitution of this Board and to the municipalities and incorporated areas under its jurisdiction in previous issues of the Year Book. (See Year Book No. 5, p. 988.)

(a) *Description of Waterworks.* The water supply is pumped from the Hunter River about a mile and a half up stream from West Maitland into a settling-tank of 1,390,500 gallons capacity, and thence flows through filter beds into a clear water tank holding 589,500 gallons. It is then pumped from the clear water tank into two summit reservoirs, one of which supplies East and West Maitland, and Morpeth, while the other supplies Newcastle and suburbs, and the townships of South Maitland and Cessnock. There is also a storage reservoir of 172,408,100 gallons capacity, which is resorted to when the river water is too turbid. In these districts there are fourteen service reservoirs, having a total capacity of nearly 5,794,378 gallons supplied by gravitation. On the hill at Newcastle there is also a high-level iron tank with a capacity of 20,000 gallons, which is supplied by a small pumping engine at Newcastle reservoir. The total length of water mains is 411 miles.

(b) *Water Supply, Capital Cost, Revenue, and Expenditure.* By the Act of 1892 referred to above and an amending Act of 1894 the capital debt of the Board was to be liquidated by annual instalments distributed over 100 years with interest at $3\frac{1}{2}$ per cent. By a further amending Act of 1897 the repayment of expenditure on permanent works was abrogated, and the annual instalments to be paid in liquidation of the cost of renewable works were to be fixed by the Government from year to year. The capital debt of the Board to the Government at 30th June, 1917, was in respect of water supply £660,067, and £443,257 in respect of sewerage. In the subjoined table particulars are given as to the revenue and expenditure, and also as to the number of houses and population supplied in 1901 and 1913 to 1917:—

PARTICULARS OF HUNTER DISTRICT WATER SUPPLY, 1901 and 1913 to 1917.

Year ended 30th June.	Revenue.	Working Expenses (including Interest).	Houses Supplied.	Estimated Population Served.	Supply.	
					Daily Average.	Total.
	£	£	No.	No.	1000 Gallons.	1000 Gallons.
1901	27,405	30,948	9,086	45,400	1,005	366,889
1913	53,673	49,043	18,405	92,025	2,366	863,692
1914	66,323	52,994	19,575	97,875	2,791	1,018,810
1915	68,611	55,382	20,709	103,545	2,859	1,043,546
1916	79,507	58,436	22,056	110,280	3,507	1,283,754
1917	78,040	65,338	22,604	113,020	3,435	1,253,897

The average daily consumption of water for all purposes per inhabitant was 30.39 gallons during the year 1917, as against 31.80 gallons during the previous year.

(c) *Sewerage Works.* Considerable progress has been made by the Department of Public Works with the construction of the sewerage works for Newcastle and suburbs. The scheme is designed on the separate system, and will deal with the sewage partly by gravitation and partly by pumping. Up to the 30th June, 1917, about 103 miles of sewers, connecting with 8284 separate properties, were under the control of the Board. For the financial year 1916-17 the revenue was £21,408 and the expenditure £29,316, the latter amount including a £3473 instalment to the sinking fund for the reconstruction of renewable works, and £2754 interest on works not transferred to the Board at 30th June, 1917, and therefore not revenue producing at that date.

(iv.) *Water Supply and Sewerage in Country Towns.* With the object of assisting municipalities to construct systems of water supply and sewerage, the Country Towns Water Supply and Sewerage Act of 1880 was passed, but has since been amended by the Acts of 1887, 1894 and 1905. The principal provisions of these Acts are more fully dealt with in previous issues of this book. (See Year Book No. 5, p. 989.) By an Act passed in 1916 these Acts were applied to shires.

(a) *Waterworks.* Up to the 30th June, 1917, fifty-five country municipalities had availed themselves of the privileges of the Acts as regards waterworks, all of which at that date had been completed and handed over by the Government. The capital debt of these works was £1,188,083, and the total of the sums payable annually for various periods ranging up to 100 years was £56,401, including interest ranging from $3\frac{1}{2}$ per cent. to 4 per cent., the first repayments having become due at various dates, starting from the end of the year 1893. In the calculation of these repayments the interest on the sums actually expended has been added, and any payments by the councils, as well as sums remitted under the authority of the Act, have been deducted. Other schemes of water supply and extensions of existing works are in course of construction. A few other municipalities have constructed works out of their own resources, and the water supply of Broken Hill with a capital debt of £473,869 was constructed under a special Act and administered by the Minister for Public Works.

(b) *Sewerage Works.* Only seventeen municipal councils have taken advantage of the Act providing for the construction of sewerage and storm water drainage works in country towns. On the 30th June, 1917, the capital debt of these systems was £342,139, the amount payable annually to the Government being £14,211. Other sewerage systems, as well as extensions to existing systems, are in course of construction.

2. *Victoria.*—(i) *The Melbourne and Metropolitan Board of Works.* This Board was established by an Act of 1890, and entered upon its duties in March, 1891. The Board consists of forty members, one of whom is chairman elected every four years by the other members, the retiring chairman being eligible for re-election. Nine members are elected by the Melbourne City Council, four by the South Melbourne Council, three by the Prahran, two each by the Collingwood, Fitzroy, Richmond, and St. Kilda, and one each by the other fifteen suburban municipal councils returning a representative. The sewerage area over which the Board exercises control consists of fifteen cities, five towns, one shire, and parts of five other municipalities, or twenty-six municipalities in all, comprising a total area of 90,821 acres. Control for water supply purposes is also exercised by consent of the Governor-in-Council over 2949 acres in four municipalities. The Board further supplies water to the metropolitan farm at Werribee, and the outfall sewer area. Various other shires also arrange for bulk supplies of water. The total estimated population on the 31st December, 1917, was 733,496. The waterworks for the supply of Melbourne and suburbs were originally carried out by the Government, which had for that purpose contracted loans amounting to £2,389,934; these works were vested in the Board in 1891. The primary object of the creation of the Board was not, however, to take over these works, but was to supply the long called for and pressing want of a sewerage system for the metropolis. To carry out its work the Board is authorised to borrow £10,750,000, exclusive of the loans contracted by the Government for the purpose of waterworks and taken over by the Board. The liability on Government loans on the 30th June, 1917, was £1,559,786, and for loans raised by the Board was £10,775,110. The Board is still empowered to borrow £805,038 before reaching the limit of its borrowing powers.

(a) *Total Cost of Water Supply and Sewerage.* The subjoined table shews the total cost of construction and maintenance of water supply and sewerage from 1853 to 1917 :—

MELBOURNE AND METROPOLITAN BOARD OF WORKS.—TOTAL COST OF CONSTRUCTION AND MAINTENANCE OF WATER SUPPLY AND SEWERAGE, 1853 to 1917.

Period ending 30th June.	Water Supply.			Sewerage.			Grand Total.
	Capital Cost.	Working Expenses.	Interest.	Capital Cost.	Working Expenses.	Interest.	
	£	£	£	£	£	£	
1853 to 1891	3,378,246	420,833	1,021,676	...	...	...	4,820,755
1891 to 1901	336,957	367,506	1,021,181	3,307,764	114,268	919,017	6,066,693
1901 to 1911	299,303	384,871	1,026,362	2,981,666	461,706	2,333,348	7,487,256
1911 to 1914	600,222	159,903	354,665	614,401	199,214	902,310	2,830,715
1914 to 1915	129,007	60,547	130,268	245,548	72,030	316,788	954,188
1915 to 1916	91,893	54,580	134,915	166,201	70,783	321,640	840,012
1916 to 1917	31,979	54,566	137,544	108,583	72,658	329,176	734,506
Total ...	4,867,607	1,502,806	3,826,611	7,424,163	990,659	5,122,279	23,734,125

(b) *Revenue and Expenditure of Melbourne and Metropolitan Board of Works.*
The following table shows the actual receipts and expenditure, and also the loan receipts and expenditure of the Board during 1901-2 and 1913 to 1917 :—

MELBOURNE AND METROPOLITAN BOARD OF WORKS.—REVENUE AND EXPENDITURE DURING EACH YEAR, 1901-2 and 1913 to 1917.

Particulars.	1901-2.	1912-13.	1913-14.	1914-15.	1915-16.	1916-17.
ORDINARY RECEIPTS.						
Water supply	£ 171,956	£ 295,963	£ 323,762	£ 356,155	£ 344,053	£ 333,647
Sewerage, etc.	124,696	287,507	320,931	344,768	311,408	293,250
Live stock—Metropolitan farm	19,929	57,787	62,064	87,135	103,669	86,225
Interest { Water supply ... ..	...	2,277	1,890	1,576	1,718	1,593
{ Sewerage	17,448	8,695	9,125	8,396	8,694	11,131
Total	334,029	652,229	716,772	797,930	769,542	725,846
ORDINARY EXPENDITURE.						
General management	33,621	41,007	44,668	45,032	45,776	49,409
Live stock, etc.—Metropolitan farm	16,702	14,130	55,570	49,704	87,325	67,206
Maintenance { Water supply	22,205	34,508	34,125	41,521	41,457	38,452
{ Sewerage	24,396	50,433	49,198	53,465	54,748	45,208
Interest { Water supply	102,670	116,716	130,182	131,845	136,633	139,138
{ Sewerage	192,952	307,630	323,149	325,167	330,568	340,589
War expenditure: Safeguarding works, etc. ... ..	...	...	...	...	1,000	7,431
Patriotic and Belgian Relief Funds ... ..	...	...	...	2,000	10,721	...
Victorian Red Cross ... ..	...	...	...	...	30,000	100
Total	392,546	594,424	636,892	648,734	738,228	687,533
LOAN RECEIPTS.						
Water supply	1,636	12,315	10,803	10,138	18,500	8,062
Sewerage	88,425	61,315	46,620	42,950	53,326	44,926
Proceeds of loans	396,238	307,952	796,841	223,500	190,512	567,878
Miscellaneous ... ..	...	28,355	17,375	10,735	7,947	2,648
Total	486,299	409,937	871,639	287,323	270,285	623,514
LOAN EXPENDITURE.						
Water supply construction	17,058	339,753	160,107	140,102	109,440	39,764
Sewerage construction	410,760	259,461	242,849	288,582	235,458	154,743
Expenses in floating and redemption of loans	5,200	130,159	253,426	114	51,559	370,362
Miscellaneous	—*4,293	47,474	30,004	25,882	30,311	7,156
Total	428,725	776,847	686,386	454,680	426,768	581,025

* Excess of stock distribution (£27020) over purchases (£2727).

(ii.) *Melbourne Metropolitan Water Supply.* In December, 1857, the construction of the Yan Yean Reservoir system was completed. A description of the conditions that prevailed in Melbourne prior to that date is given in previous issues of the Year Book.

(a) *Development of System.* The following statement shews the development which has taken place in the water supply system of Melbourne during the sixty years since its inception :—

MELBOURNE WATER SUPPLY SYSTEM, 1857 to 1917.

Year.	Estimated Population Supplied.*	Capital cost.†	Charge per 1000 Gallons.	Rate in £.	Reticulation, Mains, &c., Mileage.†	Daily average of annual consumption of water.*
1857 (Dec. 31)	95,442	£ 748,974	10/- and 6/-	1/-	104	2,250,000
1917 (June 30)	733,496	4,867,607	1/-	6d.	1,682	8,604,178

* 31st December. † 30th June.

(b) *Description of Water Supply Systems.* The water supply of Melbourne consists of three main systems—the Yan Yean (including the high level main), the Maroondah, and the O'Shanassy systems.

A full description of the two former systems has been given in previous issues of this book (see No. 6, p. 983).

The three reservoirs at Preston, which are the main distributors of the central city supply, contain 13,500,000, 24,500,000, and 26,300,000 gallons respectively.

The work has been completed of diverting the waters of the O'Shanassy River, a tributary of the Yarra, by an open aqueduct and pipe line of an aggregate length of 48½ miles, delivering water to the eastern portion of the metropolis by way of Mitcham and Surrey Hills. The total capacity of the scheme is 20,000,000 gallons per day, but it has been completed in the tunnels and some other parts to a capacity of 60,000,000 gallons to provide for further diversions from the Upper Yarra and its tributaries. The scheme was estimated to cost £450,000, and up to 30th June, 1917, £452,027 had been expended. The watershed of the O'Shanassy River, containing 33,000 acres, situated near Warburton, has been excised from the permanent forests area, and a Crown grant was issued to the Board on the 28th January, 1910.

(c) *Catchment Areas, Reservoirs, and Aqueducts.* (i.) *Drainage Areas.* The whole of the catchment areas are absolutely free from population, cultivation, or stock grazing, and are under the complete control of the Metropolitan Board of Works. The present drainage areas from which the water is delivered are as follows :—

MELBOURNE WATER SUPPLY.—CATCHMENT AREA IN ACRES, 1917.

Silver and Wallaby Creeks.	Plenty River and Jack's Ck.	Yan Yean Reservoir Catchment.	Maroondah Catchment.	O'Shanassy Catchment.	Total.
12,000	12,000	5,000	40,000	33,000	102,000

All the water is delivered by gravitation, no pumping being required in any portion of the area supplied.

(d) *Storage and Service Reservoirs.* There are two storage reservoirs, having a total capacity of 6,460,000,000 gallons, and thirteen service reservoirs having a total capacity of 131,300,000 gallons. The total daily quantity of water which can be sent into Melbourne is as follows :—

System ...	Yan Yean.	High Level Main.	Maroondah.	O'Shanassy.	Total Supply.
Gallons per day ...	33,000,000	9,000,000	28,000,000	20,000,000	90,000,000

(e) *Quantity of Water, Number of Houses, and Population Supplied.* The following table gives various particulars for the years 1901 and 1913-17, shewing the increase in the supply of water in Melbourne and suburbs :—

**MELBOURNE WATERWORKS.—NUMBER OF HOUSES, POPULATION, AND
WATER SUPPLIED, 1901 and 1913-17.**

Year Ended 30th June.	Number of Houses Served.	Estimated Population Supplied.	Average Daily Supply.	Total Supply for the Year ended 30th June.	Average Daily Supply.		Rate Levied.	Assess-ments of Houses Served by Metro-politan Water Supply.
					Per House.	Per Head of Esti-mated Popu-lation.		
	No.	No.	,000 Gallons.	,000 Gallons.	Gallons.	Gallons.		£
1901 ...	104,548	491,780	28,732	10,487,007	274.8	58.4	6d. in the £	3,479,721
1913 ...	140,351	614,300	39,380	14,373,761	280.6	64.1	7d. in the £	5,670,801
1914 ...	147,442	639,700	43,644	15,930,104	296.0	68.2		6,217,841
1915 ...	150,825	662,500	36,989	13,501,051	245.2	55.8	6d. in the £	6,577,338
1916 ...	155,208	693,978	37,069	13,567,184	238.8	53.4		6,905,842
1917 ...	158,086	720,577	37,653	13,743,439	239.2	52.3		7,113,740

(f) *Total Cost of Construction, Revenue, Expenditure and Net Profits, 1853 to 1917.* The following table shows the total cost of construction, the revenue, expenditure, and net profits for various periods up to 30th June, 1917:—

**MELBOURNE WATERWORKS.—CONSTRUCTION COST, REVENUE, EXPENDITURE,
AND NET PROFITS, 1853 to 1917.**

Period.	Capital Cost.*	Revenue.†	Working Expenses.‡	Percentage of Working Expenses to Revenue.	Interest.§	Surplus.
	£	£	£	%	£	£
Total to 1890-1	3,378,246	3,150,055	420,833	...	1,021,676	1,707,546
1891-2 to 1900-1	336,957	1,686,025	367,506	21.80	1,021,181	297,338
1901-2 to 1910-11	299,303	2,054,355	384,871	18.73	1,026,362	643,122
1911-12 to 1913-14	600,222	897,577	159,903	17.81	354,665	383,009
1914-15 ...	129,007	350,549	60,547	17.27	130,268	159,734
1915-16 ...	91,893	334,181||	54,580¶	16.33	134,915	144,686
1916-17 ...	31,979	319,614	54,566**	17.07	137,544	127,504
Total ...	4,867,607	8,792,356	1,502,806	...	3,826,611	3,462,939

* Works commenced in 1853. † Revenue commenced in 1854. ‡ Returns for expenditure commenced in 1859. § First interest paid in 1856. || Rate reduced from 7d. to 6d. in the £. ¶ Not including renewals (£7349) and special war expenditure (£7728). ** Not including renewals (£4545) and special War expenditure (£4689).

(iii.) *Melbourne Sewerage.* As stated above, the chief object of the creation of the Melbourne and Metropolitan Board was to carry out an efficient system of sewerage. The cost of removal of the sewage in 1894 was about £90,000, equal to a capital expenditure of £1,750,000. This movable pan system has been displaced by the water carriage system throughout the greater portion of the metropolis, and in other parts the work of reticulation is now proceeding.

(a) *Description of Sewerage Systems.* The whole of the sewage of the metropolis is being gradually collected by means of two principal sewers and a subsidiary main leading to the pumping station at Spotswood. A description of the scheme may be found in previous issues. (See Year Book No. 5, p. 1007.)

(b) *Metropolitan Sewage Farm.* The farm originally contained 8847 acres, situated on the western side of the Werribee River. The price paid for the land was £17 10s. per acre (including compensation for severance), which in its virgin unimproved state cost the Board in 1892, £159,873. This sum included the purchase of a strip of land 11½ miles long (168½ acres) on which the greater portion of the outfall sewer is constructed. Since 1911, 2306 acres have been purchased, making the total area of the farm 11,153 acres at 30th June, 1917, its total cost to that date being £555,323. About 34,022,175 gallons of sewage had to be disposed of every twenty-four hours during the year in 1916-17 in irrigating the fields. It is spread over properly prepared and sown blocks of land by a series of mains and lateral carriers. The blocks are laid down with grass and lucerne, on

which sheep and cattle are depastured. During the financial year 1916-17, 4569 sheep were sold, the profit for the year being £1154. Cattle to the number of 5147 were sold, the profit for the year on cattle being £19,195.

(c) *Number of Houses Connected, Capital Cost, Revenue and Expenditure.* The following table gives particulars as to the number of houses connected to the sewerage system, the total capital cost, and the receipts and disbursements during 1901 and 1913-17 :—

MELBOURNE SEWERAGE WORKS.—TENEMENTS CONNECTED, CAPITAL COST, REVENUE, MAINTENANCE, AND WORKING EXPENSES, 1901-2 and 1913-17.

Year.	Number of Houses Connected.	Capital Cost.	Revenue.			Maintenance, Repairs and Renewals.
			From Rates.	From other Sources.	Total.	
	No.	£	£	£	£	£
1901-2 ...	47,172	3,610,225	126,725	10,968	137,693	24,336
1912-13 ...	125,103	6,695,534	285,721	17,655	303,376	51,804
1913-14 ...	131,168	6,903,831	319,817	18,642	338,459	49,615
1914-15 ...	138,108	7,149,379	342,312	40,146	382,458	54,558
1915-16 ...	143,737	7,135,580	307,625*	50,487	358,112	52,402†
1916-17 ...	148,395	7,424,163	289,512‡	25,586	315,098	53,099§

* Rate reduced from 1s. 1d. to 11d. in the £. † Not including renewals (£3424) and special war expenditure (£2925). ‡ Rate reduced from 11d. to 10d. in the £. § Not including renewals (£3790) and special war expenditure (£2635.)

(iv.) *Water Supply in Country Towns and Districts.* By the Water Act 1905 (now the Water Act 1915), which came into operation on the 1st May, 1906, the control and management of all Irrigation Trusts, with one exception, and of a number of waterworks and water supply districts were centralised, and their works and property vested in the State Rivers and Water Supply Commission. The powers and duties of this Commission were extended by the Water Act 1909 (now embodied in the Water Act 1915), the whole of the Water Supply Department being now merged in the Commission. Further information with regard to this Commission and to the works and districts under its control are given in the section in this book dealing with Water Conservation and Irrigation. There are, however, in different parts of Victoria a number of other waterworks which are concerned chiefly with domestic supply, and which are controlled by local authorities, i.e., by Waterworks Trusts or by municipal corporations. These works are constructed out of moneys either granted or lent by the State Government. The following table gives particulars as to the waterworks under the control of Trusts and municipal corporations for the years 1901 and 1913-17 :—

VICTORIA.—COUNTRY WATERWORKS UNDER TRUSTS AND MUNICIPAL CORPORATIONS, 1901. and 1913-17.

Year.	Waterworks Trusts.				Municipal Corporations.			
	Number of Trusts.	Capital Cost.	Capital Indebtedness.	Interest Outstanding.	Number of Corporations.	Capital Cost.	Capital Indebtedness.	Interest Outstanding.
	No.	£	£	£	No.	£	£	£
1901 ...	76	823,418	748,089	12,461	24	655,702	470,041	6,635
1913 ...	89	1,083,390	866,594	10,858	22	656,200	415,672	1,213
1914 ...	90	1,114,727	889,905	14,071	22	689,925	447,347	2,005
1915 ...	94	1,144,095	911,786	13,128	22	700,832	450,513	2,050
1916 ...	95	1,169,520	929,561	13,358	22	718,089	464,114	1,871
1917 ...	95	1,224,211	937,510					

* Returns not available.

Under the provisions of the Local Government Act 1903 (now embodied in the Local Government Act 1915), municipal councils are authorised to construct and maintain tanks, dams, and reservoirs, and must maintain existing works for the gratuitous supply

of water. They are also empowered to accept the management and control of new waterworks within their respective localities, and may, with the consent of the Governor, construct or purchase new works within or without their locality. Councils are also authorised to enter into contracts for the supply of water for any period not exceeding ten years with the owner of any waterworks. Every municipality may levy a special water rate for water supplied, or for the purpose of constructing waterworks or paying the interest on any loan contracted by the council for such purpose, but the amount of the rate must not exceed in any year the sum of two shillings in the pound, provided that a minimum of ten shillings may be fixed by the council to be paid in respect of any property to which water is supplied.

(v.) *Geelong Waterworks and Sewerage Trust.* This Trust was constituted under the Geelong Municipal Waterworks Act 1907, with borrowing power up to £300,000, afterwards increased by Act No. 2322, 1911, to £350,000, and subsequently to £525,000. It was reconstituted under the Geelong Waterworks and Sewerage Act 1910, with power to borrow an additional £250,000 for the purpose of installing a sewerage system for Geelong and suburbs. These Acts have since been consolidated under the Geelong Waterworks and Sewerage Act No. 2661, and the borrowing power for sewerage purposes increased to £375,000. The available storage capacity of the reservoirs is 1655 million gallons, and the Trust is authorised to supply water to (a) City of Geelong; (b) the suburbs thereof, and all places within a radius of five miles of the Geelong post office; and (c) any place within ten miles on either side of the main pipe from Stoney Creek to Geelong. The cost of the works (water and sewerage) to 30th June, 1917, was £793,660, the estimated population served is 35,000, and the number of assessments 11,346. The receipts for the year amounted to £43,312. The sewerage scheme provides for a main outfall sewer 4 ft. 3 in. \times 3 ft. 3 in. to the ocean at Black Rock—a distance of about nine miles. The drainage area embraces an area of 8081 acres, including the city of Geelong, boroughs of Geelong West, Newtown and Chilwell, and the suburban areas in the shires of Corio, South Barwon, and Bellarine.

3. Queensland.—(i.) *The Metropolitan Water and Sewerage Board.* This Board was constituted by the Metropolitan Water and Sewerage Act 1909 and the Amended Act of 1915, which divested the then existing Water Board of its powers and duties and vested them in an extended form in the new Board. The Acts further empower the Board to carry out a sewerage and drainage system, and relieve the local authorities of their responsibilities in that matter. The district of the new Board comprises the cities of Brisbane and South Brisbane, the towns of Hamilton, Ithaca, Toowong, and Windsor, and the shires of Balmoral, Cooparoo, Enoggera (except division 3), Sherwood (except division 1), Stephens, Taringa, Toombul, and a portion of Kedron.

The Board consists of nine members, viz., the president and eight elected colleagues.

(a) *Brisbane Water Supply.* The supply is derived from the upper reaches of the Brisbane River, and from two storage reservoirs, known respectively as the Enoggera and the Gold Creek reservoirs.

(1) *The Brisbane River Supply.* About 75 per cent. of the total supply of water to the metropolitan area is derived from the pumping station situated at Mount Crosby. The catchment area above the pumping station is 4000 square miles. The water is pumped from the river into a reservoir 267 feet long, 100 feet wide, and 15 feet deep, and 463 feet above low water mark at Brisbane. The capacity of this reservoir is 2,500,000 gallons. A larger reservoir and sedimentation basins have been completed at a slightly lower level than the first-named reservoir, the capacity of which is 4,600,000 gallons. The Board has also completed the installation of three powerful pumping engines, each capable of pumping 6,000,000 gallons in 24 hours, the whole plant being one of the finest in Australia.

(2) *The Enoggera Reservoir.* The Enoggera works are distant from Brisbane about eight miles by road. The catchment area is nearly thirteen square miles in extent, and the reservoir, which is formed by an earthen dam, holds 1,000,000,000 gallons, of which 600,000,000 are available by gravitation. The greatest length of the reservoir is 2600 yards, and its greatest

breadth 700 yards. The supply from Enoggera is filtered through an intermittent sand filtration plant, comprising half an acre of sand beds, and a pure water reservoir with a capacity of 750,000 gallons.

- (3) *The Gold Creek Reservoir.* This reservoir is situated in the upper waters of Gold Creek, a branch of Moggill Creek, distant from Brisbane by road about thirteen miles. The supply is drawn from a catchment area adjoining that of Enoggera, and comprising an area of nearly four square miles. The total capacity is about 406,000,000 gallons, of which 400,000,000 gallons are available.
- (4) *The Cabbage Tree Creek Reservoir.* This reservoir is some five miles from the pumping station in a straight line, but by windings in the river about 15 miles. It holds about 5800 million gallons, and is a very valuable asset to the water supply in time of drought. It is intended to convey this water to the pumping station by a conduit.
- (5) *Service Reservoirs.* Certain portions of the metropolitan area are supplied with water from service reservoirs, and these reservoirs are supplied from the sources alluded to above. These service reservoirs are constructed at Highgate Hill, Wickham Terrace, and Bartley's Hill, and have a total capacity of over 4,000,000 gallons. A second reservoir is in course of construction at Bartley's Hill, which will, on completion, bring the capacity of the service reservoirs up to $6\frac{1}{2}$ million gallons. A fuller description of the Brisbane water supply scheme may be found in previous issues.

(b) *Brisbane Waterworks : Cost, Revenue, Expenditure, and Interest.* The subjoined table gives particulars as to the total capital cost, the revenue and expenditure, and amount of interest and loan redemption during 1901 and each of the years 1913 to 1917 :—

BRISBANE WATERWORKS.—COST, REVENUE, EXPENDITURE, INTEREST, AND REDEMPTION OF LOANS, 1901 and 1913-17.

Year.	Capital Cost.	Revenue from Rates and Sales of Water.	Working Expenses.	New Work Construction.	Interest and Redemption of Loans.
	£	£	£	£	£
1901 ...	694,973	60,120	17,462	7,535	42,426
1913 ...	1,255,898	76,922	43,135	121,083	31,498
1914 ...	1,489,720	97,366	44,549	233,822	39,194
1915 ...	1,852,622	103,530	50,078	361,765	52,704
1916 ...	2,136,699	111,066	53,879	284,078	53,995
1917 ...	2,422,857	121,514	59,199	286,158	60,388

(c) *Brisbane Waterworks : Length of Mains, Tenements and Population Served, and Water Consumption.* The following table shews the length of mains, the number of tenements connected, the population supplied, the total quantity of water supplied, the average daily supply, and the average daily supply per head of population supplied during 1901 and each year from 1913 to 1917 :—

BRISBANE WATERWORKS.—PARTICULARS, 1901 and 1913-17.

Year.	Length of Reticulation Mains.	Number of Tenements Connected.	Estimated Population Supplied.	Quantity Supplied.	Average Daily Supply.	Average Daily Supply per Head of Estimated Population.
	Miles.	No.	No.	,000 Gallons.	Gallons.	Gallons.
1901 ...	198	15,652	78,260	1,536,260	4,208,931	55
1913 ...	370 $\frac{1}{2}$	28,301	139,925	2,099,590	7,752,302	41.05
1914 ...	389	29,612	148,060	2,293,920	6,284,712	42.44
1915 ...	405	31,442	157,210	2,655,440	6,541,430	41.60
1916 ...	414	31,770	158,030	2,629,108	7,183,354	42.44
1917 ...	429 $\frac{1}{2}$	33,082	165,410	2,827,836	7,747,498	46.83

The total length of the trunk mains is 97 miles.

A scheme of sewerage has been devised for Brisbane and its suburbs. It is intended to construct works for the provision of a population of 275,000, and work is now being carried on in connection with the main sewers. Altogether 48,668 lineal feet of main sewers have been constructed, and 10,966 lineal feet are under construction. The latter includes a tunnel under the River Brisbane. Plans for the sewage treatment works have been approved of by the Department of Public Works, and further plans embodying the actuated sludge method of treatment are now under review. The survey work has been carried on, 19,252 houses having now been surveyed.

(ii.) *Country Towns Water Supply.* In addition to the city of Brisbane there were at the end of the year 1916 twenty-eight towns in Queensland provided with water supply systems, constructed by municipalities chiefly from Government loans. The sub-joined statement gives particulars of all the water supply systems—exclusive of Brisbane—for the year 1916 :—

QUEENSLAND.—PARTICULARS OF COUNTRY WATER SUPPLY SYSTEMS, 1916.

£				£			
Cost of construction to 31/12/16 ... 873,738				Expenditure	Office and salaries ... 14,386		
Receipts	Rates and sales of water 99,622				Construction ... 33,129		
	Other ... 21,338*				Maintenance ... 48,091		
					Interest & redemption 29,766		
					Other expenses ... 9,752		
Total receipts ... 120,960			Total ... 135,124				
Assets ... 705,012				Liabilities ... 495,048			

* Including £18,389 from Government loans.

4. *South Australia.*—(i.) *Adelaide Water Supply System.* The water supply system of Adelaide is under the control of the Public Works Department. The supply is obtained partly from the catchment areas of the rivers Onkaparinga and Torrens, and Sixth Creek, and partly from springs and pumping stations. There are three storage reservoirs, situated at Happy Valley, Hope Valley, and Thorndon Park, having an aggregate capacity of 4,101,000,000 gallons, while the tanks used in connection with the springs and pumping stations have a further capacity of 4,824,000 gallons. A new reservoir having a capacity of 3,650,000,000 gallons is nearly completed at Millbrook, to be supplied from the River Torrens. The total capital cost up to the 30th June, 1917, was £2,016,051, the total revenue being £3,160,886, and the area served approximately 106,000 acres.

The following table gives various particulars relating to the water supply of Adelaide for the years 1912 to 1917 inclusive :—

ADELAIDE WATER SUPPLY.—LENGTH OF MAINS, REVENUE, EXPENDITURE, AND CONSUMPTION OF WATER, 1912 TO 1917.

Year Ended 30th June.	Length of Mains.	Gross Revenue.	Working Expenses.	Net Revenue.	Percentage of Net Revenue on Capital Cost.	Total Consumption of Water.*
	Miles.	£	£	£	%	Million of Gals.
1912 ...	763½	94,280	26,384	67,896	3.68	4,600
1913 ...	802½	105,590	27,982	77,608	4.12	4,700
1914 ...	836	113,156	30,106	83,050	4.32	5,150
1915 ...	859	112,082	36,029	76,053	3.85	3,467
1916 ...	873	103,947	35,412	68,535	3.42	3,223
1917 ...	882	118,951	32,974	85,977	4.26	4,113

* In the Adelaide Water District there are no governing meters. The quantities shown above are as recorded by gaugings taken at the reservoirs, and include evaporation and absorption.

(ii.) *Adelaide Sewerage System.* In connection with the sewerage system of Adelaide, which is also under the control of the Public Works Department, about 351 miles of sewers had been laid in the city and suburbs up to the 30th June, 1917. The sewage is

disposed of on a farm and filter-beds, the latter being used only during the winter months. A scheme of sewerage extension which includes a pumping station to deliver the sewage to the existing sewage farm is now nearing completion.

The following table gives particulars relating to the Adelaide sewerage system for the years 1912 to 1917 inclusive:—

ADELAIDE SEWERAGE SYSTEM.—REVENUE AND EXPENDITURE, 1912 to 1917.

Year Ended the 30th June.	Revenue.			Expenditure.			Net Revenue.	
	Rates and Interest.	Sewage Farm. Sales of Produce, etc.	Total.	Maintenance.	Sewage Farm. Working Expenses.	Total.	Total.	Percentage on Capital Cost.
	£	£	£	£	£	£	£	%
1912 ...	41,449	6,984	48,383	9,376	5,089	14,415	33,968	4.88
1913 ...	45,373	8,392	53,765	9,803	6,392	16,195	37,570	5.01
1914 ...	49,507	9,588	59,095	10,242	5,629	15,871	43,224	5.55
1915 ...	52,348	10,040	62,388	9,688	6,948	16,636	45,752	5.74
1916 ...	56,606	21,207	77,813	11,410	14,482	25,842	51,971	6.39
1917 ...	57,488	13,664	71,152	11,350	10,794	22,144	49,008	5.96

The seaside town of Glenelg is served by a separate sewage disposal works, including a pumping station, septic tank, lucerne plots, and filter beds. The net revenue for the year ended 30th June, 1917, was £930, being 1.87 per cent. on the capital cost. Up to the same date 15½ miles of sewers had been laid.

(iii.) *Water Supply in Country Towns.* In South Australia there is a number of country waterworks under the control of the Public Works Department. There are large reservoirs at Barossa, Beetaloo, Bundaleer, Yeldulknie, and Warren, which supply sixty-three townships with water for domestic and stock purposes. The principal towns thus supplied are Gawler, Wallaroo, Moonta, Kadina, Port Pirie, Port Wakefield, Balaklava, Tanunda, and Cowell. The following table shews the capacity of these reservoirs, together with particulars as to the townships supplied and the country lands reticulated:—

PRINCIPAL COUNTRY WATERWORKS, SOUTH AUSTRALIA, 1917.

Reservoirs.	Townships Supplied.			Country Lands Reticulated.		Capacity in Million Gallons.	
	Number.	Square Miles.	Miles of Main.	Square Miles.	Miles of Main.	Head-works.	Service Reserv'rs.
Barossa ...	23	40	70	1,007	543	993	10
Beetaloo ...	22	158	174	1,661	877	800	100
Bundaleer ...	14	8	32	1,088	477	1,319	16
Yeldulknie and Ullabadinie ...	2	3	6	500	96	288	...
Loxton ...	1	2	3	530	...	*	*
Warren ...	2	4	10	473	22	1,049	...

* Pumped from River Murray.

Sixteen township districts are supplied from smaller local reservoirs, the most important town served being Port Augusta. A new water supply scheme is in course of construction at the Baroota Creek to augment the supply of Port Augusta, Port Pirie and farming lands, while the construction of a large reservoir on the Tod River is under consideration for the supply of Port Lincoln and farming lands in Eyre Peninsula. The reservoir with leading and reticulation mains for supplying the towns of Port Victor, Port Elliot, Middleton and Goolwa has been completed and is in operation.

5. **Western Australia.**—(i.) *Water Supply, Sewerage and Drainage Department.* Prior to 1912, water supply, sewerage and drainage in Western Australia, although under Governmental control, were nevertheless under the management of several distinct departments. In that year, however, the Government decided that these functions should be concentrated in one department with the Minister of Works as administrator, and on the 1st August, 1912, a new department with the above title assumed the management of the undermentioned water supplies:—(a) The Metropolitan Water Supply, Sewerage and Drainage Undertaking. (b) The Goldfields Water Supply Undertaking. (c) Mines Water Supplies, boring and well-sinking in mining districts, formerly a branch of the Mines Department. (d) Water supplies, sewerage and drainage, well-sinking, boring, etc., in agricultural districts, etc., formerly a branch of the Public Works Department. The total capital expenditure on works controlled by the Department was, at 30th June, 1917, £7,375,104.

The Acts of Parliament administered by the new department are:—“The Metropolitan Water Supply, Sewerage and Drainage Act 1909”; “The Goldfields Water Supply Act 1902” and amendment; “The Water Boards Act 1904”; “The Lands Drainage Act 1900” and amendment; “The Water Supply Act 1893”; and “The Rights in Water and Irrigation Act 1914.”

(ii.) *Perth Metropolitan Water Supply, Sewerage, and Drainage Undertaking.* The Perth Metropolitan Water Supply Works were first opened by a private company in October, 1890. Under the provisions of the Metropolitan Waterworks Act 1896, however, the works were purchased by the Government at a cost of £220,000, and were placed under the control of a Board, the functions of which were exercised from the year 1904 to 1909 by the Minister for Works. By the Metropolitan Water Supply, Sewerage, and Drainage Act 1909, all water and sewerage works formerly vested in the Metropolitan Board were transferred to a Minister of Water Supply, Sewerage, and Drainage. In August, 1912, the administration was transferred to the new Water Supply Department.

(a) *Water Supply.* The supply of water is derived from six sources—(i.) the Victoria reservoir, (ii.) Bickley Brook reservoir, (iii.) the Mundaring reservoir, (iv.) Narrogin Brook, (v.) Walter's Brook, and (vi.) artesian bores. A description of the principal schemes is given in previous year books (see Year Book No. 7, page 887). For the year ending 30th June, 1917, the total consumption of water was 1938 million gallons, an increase of 9 millions over the previous year. The number of services at that date was 31,797, and the length of mains was 609 miles.

(b) *Financial Operations of Water Supply Branch.* The following table gives particulars of the financial operations of the Metropolitan Water Supply Branch for each year ending the 30th June from 1912 to 1917 inclusive:—

PERTH METROPOLITAN WATER SUPPLY BRANCH.*—PARTICULARS OF FINANCIAL OPERATIONS, 1912 to 1917.

Year ended the 30th June.			Capital Cost of Works.	Depre- ciation.	Net Capital Cost.	Gross Revenue.	Cost of Main- tenance and Manage- ment.	Ratio of Working Expenses to Revenue.
			£	£	£	£	£	Per cent.
1912	...	...	701,852	107,388	594,464	66,892	25,082	37.49
1913	...	...	768,068	143,030	625,038	74,600	25,479	34.11
1914	...	...	892,434	167,326	725,108	87,802	31,483	35.86
1915	...	...	964,670	183,910	780,760	99,953	33,580	33.52
1916	...	...	997,650	201,834	795,816	103,668	37,987	36.60
1917	...	...	1,019,388	220,750	798,638	95,451	36,075	37.79

* Perth, Fremantle, and Claremont combined.

(c) *Consumption of Water.* The following table shews the total annual supply, the average daily supply, and the average daily supply per house and per head of population during each financial year from 1913 to 1917 inclusive:—

**METROPOLITAN WATER SUPPLY BRANCH.—CONSUMPTION OF WATER,
1913 to 1917.**

Year.	Average Daily Supply in ,000 Gallons.			Water Supply for Years in ,000 Gallons.			Number of Houses Supplied.	Esti- mated Popu- lation sup- plied.	Average Daily Supply during Years.	
	From Reser- voirs.	From Bores.	Total.	From Reser- voirs.	From Bores, etc.	Total.			Per House.	Per Head of Popu- lation.

**CENTRAL DISTRICT (INCLUDES PERTH, FREMANTLE, CLAREMONT
AND GUILDFORD).**

	Gals.	Gals.	Gals.	Gals.	Gals.	Gals.	No.	No.	Gals.	Gals.
1913	1,285	3,026	4,311	469,311	905,960	1,375,171	24,150	100,000	156	39.7
1914	1,954	2,805	4,759	713,368	1,023,726	1,737,094	28,391	120,000	167	39.6
1915	1,171	3,723	4,893	427,598	1,358,109	1,785,797	29,721	127,000	164	38.5
1916	2,202	2,609	4,811	806,073	955,075	1,761,148	30,752	129,300	156	37.2
1917	2,100	3,179	5,279	766,436	1,160,464	1,926,900	31,797	133,556	166	39.5

ARMADALE DISTRICT.

1915	28	...	28	10,220	...	*10,220	82	300	*340	*93.0
1916	9	...	9	3,274	...	3,274	83	300	107	29.8
1917	29	...	29	10,563	...	10,563	98	410	298	71.2

* Includes water supplied to Railways.

(d) *Sewerage and Drainage in Perth and Fremantle.* The work of providing a sewerage system for Perth and Fremantle was commenced in 1906, and has proceeded without interruption up to the present time. Up to 30th June, 1917, 13,069 houses had been connected to the sewers. The revenue of the Sewerage and Drainage undertaking for 1916-17 was £52,538, as against £44,667 for the preceding year. The maintenance expenditure amounted to £15,254, and interest and sinking fund charges to £46,086. A description of the method of sewage disposal adopted may be found in previous issues. (See Year Book No. 5, p. 1031.)

(iii.) *Goldfields Water Supply Undertaking.* The Act under which the works were constructed was introduced in Parliament by Sir John Forrest, G.C.M.G., then Premier of Western Australia, in September, 1896, and provided for an expenditure of £2,500,000, and a daily supply of 5,000,000 gallons. The works designed by the late Mr. C. Y. O'Connor, Engineer-in-Chief of the State, were originally known as the "Coolgardie Water Scheme," but are now officially called the "Goldfields Water Supply." Construction work in connection with the scheme was commenced early in 1898, and the water was delivered in Kalgoorlie in January, 1903. The source of supply is the Helena River, in the Darling ranges, where, at about 18 miles from Perth, an impounding reservoir, 760 acres in extent, with a catchment area of 569 square miles, has been constructed. A detailed description of the scheme will be found in previous issues of the Year Book (see Year Book No. 9, p. 924). The area of operations embraces 16,000 square miles, the total length of the water area being approximately 380 miles. The cost of the original works, including expenses of raising loans, was £2,866,454, and of supplementary works £525,684, making a total of £3,392,138. The Mundaring Reservoir cost £249,000. Its capacity is 4,650,000,000 gallons, and its surface area at full supply level 672 acres. The height of the wall above the river bed is 100 feet; length of wall, 755 feet; width of wall at bottom, 85 feet; at top, 11 feet; and when reservoir is full, the water extends back for the distance of 7 miles.

During the financial year 1916-17, the total consumption amounted to 1,061,000,000 gallons, a decrease on the previous year of 137,000,000 gallons. The gross revenue was £214,838, and the working expenses £88,852, leaving a surplus available towards interest and sinking fund of £125,986. The outlay for interest and sinking fund charges in respect of supplementary capital absorbed £33,216, leaving £92,770, payable to the State Treasury. During the financial year the State Treasury paid £168,813 interest and sinking fund on State loans in respect to these works, and the operations of the undertaking showed a net deficiency of £76,043. Reticulation figures are as follows:—Towns reticulation, 245 miles; supply mains to towns, 80 miles; supply mains to mining centres, 79½ miles; agricultural extensions, 481 miles; total mains, including main conduit, 1230.

(iv.) *Water Supplies for Towns.* Under the Water Boards Act 1904, the following water undertakings are administered by the Department:—Collie, Cue-Day Dawn, Derby, Geraldton, Leonora, Meekatharra, Menzies, Ora Banda, and Pingelly. Water supplies for Albany, Broome, Bunbury, Busselton, Carnarvon, Port Hedland, Roeburne, Sandstone, Wagin, and Wyndham are administered by local boards under the supervision of the Department.

(v.) *Mines Water Supplies.* At the present time the water stations under the control of the Engineer for Goldfields Areas number about 1400, and are spread over an area of nearly 500,000 square miles. The principal works carried out by the Branch are as follows:—(a) Domestic supplies for mining towns and the supply of water for battery and general mining purposes. (b) Opening up the very remote portions of the State by means of tracks, of which there are about 4000 miles. (c) The sinking of wells and bore-wells, also testing the country by means of boring to locate water, and thus enabling the mineral resources of the State to be systematically prospected. (d) Diamond drilling has also been carried out for the purpose of testing the country for minerals at depths unattainable with the ordinary boring plants. (e) Over 3000 miles of stock routes have been opened up, and wells have been sunk at easy stages, capable of watering mobs of 400 head of cattle. Tanks, dams, and reservoirs have been made on the gold-fields for the conservation of surface water, their total storage capacity being over 200,000,000 gallons, and their cost over £400,000.

A very important adjunct of the branch is the camel farm established at Coolgardie, where the breeding of camels is undertaken, the number at present being about 240. These camels are used by parties from the Water Supply Branch in the arid regions of the interior, where water is scarce, and the stages are long.

(vi.) *Water Supplies in Agricultural Areas.* Owing to the rapid development in agricultural districts in what a few years ago was practically unexplored country, and the consequent necessity for providing water for settlers, a large number of tanks were excavated, and wells sunk where suitable water had been proved by boring. Of 2508 shallow bores put down, fresh water was obtained in 427, stock water in 218, the others being salt or dry. The number of tanks excavated to 30th June, 1917, was 322, with an approximate capacity of 114,500,000 gallons, and the number of wells 283, the estimated capacity of which is 52,500,000 gallons. The capital expenditure for the financial year ending June, 1917, was £11,205.

(vii.) *Land Drainage.* Under the Land Drainage Act 1900 the drainage undertaking for the Torbay-Grassmere District is administered by the Department. Undertakings controlled by Boards under the same Act are East Jandakot, Lennox, Koriyekup, Njookenbooroo, Sterling, Saidie, and Wangong.

6. *Tasmania.*—(i.) *Hobart Water Supply.* The original water supply of Hobart was obtained from a stream known as the Hobart Rivulet, flowing from Mount Wellington, the works being carried out in 1831 by the Imperial Government. These works consisted of an aqueduct and a line of cast-iron pipes, the water being distributed to several points known as "wells." By an Act of the State Parliament passed in 1860 the works were

transferred to the municipality. Under this Act certain additional streams flowing from Mount Wellington were acquired as sources of supply, and a storage reservoir containing 40,000,000 gallons was constructed. The catchment area on Mount Wellington at present comprises an area of 4200 acres, the sources of supply having been extended at various times as far as the North West Bay River, fifteen miles from Hobart.

(a) *Storage Reservoirs.* There are three storage reservoirs about 3 miles from the city. One standing 502 feet above sea-level has a capacity of 60,000,000 gallons; the second is 447 feet above sea-level, with a capacity 40,000,000 gallons; while the third, which has been only recently completed, will hold 207,000,000 gallons. The whole of the supply is by gravitation. The water is brought from the various mountain streams by means of pipes to the storage reservoirs, and thence by four 10-inch cast-iron mains, of which three lead to the distributing reservoirs, and one direct to the shipping and southern portion of the city.

The provision of the new reservoir and the laying down of a new concrete intake pipe line from the N.W. Bay River has placed the city in a very good position in respect of water, and the supply is sufficient for a much larger population than is served at present.

(b) *Capital Cost, Tenements Connected, Length of Mains, Revenue and Expenditure.* The total capital cost to the end of 1916 was £332,000, but a considerable amount of reticulation work has been done out of revenue and not charged to capital account. The outstanding loans at the end of 1916 amounted to £270,300. At the same date the number of tenements supplied in the city and suburbs was 8621, the population 35,000, and the length of reticulation mains 94½ miles. The revenue and expenditure for the last six years were as follows:—

HOBART WATERWORKS.—REVENUE AND EXPENDITURE, 1911 to 1916.

Particulars.	1911.	1912.	1913.	1914.	1915.	1916.
	£	£	£	£	£	£
Revenue	31,207	23,858	21,982	22,191	23,382	24,801
Expenditure	20,381	20,584	21,336	24,550	26,471	27,676

(ii.) *Hobart Sewerage System.* A scheme for the construction of a sewerage system in Hobart was adopted in 1903. The sewage is discharged into the estuary of the River Derwent. Up to the end of the year 1916 about 72½ miles of sewers had been laid at a cost of about £191,000, and 7102 tenements had been connected. The revenue for the year was £12,574. The scheme, which is intended to sewer over 2000 acres so as to serve an estimated population of about 80,000 people, is practically completed. The suburb of Queenborough has recently become incorporated with the city, and arrangements are now being made to extend the system to this district, the work of construction having recently been commenced.

§ 4. Harbour Trusts.

1. *Introduction.*—In the chief ports and harbours of the Commonwealth, administrative bodies have been created, in whom is vested the control and management of the port with respect to dredging, wharf and harbour accommodation, pilotage, harbour dues, etc.

Of these Trusts or Boards some are purely departmental, some are nominated by Government, while others are comprised of members appointed by the municipal and other associations connected with the port. In the latter case, the Government is usually represented on the Board by one or more nominated members. The Boards and Trusts mentioned hereunder are the only ones for which information is at present available.

2. **Sydney Harbour Trust.**—This Trust was established by an Act which came into force on the 11th February, 1901. Its powers and duties have been dealt with in previous issues of this book, together with some of the more important improvements carried out by the Commissioners. (See Year Book No. 5, p. 990.)

(i.) *Revenue, Expenditure, and Capital Cost.* The subjoined table gives particulars of the revenue and expenditure of the Trust, and also shows the total capital debt for properties, etc., vested in the Commissioners, the amount of interest payable on the debt, and the balance of revenue after deducting expenditure, interest, and the amount of the Commissioners' salaries:—

**SYDNEY HARBOUR TRUST.—REVENUE, EXPENDITURE, CAPITAL DEBT,
INTEREST AND BALANCE, 1901 and 1913-17.**

Year ended the 30th June—	Revenue.				Expenditure.	Total Capital Debt.	Interest.†	Balance.
	Wharfage & Harbour Rates.	Tonn'ge Rates & Berthg. Charges	From Other Sources.	Total.				
	£	£	£	£	£	£	£	£
1901* ...	42,784	3,208	12,324	58,316	11,275	4,692,782	55,554	— 8,513
1913 ...	258,703	18,417	173,162	450,282	154,540†	6,535,853	221,049	74,692
1914 ...	260,761	19,867	188,901	469,529	161,479†	6,992,932	248,088	59,962
1915 ...	255,217	15,046	194,418	464,681	161,358†	7,367,922	263,478	39,845
1916 ...	274,551	17,630	197,540	489,721	171,951†	7,948,756	289,256	28,484
1917 ...	252,044	29,095	230,841	511,980	165,586†	8,598,939	330,954	15,441

* For the period from 11th February to the 30th June, 1901. † The rate of interest charged each year is the average rate on the total capital debt of the State, which varies. ‡ Including expenditure for the renewal, replacement or reconstruction of wharves or buildings.
Note.—The minus sign (—) represents a loss.

(ii.) *Dredging and Towing.* The subjoined statement gives particulars of the dredging and towing done by the dredges and tug-boats owned by the Trust:—

**SYDNEY HARBOUR TRUST.—PARTICULARS OF DREDGING AND
TOWING, 1901 and 1913-17.**

Year.	Dredging.			Towing Dredged Material.		
	Tons Dredged.	Total Expenditure.	Expenditure per Ton.	Miles run Towing.	Total Expenditure in Towing.	Expenditure per Mile Towing.
	Tons.	£	Pence.	Miles.	£	Pence.
1901 ...	317,500	3,696	2.79	29,277	2,849	23.35
1913 ...	1,875,925	28,104	3.59	28,317	5,976	48.22
1914 ...	1,852,500	29,079	3.77	45,724	8,271	43.41
1915 ...	1,561,500	27,937	4.29	48,982	9,949	48.06
1916 ...	2,092,918	28,253	3.24	46,581	11,268	58.05
1917 ...	1,938,130	31,697	3.93	43,847	11,950	65.41

3. **The Melbourne Harbour Trust.**—This Trust was constituted under an Act passed in 1876, as a result of public agitation and demands extending over a period of thirty-four years to the effect that the cost of landing goods should be reduced and the delays in receiving goods should be abolished. Both demands arose from the fact that vessels of a draught greater than twelve feet had to discharge in the bay into lighters.

(i.) *Constitution of the Trust.* The Harbour Trust Act was originally drafted on the lines of similar institutions in Great Britain, such as the Thames Conservancy, the Mersey Harbour Board, and the Clyde Trust. Under the Act of 1876, as amended in 1883, the number of Commissioners was fixed at seventeen. By an Act No. 2449 (1912), the constitution of the Trust was altered to a Commission of five members elected by the

Governor-in-Council, consisting of a chairman, who devotes his whole attention to the business of the Trust, and four others representing the interests of shipowners, exporters, importers, and primary producers.

(ii.) *Works Undertaken by Trust in the River and in the Port.* In 1890 a consolidating Act was passed, and the borrowing powers of the Trust were increased to £2,000,000, and subsequently by Act No. 2449 to £3,000,000. The river was widened from Queen's Bridge to the Bay to about 300 feet, while the depth has been gradually increased until at the present time it is twenty-six feet at low water. A total of 10.39 miles of wharves and piers are in use in the River, Victoria Dock, Williamstown and Port Melbourne. Most of these wharves in the river and dock carry sheds with a total length of 17,394 feet, covering an area of 878,928 square feet. The new pier in Victoria Dock, now complete, is included in these figures.

(a) *The Coode Canal.* In 1889 the canal across the flats below Fishermen's Bend was completed at a cost of £96,000. The length of the canal is 2002 yards, the distance from Queen's Bridge to the river entrance being thereby reduced from seven miles to five and three-quarter miles, and the navigation being greatly facilitated. This channel, which is called the Coode Canal, has been widened 164 feet, thus making its total width 487 feet, and its width at low water 430 feet. At the present time there is a depth of 26 feet at low water for a width of 250 feet.

(b) *The Victoria Dock.* This dock, four miles up the river, and opened in 1892, has an area of eighty-two acres and a depth of thirty feet at low water. The entrance to the dock is 160 feet wide. There are 11,760 feet of wharfage including that of the new central pier, and the total cost, including wharves, sheds, approaches thereto and new pier was, to 31st December, 1917, £705,441. The sheds have a total length of 6818 feet, and cover an area of 381,096 square feet. The new central pier is 1631 feet long and 250 feet wide, with a 57-foot roadway in the centre. There are four cargo sheds on this pier, two being 480 feet by 60 feet, and two 486 feet by 60 feet. It is proposed to erect two others each 486 feet long. The expenditure on this work to 31st December, 1917, amounted to £178,261.

(iii.) *Works in the Bay.* Prior to 1879 all the mail steamers and vessels of heavy draught had to lie at anchor in the bay, and there discharge into lighters. One of the first works undertaken by the Commissioners was to make the railway piers at Williamstown available to these vessels. This work was completed at a cost of £256,160. In 1893 a channel over 8000 feet long and 600 feet wide was dredged, running in a southerly direction from Port Melbourne Railway Pier and having a navigable depth of thirty feet o.l.w. The cost of this work was £218,379. A new railway pier was completed at Port Melbourne in 1915. Its length is 1902 feet, with a width of 185 feet, and the average depth of water is 37 feet. Two shelter sheds provide accommodation, and there are ten travelling gangways to facilitate the landing of passengers so as to avoid crossing the railway lines on the pier level.

(iv.) *Dredging.* The total quantity of material raised by the dredging and excavation done in the improvement of the river and bay amounts to nearly 61 million cubic yards.

During the ten years ending 31st December, 1917, the average cost of dredging per cubic yard was 2.19 pence and the cost of towing and depositing 4.72 pence, not allowing for depreciation of plant. The Trust has expended £334,774 in reclaiming land within its jurisdiction. The amount of material raised annually is now about 2,761,000 cubic yards.

(v.) *Financial Operations.* The revenue of the Trust is obtained from wharfages and tonnage rates, rents and license fees from land and ferries, and other license fees. One-fifth* of the revenue of the Trust is paid to the consolidated revenue of Victoria. The following table gives particulars of the revenue and expenditure of the Trust from 1913 to 1917 inclusive:—

* Limited by Act 2449 to £60,000 per annum for five years from 1st January, 1913.

MELBOURNE HARBOUR TRUST.—REVENUE AND EXPENDITURE, 1913 to 1917.

Particulars.	1913.	1914.	1915.	1916.	1917.
REVENUE.					
	£	£	£	£	£
Rates, rents, etc.	336,037	349,461	306,034	311,395	312,654
Interest	665	2,284	1,293	170	31
Other receipts	1,949	8,172	7,957	11,109	7,610
Total	338,651	359,917	315,284	322,674	320,295
EXPENDITURE.					
	£	£	£	£	£
Management and general expenses ...	35,753	42,460	46,257	56,265	49,205
Interest	71,081	83,620	86,567	88,372	93,996
Total	106,834	126,080	132,824	144,637	143,201
Less standing charges added to works ...	18,718	21,936	23,823	21,135	19,632
Total	88,116	104,144	109,001	123,502	123,569
Wharfage and other refunds	1,112	1,531	1,620	1,140	1,378
Charges remitted on troopships ... ..	...	4,532	3,166	...	...
Consolidated revenue of Victoria	60,960	60,000	60,000	60,000	60,000
Flotation of loan expenses ... ..	...	5,289	5,011	...	1,005
Redemption of loans expenses ... ..	...	...	925	...	...
Maintenance... ..	63,911	50,661	55,520	53,375	70,112
Total expenditure	214,099	226,157	235,243	238,017	256,064
Surplus on revenue account	124,552	133,760	80,041	84,657	64,231
Less depreciation and renewals account and sinking fund	29,188	30,058	30,415	51,364	51,747
Net surplus on revenue account ...	95,364	103,702	49,626	33,293	12,484
CAPITAL EXPENDITURE.					
	£	£	£	£	£
Land and property	46,007	5,534	2,060	1,316	588
Deepening waterways	49,620	96,198	93,615	82,429	50,871
Wharves construction... ..	115,244	87,885	120,627	105,803	62,246
Approaches construction	16,354	7,029	10,921	8,960	6,201
Other harbour improvements	2,713	1,376	4,275	35,946	26,923
Floating plant	9,744	33,452	3,112	25,190	3,814
General plant	2,910	3,364	4,107	2,853	1,728
Stock account	44,572	32,070	25,451	21,784	4,686
Total	287,164	266,908	264,168	284,281	157,057

4. **Fremantle Harbour Trust.**—Under the provisions of an Act passed in 1902, a Harbour Trust was constituted for the general administration of Fremantle harbour, and since January, 1903, the Trust has had full control of all the affairs of the harbour,

and undertakes the duties of wharfingers, and the receiving, sorting, storing, delivering, and handling of all cargo between vessels and the owners of the goods. The works, which were commenced in 1892, were designed with the object of forming a safe and commodious harbour within the mouth of the Swan River, so as to admit vessels at all states of the tide, and thus enable cargo to be loaded and discharged at the quays and goods-sheds on the river banks. Two ocean moles have been thrown out from the north and south heads, the former being 3450 feet and the latter 2040 feet long. A channel, 450 feet wide and 30 feet deep at low water, has been blasted and dredged through the rock which formerly crossed the estuary to the river to give access to the harbour basin, which has a width of 1400 feet and a depth of 30 feet at low water and is upwards of a mile in length, and wharves and goods-sheds have been constructed along the reclaimed foreshore on both sides of the harbour. The depth of water in the entrance channel and inner harbour is now being increased to 36 feet, and will eventually be made 40 feet below lowest low water datum. At the present time all the European mail boats and equally large vessels which make Fremantle the first and last port of call in Australia, are able to enter and leave the harbour in all weather and at all tides day or night. The quays on both sides of the inner harbour basin are equipped with electric and steam cranes, and there is also a complete installation of electric elevators and conveyors for stacking and shipping bagged grain and flour. All berths are laid with railway rails. For the year ended 30th June, 1917, the total revenue of the Trust was £176,414, and the expenditure £94,777. The gross amount paid to the Treasury for the year was £83,355, being interest £62,737, sinking fund £17,925, and surplus revenue account £692.

5. Hobart Marine Board.—The Hobart Marine Board was established in 1858, and consists of nine wardens, elected by the shipowners, importers and exporters of the port. To meet the requirements of the large steamers visiting the Commonwealth, extensive harbour improvements have been completed. The Ocean wharf and pier has a length of 1150 feet, with a depth of water from 36 feet at the inner to 60 feet at the outer end, while other piers afford accommodation for the largest vessels visiting Australia.

The total capital debt on properties in connection with the Harbour Trust vested in the Board is £106,400. The interest paid in 1917 amounted to £4256, and the contributions to sinking fund, £1020. The Board also transferred £938 from revenue to the Harbour Improvements Account. The receipts and expenditure of the Board for the last five years were as follows :—

HOBART MARINE BOARD.—RECEIPTS AND EXPENDITURE, 1913-17.

Year.	RECEIPTS.				EXPENDITURE.			
	General.	Harbour Improvements, Debentures, etc.	Light-house Fund.	Total.	General.	Harbour Improvements.	Light-house Fund.	Total.
	£	£	£	£	£	£	£	£
1913 ...	21,343	138,000	10,634	69,977	² 20,453	35,917	11,948	68,318
1914 ...	24,772	26,000	11,481	62,253	³ 24,956	29,241	13,047	67,244
1915 ...	23,448	5,264	...	28,712	⁴ 23,096	6,983	...	30,079
1916 ...	22,800	6,062	...	28,862	⁶ 21,803	7,801	...	29,604
1917 ...	17,294	6,627	...	23,921	⁷ 17,247	5,212	...	22,459

¹ Including £8000 from General Account.

² Including £4000 voluntary contribution to

Sinking Fund. ³ Including £3000 transferred from the General Account to the Harbour

Improvements Account. ⁴ Including £1500 transferred from General Account to Harbour

Improvements. ⁵ The Commonwealth Government took over control of Ocean lights from

1st July, 1915. ⁶ Including £4000 debentures purchased. ⁷ Including £938 transferred

from General Account to Harbour Improvements.

6. Launceston Marine Board.—The Board was formed in 1858 and consists of thirteen members, elected on the municipal franchise, with special residential conditions. The principal work of the Board is in connection with the straightening, deepening, and widening of the River Tamar, the distance from the wharves to the open sea being 40 miles.

Wharves to the length of 6702 feet have been constructed, the depth at some of them being 40 feet s.l.w. The total capital debt on 31st December, 1917, was £204,539, of which £157,301 was incurred on the Tamar Improvement Scheme. The revenue for 1917 was £28,296 and the expenditure £25,880.

7. Geelong Harbour Trust.—This Trust was incorporated in 1905, and consists of three Commissioners appointed by the Government of Victoria. To the 31st December, 1917, the Trust had borrowed £575,000. The sinking fund at the same date stood at £17,725. The revenue receipts for the year 1917 were £32,376 and the disbursements £39,380.

8. Rockhampton Harbour Board.—The Board consists of eleven members elected by the municipalities and shires of the Central Division of Queensland. The principal items of export by water in 1917 were—wool, 50,100 bales; preserved and frozen meats, 9837 tons; blister copper, and concentrates, 6646 tons; and gold, £326,253 in value. For the year 1917 the receipts were £34,964 and the expenditure was £30,220, including £7048 for redemption and interest. The total of the net registered tonnage entering the port in 1917 was 563,539.

9. Bundaberg Harbour Board.—The principal port in Queensland for the shipment of sugar is Bundaberg. The Harbour Board consists of nine members, representing the district shire councils and the shipowners and exporters, with one Government nominee.

The total exports for the year ending 31st December, 1917, amounted to 31,182 tons, as against 22,188 tons for the previous year, shewing an increase of 8994 tons. The principal items of export were:—Raw sugars, 14,471 tons; refined sugars, 12,254 tons; syrups and molasses, 998 tons; rum and spirits, 1705 tons; copper ores, 472 tons. The revenue for 1917 amounted to £5887, as against £5202 for 1916; the expenditure for 1917 was £7138 as compared with £6114 for 1916. Dredging resulted in 89,300 tons of silt, etc., being lifted and deposited at sea, but only about four months of the year were occupied in this work.

10. Cairns Harbour Board.—The Cairns Harbour Board consists of twelve members, three representing the town of Cairns and the other nine the surrounding shire councils. For the year ended 31st December, 1917, the cash receipts from harbour and berthage dues and miscellaneous items amounted to £24,315, while the revenue from taxes and fixed rates was £22,502. The total income amounted to £24,343. The principal items of export were:—Raw sugar, timber, maize, copper, and fruit.

11. Bunbury (Western Australia) Harbour Board.—The Bunbury Harbour Board was constituted in 1909, and consists of five members appointed by the Government. The jetty has berthage accommodation for eight steamers, and the depth of water for loading thereat ranges from 18 to 27 feet. Electric and steam gantry cranes are available at the deeper berths.

The capital expenditure for the year ending 30th June, 1917, was £37,526, making the total capital expenditure to that date £309,095. The revenue for the year was £11,417 and the expenditure £5790, the balance being paid into Consolidated Revenue to meet interest and sinking fund. The export tonnage for the year was made up as follows:—Jarrah timber, 67,044 loads of 50 cubic feet; wheat, 21,770 tons; Collie coal (bunkers), 8715 tons; wool, 2876 bales; and miscellaneous goods, 676 tons; the total export value being £492,000. The total import tonnage was 6981 tons, the total cargo tonnage dealt with during the year ended 30th June, 1917, amounting to 150,458 tons.

12. Burnie and Table Cape (Tasmania) Marine Board.—While the existing works accommodate steamers of 4000 to 5000 tons, which visit the port regularly, they are insufficient for the rapidly increasing traffic in produce, ores and timber from the north-west and west coast district of Tasmania. A scheme is, therefore, being carried out by which the port will eventually be capable of taking any ships trading in the Commonwealth. A breakwater is being constructed 1200 feet in length with a depth alongside of 40 feet at low water. On 31st March, 1917, 1010 feet of this breakwater had been constructed. It is intended later on to increase the length to 4000 feet and to enclose 300 acres of deep

water space, of which 100 acres will have a depth of nearly 45 feet. The expenditure on that portion of the scheme at present under construction will be £200,000, including a wharf 500 feet long, with a depth of 36 feet at low water. The revenue for the year 1917 was £10,415, and the expenditure £14,371, including £8978 interest on construction loan.

§ 5. Fire Brigades.*

1. **New South Wales.**—Reference has been made in the section of this book dealing with the subject of *Private Finance* (see page 832) to the constitution of the Board of Fire Commissioners of New South Wales, which has now superseded the Metropolitan and all other Fire Brigade Boards in that State.

(i.) *Receipts and Disbursements of Board of Fire Commissioners of New South Wales.* The subjoined table shews the actual receipts and disbursements of the Board for the past five years:—

NEW SOUTH WALES BOARD OF FIRE COMMISSIONERS.—RECEIPTS AND DISBURSEMENTS FOR SYDNEY FIRE DISTRICT, 1913-17.

Year.	Receipts.						Disbursements.
	From Government.	From Municipalities.	From Fire Insurance Companies.	From Firms.	From other Sources.	Total.	
	£	£	£	£	£	£	£
1913 ...	25,586	25,586	25,404	182	2,270	79,028	76,853
1914 ...	29,200	29,200	28,966	234	1,773	89,373	88,208
1915 ...	29,071	29,071	28,161	410	1,749	88,462	96,146
1916 ...	29,071	29,071	28,883	188	2,205	89,418	98,934
1917 ...	34,283	34,283	33,562	721	4,103	106,952	103,539

With reference to the preceding table, under the "Fire Brigades Act 1909," by which the New South Wales Board of Fire Commissioners was constituted and which came into operation on 1st January, 1910, insurance companies do not now, as formerly, return the amount of their risks, but give in lieu thereof the amount of premiums received, which forms the basis of their contribution towards the revenue of the Board. By this Act also, firms which effect insurances with companies not registered in New South Wales are likewise required to make contributions on account of the premiums paid to such companies, which is the first instance of this class of insurer being compelled to share the expense of local advantages, which had hitherto been available free of cost. A fuller description of the principal provisions of this Act will be found in previous issues of this book (see Year Book No. 5, page 990). The Sydney fire district includes the City of Sydney and suburbs, comprising a total area of 232 square miles. On the 31st December, 1917, the Board had under its control in this district 62 stations, 320 permanent men, 170 partially paid firemen, 14 steam and 32 motor fire engines, 78 horses, 139,100 feet of hose, and 459 telephone fire-alarms. The length of wire used for telephone lines was 1106 miles.

2. **Victoria.**—Under the Fire Brigades Act of 1890 a metropolitan fire district and nine country fire districts were established, the former being placed under the control of a Metropolitan Fire Brigades Board, and the latter under the control of a Country Fire Brigades Board.

(i.) *Metropolitan Fire Brigades Board.* The metropolitan fire district originally comprised the area included in the several municipalities within a radius of ten miles from the Melbourne General Post Office, but this area has since being extended in certain directions so as to include the greater part of the Shire of Moorabbin and also the township of Mordialloc. The Board is composed of nine members, of whom three are appointed by the Governor-in-Council, three by the municipal councils, and three by the insurance companies. On the 30th June, 1918, the Board had under its control

* See Section XXI. § 6, Fire Insurance, p 832.

43 stations, 243 permanent men, 111 partially-paid firemen, 39 special service firemen, 9 steam fire engines, 7 petrol motor fire engines, 52 other petrol motor appliances, 9 horses, 111,051 feet of hose, and 314 fire-alarm circuits having 989 street fire alarms, of which 967 contained telephones. The Government, the insurance companies and the municipalities in which the Board operates contribute equally to the cost and maintenance of the brigade. The following table gives particulars as to the financial operations of the Board during each year from 1913 to 1917-18 inclusive :—

VICTORIA.—REVENUE AND EXPENDITURE OF METROPOLITAN FIRE BRIGADES BOARD, 1913 to 1917-18.

Particulars.	1913.	1914.	1915.	1916.	1917-18.
ORDINARY RECEIPTS.					
	£	£	£	£	£
Contributions ...	66,238	66,954	77,794	84,583	82,308
Receipts for services ...	5,941	8,241	6,634	7,595	6,064
Interest and sundries ...	3,669	3,234	9,957	3,913	3,626
Total ...	75,848	78,429	94,385	96,091	91,998
ORDINARY EXPENDITURE.					
	£	£	£	£	£
Salaries ...	47,210	50,966	51,304	59,184	58,900
Interest and sinking fund ...	8,357	9,432	11,442	13,330	13,610
Other expenditure ...	20,281	18,031	31,639	23,577	25,057
Total ...	75,848	78,429	94,385	96,091	97,567

(ii.) *The Country Fire Brigades Board.* This Board consists of nine members, of whom three are appointed by the Governor-in-Council, two are elected by the municipal councils of the districts where there are brigades registered under the Board, two by the fire insurance companies, and two by the registered fire brigades. At the end of the year 1917 there were 109 municipal councils, and seventy insurance companies included in the operations of the Act. All the brigades are volunteer brigades, but in the large towns permanent station-keepers and watchmen are employed. There were 131 registered brigades and 2985 registered firemen at the end of the year 1917.

For the year 1917 the receipts of the Country Fire Brigades Board amounted to £14,639, and the expenditure to £14,572.

3. Queensland.—In the year 1917 there were twenty-nine fire brigades organised in various towns in Queensland. The revenue of these brigades is derived chiefly from grants from the Government, from municipalities, and from the insurance companies, generally in equal proportions, and the following table gives these particulars for the year 1917 :—

QUEENSLAND.—FIRE BRIGADES, 1917.

Receipts.	Amount.	Expenditure.	Amount
	£		£
From Government ...	8,625	Salaries and wages ...	14,873
„ Local authorities ...	8,716	Building, repairs, etc....	491
„ Insurance companies ...	8,606	Plant, stores, clothing, etc.	4,501
„ Other sources ...	619	Other ...	5,298
Total ...	26,566	Total ...	25,163

At the end of the year 1917 the fire brigades staffs comprised 82 permanent men, 247 partially paid, and 104 volunteers. The Metropolitan Brigade at Brisbane and the South Brisbane brigade protect an area of $9\frac{1}{2}$ square miles; their joint staffs comprise 68 men. They have three steam engines, three motor turbines, one chemical motor, nine reels, consisting of four horse, two motor, and three hand reels, and 23,155 feet of hose. There are 14 telephone fire alarms and 198 call points.

4. **South Australia.**—The Fire Brigades of South Australia are managed by a Board consisting of five members, one being nominated by the Government, one by the Adelaide city council, one by the other metropolitan and country municipalities, and the other two by the contributing insurance companies. The Board is incorporated under the Fire Brigades Act 1913. The revenue of the Board is derived by contributions of three-ninths by the Government, four-ninths by the insurance companies, and two-ninths by the city of Adelaide and the other municipalities subject to the Act, the contribution for 1917 amounting to £26,284. Brigades are established in the following municipalities, viz., Adelaide, Kensington and Norwood (including St. Peter's), Unley, Port Adelaide, Glenelg, Gawler, Kapunda, Moonta, Kadina, Port Pirie, Port Augusta and Thebarton. The strength of the brigades consists of 91 permanent firemen and 32 auxiliary firemen. The plant consists of five steam fire engines, one motor engine, nine motor hose carriages, one floating fire engine, 7 hose reels, and 17 horses. The number of calls received during the year 1917 was 325, of which 14 were to fires of a serious nature. Of the total calls, 176 were in the metropolitan district.

5. **Western Australia.**—Under the Fire Brigades Act 1898, fire brigades were established in a number of the more important centres of population in the State. These brigades were under the control of local boards, and were in some cases municipal and in others volunteer.

An Act to make further provision for the protection of life and property from fire came into operation on the 2nd April, 1917, and is called the Fire Brigades Act 1916. It provides that every municipal or road board district shall be a fire district for the purposes of such Act, under the control of the Western Australian Fire Brigades Board. Formerly, under the District Fire Brigades Act 1909, which was repealed by the 1916 Act, the whole State was divided into two fire districts only. Provision is also made in the later Act for the amalgamation of two or more municipal or road board districts into one fire district. The Board is elected biennially and is constituted as follows:—Two members nominated by the Government, one of whom shall be the President; one member elected by the council of the municipality of the City of Perth; one member elected by the municipal and road board districts between Fremantle and Midland Junction, excluding the City of Perth; one member elected by the municipal and road board districts between Southern Cross and Leonora (Eastern Goldfields District); one member elected by the remainder of the municipal and road boards districts in the State under the operation of the Act; two members elected by the insurance companies; and one member elected by the Volunteer Fire Brigades. The income of the Board is derived as follows:—Two-eighths from the Government, three-eighths from the local authorities and three-eighths from the insurance companies. In regard to the revenue derived from the local authorities it is provided that the local authority in each district shall only contribute three-eighths of the expenditure in such district. Under the 1909 Act the amount levied upon each local authority was a pro-rata proportion of the three-eighths of the total estimated expenditure in the State, based on the valuation of the property within each local authority's district. The receipts for the year 1917 amounted to £35,477, and the expenditure to £32,329.

The whole of the brigades throughout the State are now controlled by this Board, and number two purely permanent, ten permanent and partially paid, six permanent and volunteer, one partially paid, and twenty-three purely volunteer brigades; making a total of forty-two. The staff includes a chief officer, deputy-chief officer, third officer, motor engineer, electrical engineer, 12 other officers, 66 permanent firemen, 48 partially-paid firemen, and 399 volunteer firemen.

6. **Tasmania.**—Under the present system, the Government, the City Council, and the Fire Insurance Companies contribute equally to the annual expenditure of the Hobart Fire Brigade. There are volunteer brigades under the control of local boards in most of the larger centres of population. The expenditure for the year amounted to £3474.

§ 6. Local Government Finance.

1. **Introduction.**—In the preceding parts of this section certain particulars have been given regarding local authorities in each individual State. It is proposed to give here in a comparable form for each State particulars regarding the financial operations of local governing bodies. The areas controlled by these bodies are variously known in the several States as cities, towns, boroughs, shires, municipalities, municipal districts, and road districts. The particulars given in the tables in the two next paragraphs relate to financial years ending as follow:—New South Wales: for the calendar year 1916. Victoria: 30th September, 1916, except Melbourne, 31st December, and Geelong, 31st August, 1916. Queensland: calendar year 1916. South Australia: Corporations, 30th November, and district councils, 30th June, 1916. Western Australia: 31st October, 1916, except road districts, 30th June, 1916. Tasmania: calendar year 1916.

2. **Number, Revenue, Expenditure, and Valuation of Local Authorities.**—The following table gives particulars of the number, revenue, expenditure, and valuation of local authorities in each State and in the Commonwealth during the year 1916. It should be noted that, excepting in Tasmania, the metropolitan water supply systems are not under municipal control; the particulars given of revenue and expenditure for the five States other than Tasmania do not, therefore, include revenue and expenditure on account of these systems.

NUMBER, REVENUE, EXPENDITURE, AND VALUATION OF LOCAL AUTHORITIES (a) IN EACH STATE, 1916.

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	C'wlth.
No. of local authorities (a)	321	190	186	183	143	50	1,072
RECEIPTS.							
Rates—	£	£	£	£	£	£	£
General ...	2,114,182	1,346,439	654,328	236,265	202,564	49,279	4,603,057
Other (b) ...	181,678	279,743	249,767	89,500	68,398	137,268	1,006,354
Government grants ...	389,833	74,372	53,221	57,935	33,859	12,753	621,973
Loans (c) & other sources	1,061,396	553,673	149,500	94,271	476,078	219,272	2,554,190
Total ...	3,747,089	2,254,227	1,106,816	477,971	780,899	418,572	8,785,574
EXPENDITURE.							
Works, services, etc. ...	2,722,267	1,486,488	844,970	296,896	480,482	342,873	6,173,976
Interest on loans and overdrafts ...	400,933	262,760	18,150	13,900	82,376	72,877	1,084,104
Redemptions, sinking funds, etc. ...		101,461	33,809	11,917	52,340	33,581	
Administration ...	307,643	206,353	132,627	57,716	57,860	37,532	799,733
Other ...	142,725	230,905	141,721	80,080	111,642	24,114	731,187
Total ...	3,573,568	2,287,967	1,171,277	460,511	784,700	510,977	8,789,000
VALUATIONS.							
Capital value of property	£194,964,738	326,415,110	62,280,061	92,272,929	26,817,864	34,825,058	737,575,760
Annual value of property	(e)	17,319,418	(e)	4,668,868	1,520,135	1,717,878	(e)

(a) Including particulars for all areas controlled by local governing bodies responsible for the construction and maintenance of roads and streets, such areas being variously known in the several States as cities, towns, boroughs, shires, municipalities, road districts, etc. (b) Exclusive of rates for water supply and sewerage in metropolitan and most other principal towns, such rates being collected by special boards or general Government. (c) Exclusive of loans in connection with extraordinary works of construction. (d) Unimproved capital value. (e) Not available. (f) Excluding District Road Boards.

3. **Local Government Loans, 1916.**—The following table gives particulars for each State of loans raised by local authorities during the year 1916, of loans current at the end of that year, of liability on account of interest and sinking fund, and of loans maturing during 1916 :—

PARTICULARS OF LOANS RAISED BY LOCAL AUTHORITIES, 1916.

Particulars.	N.S.W.	Victoria.	Q'land.	S.A.	W.A.	Tas.	C'wealth.
	£	£	£	£	£	£	£
Loans from general Government—							
Raised during year ...	...	183,548	48,557	...	125	33,596	265,826
Current at end of year ...	...	504,465	448,977	...	83,723	601,299	1,638,464
Loans from other sources—							
Raised during year ...	552,974	316,764	...	21,660	111,426	310,295	1,313,119
Current at end of year ...	8,820,836	5,364,795	957,039	355,784	1,814,984	1,203,451	18,516,889
Total—							
Raised during year ...	552,974	500,312	48,557	21,660	111,551	343,891	1,578,945
Current at end of year ...	8,820,836	5,869,260	1,406,016	355,784	1,898,707	1,804,750	20,155,353
Current loans, exclusive of those obtained from general Government, raised within the C'wealth	7,996,881	5,364,795	...	355,784	1,333,684	384,291	15,435,435
Annual liability on account interest (a)	(a)	250,985	17,173	14,703	85,371	84,102	(a)
Total sinking fund at end of year (a)	(a)	793,279	101,755	23,061	279,804	184,364	(a)
Amount loans maturing during year							
Redeemed ...	...	...	(a)	10,750	30,257	157,418	(a)
Renewed ...	...	...	(a)	...	...	...	(a)

(a) Not available.