

## SECTION VIII.

### AGRICULTURAL PRODUCTION.

#### § 1. Introductory.

**1. Early Attempts at Agriculture.**—The instructions issued to Captain Phillip on the 25th April, 1787, directed him, amongst other things, to proceed as soon as possible to the cultivation of the soil "under such regulations as may appear to be necessary and best calculated for securing supplies of grain and provisions." When the settlers landed at Botany Bay, however, it was found that the glowing accounts published in England by members of Captain Cook's expedition of the fertility of the soil in that locality were considerably overdrawn. Even when Phillip and his company moved round to Port Jackson on the 26th January, 1788, matters were for a time in no better case. The ground in the immediate neighbourhood of the settlement was not suitable for the cultivation of cereal crops, and when the time came to cultivate the soil it was found that there were very few who possessed the slightest acquaintance with the art of husbandry.

**2. The First Sowing.**—In his despatch of the 15th May, 1788, Captain Phillip states that it was proposed to sow eight acres with wheat and barley, although, owing to the depredations of field mice and ants, he was doubtful of the success of the crops.

**3. Discovery of Suitable Agricultural Land.**—A branch settlement was formed at Rosehill, on the Parramatta River, towards the close of 1788, and here corn crops were successfully raised. In his despatch of 12th February, 1790, Phillip refers to the harvest at Rosehill at the end of December, 1789, as consisting of 200 bushels of wheat and sixty of barley, in addition to small quantities of oats, Indian corn, and flax. By the year 1791 there were 213 acres under crop in this locality. In 1792 a new settlement was formed at Toongabbie, about three miles westward of Parramatta, where Phillip states "there are several thousand acres of exceeding good ground." The Hawkesbury Valley, which probably contains some of the richest land in the world, was first settled in 1794. For a long time agricultural operations in Australia were restricted to the narrow belt of country between the tableland and the east coast of New South Wales, as it was not until the year 1813 that a passage was discovered across the Blue Mountains to the fertile plains of the west.

#### § 2. Progress of Agriculture.

**1. Early Records.**—In an "Account of Live Stock and Ground under Crop in New South Wales, 19th August, 1797," Governor Hunter gives the acreage under crop as follows:—Wheat, 3361 acres; maize, 1527 acres; barley, 26 acres; potatoes, 11 acres; and vines, 8 acres.

At a muster taken in 1808 the following was the return of crops:—Wheat, 6877 acres; maize, 3389 acres; barley, 544 acres; oats, 92 acres; peas and beans, 100 acres; potatoes, 301 acres; turnips, 13 acres; orchards, 546 acres; and flax and hemp, 34 acres.

By the year 1850 the area under crop had increased to 491,000 acres, of which 198,000 acres were cultivated in what is now the State of New South Wales, and 169,000 acres in Tasmania. At the end of 1850 the area under cultivation in Victoria, which was then the Port Phillip District of New South Wales, was 52,190 acres.

The gold discoveries of 1851 and subsequent years had at first a very disturbing effect on agricultural progress, the area under crop declining from 491,000 acres in 1850 to 458,000 acres in 1854; the area under cultivation in New South Wales decreased by nearly 66,000 acres, while in Tasmania a falling-off of over 41,000 acres was experienced. The demand for agricultural products occasioned by the large influx of population was, however, soon reflected in the increased area cultivated, for at the end of 1858 the land under crop in Australia totalled over a million acres. The largest increase took place in Victoria, which returned an area of 299,000 acres. For the same year South Australia had 264,000 acres in cultivation, Tasmania 229,000 acres, and New South Wales 223,000 acres.

**2. Progress of Cultivation since 1860.**—The following table shews the area under crop in each of the Commonwealth States at quinquennial intervals since 1860 and during each year of the period 1901-9. The area under permanent artificially-sown grasses is excluded in all the States, except for the years 1860-79 in the case of New South Wales, where the acreage cannot be separated. During those years, however, the area laid down under permanent grasses could not have been very large:—

AREA UNDER CROP IN AUSTRALIA, 1860-1 to 1908-9.

Season.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Commonwealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1860-1 ...	260,798	387,282	3,353	359,284	24,705	152,860	1,188,282
1865-6 ...	378,255	448,194	14,414	547,124	38,180	159,547	1,585,714
1870-1 ...	426,976	692,840	52,210	801,571	54,527	157,410	2,185,534
1875-6 ...	451,139	786,520	77,347	1,111,882	47,571	142,547	2,567,006
1880-1 ...	629,180	1,548,809	113,978	2,087,237	57,707	140,788	4,577,699
1885-6 ...	737,701	1,867,496	198,334	2,298,412	60,058	144,761	5,306,762
1890-1 ...	852,704	2,031,955	224,993	2,093,515	69,678	157,376	5,430,221
1895-6 ...	1,348,600	2,413,235	285,319	2,092,942	97,821	212,703	6,450,620
1900-1 ...	2,445,564	3,114,132	457,397	2,369,680	201,338	224,352	8,812,463
1901-2 ...	2,278,370	2,965,681	483,460	2,236,552	217,441	232,550	8,414,054
1902-3 ...	2,249,092	3,246,568	275,383	2,224,593	229,992	246,923	8,472,551
1903-4 ...	2,545,940	3,389,069	566,589	2,256,824	283,752	259,611	9,301,785
1904-5 ...	2,674,896	3,321,785	539,216	2,275,506	327,391	226,228	9,365,022
1905-6 ...	2,840,235	3,219,962	522,748	2,255,569	364,704	230,237	9,433,455
1906-7 ...	2,826,657	3,303,586	559,753	2,157,235	460,825	244,744	9,552,800
1907-8 ...	2,572,873	3,232,523	532,624	2,265,017	494,987	257,028	9,355,052
1908-9 ...	2,717,085	3,461,761	535,900	2,321,812	586,489	269,346	9,892,393

The increase in the area under crop during the past eight years has been most marked in the case of Western Australia, the total advancing from 201,338 acres in the season 1900-1 to 586,489 acres in 1908-9, an increase of 385,151 acres. During the same period an increase of 347,629 acres was experienced in Victoria, 271,521 acres in New South Wales, 78,503 acres in Queensland, and 44,994 acres in Tasmania, while the area under crop in South Australia exhibited a decline of 47,868 acres. The total area under crop in the Commonwealth increased during the period by 1,079,930 acres, and the total for 1908-9 was the highest ever attained by the Commonwealth. In three of the States, viz., Victoria, Western Australia, and Tasmania, the area cropped in 1908-9 constituted a record, while in all cases the figures for 1908-9 exceeded those for 1907-8.

**3. Relation to Population.**—From the following table it will be seen that for the Commonwealth as a whole the area under crop has, during the past eight seasons, increased at a rate which is only slightly greater than that at which the population of the Commonwealth has increased. Only in the case of Western Australia has the ratio of area under crop to total population made any marked advance during the period,

while in South Australia a decline in ratio, though not in actual area, took place. Details for the eight seasons are as follows:—

**TOTAL AREA UNDER CROP PER 1000 OF POPULATION.**

Season	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1901-2 ...	1,671	2,463	964	6,164	1,154	1,349	2,219
1902-3 ...	1,617	2,682	540	6,103	1,117	1,419	2,197
1903-4 ...	1,798	2,804	1,105	6,168	1,282	1,463	2,384
1904-5 ...	1,855	2,751	1,039	6,157	1,384	1,265	2,368
1905-6 ...	1,926	2,656	994	6,020	1,457	1,285	2,348
1906-7 ...	1,872	2,699	1,051	5,660	1,773	1,368	2,337
1907-8 ...	1,659	2,609	988	5,872	1,887	1,433	2,251
1908-9 ...	1,719	2,751	975	5,832	2,213	1,482	2,337

4. **Relation to Total Area.**—The next table furnishes a comparison of the area under crop in the Commonwealth and the several States with the respective total areas. For the Commonwealth as a whole the area under crop represented for 1908-9 only about one acre in every 192. In Victoria the area under crop was about one acre in every 16, in Tasmania one in 62, in New South Wales one in 73, in South Australia one in 249, in Queensland one in 801, and in Western Australia one in 1065.

**PERCENTAGE OF AREA UNDER CROP TO TOTAL AREA OF EACH STATE AND OF COMMONWEALTH FOR SEASONS 1901-2 to 1908-9.**

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	C'wealth.
	%	%	%	%	%	%	%
1901-2 ...	1.147	5.273	0.113	0.387	0.035	1.386	0.442
1902-3 ...	1.132	5.772	0.064	0.385	0.037	1.472	0.445
1903-4 ...	1.282	6.025	0.132	0.390	0.045	1.547	0.489
1904-5 ...	1.347	5.906	0.126	0.393	0.052	1.348	0.492
1905-6 ...	1.430	5.725	0.122	0.390	0.058	1.372	0.496
1906-7 ...	1.423	5.873	0.130	0.372	0.074	1.459	0.501
1907-8 ...	1.295	5.747	0.124	0.392	0.079	1.532	0.491
1908-9 ...	1.368	6.155	0.125	0.401	0.094	1.605	0.520

5. **Artificially-Sown Grasses.**—Complete statistics regarding the area under sown grasses are available for the whole of the States only since the year 1896, and are as shewn hereunder:—

**AREA UNDER SOWN GRASSES, 1896-7 to 1908-9.**

Season.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Commonwealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1896-7	384,016	172,582	11,960	20,027	4,044	253,306	845,935
1901-2	467,839	162,954	34,679	23,510	3,711	314,422	1,007,115
1902-3	477,629	565,635	24,286	23,636	3,228	319,090	1,413,504
1903-4	552,501	962,665	15,639	24,118	2,952	343,284	1,901,159
1904-5	607,997	953,543	35,589	24,912	3,964	378,346	2,004,351
1905-6	627,530	1,040,335	40,802	26,082	5,456	404,653	2,144,858
1906-7	697,631	1,095,642	45,990	23,679	6,787	432,128	2,301,857
1907-8	736,080	1,095,471	76,943	34,635	7,990	465,673	2,416,792
1908-9	807,914	1,029,711	82,784	23,297	10,265	491,423	2,445,394

The considerable increase in the area of the grass lands of the Commonwealth is due in large measure to the great development of the dairying industry which has taken place during the last ten years, and which is referred to in the succeeding section.

### § 3. Relative Importance of Crops.

1. **Various Crops.**—The following table has been compiled in order to show the relative importance of the various crops in each State and in the Commonwealth as a whole. The figures refer to the season 1908-9:—

#### DISTRIBUTION OF CROPS IN AUSTRALIA, 1908-9.

Crop.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Total for C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Wheat ...	1,394,056	1,779,905	80,898	1,693,501	285,011	29,103	5,262,474
Oats ...	59,881	419,869	1,797	78,494	59,461	56,654	676,156
Barley—							
Malting ...	6,902	42,882	5,411	30,709	4,658	5,086	95,648
Other... ..	2,618	21,766	1,974	14,202	2,650	1,389	44,599
Maize ...	180,812	14,004	127,655	1,223	181	...	323,875
Beans and Peas ...	274	11,153	...	7,054	766	12,292	31,539
Rye ...	4,635	2,024	32	998	554	749	8,992
Other Cereals ...	...	...	7	20	16	...	43
Potatoes ...	26,301	47,903	6,227	8,069	2,026	35,160	125,686
Onions ...	344	5,340	64	342	143	52	6,285
Other Root Crops	911	2,072	3,255	369	196	5,552	12,355
Hay ...	715,837	956,371	65,004	424,924	201,874	88,613	2,452,623
Green Forage ...	235,595	63,066	87,675	16,086	4,902	6,243	413,567
Grass Seed ...	81	1,741	160	114	...	3,221	5,317
Sugar Cane—							
Productive ...	6,951	...	92,219	...	...	...	99,170
Unproductive ...	10,030	...	31,683	...	...	...	41,713
Vines—							
Productive ...	7,596	20,977	1,554	20,035	2,697	...	52,859
Unproductive ...	655	3,453	62	1,996	425	...	6,591
Tobacco... ..	618	413	669	...	...	...	1,700
Hops ...	...	189	...	3	...	956	1,148
Orchards and other							
Fruit Gardens ...	45,993	54,946	14,104	20,855	16,166	22,587	174,651
Market Gardens ...	10,331	9,279	2,875	2,818	3,471	1,603	30,377
All other Crops ...	6,664	4,408	12,575	...	1,292	86	25,025
Total Area ...	2,717,085	3,461,761	535,900	2,321,812	586,489	269,346	9,892,393

2. **Relative Areas of Crops in States.**—Taking the principal crops, *i.e.*, those in the case of which the cultivation amounts to more than 50,000 acres in the Commonwealth, the proportion of each in the various States to the total area under crop for the season 1908-9 is shewn in the next table. In four of the States, *viz.*, New South Wales, Victoria, South Australia, and Western Australia, wheat-growing for grain is by far the most extensive form of cultivation, while in each of these States the hay crop is second in importance. In New South Wales green forage ranks third, but in Victoria, South Australia, and Western Australia, and also in the Commonwealth as a whole, the oat crop occupies third position. In Queensland, on the other hand, the three principal crops in the order of importance are maize, sugar cane, and green forage, while in Tasmania hay, oats, and potatoes occupy the leading positions. For the Commonwealth as a whole, the wheat, hay, and oat crops represent nearly 85 per cent. of the total area under crop.

## PROPORTION OF AREA UNDER CHIEF CROPS, 1908-9.

Crop.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	C'wealth.
	%	%	%	%	%	%	%
Wheat ...	51.31	51.42	15.10	72.94	48.60	10.80	53.20
Hay ...	26.35	27.63	12.13	18.30	34.42	32.90	24.79
Oats ...	2.20	12.13	0.34	3.38	10.14	21.03	6.84
Green Forage ...	8.67	1.82	16.36	0.69	0.83	2.32	4.18
Maize ...	6.66	0.40	23.82	0.05	0.03	...	3.27
Orchards and Fruit							
Gardens ...	1.69	1.59	2.63	0.90	2.76	8.39	1.77
Sugar Cane...	0.62	...	23.12	...	...	...	1.42
Barley ...	0.35	1.87	1.38	1.93	1.25	2.40	1.42
Potatoes ...	0.97	1.38	1.16	0.35	0.34	13.06	1.27
Vineyards ...	0.30	0.70	0.30	0.95	0.53	...	0.60
All Other ...	0.88	1.06	3.66	0.51	1.10	9.10	1.24
Total ...	100.00	100.00	100.00	100.00	100.00	100.00	100.00

3. **Acreage of Principal Crops, Commonwealth.**—The acreage devoted to each of the principal crops in the whole Commonwealth during the last five seasons is shewn below :—

## ACREAGE OF CHIEF COMMONWEALTH CROPS, 1904-5 to 1908-9.

Crop.	1904-5.	1905-6.	1906-7.	1907-8.	1908-9.
	Acres.	Acres.	Acres.	Acres.	Acres.
Wheat ...	6,269,778	6,122,746	5,977,794	5,383,911	5,262,474
Hay ...	1,367,321	1,574,412	1,654,399	1,811,579	2,452,623
Oats ...	493,317	466,567	581,843	642,814	676,156
Green Forage ...	179,603	225,879	236,484	439,725	413,567
Maize ...	324,265	314,901	325,581	299,579	323,875
Orchards and Fruit Gardens	158,604	159,724	162,274	170,448	174,651
Sugar Cane ...	141,842	155,912	153,885	144,763	140,883
Barley ...	113,207	90,945	106,436	131,099	140,247
Potatoes ...	116,707	118,533	146,681	143,511	125,686
Vineyards ...	65,673	64,344	62,546	61,232	59,450
All other Crops ...	134,705	139,492	137,933	126,391	122,781
Total ...	9,365,022	9,433,455	9,545,856	9,355,052	9,892,393

During the period under review the area devoted to the several crops has varied considerably, that under wheat attaining a maximum for the period in the season 1904-5, and a minimum in 1908-9, while hay reached its maximum area in 1908-9 and its minimum in 1904-5. It is of interest to note that the persistent decline in wheat area during the quinquennium under review has been practically counterbalanced by the increase in the area devoted to hay. Thus the totals for the two crops were as follows:—1904-5, 7,637,099 acres; 1905-6, 7,697,158 acres; 1906-7, 7,632,193 acres; 1907-8, 7,195,490 acres; 1908-9, 7,715,097 acres.

## § 4. Wheat.

1. **Progress of Wheat-Growing.**—(i.) *Acreage.* The area under wheat for grain is given below for each State at various periods since 1860, and is shewn diagrammatically in the graph hereinafter :—

## AREA UNDER WHEAT, 1860-1 to 1908-9.

Season.	N.S.W.	Victoria.	Q'land.	Sth. Aust.	West Aust.	Tasmania.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1860-1	128,829	161,252	196	273,672	13,584	66,450	643,983
1865-6	131,653	178,628	2,068	410,608	22,249	73,270	818,476
1870-1	147,997	284,167	2,892	604,761	26,640	57,382	1,123,839
1875-6	133,609	321,401	4,478	898,820	21,561	42,745	1,422,614
1880-1	253,138	977,285	12,632	1,733,542	27,686	50,022	3,054,305
1885-6	264,867	1,020,082	10,093	1,922,555	29,511	30,266	3,277,374
1890-1	333,233	1,145,163	10,390	1,673,573	33,820	32,452	3,228,631
1895-6	596,684	1,412,736	27,090	1,649,929	23,241	64,652	3,774,332
1900-1	1,530,609	2,017,321	79,304	1,913,247	74,308	51,825	5,666,614
1901-2	1,392,070	1,754,417	87,232	1,743,452	94,710	44,084	5,115,965
1902-3	1,279,760	1,994,271	1,880	1,746,842	92,398	40,898	5,156,049
1903-4	1,561,111	1,968,599	138,096	1,711,174	137,946	49,414	5,666,340
1904-5	1,775,955	2,277,537	150,958	1,840,157	182,080	43,091	6,269,778
1905-6	1,939,447	2,070,517	119,356	1,757,036	195,071	41,319	6,122,746
1906-7	1,866,253	2,031,893	114,575	1,686,374	250,283	32,808	5,982,186
1907-8	1,390,171	1,847,121	82,461	1,753,755	279,609	30,794	5,383,911
1908-9	1,394,056	1,779,905	80,898	1,693,501	285,011	29,103	5,262,474

The area devoted to the production of wheat in the Commonwealth attained a maximum in the season 1904-5, when a total of 6,269,778 acres was reached, since then a persistent decline in area has been in evidence, and the total for 1908-9 fell short of that for 1904-5 by more than 1,000,000 acres. In this connection however, it should be noted that the decline in the area of wheat for grain has been accompanied by an increase in the area under hay. The maximum area under wheat for grain was attained by the several States in the following seasons:—New South Wales, 1905-6; Victoria, Queensland, and South Australia, 1904-5; Western Australia, 1908-9; and Tasmania, 1903-4. According to the preliminary reports available it appears that the area of wheat reaped for grain in 1909-10 will shew a marked advance on that for 1908-9.

(ii.) *Yield.* The production during the same period for each State and for the Commonwealth as a whole is given below:—

## PRODUCTION OF WHEAT, 1860-1 to 1908-9.

Season.	N.S.W.	Victoria.	Q'land.	Sth. Aust.	W. Aust.	Tasmania.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1860-1	1,581,598	3,459,914	3,136	3,576,593	208,332	1,415,896	10,245,469
1865-6	1,013,863	3,514,227	33,088	3,587,800	231,594	1,273,766	9,654,338
1870-1	999,595	2,870,409	39,787	6,961,164	316,769	896,881	12,084,605
1875-6	1,953,640	4,978,914	97,400	10,739,834	237,171	700,092	18,712,051
1880-1	3,717,355	9,727,369	223,243	8,606,510	332,232	750,040	23,356,749
1885-6	2,733,133	9,170,538	51,598	14,612,876	339,376	524,348	27,431,869
1890-1	3,649,216	12,751,295	207,990	9,399,389	467,389	642,980	27,118,259
1895-6	5,195,312	5,669,174	123,630	5,929,300	188,077	1,164,855	18,270,348
1900-1	16,173,771	17,847,321	1,194,088	11,253,148	774,653	1,110,421	48,353,402
1901-2	14,808,705	12,127,382	1,692,222	8,012,762	956,886	963,662	38,561,619
1902-3	1,585,097	2,569,364	6,165	6,354,912	985,559	876,971	12,378,068
1903-4	27,334,141	28,525,579	2,436,799	13,209,465	1,876,252	767,398	74,149,634
1904-5	16,464,415	21,092,139	2,149,663	12,023,172	2,013,237	792,956	54,535,582
1905-6	20,737,200	23,417,670	1,137,321	20,143,798	2,308,305	776,478	68,520,772
1906-7	21,817,938	22,618,043	1,108,902	17,466,501	2,758,567	651,408	66,421,359
1907-8	9,155,884	12,100,780	693,527	19,135,557	2,925,690	644,235	44,655,673
1908-9	15,483,276	23,345,649	1,202,799	19,397,672	2,460,823	700,777	62,590,996

The wheat harvest of 1908-9 ranks fourth in point of yield amongst the harvests of the Commonwealth, the only other occasions on which a yield exceeding 60,000,000 bushels has been reaped being the seasons 1903-4, 1905-6 and 1906-7. The prospects for the forthcoming harvest of 1909-10 are excellent, and taking into account the extensive areas reported as being under crop it appears probable that the aggregate yield for the season will exceed 70,000,000 bushels.

(iii.) *Average Yields.* In the next table will be found the average yield of wheat per acre in each of the last eight seasons :—

**YIELD OF WHEAT PER ACRE, 1901-2 to 1908-9.**

Season.	N.S.W.	Victoria.	Q'land.	Sth. Aust.	W. Aust.	Tasmania.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1901-2	10.64	6.91	19.40	4.60	10.10	21.86	7.54
1902-3	1.24	1.29	3.28	3.64	10.67	21.44	2.40
1903-4	17.51	14.49	17.65	7.72	13.60	15.53	13.32
1904-5	9.27	9.26	14.24	6.53	11.06	18.40	8.70
1905-6	10.69	11.31	9.53	11.46	11.83	18.79	11.19
1906-7	11.69	11.13	9.68	10.36	11.02	19.86	11.10
1907-8	6.59	6.55	8.41	10.91	10.46	20.92	8.29
1908-9	11.11	13.12	14.87	11.45	8.63	24.08	11.89

As the above figures shew, there were remarkable variations in the average yields, chiefly of course due to the vagaries of the season. The season 1902-3 was an especially lean one in all the States except Western Australia and Tasmania. A large proportion of the area sown with wheat had to be ploughed in or else fed off by stock, but the comparatively heavy yields in the succeeding year shew that this additional cultivation was very beneficial. For the Commonwealth as a whole the average yield per acre for 1908-9 was the best since 1903-4.

(iv.) *Relation to Population.* During the past eight seasons the Commonwealth's production of wheat per head of population has varied between  $3\frac{1}{2}$  bushels in 1902-3 and 19 bushels in 1903-4. The State in which wheat-growing occupies the most important position relatively to population is South Australia, which in 1905-6 had a yield which averaged  $53\frac{1}{2}$  bushels per head. Queensland is the State in which the average production of wheat per head is least. Particulars for the past eight seasons are as follows :—

**AUSTRALIAN WHEAT PRODUCTION PER 1000 OF POPULATION.**

Season.	N.S.W.	Victoria.	Queensland.	South Aust.	West. Aust.	Tasmania.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1901-2	10,860	10,073	3,375	22,082	5,077	5,591	10,168
1902-3	1,140	2,122	12	17,433	4,787	5,041	3,210
1903-4	19,311	23,598	4,753	36,099	8,476	4,324	19,005
1904-5	11,415	17,469	4,141	32,530	8,509	4,435	13,793
1905-6	14,065	19,314	2,163	53,760	9,222	4,332	17,058
1906-7	14,448	18,481	2,081	45,127	10,614	3,642	16,180
1907-8	5,905	9,767	1,287	49,616	11,154	3,592	10,746
1908-9	9,790	18,552	2,189	48,726	9,285	3,856	14,784

2. *Australian and Foreign Wheat Yields.*—In the next table will be found a statement of the average return per acre in the principal wheat-growing countries of the world :—

## AVERAGE YIELD OF WHEAT IN VARIOUS COUNTRIES.

Country.	Year.	Average Yield in bushels per acre.	Country.	Year.	Average Yield in bushels per acre.
Netherlands ...	1907	38.40	United States...	1907	13.60
Belgium...	1906	34.96	Italy ...	1904	12.76
New Zealand ...	1908	34.76	Servia ...	1905	12.25
United Kingdom ...	1907	33.98	Australia ...	1908	11.89
Sweden ...	1906	30.40	Siberia (Russia)	1906	11.33
Germany ...	1907	29.62	Argentina ...	1907	11.09
France ...	1907	22.49	Spain ...	1907	10.98
Japan ...	1906	18.10	India ...	1907	10.71
Bulgaria ...	1903	17.82	Algeria ...	1906	10.35
Austria ...	1907	17.49	Caucasia (Russia)	1906	10.21
Canada ...	1907	15.47	Rumania ...	1907	9.67
Hungary ...	1907	15.19	Russia in Europe	1906	7.25

3. **Wheat Crops of the World.**—The latest available official statistics of the production of wheat in various countries are given in the following table :—

Country.	Year.	Yield in Bushels.	Country.	Year.	Yield in Bushels.
United States ...	1907	614,810,750	United Kingdom ...	1907	53,193,620
France ...	1907	365,347,340	Austria ...	1907	50,953,920
Russia in Europe ...	1906	364,775,170	Rumania ...	1907	40,931,850
India ...	1907	305,606,940	Bulgaria ...	1903	35,540,990
Italy ...	1905	155,542,750	Algeria ...	1906	34,313,180
Hungary ...	1907	130,326,190	Japan ...	1906	19,652,830
Germany ...	1907	127,807,170	Belgium ...	1906	12,959,840
Argentina ...	1907	114,440,420	Servia ...	1905	11,258,450
Spain ...	1907	100,303,080	Mexico ...	1904	9,390,670
Canada ...	1907	93,094,700	New Zealand	1908	8,772,790
Caucasia (Russia)	1906	84,888,780	Sweden ...	1907	5,769,500
Australia ...	1908	62,590,996	Netherlands	1907	5,160,260
Siberia (Russia)	1906	57,140,280	Denmark ...	1906	4,004,670

Various estimates of the total quantity of wheat produced in the world have been made. That furnished by the United States Department of Agriculture gives the following figures for the five years 1903 to 1907 :—

## WORLD'S PRODUCTION OF WHEAT.

Year	1903.	1904.	1905.	1906.	1907.
Production	1,000,000 bushels. 3,092	1,000,000 bushels. 3,056	1,000,000 bushels. 3,219	1,000,000 bushels. 3,330	1,000,000 bushels. 3,013

For the five years referred to the Australian production of wheat aggregated 276,000,000 bushels, thus representing about  $1\frac{3}{4}$  per cent. of the world's production. The total quantity of wheat produced in the British Empire during the same period of five years was approximately 2,573,000,000 bushels, so that the Australian production of wheat represented about  $10\frac{3}{4}$  per cent. of that of the British Empire, while the British Empire production represented about  $16\frac{1}{2}$  per cent. of the world's total.

4. **Prices of Wheat.**—(i.) *British Wheat.* Since the United Kingdom is the largest importer of Australian wheat, the price of wheat in the British markets is a matter of considerable interest to the local producer. The table below gives the average prices per Imperial quarter realised by British-grown wheat :—



## PRICES OF BRITISH WHEAT PER QUARTER, 1861 to 1908.

Year.	Average for Year.	Highest Weekly Average.	Lowest Weekly Average.	Year.	Average for Year.	Highest Weekly Average.	Lowest Weekly Average.
	s. d.	s. d.	s. d.		s. d.	s. d.	s. d.
1861 ...	55 4	61 6	50 0	1903 ...	26 9	30 3	24 11
1871 ...	56 8	60 0	52 6	1904 ...	28 4	30 6	26 3
1881 ...	45 4	55 2	40 9	1905 ...	29 8	32 3	26 8
1891 ...	37 0	41 8	32 3	1906 ...	28 3	30 9	25 9
1901 ...	26 9	27 8	25 8	1907 ...	30 7	36 3	26 0
1902 ...	28 1	31 8	24 10	1908 ...	32 0	35 6	30 5

(ii.) *Australian and other Wheat.* Generally speaking, Australian wheat shews a grain of bright clear texture, rich in gluten, and of fine milling quality. Its excellence is attested by the high price which it realises in the Home markets. The statement below shews, for the last five years, the average value per Imperial quarter of the wheat imported into the United Kingdom from the chief producing countries:—

## AVERAGE PRICE OF FOREIGN WHEAT IMPORTED INTO THE UNITED KINGDOM, 1904 TO 1908.

Country.	Average Price per Imperial Quarter.					Country.	Average Price per Imperial Quarter.				
	1904.	1905.	1906.	1907.	1908.		1904.	1905.	1906.	1907.	1908.
	s. d.	s. d.	s. d.	s. d.	s. d.		s. d.	s. d.	s. d.	s. d.	s. d.
Argentina ...	30 1	30 7	29 10	31 6	35 6	U. States—					
Bulgaria ...	28 7	29 4	27 5	25 9	35 10	A. Coast ...	30 7	31 9	30 7	33 9	36 3
Chile ...	30 8	30 4	...	36 8	35 1	P. Coast ...	30 9	31 7	30 11	31 9	36 1
Germany ...	31 2	31 11	27 7	25 0	33 7	Canada ...	30 10	31 8	30 8	34 1	35 1
Rumania ...	29 5	31 0	28 11	30 2	38 5	British India	28 7	29 8	29 4	33 9	37 8
Russia—						Australia ...	31 4	32 4	31 2	33 8	37 7
Nthn. Ports	30 9	31 2	28 6	32 11	35 5						
Sthn. Ports	30 9	31 9	29 10	32 8	38 3						

In the next table will be found a statement of the export prices of Australian wheat during each of the last eight years:—

## EXPORT PRICES OF AUSTRALIAN WHEAT, 1901 to 1908.

Year ...	1901.	1902.	1903.	1904.	1905.	1906.	1907.	1908.
Price per bushel	2s. 9d.	3s. 1d.	3s. 1d.	3s. 2d.	3s. 5d.	3s. 3d.	3s. 4d.	4s. 1d.

The export prices here shewn are the average declared values for the successive years at the several ports of shipment in the Commonwealth.

5. *Imports and Exports of Wheat and Flour.*—(i.) *Quantities.* The table here-under shews the imports, exports, and net exports of wheat and flour during each year of the period 1901-8. For the sake of convenience flour has been expressed at its equivalent in wheat, one ton of flour being taken as equal to 50 bushels of grain. As shewn in this table, the Commonwealth imports of wheat and flour during 1903 were equivalent to 12,607,940 bushels of wheat. This importation was necessitated by the failure of the crop in the preceding season. The principal sources of supply were the United States, which contributed 5,000,000 bushels of wheat and 56,000 tons of flour, the Argentine which sent 3,000,000 bushels of wheat and 2000 tons of flour, and Canada which sent 57,000 bushels of wheat in addition to 11,000 tons of flour. Wheat to the extent of 134,000 bushels was obtained from India, while Brazil furnished 122,000 bushels. In ordinary seasons the import of wheat and flour is negligible. During the past five years the export has ranged between 20,900,000 bushels in 1908 and 38,600,000 bushels in 1906.

# IMPORTS AND EXPORTS OF WHEAT AND FLOUR, COMMONWEALTH, 1901 TO 1908.

Year.	Imports.			Exports.			Net Exports.
	Wheat.	Flour.	Total.	Wheat.	Flour.	Total	
	Bushels.	Eq. Bshls. <sup>1</sup>	Bushels.	Bushels.	Eq. Bshls. <sup>2</sup>	Bushels.	Bushels.
1901	22,992	302,550	325,542	20,260,058	4,840,700	25,100,758	24,775,216
1902	176,133	553,650	729,783	8,999,282	1,659,150	10,658,432	9,928,649
1903	9,114,490	3,493,450	12,607,940	1,530,143	402,500	1,932,643	10,675,297
1904	618	58,200	58,818	33,346,066	5,247,500	38,593,566	38,534,748
1905	258	55,550	55,808	24,648,182	7,715,850	32,364,032	32,308,224
1906	745	43,800	44,545	30,262,335	8,344,050	38,606,385	38,561,840
1907	2,010	18,700	20,710	28,784,130	8,171,900	36,956,030	36,935,320
1908	142	8,900	9,042	15,027,388	5,840,150	20,867,538	20,858,496

1. Equivalent in bushels of wheat. 2. — Denotes net imports.

(ii.) *Destination of Exported Breadstuffs.* In the next two tables will be found the principal countries to which the Commonwealth exported wheat and flour during each year of the period 1904-8. The countries are as shown in the Australian Customs returns, but owing to the fact that wheat ships are frequently instructed to call for orders at various African ports, some of these African countries cannot be properly considered as the ultimate destination of the whole of the wheat said to be exported to them.

## EXPORTS OF WHEAT FROM THE COMMONWEALTH, 1904 to 1908.

Country to which Exported.	1904.	1905.	1906.	1907.	1908.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
United Kingdom ...	27,176,293	16,910,925	20,138,149	21,487,355	11,538,962
Cape of Good Hope ...	4,632,456	3,783,657	4,017,233	3,734,272	2,104,613
Ceylon ...	41	18	164,358	4,835	510
Fiji ...	44	173	138	285	...
Hong Kong ...	41,215	27,412	2,903	65,428	...
India ...	...	233	437,317	31,573	485,078
Malta ...	...	16,800	...	...	...
Natal ...	381,602	238,797	145,995	422,433	370,670
New Zealand ...	512	138	548	36,340	31,622
Other British Possessions	396	541	132	207	28,880
Austria ...	...	...	9,375	...	...
Belgium ...	97,713	24,810	42,442	57,448	40,810
Canary Islands ...	...	323,882	327,255	...	...
Chile ...	138,567	382,377	2,212,410	568,675	75,617
China ...	4,148	...	10,487	599,222	...
Egypt ...	16,972	...	161,470	179,132	70,045
France ...	62,377	106,328	27,803	19,103	19,542
Germany ...	15,989	15,507	59,960	33,278	...
Guam ...	...	57,523	...	...	...
Italy ...	...	11,040	208,528	7,773	...
Japan ...	300,705	565,133	40,710	313,419	57
Java ...	59	45	100	9	...
New Caledonia ...	69,555	128,893	60,563	4,153	722
Peru ...	401,919	1,213,877	1,244,112	1,204,897	253,865
Philippine Islands ...	...	3	833	...	...
Portuguese East Africa	3,773	29,635	4,353	12,210	5,107
South Sea Islands ...	28	135	237	340	228
Spain ...	...	809,785	864,367	...	...
Sweden ...	...	...	80,414	...	...
Other Foreign Countries	1,702	515	143	1,743	1,060
Total ...	33,346,066	24,648,182	30,262,335	28,784,130	15,027,388

The exports of flour during the same period and the principal countries of destination were as follows :—

**EXPORTS OF FLOUR FROM THE COMMONWEALTH, 1904 to 1908.**

Country to which Exported.	1904.	1905.	1906.	1907.	1908.
	Tons.	Tons.	Tons.	Tons.	Tons.
United Kingdom ...	52,114	54,019	26,796	7,181	13,545
Cape of Good Hope ...	9,031	17,212	13,722	7,944	6,911
Ceylon ...	1,035	2,105	2,408	2,345	2,716
Fiji ...	1,084	1,093	1,168	1,362	...
Hong Kong ...	419	10,269	20,455	25,332	481
India ...	1	23	228	67	107
Mauritius... ..	791	1,681	5,471	2,579	3,461
Natal ...	19,642	23,910	24,358	20,264	16,751
New Zealand ...	521	441	1,032	6,427	14,464
Straits Settlements...	842	7,680	17,608	18,133	5,665
Other British Possessions	259	546	290	402	1,584
Belgium ...	...	497	...	...	...
Canary Islands ...	...	2	...	...	...
Celebes ...	50	302	622	592	391
Chile ...	20	8	1,929	...	...
China ...	31	414	586	6,479	363
Cochin China ...	75	10	100	384	110
Denmark ...	1	...	...	...	...
Egypt ...	...	...	33	16	1,570
France ...	1	7	...	...	...
Germany ...	298	8	28	25	3
Guam ...	36	4,925	496	...	...
Japan ...	730	1,555	4,793	491	1
Java ...	8,360	11,890	15,021	17,320	13,492
Molucca Islands ...	58	42	195	111	72
New Caledonia ...	2,974	3,030	3,613	4,293	4,056
Peru ...	1	4	...	...	...
Philippine Islands ...	1,163	6,442	12,126	16,947	9,790
Portuguese East Africa	3,193	4,410	11,139	22,678	17,689
Reunion ...	1,350	500	700	...	1,547
South Sea Islands ...	553	716	836	953	820
Sumatra ...	53	260	685	732	785
Other Foreign Countries	262	316	443	381	429
<b>Total ...</b>	<b>104,948</b>	<b>154,317</b>	<b>166,881</b>	<b>163,438</b>	<b>116,803</b>

During the five years under review the export of wheat to the United Kingdom totalled 97,251,684 bushels or about 74 per cent. of the total export for the period. On the other hand, the export of flour to the United Kingdom aggregated only 153,655 tons or about 22 per cent. of the total export. During the five years the heaviest exports of flour have taken place to the United Kingdom, South Africa, Portuguese East Africa, Hong Kong, Straits Settlements and Java.

(iii.) *Interstate Trade in Wheat.* A fairly considerable trade in wheat is carried on between the several States, the net result for 1908 shewing South Australia and Western Australia as exporters, and New South Wales, Tasmania, Victoria, and Queensland as importers. The total quantity of wheat consigned from the several States to other States of the Commonwealth during 1908 was 2,574,714 bushels. Details for the year are as follows:—

## INTERSTATE TRADE IN WHEAT, 1908.

State.	Imports from other States of the C'wealth.		Exports to other States of the Commonwealth.		Net Interstate Exports.*	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Bushels.	£	Bushels.	£	Bushels.	£
New South Wales	1,184,858	252,364	388,450	76,608	—796,408	—175,756
Victoria ...	294,958	57,205	210,708	45,209	— 84,250	— 11,996
Queensland ...	596,723	123,065	1,895	435	—594,828	—122,630
South Australia ...	1,680	352	1,889,338	400,972	1,887,658	400,620
Western Australia.	2,677	637	84,160	19,055	81,483	18,418
Tasmania ...	493,818	108,692	163	36	—493,655	—108,656

\* — denotes net imports.

(iv.) *Interstate Trade in Flour.* In the case of flour the importing States are Queensland, Tasmania, and Western Australia, while the exporters are South Australia, Victoria, and New South Wales. The following table contains particulars for the year 1908:—

## INTERSTATE TRADE IN FLOUR, 1908.

State.	Imports from other States of the C'wealth.		Exports to other States of the Commonwealth.		Net Interstate Exports.*	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Tons.	£	Tons.	£	Tons.	£
New South Wales	15,894	152,600	20,645	197,852	4,751	45,252
Victoria ...	3,777	34,178	13,292	121,121	9,515	86,943
Queensland ...	34,391	320,748	3	33	—34,388	—320,715
South Australia ...	135	1,295	25,148	233,857	25,013	232,562
Western Australia	2,235	20,127	...	...	— 2,235	— 20,127
Tasmania ...	2,894	26,031	238	2,116	— 2,656	— 23,915

\* — denotes net imports.

(v.) *Interstate Trade in Bran, Pollard, and Sharps.* Bran, pollard, and sharps, collectively known as wheat offal, represent about 33 per cent. of the total wheat ground, and figure somewhat largely in the interstate exports of South Australia and the interstate imports of Western Australia for 1908. Queensland is also an interstate importer, and Victoria and New South Wales exporters. In the case of Tasmania it is peculiar that this State appears for 1907 and 1908 as an importer of wheat and flour and an exporter of wheat offal. Details for 1908 are as follows:—

## INTERSTATE TRADE IN BRAN, POLLARD, AND SHARPS, 1908.

State.	Imports from other States of the C'wealth.		Exports to other States of the Commonwealth.		Net Interstate Exports.*	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Bushels.	£	Bushels.	£	Bushels.	£
New South Wales	455,405	29,853	551,920	31,024	96,515	1,171
Victoria ...	221,850	13,232	623,610	33,674	401,760	20,442
Queensland ...	494,275	26,855	23,320	1,471	—470,955	—25,384
South Australia	25,305	1,344	875,140	49,855	849,835	48,511
Western Australia	890,170	45,825	...	...	—890,170	—45,825
Tasmania ...	72,625	3,825	85,640	4,910	13,015	1,085

\* — denotes net imports.

(vi.) *Exports of Wheat and Flour.* From the foregoing returns it will be seen that the quantity of Australian wheat exported in the form of flour does not represent, on the average, more than 20 per cent. of the total wheat export of the Commonwealth. One cause of this, and probably the chief one, is the fact that Australian wheats are in considerable demand with the English millers for mixing purposes, while the Australian flour has not, up to the present, received that consideration from the English bakers which its admitted qualities undoubtedly merit. Steps which have recently been taken for bringing these qualities before the British public may possibly have the effect of increasing the proportion of wheat exported in the form of flour.

A point of some interest in connection with the export of wheat, and one which bears also on the proportions of wheat and flour exports just referred to, is that concerning the quantity of phosphoric acid which this export has the effect of removing from the Commonwealth, and the necessity which exists for the return to the soil of this substance in some form.

According to an estimate furnished by the chemist to the New South Wales Department of Agriculture (F. B. Guthrie, Esq., F.C.S., etc.), the proportions of milled product from a bushel (60 lbs.) of wheat are, approximately, 42 lbs. of flour, 9 lbs. of bran, and 9 lbs. of pollard, while the percentage of phosphoric acid contained in these products is as follows:—

Flour ...	...	...	0.32 per cent.,	or 0.13 lbs. per bushel.
Bran ...	...	...	3.00	" 0.27 "
Pollard ...	...	...	0.90	" 0.08 "

The total amount of phosphoric acid contained in a bushel of wheat is, therefore, 0.48 lbs., of which 0.13 lbs. is in the flour and 0.35 lbs. in the offal.

During the past eight years the net exports from the Commonwealth of wheat and its milled products have amounted to 153,540,196 bushels of wheat, 753,738 tons of flour, and 3,280,308 bushels of bran, pollard, and sharps. On the basis of the figures quoted above this export would contain no less than 79,803,000 lbs. of phosphoric acid, the value of which as a fertiliser would be about £500,000.

**6. Value of the Wheat Crop.**—The estimated value of the wheat crop in each State and in the Commonwealth during the season 1908-9 is shewn below:—

#### VALUE OF THE WHEAT CROP, 1908-9.

State.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	Cwlth.
	£	£	£	£	£	£	£
Aggregate value ...	3,111,179	5,301,408	300,700	4,243,241	522,925	145,800	13,625,253
Value per acre ...	£2/4/8	£2/19/7	£3/14/4	£2/10/1	£1/16/8	£5/0/2	£2/11/9

## § 5. Oats.

**1. Progress of Cultivation.**—Oats comes next in importance to wheat amongst the cereal crops cultivated last season, but while wheat grown for grain accounted for more than 53 per cent., oats represented less than 7 per cent. of the area under crop in the Commonwealth. The progress of cultivation since 1860 is shewn in the table hereunder, and more fully in the graphs hereinafter:—

## CULTIVATION OF OATS, 1860-1 to 1908-9.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1860-1 ...	6,535	86,337	7	2,273	507	30,303	125,962
1865-6 ...	10,939	102,817	348	2,872	1,232	28,538	146,746
1870-1 ...	10,683	149,309	122	6,188	2,095	30,946	199,343
1875-6 ...	18,856	124,100	114	3,640	1,256	32,556	180,522
1880-1 ...	17,923	134,089	116	4,355	1,319	19,853	177,655
1885-6 ...	14,117	215,994	208	7,871	1,596	29,247	269,033
1890-1 ...	14,102	221,048	411	12,475	1,934	20,740	270,710
1895-6 ...	23,750	255,503	922	34,098	1,880	32,699	348,852
1900-1 ...	29,383	362,689	385	27,988	4,790	45,073	470,308
1901-2 ...	32,245	329,150	1,535	34,660	9,751	54,089	461,430
1902-3 ...	42,992	433,489	78	50,296	10,334	55,058	592,247
1903-4 ...	51,621	433,638	2,808	57,558	14,568	60,663	620,856
1904-5 ...	40,471	344,019	643	50,630	13,864	43,690	493,317
1905-6 ...	38,543	312,052	533	56,950	15,713	42,776	466,567
1906-7 ...	56,431	380,493	1,236	57,000	28,363	53,320	581,843
1907-8 ...	75,762	398,749	715	66,297	46,667	54,625	642,815
1908-9 ...	59,881	419,869	1,797	78,494	59,461	56,654	676,156

2. **Total Yield.**—The total oat crop of the several States for the same period is furnished in the following table:—

## COMMONWEALTH OAT CROP, 1860-1 to 1908-9.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1860-1 ...	98,814	2,633,693	91	52,989	11,925	926,418	3,723,930
1865-6 ...	116,005	2,279,468	4,524	42,642	19,005	688,740	3,150,384
1870-1 ...	119,365	2,237,010	1,586	88,383	39,974	691,250	3,177,568
1875-6 ...	352,966	2,719,795	1,482	60,749	18,840	827,043	3,980,875
1880-1 ...	356,121	2,362,425	2,081	50,070	21,104	439,446	3,231,247
1885-6 ...	279,107	4,692,303	1,006	97,201	23,142	784,325	5,877,084
1890-1 ...	256,659	4,919,325	8,967	116,229	38,791	519,395	5,859,366
1895-6 ...	374,196	2,880,045	10,887	184,012	19,326	906,934	4,375,400
1900-1 ...	593,548	9,582,332	7,855	366,229	86,433	1,406,913	12,043,310
1901-2 ...	687,179	6,724,900	42,208	469,254	163,654	1,702,659	9,789,854
1902-3 ...	351,758	4,402,982	520	620,823	167,882	1,752,745	7,296,710
1903-4 ...	1,252,156	13,434,952	70,713	902,936	258,503	1,621,950	17,541,210
1904-5 ...	652,646	6,203,429	15,137	555,696	226,318	1,178,819	8,832,045
1905-6 ...	883,081	7,232,425	5,858	869,146	283,987	1,200,024	10,474,521
1906-7 ...	1,404,574	8,845,654	28,884	896,166	457,155	1,979,574	13,612,007
1907-8 ...	851,776	5,201,408	9,900	874,388	721,753	1,526,002	9,185,227
1908-9 ...	1,119,113	11,124,940	38,811	1,280,235	739,303	1,946,010	16,248,412

The principal oat-growing State of the Commonwealth is Victoria. During the past nine seasons it has produced nearly 70 per cent. of the total quantity of oats grown in the Commonwealth; Tasmania, New South Wales, and South Australia come next in order of importance. In Western Australia and South Australia the highest production of oats for any season was that of 1908-9, while Victoria and Queensland experienced a maximum yield in 1903-4, and Tasmania and New South Wales in 1906-7. For the Commonwealth as a whole the record yield was that of 17,541,210 bushels in the season 1903-4, while the yield of 16,248,412 bushels for 1908-9 ranks second.

3. **Average Yield.**—The average yield per acre of the oat crop of the Commonwealth varies considerably in the different States, being highest in Tasmania and lowest in South Australia. Particulars as to average yield for the past eight seasons are given in the succeeding table:—

## AVERAGE YIELD OF OATS PER ACRE.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	C'wealth
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1901-2 ...	21.81	20.43	27.50	13.54	16.78	31.48	21.22
1902-3 ...	8.18	10.16	6.67	12.34	16.25	31.83	12.32
1903-4 ...	24.26	30.98	25.18	15.69	17.74	26.74	28.25
1904-5 ...	16.13	18.03	23.54	10.98	16.32	26.98	17.90
1905-6 ...	22.91	23.18	10.99	15.26	18.07	28.05	22.45
1906-7 ...	24.89	23.25	23.37	15.72	16.12	33.94	23.39
1907-8 ...	11.24	13.04	13.85	13.19	15.47	27.94	14.29
1908-9 ...	18.69	26.50	21.60	16.31	12.43	34.35	24.03

It will be seen that as in the case of the wheat crop, the smallest average yield per acre for the Commonwealth for the period was that experienced in the season 1902-3, while the largest was that of the succeeding season.

4. **Relation to Population.**—The State in which oat production occupies the most important position in relation to population is Tasmania, the yield for that State representing for 1908-9 about  $10\frac{1}{2}$  bushels per head, as compared with  $3\frac{1}{2}$  bushels per head for the Commonwealth as a whole. Particulars for the past eight seasons are furnished in the succeeding table :—

## OAT PRODUCTION PER 1000 OF POPULATION.

Season.	N.S.W.	Victoria.	Q'land.	Sth. Aust.	W. Aust.	Tas.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1901-2	504	5,586	84	1,293	868	9,879	2,581
1902-3	253	3,637	1	1,703	815	10,076	1,892
1903-4	885	11,114	138	2,467	1,168	9,139	4,496
1904-5	453	5,138	29	1,503	957	6,593	2,234
1905-6	599	5,965	11	2,320	1,135	6,695	2,608
1906-7	930	7,228	54	2,359	1,759	11,068	3,332
1907-8	549	4,198	18	2,267	2,752	8,508	2,210
1908-9	707	8,841	71	3,216	2,789	10,707	3,838

5. **Value of Oat Crop.**—The estimated value of the oat crop of the several States of the Commonwealth for the season 1908-9 is as follows :—

## VALUE OF OAT CROP, 1908-9.

State.	N.S.W.	Victoria.	Q'land.	Sth. Aust.	West Aus.	Tas.	C'wealth.
Aggregate value	£135,226	£1,013,760	£7,439	£130,691	£164,826	£243,300	£1,715,242
Value per acre ...	£2/5/2	£2/8/3	£4/2/10	£1/13/4	£3/2/2	£4/5/11	£2/10/9

6. **Imports and Exports.**—The production of oats in the Commonwealth has not yet reached such a stage as to admit of a regular export trade in this cereal; in fact in certain years the imports have exceeded the exports, notably in 1903, 1906, and 1908. The quantities and values of oats imported into and exported from the Commonwealth during the eight years 1901 to 1908 are given hereunder :—

## COMMONWEALTH IMPORTS AND EXPORTS OF OATS, 1901 to 1908.

Year.	Imports.		Exports.		Net Exports.*	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Bushels.	£	Bushels.	£	Bushels.	£
1901	1,526,599	153,674	2,874,334	285,347	1,347,735	131,673
1902	1,037,596	157,981	1,427,620	181,450	390,024	23,469
1903	2,066,365	229,395	184,823	23,305	1,881,542	206,090
1904	185,652	15,921	1,713,578	115,659	1,527,926	99,738
1905	392,400	45,460	882,740	83,479	490,340	38,019
1906	215,330	27,445	154,063	18,559	61,267	8,886
1907	21,945	2,850	533,485	60,204	511,540	57,354
1908	1,401,870	206,283	67,058	10,594	1,334,812	195,689

\* — signifies net imports.

The principal countries from which the Commonwealth imports of oats have been obtained are the Dominion of New Zealand and the South African colonies, while the principal countries to which oats were exported during the period under review were the South African colonies in the earlier, and New Zealand in the later years.

7. **Oatmeal, etc.**—Importations of oatmeal, etc., into the Commonwealth take place principally from the United Kingdom, the United States, and Canada. The total importations of oatmeal, wheatmeal, and rolled oats during 1908 amounted to 823,320 lbs., and represented a value of £10,416.

8. **Comparisons with other Countries.**—A comparison of the Australian production of oats with that of the leading oat-producing countries of the world, is furnished in the following table:—

## PRODUCTION OF OATS IN VARIOUS COUNTRIES, 1907.

Country.	Quantity of Oats produced	Country.	Quantity of Oats produced	Country.	Quantity of Oats produced.
	Bushels.		Bushels.		Bushels.
Russian Empire	740,898,464	Austria	214,890,456	Rumania ...	17,290,168
United States ...	731,507,936	Hungary ...	183,688,752	New Zealand	15,021,861
Germany ...	517,043,592	U'd. Kingdom	65,647,728	Spain ...	13,943,288
France (1906) ...	250,466,816	Sweden ...	20,286,000	Australia ...	9,185,227
Canada ...	217,542,784	Netherlands...			

9. **Comparison of Yields.**—The average yield per acre of oats in Australia is a somewhat low one compared with the results obtained in other countries, where the cultivation of this cereal is more extensively carried on. Arranging the countries contained in the foregoing table, with the exception of Russia, for which particulars are not available, according to the magnitude of the average yield of oats for the year 1907, the results are as follow:—

## YIELD OF OATS PER ACRE, 1907.

Country.	Average per Acre.	Country.	Average per Acre.	Country.	Average per Acre.
	Bushels.		Bushels.		Bushels.
Netherlands ...	58.96	Austria ...	30.04	United States ...	22.98
Germany ...	47.82	Canada ...	29.86	Rumania...	19.86
United Kingdom...	43.76	France (1906) ...	26.28	Australia...	14.29
New Zealand ...	38.82	Hungary ...	23.55	Spain ...	11.76



**10. Interstate Trade.**—Particulars concerning the interstate trade in oats for the year 1908 are contained in the following table. These shew that Tasmania is the largest exporter, while New South Wales is the largest importer of oats:—

**INTERSTATE TRADE IN OATS, 1908.**

State.	Imports from Other States of the Commonwealth.		Exports to Other States of the Commonwealth.		Net Interstate Exports.*	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Bushels.	£	Bushels.	£	Bushels.	£
New South Wales ...	580,663	90,003	32,000	5,236	—548,663	—84,767
Victoria ...	296,373	42,761	198,935	30,665	—97,438	—12,096
Queensland ...	91,310	13,977	93	12	—91,217	—13,965
South Australia ...	2,195	349	200,712	29,320	198,517	28,971
Western Australia ...	184,037	25,770	473	94	—183,564	—25,676
Tasmania ...	7,100	1,020	729,465	108,553	722,365	107,533

\* — signifies net imports.

**11. Price of Oats.**—The average wholesale prices of oats in the Melbourne market for each of the years 1904 to 1908 are given in the following table:—

**AVERAGE WHOLESALE PRICE OF OATS PER BUSHEL.**

Particulars.	1904.	1905.	1906.	1907.	1908.
	s. d.	s. d.	s. d.	s. d.	s. d.
Feed oats ...	1 3	1 10	2 4	2 5	2 11
Milling oats ...	1 11	2 7	2 8	2 6	3 0

**§ 6. Maize.**

**1. States Growing Maize.**—The only States in which maize is at all extensively grown for grain are those of New South Wales and Queensland, the area so cropped in these two States during the season 1908-9 being 308,467 acres, or more than 95 per cent. of the total for the Commonwealth. Of the balance, Victoria contributed 14,004 acres, South Australia 1223 acres, and Western Australia 181 acres. The climate of Tasmania prevents the growing of maize for grain in that State. In South Australia prior to 1908 particulars concerning maize had not been specially asked for on the form used in the collection of agricultural statistics. In all the States maize is grown to a greater or less extent as green forage, particularly in connection with the dairying industry.

**2. Area under Maize.**—The area devoted to the growing of maize for grain in each State, from 1875 onwards, is given in the following table, the actual fluctuations from year to year are shewn more fully on the graph hereinafter.

The total area under maize in the Commonwealth exceeded 300,000 acres for the first time in the season 1890-1, and although it has fluctuated somewhat since then, it may be considered to have remained practically stationary at about that figure. The greatest divergence occurred in 1903-4, when a record total of 371,906 acres was harvested. The area cropped with maize in New South Wales, which had declined rapidly from a maximum of 226,834 acres in 1903-4 to 160,980 acres in 1907-8, shewed a marked

improvement in 1908-9, when a total area of 180,812 acres was cropped. In Queensland the area appears to be on the increase, and that for 1906-7 was the highest ever attained in that State, while the area cropped in 1908-9 has only twice been exceeded, viz., in 1906-7 and 1903-4. The area under maize in New South Wales in 1907-8 represents less than 7 per cent. of that State's total area under crop, while in the case of Queensland the maize crop amounts to nearly 24 per cent. of the total.

#### AREA UNDER MAIZE, STATES AND COMMONWEALTH, 1875-6 to 1908-9.

Season.	N.S.W.	Victoria.	Queensland.	South Aust.	West Aust.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1875-6	117,582	2,346	38,711	...	60	158,699
1880-1	127,196	1,769	44,109	...	32	173,106
1885-6	132,709	4,530	71,741	...	120	209,100
1890-1	191,152	10,357	99,400	...	81	300,990
1895-6	211,104	7,186	100,481	...	23	318,794
1900-1	206,051	9,389	127,974	...	91	343,505
1901-2	167,333	10,020	116,983	...	513	294,849
1902-3	202,437	10,906	89,923	...	109	303,375
1903-4	226,834	11,810	133,099	...	163	371,906
1904-5	193,614	11,394	119,171	...	86	324,265
1905-6	189,353	11,785	113,720	...	43	314,901
1906-7	174,115	11,559	139,806	...	101	325,581
1907-8	160,980	10,844	127,119	*549	87	299,579
1908-9	180,812	14,004	127,655	1,223	181	323,875

\* Particulars for previous years not available.

3. **Total Yield.**—Notwithstanding the fact that the area under maize in the Commonwealth for 1906-7 fell considerably short of that for some of the previous seasons, the 1906-7 production established a record, the total attained being 10,172,154 bushels. Only once previously had a total exceeding ten millions been reached, viz., in the season 1897-8, when 10,036,083 bushels were harvested. For the season 1908-9, both the area under maize and also the aggregate yield were higher in all the States than for the preceding season. Particulars concerning the yield from 1875 onwards are as hereunder:—

#### MAIZE CROP, STATES AND COMMONWEALTH, 1875-6 to 1908-9.

Season.	N.S.W.	Victoria.	Queensland.	S. Aust.	W. Aust.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1875-6	...	37,177	1,006,486	...	1,200	4,455,380
1880-1	...	49,299	1,409,607	...	896	5,978,699
1885-6	...	181,240	1,574,294	...	1,417	6,093,114
1890-1	...	574,083	2,373,803	...	1,526	8,662,617
1895-6	...	351,891	2,391,378	...	600	8,430,899
1900-1	...	604,180	2,456,647	...	1,399	9,354,971
1901-2	...	615,472	2,569,118	...	5,203	7,034,786
1902-3	...	750,524	1,033,329	...	2,110	4,835,232
1903-4	...	904,239	1,923,623	...	2,487	9,667,089
1904-5	...	623,736	2,542,766	...	896	8,118,530
1905-6	...	641,216	2,164,674	...	428	8,346,068
1906-7	...	704,961	3,703,274	...	919	10,172,154
1907-8	...	508,761	3,093,789	*6,263	1,080	8,137,745
1908-9	...	650,462	2,767,600	19,043	2,136	8,655,279

\* Particulars for previous years not available.

4. **Average Yield.**—In the following table particulars are given of the average yield per acre of the maize crops of the several States for the eight seasons, 1901-2 to 1908-9:—

## AVERAGE YIELD OF MAIZE PER ACRE, COMMONWEALTH AND STATES, 1901-2 to 1908-9.

Season.	N.S.W.	Victoria.	Queensland.	S. Aust.	W. Aust.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1901-2 ...	22.98	61.42	21.96	...	10.16	23.86
1902-3 ...	15.06	68.82	11.49	...	19.36	15.94
1903-4 ...	30.14	76.57	14.45	...	15.26	25.99
1904-5 ...	25.57	54.74	21.34	...	10.42	25.04
1905-6 ...	29.26	54.41	19.04	...	9.95	26.50
1906-7 ...	33.10	60.99	26.49	...	9.10	31.24
1907-8 ...	28.13	46.92	24.34	*11.41	12.41	27.16
1908-9 ...	28.85	46.45	21.68	15.57	11.80	26.72

\* Particulars for previous years not available.

The extraordinarily high average yield obtained in Victoria is due, in large measure, to the fact that the area under maize in that State is comparatively small and is situated in districts that are peculiarly suited to the production of this grain. The yield in New South Wales is appreciably higher than that obtained in Queensland.

5. **Value of Maize Crop.**—The value of the Commonwealth maize crop for the season 1908-9 has been estimated at £1,830,203, made up as follows:—

## VALUE OF MAIZE CROP, 1908-9.

State.	New South Wales.	Victoria.	Queensland.	S. Aust.	Western Australia.	Commonwealth.
Aggregate value	£1,086,675	£139,009	£599,647	£4,285	£587	£1,830,203
Value per acre	£6 0/2	£9 18/6	£4 13/11	£3 10/	£3 4/10	£5 13/

6. **Relation to Population.**—During the past eight seasons the Commonwealth production of maize has ranged between  $1\frac{1}{4}$  bushels per head of population in 1902-3 and  $2\frac{1}{4}$  bushels per head in 1906-7. The production in Queensland, the State in which the maize yield per head of population is highest, ranged during the same period between 2 bushels per head in 1902-3 and 7 bushels per head in 1906-7. Details for the several States for the eight seasons are as follows:—

## MAIZE PRODUCTION PER 1000 OF POPULATION.

Season.*	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1901-2 ...	2,820	511	5,125	...	28	...	1,855
1902-3 ...	2,192	620	2,027	...	10	...	1,254
1903-4 ...	4,830	748	3,753	...	11	...	2,478
1904-5 ...	3,433	517	4,898	...	4	...	2,053
1905-6 ...	3,757	529	4,117	...	2	...	2,078
1906-7 ...	3,816	576	6,951	...	4	...	2,490
1907-8 ..	2,920	411	5,740	*16	4	...	1,958
1908-9 ...	3,299	517	5,038	48	8	...	2,044

\* Particulars for previous years not available.

7. **Overseas Imports and Exports.**—Except in the years 1902 and 1903, when, owing to the severe drought experienced in Australia, many of the maize crops failed, the Commonwealth overseas trade in maize has been practically insignificant. In the former of the years mentioned nearly two million, and in the latter considerably more than a million bushels were imported. In 1908 also, owing to the small harvest of season 1907-8, the imports of maize were largely in excess of the exports. Details of imports and exports for the past eight years are as follows:—

## COMMONWEALTH IMPORTS AND EXPORTS OF MAIZE, 1901 to 1908.

Year.	Imports.		Exports.		Net Exports.*	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Bushels.	£	Bushels.	£	Bushels.	£
1901 ...	188,423	24,764	533	75	187,890	24,689
1902 ...	1,910,587	319,859	1,450	351	1,909,137	319,508
1903 ...	1,346,702	204,484	17,296	2,749	1,329,406	201,735
1904 ...	35,096	3,018	48,109	5,421	13,013	2,403
1905 ...	9,785	1,922	7,033	985	2,752	937
1906 ...	24,727	3,243	63,168	9,256	38,441	6,013
1907 ...	31,327	5,541	43,429	6,220	12,102	679
1908 ...	271,723	49,291	2,018	444	269,705	48,847

\* — signifies net imports.

The principal countries to which maize has been exported from the Commonwealth are South Africa, New Zealand, and China, while the principal countries from which importations have taken place are the Argentine Republic, New Zealand, the United States, the New Hebrides, South Africa, and Java.

8. **Prepared Maize.**—A fairly large quantity of corn-flour is imported annually into the Commonwealth, the principal countries of supply being the United Kingdom and the United States. During the year 1908 these importations amounted to 752,064 lbs., and represented a value of £9964.

9. **Maize-growing in other Countries.**—The world's production of maize for the year 1907 has been estimated at 3,200,000,000 bushels, and of this quantity the United States of America was responsible for 2,510,000,000 bushels, or nearly 78½ per cent. The other leading maize-producing countries of the world are Mexico, the Argentine Republic, Italy, and Austria-Hungary.

10. **Interstate Trade in Maize.**—In addition to being the largest producer of maize in the Commonwealth, New South Wales is also the largest importer from the other States. Particulars of the Interstate imports and exports are contained in the table given hereunder:—

## INTERSTATE TRADE IN MAIZE, 1908.

State.	Imports from other States of the Commonwealth.		Exports to other States of the Commonwealth.		Net Interstate Exports.*	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Bushels.	£	Bushels.	£	Bushels.	£
New South Wales ...	502,675	115,895	31,130	6,986	471,545	108,959
Victoria ...	11,493	2,545	236,923	54,634	225,430	52,089
Queensland ...	46,080	10,537	306,852	70,804	260,772	60,267
South Australia ...	6,857	1,558	1,664	345	5,193	1,213
Western Australia ...	6,704	1,538	...	...	6,704	1,538
Tasmania ...	2,882	685	122	39	2,760	646

\* — signifies net imports.

11. **Price of Maize.**—The average wholesale price of maize in the Sydney market is given in the following table for each of the years 1901 to 1908:—

## AVERAGE PRICE OF MAIZE PER BUSHEL.

Year ...	1901.	1902.	1903.	1904.	1905.	1906.	1907.	1908.
Average price per bushel	s. d. 2 9	s. d. 4 10	s. d. 4 1	s. d. 2 4	s. d. 3 3	s. d. 3 0	s. d. 3 2	s. d. 4 7

## § 7. Barley.

1. **Area under Barley.**—The area devoted to barley in the Commonwealth is one which has fluctuated very considerably, but up to the season 1906-7 the net result of these fluctuations had left it in practically the same position as that which it occupied twenty-six years previously. During the last two seasons, however, a satisfactory advance has been made and the area under barley for 1908-9, viz., 140,247 acres, is the highest ever attained in the Commonwealth. The principal barley-growing State is Victoria, which, for the season 1908-9, accounted for 46 per cent. of the Commonwealth area devoted to this crop. The figures here given relate to the areas harvested for grain; only small areas are cropped for hay, while more considerable quantities are cut for green forage. These, however, are not included in this sub-section. The area under barley for grain in the several States from 1875 onwards is shewn in the following table:—

COMMONWEALTH AREA UNDER BARLEY, 1875-6 to 1908-9.

Season.	N.S.W.	Victoria.	Q'land.	Sth. Aust.	W. Aust.	Tasmania.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1875-6	4,817	31,568	613	13,969	5,014	5,939	61,920
1880-1	8,056	68,630	1,499	13,074	6,363	8,297	105,919
1885-6	5,298	74,112	406	16,493	6,178	6,833	109,320
1890-1	4,937	87,751	584	14,472	5,322	4,376	117,442
1895-6	7,590	78,438	721	14,184	1,932	6,178	109,043
1900-1	9,435	58,853	7,533	15,352	2,536	4,502	98,211
1901-2	6,023	32,423	11,775	15,517	2,669	6,104	74,511
1902-3	4,557	37,716	430	21,493	3,783	8,281	76,260
1903-4	10,057	47,760	22,881	23,697	3,609	8,084	121,088
1904-5	14,930	46,089	17,387	23,904	3,251	7,646	113,207
1905-6	9,519	40,938	5,201	26,250	3,665	5,372	90,945
1906-7	7,979	52,816	8,601	23,122	3,590	5,328	106,436
1907-8	11,890	63,074	6,943	37,321	6,019	5,852	131,099
1908-9	9,520	64,648	7,385	44,911	7,308	6,475	140,247

All the States except New South Wales shewed satisfactory increases in area for 1908-9 as compared with the cropping of the previous season, while in South Australia a comparatively consistent increase in the area under barley has been in evidence for many years.

2. **Malting and other Barley.**—In recent years the statistics of all the States have distinguished between "malting" and "other" barley. Particulars for the Commonwealth are as follows:—

AREA UNDER MALTING AND OTHER BARLEY, 1908-9.

State.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Malting barley	6,902	42,882	5,411	30,709	4,658	5,096	95,648
Other barley ...	2,618	21,766	1,974	14,202	2,650	1,389	44,599
Total ...	9,520	64,648	7,385	44,911	7,308	6,475	140,247

It will be seen that, taking the Commonwealth as a whole, about 68 per cent. of the area devoted to this grain is cropped with malting barley. The proportion varies considerably in the several States.

3. **Total Yield.**—The total production of barley in the Commonwealth for the season 1908-9 amounted to 2,874,204 bushels, exceeding the preceding season's harvest by 882,552 bushels, and constituting a record for the production of barley in Australia. The highest total previously attained was that of 2,701,233 bushels for the season 1903-4. Increased yields occurred in all the States except Western Australia. Particulars concerning the yields of the several States from 1875 onwards are as follows:—

**COMMONWEALTH BARLEY CROP, 1875-6 to 1908-9.**

Season.	N.S.W.	Victoria.	Q'land.	Sth. Aust.	W. Aust.	Tasmania.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1875-6	98,576	700,665	12,260	197,315	70,196	165,357	1,244,369
1880-1	163,395	1,068,830	31,433	151,886	89,082	169,156	1,673,782
1885-6	85,606	1,302,854	9,826	218,334	89,581	176,466	1,882,667
1890-1	81,883	1,571,599	12,673	175,583	85,451	99,842	2,026,531
1895-6	96,119	715,592	7,756	140,391	18,691	138,833	1,117,382
1900-1	114,228	1,215,478	127,144	211,102	29,189	116,911	1,814,052
1901-2	103,361	693,851	277,037	243,362	34,723	167,485	1,519,819
1902-3	18,233	561,144	3,595	317,155	46,255	201,133	1,147,515
1903-4	174,147	1,262,923	510,557	487,920	53,227	212,459	2,701,233
1904-5	266,781	874,099	331,772	346,718	37,332	163,194	2,019,896
1905-6	111,266	1,062,139	61,816	505,916	49,497	106,042	1,896,676
1906-7	152,739	1,255,442	158,283	491,246	48,827	141,895	2,248,432
1907-8	75,148	1,059,295	64,881	566,937	76,205	149,186	1,991,652
1908-9	166,538	1,511,181	137,667	825,740	74,433	158,645	2,874,204

4. **Value of Barley Crop.**—The estimated value of the total barley crop of the Commonwealth for the season 1908-9 was £507,057; the extent to which the several States have contributed to this total being shewn in the following table:—

**VALUE OF BARLEY CROP.**

State.	N.S.W.	Victoria.	Q'land.	Sth. Aust.	W. Aust.	Tas.	C'wealth.
Total value ...	£38,404	£262,941	£34,417	£128,939	£12,626	£29,730	£507,057
Value per acre	£4/0/8	£4/1/4	£4/13/2	£2/17/5	£1/14/7	£4/11/10	£3/12/4

5. **Relation to Population.**—During the eight seasons, 1901-2 to 1908-9, the quantity of barley produced in the Commonwealth has averaged about half a bushel per head of population. For the season 1908-9 the production ranged from two bushels per head in South Australia to one-tenth of a bushel in New South Wales. Details for the period are as follows:—

**BARLEY PRODUCTION PER 1000 OF POPULATION.**

Season.	N.S.W.	Victoria.	Qsld.	S. Aust.	W. Aust.	Tas.	C'wealth.
	Bushels.	Bushels	Bushels	Bushels.	Bushels	Bushels	Bushels.
1901-2 ...	76	576	553	671	184	972	401
1902-3 ...	13	464	7	870	225	1,156	298
1903-4 ...	123	1,008	996	1,333	240	1,197	681
1904-5 ...	184	724	639	938	158	913	511
1905-6 ...	75	876	118	1,350	198	517	469
1906-7 ...	101	1,026	297	1,293	188	793	550
1907-8 ...	48	855	120	1,470	291	832	479
1908-9 ...	105	1,201	251	2,074	281	873	679

6. **Commonwealth Imports and Exports.**—The Commonwealth oversea trade in barley is not extensive, and in most years the imports exceed the exports. In 1902 and 1903 somewhat extensive importations of barley from the United States and New Zealand

took place, owing to the shortage in local supply resulting from the severe drought of that period. In 1904, the record crop of the season 1903-4 furnished the material for a heavy exportation to Japan, the total exported thither during that year being 551,825 bushels. Particulars of the Commonwealth oversea imports and exports of barley for the eight years 1901 to 1908 are contained in the following table :—

**COMMONWEALTH IMPORTS AND EXPORTS OF BARLEY, 1901 to 1908.**

Year.	Imports.		Exports.		Net Exports.*	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Bushels.	£	Bushels.	£	Bushels.	£
1901 ...	55,508	7,208	17,474	1,942	— 38,034	— 5,266
1902 ...	686,478	123,194	8,267	1,465	—678,211	—121,729
1903 ...	731,494	136,997	14,286	5,561	—717,208	—131,436
1904 ...	246,908	39,012	568,640	65,950	321,732	26,938
1905 ...	124,850	19,672	244,456	28,618	119,606	8,946
1906 ...	210,586	34,468	3,150	562	—207,436	— 33,906
1907 ...	232,154	53,802	38,350	5,533	—193,804	— 48,269
1908 ...	452,462	107,126	1,148	290	—451,314	—106,836

\* — signifies net imports.

It will be seen that in only two years out of the eight dealt with have the Commonwealth exports of barley exceeded the imports, viz., in 1904 and 1905. During the eight years the total importations amounted to 2,740,440 bushels, valued at £521,479, and the total exports to 895,771 bushels, valued at £109,921, giving a net importation of 1,844,669 bushels in quantity and £411,558 in value.

In addition to the above, which relates to the unprepared grain, there is a small importation into the Commonwealth of pearl and Scotch barley, mainly from the United Kingdom, Germany, and China. The total imported during 1908 amounted to only 8619 lbs. in weight, with a value of £64.

A more considerable export trade in Australian pearl and Scotch barley is carried on, mainly with New Zealand, the total exports for 1908 reaching 303,549 lbs. valued at £2,242.

**7. Commonwealth Imports and Exports of Malt.**—The importations of malt into the Commonwealth are fairly extensive, the bulk of the supply being obtained from the United Kingdom, Austria-Hungary, and Germany, but principally from the United Kingdom. Details of imports and exports for the past eight years are given hereunder :—

**COMMONWEALTH IMPORTS AND EXPORTS OF MALT, 1901 to 1908.**

Year.	Imports.		Exports.		Net Imports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Bushels.	£	Bushels.	£	Bushels.	£
1901 ...	516,135	140,615	...	...	516,135	140,615
1902 ...	293,637	91,410	...	...	293,637	91,410
1903 ...	175,212	54,532	198	76	175,014	54,456
1904 ...	189,500	57,571	787	313	188,713	57,258
1905 ...	170,712	53,247	41	14	170,671	53,233
1906 ...	172,433	55,714	539	85	171,894	55,629
1907 ...	153,415	48,262	1,087	371	152,328	47,891
1908 ...	210,860	67,219	528	199	210,332	67,020

**8. Interstate Trade in Barley and Malt.**—Victoria, as well as being the largest grower of barley in the Commonwealth, is also the largest importer from the other States, the supply being chiefly obtained from South Australia, the principal inter-

state exporter during 1908. In the cases of both pearl barley and malt Victoria was the largest exporter to the other States, while Western Australia was the largest importer of pearl barley, and New South Wales the largest importer of malt.

### INTERSTATE TRADE IN BARLEY AND MALT, 1908.

#### BARLEY (UNPREPARED).

State.	Imports from Other States of the Commonwealth.		Exports to Other States of the Commonwealth.		Net Interstate Exports.*	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Bushels.	£	Bushels.	£	Bushels.	£
New South Wales	99,508	21,002	3,158	837	96,350	20,165
Victoria ...	220,090	51,940	107,734	22,676	112,356	29,264
Queensland ...	91,284	20,761	2,332	529	88,952	20,232
South Australia ...	322	89	298,198	69,882	297,876	69,793
Western Australia	1,546	330	...	...	1,546	330
Tasmania ...	1,778	458	3,106	656	1,328	198

#### BARLEY (PEARL AND SCOTCH).

	Lbs.	£	Lbs.	£	Lbs.	£
New South Wales	175,136	1,395	34,681	251	140,455	1,144
Victoria ...	32,091	157	533,690	3,643	501,599	3,486
Queensland ...	88,068	614	...	...	88,068	614
South Australia ...	171,016	1,189	95,749	860	75,267	329
Western Australia	175,301	1,209	392	3	174,909	1,206
Tasmania ...	25,728	213	2,828	20	22,900	193

#### MALT.

	Bushels.	£	Bushels.	£	Bushels.	£
New South Wales	338,963	108,168	3,128	1,113	335,835	107,055
Victoria ...	2,378	770	412,748	134,163	410,370	133,393
Queensland ...	40,365	14,234	11,418	3,678	28,947	10,556
South Australia ...	2,508	988	33,405	11,402	30,897	10,414
Western Australia	70,907	24,171	...	...	70,907	24,171
Tasmania ...	5,578	2,025	...	...	5,578	2,025

\* — signifies net imports.

9. **Comparison with other Countries.**—In comparison with the barley production of other countries of the world that of Australia appears very small indeed. Particulars for some of the leading countries for the year 1907 are as follows, the Australian figures being added for the sake of comparison:—

#### PRODUCTION OF BARLEY IN VARIOUS COUNTRIES, 1907.

Country.	Production of Barley.	Country.	Production of Barley.
	Bushels.		Bushels.
Russian Empire ...	342,252,400	France (1906) ...	35,859,920
Germany ...	154,180,600	Rumania ...	19,442,112
United States ...	145,927,648	Sweden ...	13,134,000
Austria-Hungary ...	134,618,168	Netherlands ...	3,964,808
United Kingdom ...	67,092,328	<b>Australia</b> ...	<b>1,991,652</b>
Spain ...	51,439,528	New Zealand ...	1,163,406
Canada ...	44,960,492		



10. **Average Yield.**—The average yield per acre of barley varies considerably in the different States, being highest in Tasmania and Victoria, and lowest in Western Australia and Queensland. Details for each State for the eight seasons 1901-2 to 1908-9 are given in the following table:—

**AVERAGE YIELD PER ACRE OF BARLEY, 1901-2 to 1908-9.**

Season.	N.S.W.	Victoria.	Q'land.	Sth. Aust.	West Aust.	Tas.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1901-2 ...	17.16	21.40	23.53	15.68	13.01	27.44	20.40
1902-3 ...	4.00	14.88	8.36	14.76	12.23	24.29	15.05
1903-4 ...	17.32	25.50	22.31	17.00	14.75	26.28	21.94
1904-5 ...	17.87	18.97	19.08	14.50	11.48	21.34	17.84
1905-6 ...	11.69	25.95	11.89	19.27	13.51	19.74	20.86
1906-7 ...	19.14	23.77	18.40	17.47	13.60	26.63	21.12
1907-8 ...	6.32	16.79	9.34	15.19	12.66	25.49	15.19
1908-9 ...	17.49	23.38	18.64	18.39	10.19	24.50	20.49

11. **Price of Barley.**—The average prices of barley in the Melbourne market during each of the years 1903 to 1908 are given in the following table:—

**AVERAGE PRICE OF BARLEY PER BUSHEL, 1903 to 1908.**

Particulars.	1903.	1904.	1905.	1906.	1907.	1908.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Malting barley ...	3 11	3 6	4 0	4 5	4 8	4 10
Cape barley ...	3 1	1 9	2 7	2 4	2 8	3 8

## § 8. Other Grain and Pulse Crops.

In addition to the grain crops already specified, the only grain and pulse crops at all extensively grown in the Commonwealth are beans, peas and rye. The total area under the two former for the season 1908-9 was 31,539 acres, giving a total yield of 588,508 bushels, or an average of 18.66 bushels per acre. The States in which the greatest area is devoted to beans and peas are Tasmania, Victoria and South Australia. The total area under rye in the Commonwealth during the season 1908-9 was 8992 acres, yielding 112,886 bushels, and giving an average of 12.55 bushels per acre. More than 40 per cent. of the rye grown during the season was produced in New South Wales. In addition to these grain crops a small area of rice has for some years past been cultivated in Queensland. The results obtained, however, have not offered sufficient inducement to growers to continue this crop, and the total area devoted to it has declined from 1113 acres in 1892-3 to 7 acres in 1908-9. Should rice-growing ever be seriously taken up in Australia, it is probable that large tracts of country in the northern parts of Western Australia and in the Northern Territory will be found well suited to its cultivation.

## § 9. Potatoes.

1. **Area.**—The principal potato-growing State of the Commonwealth as regards area is Victoria, Tasmania ranking second and New South Wales third. The area devoted to this crop in the Commonwealth, which has fluctuated somewhat, reached its highest point in the season 1906-7, with a total of 146,631 acres, while the area under potatoes for 1907-8 fell but little short of the 1906-7 record. In 1908-9 the area receded still further to 125,686 acres, but owing to the season in most of the States proving very favourable the aggregate yield for 1908-9 exceeded that for 1907-8 by upwards of 10,000 tons.

The area under potatoes in each State from 1890 onwards is given hereunder :—

**COMMONWEALTH AREA UNDER POTATOES, 1890-1 to 1908-9.**

Season.	N.S.W.	Victoria.	Q'land.	Sth. Aust.	W. Aust.	Tasmania.	C'wealth.
	Acres.	Acres	Acres.	Acres.	Acres.	Acres.	Acres.
1890-1	19,406	53,818	6,270	6,626	511	20,133	106,764
1895-6	24,722	43,895	9,240	6,448	668	19,247	104,220
1900-1	29,408	38,477	11,060	6,628	1,794	23,068	110,435
1901-2	26,158	40,058	9,948	6,248	1,829	25,444	109,685
1902-3	19,444	49,706	2,899	7,763	2,084	34,625	116,521
1903-4	20,851	48,930	6,732	8,616	1,823	29,160	116,112
1904-5	23,855	46,912	9,771	8,315	1,906	25,948	116,707
1905-6	26,374	44,670	7,170	9,540	2,145	28,634	118,533
1906-7	36,815	55,372	8,031	9,894	2,264	34,305	146,681
1907-8	31,917	54,149	7,889	9,062	1,854	38,640	143,511
1908-9	26,301	47,903	6,227	8,069	2,026	35,160	125,686

2. **Total Yield.**—Although only second amongst the States in respect of area under potatoes, Tasmania has, in several recent years, occupied the leading position in point of production. For the season 1908-9, Victoria's production represented nearly 40 per cent. of the total for the Commonwealth, Tasmania and New South Wales coming next in order. The total Commonwealth production for the season 1906-7, viz., 507,153 tons, was the highest ever attained, the yield which most nearly approached it being 449,383 tons in 1903-4. Details as to production in the several States during the period from 1890 onwards are as follows :—

**COMMONWEALTH PRODUCTION OF POTATOES, 1890-1 to 1908-9.**

Season.	N.S.W.	Victoria.	Q'land.	Sth. Aust.	W. Aust.	Tasmania.	C'wealth.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons
1890-1	52,791	204,155	13,112	23,963	1,900	73,158	369,079
1895-6	56,179	117,238	19,027	18,412	2,290	81,423	294,569
1900-1	63,253	123,126	20,014	14,566	4,836	93,862	319,657
1901-2	39,146	125,474	22,402	15,059	5,739	114,704	322,524
1902-3	30,732	168,759	3,257	28,312	6,488	163,518	401,066
1903-4	56,743	167,736	17,649	31,415	4,542	171,298	449,383
1904-5	48,754	92,872	19,231	19,521	5,614	110,547	296,539
1905-6	49,889	115,352	11,308	20,328	6,297	64,606	267,780
1906-7	114,856	166,839	15,830	22,277	5,028	182,323	507,153
1907-8	55,882	135,110	13,177	20,263	5,671	145,483	375,586
1908-9	71,794	152,840	11,550	21,553	6,695	121,605	386,037

3. **Average Yield per Acre.**—The suitability of the soil, climate, and general conditions of Tasmania for potato growing is evidenced by the high yields per acre which are almost invariably obtained in the island State. The lowest average yield is that obtained in Queensland. Particulars for each State for the eight seasons 1901-2 to 1908-9 are given hereunder :—

**AVERAGE YIELD OF POTATOES, COMMONWEALTH AND STATES,  
1901-2 TO 1908-9.**

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	C'wealth.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1901-2	1.50	3.13	2.25	2.41	3.14	4.51	2.94
1902-3	1.58	3.40	1.12	3.65	3.11	4.72	3.44
1903-4	2.72	3.43	2.62	3.65	2.49	5.87	3.87
1904-5	2.04	1.98	1.97	2.35	2.95	4.26	2.54
1905-6	1.89	2.58	1.58	2.13	2.94	2.26	2.26
1906-7	3.12	3.01	1.97	2.25	2.22	5.31	3.46
1907-8	1.75	2.50	1.67	2.24	3.06	3.77	2.62
1908-9	2.73	3.19	1.85	2.67	3.30	3.46	3.07

4. **Value of Potato Crop.**—The estimated value of the potato crop of each State for the season 1908-9 is furnished in the following table together with the value per acre:—

**VALUE OF POTATO CROP, 1908-9.**

State.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	C'wealth.
Total value	£372,304	£580,792	£92,400	£106,542	£53,500	£425,600	£1,631,138
Value per acre	£14/3/1	£12/2/6	£14/16/9	£13/4/1	£26/8/2	£12/2/1	£12/19/7

5. **Relation to Population.**—The average production of potatoes per annum per head of the population of the Commonwealth for the past eight seasons has been approximately  $1\frac{1}{2}$  cwt. In Tasmania, where this crop is of far greater importance in relation to population than is the case in any other State, the production per head in 1906-7 was more than a ton, and in 1908-9 about  $13\frac{1}{2}$  cwt. Details for the past eight seasons are as follows:—

**POTATO PRODUCTION PER 1000 OF POPULATION.**

Season.	N.S.W.	Victoria.	Q'land.	Sth. Aust.	W. Aust.	Tas.	C'wealth.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1901-2 ... ..	29	104	45	42	30	665	85
1902-3 ... ..	22	139	6	78	32	940	104
1903-4 ... ..	44	139	34	86	25	965	115
1904-5 ... ..	34	77	37	53	24	618	75
1905-6 ... ..	34	95	22	54	25	360	67
1906-7 ... ..	76	136	30	59	19	1,019	124
1907-8 ... ..	36	109	24	53	22	811	90
1908-9 ... ..	45	121	21	54	25	669	91

6. **Commonwealth Imports and Exports.**—Under normal conditions there is usually a fairly large export trade in potatoes carried on by the Commonwealth, principally with New Zealand and New Caledonia. Thus, during 1907, out of a total export of 17,842 tons, 13,346 tons went to New Zealand and 388 tons to New Caledonia. On the other hand, when in 1902 and 1903 the drought of that period had brought about a shortage in the Australian supplies, importations from New Zealand took place to the extent of 11,471 tons in the former and 2279 tons in the latter year. The quantities and values of the Commonwealth oversea imports and exports of potatoes for the eight years 1901 to 1908 are contained in the following table:—

**COMMONWEALTH IMPORTS AND EXPORTS OF POTATOES, 1901 to 1908.**

Year.	Imports.		Exports.		Net Exports.*	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Tons.	£	Tons.	£	Tons.	£
1901 ...	17,655	86,067	6,028	45,485	11,627	40,582
1902 ...	11,608	53,919	3,383	20,192	8,225	33,727
1903 ...	2,367	7,752	3,407	12,336	1,040	4,584
1904 ...	2,602	8,186	5,464	14,462	2,862	6,276
1905 ...	428	3,181	4,058	29,730	3,630	26,549
1906 ...	295	2,205	12,908	86,248	12,613	84,043
1907 ...	150	981	17,842	53,452	17,692	52,471
1908 ...	129	1,112	3,375	18,560	3,246	17,448

\* — signifies net imports.

7. **Interstate Trade in Potatoes.**—A large trade in potatoes is carried on between the States of the Commonwealth, the principal exporting State being Tasmania, and

the chief importers New South Wales, Queensland and Western Australia. Particulars for each State for the year 1908 are given hereunder :—

#### INTERSTATE TRADE IN POTATOES, 1908.

State.	Imports to Other States of the Commonwealth.		Exports from Other States of the Commonwealth.		Net Interstate Exports.*	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Tons.	£	Tons.	£	Tons.	£
New South Wales	81,755	390,670	7,272	39,649	74,483	351,021
Victoria ...	10,438	42,295	21,025	106,226	10,587	63,931
Queensland ...	24,889	115,929	110	716	24,779	115,213
South Australia...	3,928	19,717	2,390	12,642	1,538	7,075
Western Australia	12,719	57,271	11	56	12,708	57,215
Tasmania ...	79	397	103,000	466,990	102,921	466,593

\* — signifies net imports.

8. **Comparison with Other Countries.**—The following table will furnish means for comparing the potato crop of Australia for 1907 with those of some of the leading potato-producing countries of the world for the same year :—

#### POTATO CROPS OF VARIOUS COUNTRIES, 1907.

Country.	Yield.	Country.	Yield.
	Tons.		Tons.
Germany ...	44,806,433	Netherlands ...	2,287,093
Russian Empire ...	28,068,766	Sweden ...	1,266,368
Austria-Hungary ...	19,567,511	Denmark ...	684,696
France (1906)...	9,963,500	Norway (1906) ...	508,644
United States ...	7,222,114	Japan (1906) ...	501,421
United Kingdom ...	5,223,973	Australia ...	375,586
Belgium ...	2,373,924	New Zealand ...	142,999

### § 10. Other Root and Tuber Crops.

1. **Nature and Extent.**—Root crops, other than potatoes, are not extensively grown in Australia, the total area devoted to them for the season 1908-9 being only 18,640 acres. The principal of these crops are onions, mangolds, turnips, and "sweet potatoes" (*Batatas edulis*). Of these, onions are most largely grown in Victoria, mangolds in Tasmania and Victoria, turnips in Tasmania, and sweet potatoes in Queensland. The total area under onions in the Commonwealth during the season 1908-9 was 6285 acres, giving a total yield of 28,462 tons, and averaging 4.53 tons per acre. The area devoted in 1908-9 to root crops other than potatoes and onions, viz., 12,355 acres, yielded 112,828 tons, and gave an average of 9.13 tons per acre. The areas and yields here given are exclusive of the production of "market gardens," a reference to which will be made later.

2. **Commonwealth Imports and Exports.**—The only root crop, other than potatoes, in which any considerable oversea trade is carried on by the Commonwealth is that of onions. During the year 1908 oversea imports of onions amounted to 1069 tons, the principal countries from which they were obtained being Japan, the United States of America, and the Straits Settlements. For the same year the exports of onions totalled 3740 tons, the principal countries to which they were exported being New Zealand, Canada, the Philippine Islands, the United States of America, New Caledonia, Natal, and Fiji.

3. **Interstate Trade.**—A fairly extensive trade in onions is carried on between the several States of the Commonwealth. Victoria, the largest producer of onions, is also the largest exporter, while New South Wales, Queensland, and Western Australia are the principal importers. During the year 1908 the interstate onion trade was as follows:—

#### INTERSTATE TRADE IN ONIONS, 1908.

State.	Imports from Other States of the Commonwealth.		Exports to Other States of the Commonwealth.		Net Interstate Exports.*	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Tons.	£	Tons.	£	Tons.	£
New South Wales ...	9,603	70,105	380	2,572	— 9,223	— 67,533
Victoria ...	19	110	16,135	112,423	16,116	112,313
Queensland ...	4,313	27,923	8	47	— 4,305	— 27,876
South Australia ...	265	1,791	379	2,804	114	1,013
Western Australia ...	2,267	14,773	...	...	— 2,267	— 14,773
Tasmania ...	475	3,408	40	264	— 435	— 3,144

\* — signifies net imports.

### § 11. Hay.

1. **Nature and Extent.**—As already stated, the most important crop of the Commonwealth is that of wheat grown for grain. Next to this in importance is the hay crop, which for the season 1908-9 represented nearly 25 per cent. of the area under crop in the Commonwealth. In most European countries the hay crop consists almost entirely of meadow and other grasses, whilst in Australia a very large proportion of the area under hay comprises cereal crops, mainly wheat and oats. A considerable quantity of lucerne hay is also made, particularly in New South Wales and Queensland. The area under hay of all kinds in the several States from 1860 onwards is given hereunder:—

#### AREA UNDER HAY, 1860-1 to 1908-9.

Season.	N.S.W.	Victoria.	Q'land.	Sth. Aust.	W. Aust.	Tas.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1860-1	46,584	90,921	276	55,818	6,626	31,837	232,062
1865-6	61,909	97,902	1,449	101,996	8,824	30,244	302,324
1870-1	65,404	163,181	3,671	140,316	17,173	33,612	423,357
1875-6	77,125	155,274	8,531	161,429	17,319	34,758	454,436
1880-1	131,153	249,656	12,022	272,567	19,563	31,615	716,576
1885-6	219,886	421,036	28,881	312,672	19,677	41,693	1,043,845
1890-1	175,242	413,052	31,106	345,150	23,183	45,381	1,033,114
1895-6	319,296	464,482	28,609	362,972	63,804	54,748	1,293,911
1900-1	466,236	502,105	42,497	341,330	104,254	61,541	1,517,963
1901-2	442,163	659,239	63,055	369,796	92,654	61,495	1,688,402
1902-3	491,918	580,884	20,063	325,789	105,791	66,038	1,590,488
1903-4	496,017	733,353	78,393	370,152	109,002	66,947	1,853,864
1904-5	435,704	452,459	48,740	269,626	105,247	55,545	1,367,321
1905-6	438,036	591,771	37,425	317,924	124,906	64,350	1,574,412
1906-7	458,072	621,139	64,498	295,895	149,830	64,965	1,654,399
1907-8	541,761	682,194	54,037	328,672	131,056	73,859	1,811,579
1908-9	715,837	956,371	65,004	424,924	201,874	88,613	2,452,623

It will be seen from this table that in all the States marked fluctuations occur in the area devoted to the hay crop from year to year. These fluctuations are due to various causes, the principal being the variations in the relative prices of grain and hay, and the favourableness or otherwise of the season for a grain crop. Thus crops originally

sown for grain are frequently cut for hay owing to the improved price of that commodity, or owing to the fact that the outlook for the due development of the grain is not a satisfactory one. On the other hand, improved grain prices or the prospect of a heavy yield will frequently cause crops originally intended for hay to be left for grain. The area under hay in the Commonwealth for the season 1908-9 was much in excess of that so cropped in any previous season, and exceeded by about 600,000 acres the previous maximum for the season 1903-4.

2. **Kinds of Hay.**—Particulars concerning the kind of crop cut for hay are furnished for a series of years in the returns prepared by four of the States. Totals only were shewn in the cases of South Australia and Tasmania until the season 1907-8, when a specification of details was obtained in South Australia also. Details for the past five seasons are given in the following table:—

KINDS OF HAY GROWN, 1904-5 to 1908-9.

Kind of Hay Crop.				1904-5.	1905-6.	1906-7.	1907-8.	1908-9.
				Acres.	Acres.	Acres.	Acres.	Acres.
<b>NEW SOUTH WALES—</b>								
Wheaten	...	...	...	284,367	313,582	316,845	365,925	490,828
Oaten	...	...	...	107,805	88,495	94,420	131,325	169,441
Barley	...	...	...	1,285	2,397	843	937	1,566
Lucerne	...	...	...	42,247	33,562	45,964	43,574	54,002
Total	...	...	...	435,704	438,036	458,072	541,761	715,837
<b>VICTORIA—</b>								
Wheaten	...	...	...	132,265	203,726	231,408	210,927	278,005
Oaten	...	...	...	309,143	377,885	377,887	460,192	662,141
Other	...	...	...	11,051	10,160	11,844	11,075	16,225
Total	...	...	...	452,459	591,771	621,139	682,194	956,371
<b>QUEENSLAND—</b>								
Wheaten	...	...	...	3,137	2,856	8,664	2,084	4,075
Oaten	...	...	...	9,076	4,446	9,260	5,629	9,314
Lucerne	...	...	...	35,009	28,564	44,178	44,101	48,247
Other	...	...	...	1,518	1,559	2,396	2,223	3,368
Total	...	...	...	48,740	37,425	64,498	54,037	65,004
<b>SOUTH AUSTRALIA—</b>								
Wheaten	...	...	...	...	...	...	271,067	348,307
Oaten	...	...	...	...	...	...	48,151	68,659
Lucerne	...	...	...	...	...	...	3,767	3,162
Other	...	...	...	...	...	...	5,687	4,796
Total	...	...	...	269,626*	317,924*	295,895*	328,672	424,924
<b>WESTERN AUSTRALIA—</b>								
Wheaten	...	...	...	79,913	99,629	116,164	95,123	151,745
Oaten	...	...	...	23,914	23,910	32,521	33,854	48,309
Lucerne	...	...	...	1,420	1,367	1,145	2,079	124
Other	...	...	...					1,696
Total	...	...	...	105,247	124,906	149,830	131,056	201,874

\* Details not available.

It will be seen that wheat is the principal hay crop in New South Wales, South Australia, and Western Australia, oats in Victoria, and lucerne in Queensland. Details for Tasmania are not available.

**3. Total Yield.**—The Commonwealth hay crop for the season 1908-9 amounted to 3,136,027 tons, or 1,387,169 tons more than were produced in 1907-8. This represents the largest hay crop ever harvested in the Commonwealth, the highest previous record being that of 2,903,160 tons for the season 1903-4. For many years past the State of Victoria has been the largest hay producer in the Commonwealth, and in the season 1908-9 accounted for more than 45 per cent. of the total production. The total yields of the several States from 1860 onwards are given hereunder:—

#### COMMONWEALTH HAY CROP, 1860-1 to 1908-9.

Season.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Commonwealth.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1860-1 ...	50,927	144,211	414	71,241	8,099	62,318	337,210
1865-6 ...	54,230	96,101	2,173	88,731	7,901	34,751	283,887
1870-1 ...	69,602	183,708	5,506	197,149	20,833	40,763	517,561
1875-6 ...	88,968	206,613	12,796	194,794	17,319	49,217	569,707
1880-1 ...	174,194	300,581	23,441	261,371	19,563	35,883	815,033
1885-6 ...	191,371	442,118	30,670	307,855	19,677	51,872	1,043,563
1890-1 ...	213,034	567,779	50,116	310,125	25,014	52,021	1,218,089
1895-6 ...	229,671	390,861	50,881	225,462	53,758	62,345	1,012,978
1900-1 ...	526,260	677,757	78,758	353,662	103,813	94,198	1,834,448
1901-2 ...	472,621	884,369	122,039	346,467	89,729	109,383	2,024,608
1902-3 ...	243,379	601,272	23,181	308,825	94,007	89,210	1,359,874
1903-4 ...	816,810	1,233,063	136,117	479,723	121,934	115,513	2,903,160
1904-5 ...	366,293	514,316	80,662	294,252	113,794	73,457	1,442,774
1905-6 ...	459,182	864,177	56,829	435,546	139,380	90,077	2,045,191
1906-7 ...	621,846	881,276	94,343	398,866	158,112	104,797	2,259,240
1907-8 ...	376,800	682,370	77,601	376,170	137,511	98,406	1,748,858
1908-9 ...	729,507	1,415,746	92,947	591,141	169,168	137,518	3,136,027

**4. Value of Hay Crop.**—The following table furnishes particulars concerning the total value and the value per acre of the hay crop of the several States of the Commonwealth for the season 1908-9:—

#### VALUE OF HAY CROP, 1908-9.

Particulars.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Commonwealth.
Total value...	£3,248,667	£3,787,122	£403,232	£1,596,081	£784,772	£481,200	£10,301,074
Value per acre	£4 10/9	£3 19/2	£6 4/1	£3 15/1	£3 17/9	£5 8/7	£4 4/0

**5. Average Yield per Acre.**—The States of the Commonwealth in which the highest average yields per acre have been obtained are those of Queensland and Tasmania, these being also the States in which the smallest areas are devoted to this crop. For the past eight seasons the lowest yield for the Commonwealth as a whole was that of 17 cwt. per acre in 1902-3, and the highest that of 31 cwt. in 1903-4. Particulars for the several States for the seasons 1901-2 to 1908-9 are given hereunder:—

## AVERAGE YIELD OF HAY PER ACRE, 1901-2 to 1908-9.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	C'wealth.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1901-2 ... ..	1.07	1.34	1.94	0.94	0.97	1.78	1.20
1902-3 ... ..	0.49	1.04	1.16	0.95	0.89	1.35	0.86
1903-4 ... ..	1.65	1.68	1.74	1.30	1.12	1.73	1.57
1904-5 ... ..	0.84	1.14	1.65	1.09	1.08	1.32	1.06
1905-6 ... ..	1.05	1.46	1.52	1.37	1.12	1.40	1.30
1906-7 ... ..	1.36	1.42	1.46	1.34	1.06	1.61	1.36
1907-8 ... ..	0.69	1.00	1.44	1.14	1.04	1.33	0.96
1908-9 ... ..	1.02	1.48	1.43	1.39	0.84	1.55	1.28

6. **Relation to Population.**—During the past eight seasons the Commonwealth hay production per head of population has varied between 7 cwt. in 1902-3 and 15 cwt. in 1903-4 and 1908-9; averaging about 10½ cwt. per head for the period. The State in which the hay production per head of population is highest is South Australia. Details for the past eight seasons are given hereunder:—

## HAY PRODUCTION PER 1000 OF POPULATION.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	C'wealth.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1901-2 ... ..	347	735	243	955	476	635	534
1902-3 ... ..	175	497	45	847	457	513	353
1903-4 ... ..	577	1,018	266	1,311	551	651	744
1904-5 ... ..	254	426	155	796	481	411	365
1905-6 ... ..	311	713	108	1,162	557	503	509
1906-7 ... ..	412	720	177	1,042	608	586	552
1907-8 ... ..	237	551	144	975	524	549	419
1908-9 ... ..	461	1,125	169	1,485	638	757	741

7. **Oversea Imports and Exports.**—Under normal conditions hay, whether whole or in the form of chaff, is somewhat bulky for oversea trade, and consequently does not in such circumstances figure largely amongst the imports and exports of the Commonwealth. In 1901 and 1902, however, the exceptional demand which was created by the South African war brought about a fairly large export of hay and chaff to Natal and the Cape of Good Hope. These colonies also took and are still taking a considerable quantity of Australian compressed fodder. During the year 1904, when the war between Japan and Russia was being carried on, the exports of compressed fodder to Hong Kong were valued at £42,759 and those to Japan at £23,608. The total value of the hay and chaff exported during 1901 was £406,455, as compared with £13,646 only in 1908, while the exports of fodder, which amounted in value to £142,472 in 1904, had shrunk to £18,142 in 1908.

During 1908 the principal consignees of the hay and chaff exported from the Commonwealth were India, Ceylon, the Straits Settlements, and Java, while the principal countries to which compressed fodder was exported were the Philippine Islands and Ceylon.

Imports of hay and chaff into the Commonwealth are usually unimportant, but owing to the shortage in stocks, prior to the harvest of 1908-9 becoming available, the importations for the year 1908 totalled 16,973 tons, valued at £101,951, obtained from New Zealand and South Africa.

8. **Interstate Trade in Hay and Chaff.**—A considerable trade in hay and chaff is carried on between the several States of the Commonwealth, the exporting States during the year 1908 being South Australia, Victoria, Tasmania, and Western Australia, and the importing States New South Wales and Queensland. Western Australia entered the ranks of the exporting States during 1907. Particulars of interstate imports and exports for 1908 are given in the following table:—



## INTERSTATE TRADE IN HAY AND CHAFF, 1908.

State.	Imports from other States of the Commonwealth.		Exports to other States of the Commonwealth.		Net Interstate Exports.*	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Tons.	£	Tons.	£	Tons.	£
New South Wales	102,177	644,942	3,923	20,207	—98,254	—624,735
Victoria ...	11,301	66,142	27,989	158,698	16,688	92,556
Queensland ...	13,059	59,856	2,472	13,233	—10,587	—46,623
South Australia ...	34	127	77,656	490,985	77,622	490,858
Western Australia	192	1,054	2,191	13,964	1,999	12,910
Tasmania ...	916	3,549	13,448	78,583	12,532	75,034

\* — signifies net imports.

9. **Hay Production in Other Countries.**—As already noted, the hay crops of most European countries consist of grasses of various kinds, amongst which clover, lucerne, sainfoin and rye grass occupy a prominent place. The statistics of hay production in these countries are not prepared on a uniform basis, and consequently any attempt to furnish an extensive comparison of the production of hay in the various countries would probably be misleading. It may be noted, however, that in the United Kingdom the production of hay from clover, sainfoin, etc., was for the year 1908 represented by 5,131,663 tons from 3,081,380 acres, while from permanent grasses a yield of 9,505,663 tons of hay was obtained from 6,398,716 acres, giving a total of 14,637,326 tons from 9,480,096 acres, or about 31 cwt. per acre.

## § 12. Green Forage.

1. **Nature and Extent.**—In all the States of the Commonwealth a considerable area is devoted to the production of green forage, mainly in connection with the dairying industry. The total area so cropped during the season 1908-9 was 413,567 acres, which, though somewhat less than the corresponding area for 1907-8, was much in excess of that for any previous year. Of this total the New South Wales area represented about 57 per cent., while that in Queensland amounted to 21 per cent. of the total. The principal crops cut for green forage are maize, sorghum, oats, barley, rye, rape, and lucerne, while small quantities of sugar-cane also are so used. Particulars concerning the area under green forage in the several States from 1890 onwards are furnished in the following table:—

## AREA UNDER GREEN FORAGE, 1890-1 to 1908-9.

Season.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1890-1 ...	37,473	10,091	9,546	7,349	161	1,497	66,117
1895-6 ...	66,833	25,939	19,552	7,309	430	1,883	121,946
1900-1 ...	78,144	18,975	41,445	13,136	1,024	3,749	156,473
1901-2 ...	113,060	32,795	39,793	13,695	1,563	4,082	204,988
1902-3 ...	109,287	31,145	51,279	14,937	636	3,355	210,639
1903-4 ...	77,130	33,165	26,576	19,241	672	3,100	159,884
1904-5 ...	87,718	29,902	35,861	20,362	1,643	4,117	179,603
1905-6 ...	95,058	34,041	66,183	23,842	1,873	4,882	225,879
1906-7 ...	122,893	36,502	50,513	17,985	3,265	5,326	236,484
1907-8 ...	261,810	59,897	91,444	15,434	4,773	6,367	439,725
1908-9 ...	235,595	63,066	87,675	16,086	4,902	6,243	413,567

2. **Value of Green Forage Crops.**—The value of these crops is variously estimated in the several States, and the Commonwealth total for the season 1908-9 may be taken approximately as £1,270,000, or about £3 1s. 5d. per acre.

3. **Relation to Population.**—Particulars concerning the area under green forage per 1000 of the population of the Commonwealth and the several States for the past eight seasons are given hereunder :—

**AREA UNDER GREEN FORAGE PER 1000 OF POPULATION.**

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1901-2 ... ..	83	27	79	38	8	24	54
1902-3 ... ..	79	26	101	41	3	19	55
1903-4 ... ..	54	27	52	53	3	17	41
1904-5 ... ..	61	25	69	55	7	23	45
1905-6 ... ..	64	28	126	64	7	27	56
1906-7 ... ..	81	29	95	47	13	30	58
1907-8 ... ..	169	48	170	40	18	35	106
1908-9 ... ..	149	50	160	40	18	34	98

**§ 13. Sugar-Cane.**

1. **Area.**—Sugar-cane is grown for sugar-making purposes in only two of the States of the Commonwealth, viz., Queensland and New South Wales, and much more extensively in the former than the latter. Thus of the total area of 140,883 acres under sugar-cane in the Commonwealth for the season 1908-9 there were 123,902 acres, or about 88 per cent., in Queensland. Sugar-cane growing appears to have been started in the Commonwealth in or about 1862, as the earliest statistical record of sugar-cane as a crop is that which credits Queensland with an area of twenty acres for the season 1862-3. In the following season the New South Wales records shew that an area of two acres was devoted to the crop in the mother State. The area under cane in New South Wales reached its maximum in 1895-6 with a total of 32,927 acres. It then fell continuously to 1902-3, when it was lower than for any previous season since 1889-90. From 1902-3 to 1906-7 it remained practically stationary, but in 1907-8 fell to 17,953 acres, and in 1908-9, to 16,981 acres, the lowest area under sugar-cane since 1888-9. In Queensland, on the other hand, although fluctuations in area are in evidence throughout, the general trend has been one of satisfactory and somewhat rapid increase, the area under cane for the season 1905-6 being the highest on record, and that for 1906-7 only a little short of it. In 1907-8 the area in Queensland declined to 126,810 acres, and in 1908-9 still further to 123,902 acres, but was even then larger than for any season prior to 1905-6. The area under sugar-cane in the Commonwealth from 1865 onwards is given in the following table :—

**AREA UNDER SUGAR-CANE, 1865-6 to 1908-9.**

Season.	N.S.W.	Queensland.	C'wealth.	Season.	N.S.W.	Queensland.	C'wealth.
	Acres.	Acres.	Acres.		Acres.	Acres.	Acres.
1865-6	141	450	591	1901-2	20,809	112,031	132,840
1870-1	4,082	6,342	10,424	1902-3	20,160	85,338	105,498
1875-6	6,454	13,459	19,913	1903-4	20,182	111,516	131,698
1880-1	10,971	20,224	31,195	1904-5	21,525	120,317	141,842
1885-6	16,419	59,186	75,605	1905-6	21,805	134,107	155,912
1890-1	20,446	50,922	71,368	1906-7	20,580	133,284	153,864
1895-6	32,927	77,247	110,174	1907-8	17,953	126,810	144,763
1900-1	22,114	108,535	130,649	1908-9	16,981	123,902	140,883

2. **Productive and Unproductive Cane.**—The areas given in the preceding table represent the total area on which sugar-cane was grown during the seasons specified for purposes other than green forage. The whole area, however, was not in any case cut for crushing during that season, there being always a considerable amount of "stand over"

cane, as well as a small amount required for plants. In the season 1908-9 the New South Wales total comprised 6951 acres of productive and 10,080 acres of unproductive cane, while in the case of Queensland the productive cane amounted to 92,219 acres and the unproductive to 31,683 acres, the latter including 1770 acres for plants.

**3. Yield of Cane.**—Queensland statistics of the production of sugar-cane are not available for dates prior to the season 1897-8. In that season the total for the Commonwealth was 1,073,883 tons, as against 1,578,075 tons for 1908-9. The average yield per acre of productive cane is much higher in New South Wales than in Queensland, and during the six seasons 1901-2 to 1906-7 in the case of the former State remained practically constant at about 21 tons per acre. In 1907-8 the yield in New South Wales was so excellent that, notwithstanding the comparative smallness of the area cultivated, the aggregate amount of cane produced was the largest in that State since 1898-9. In 1908-9, on the other hand, owing mainly to the decline in area of productive cane, the total yield amounted to only 144,760 tons, the lowest for the State since 1888. The average yield per acre for New South Wales for 1908-9 was again 21 tons. In Queensland the average yield per acre for 1908-9 was much lower than for the two preceding seasons. Particulars relative to the total and average yields of the Commonwealth sugar crops for the seasons 1901-2 to 1908-9 are as follows:—

**YIELD OF SUGAR-CANE, 1901-2 to 1908-9.**

Season.	Total Yield of Cane.			Average Yield per Acre of Productive Cane.		
	N.S.W.	Queensland.	C'wealth.	N.S.W.	Queensland.	C'wealth.
	Tons.	Tons.	Tons	Tons.	Tons.	Tons.
1901-2 ...	187,711	1,180,091	1,367,802	21.36	15.10	15.73
1902-3 ...	183,105	641,927	825,032	20.90	10.86	12.16
1903-4 ...	227,511	823,875	1,051,386	21.94	13.65	14.86
1904-5 ...	199,640	1,326,989	1,526,629	20.43	16.04	16.50
1905-6 ...	201,998	1,415,745	1,617,743	19.59	14.73	15.20
1906-7 ...	221,560	1,728,780	1,950,340	21.35	17.61	17.96
1907-8 ...	277,390	1,665,028	1,942,418	27.97	17.64	18.62
1908-9 ...	144,760	1,433,315	1,578,075	20.83	15.54	15.91

**4. Relation to Population.**—The sugar-cane production of the Commonwealth during the past five seasons has averaged about 8½ cwt. per head of population. In Queensland, the principal sugar-producing State, the production of cane per head has ranged between 2½ tons in 1904-5 and 3½ tons in 1906-7. Details for the period are as follows:—

**SUGAR-CANE PRODUCTION PER 1000 OF POPULATION.**

State.		1904-5.	1905-6.	1906-7.	1907-8.	1908-9.
		Tons.	Tons.	Tons.	Tons.	Tons.
New South Wales ...	...	138	137	147	179	92
Queensland ...	...	2,556	2,693	3,244	3,090	2,609
Commonwealth ...	...	386	403	477	467	373

**5. Quality of Cane.**—The quantity of cane required to produce a ton of sugar varies considerably not only with the district in which the cane is grown but also with the season. In Queensland, for instance, during the seasons 1902-3 to 1906-7 the sugar content of the cane crushed continuously diminished, so that whilst in 1902-3 the quantity of cane used in producing a ton of sugar was 8.38 tons, in the season 1906-7 the quantity required was 9.38 tons, the production in the former case being approximately 12 per cent. and in the latter 10½ per cent. of the weight of cane crushed. For the season 1907-8, the cane was of much better quality, and the quantity required to produce a

ton of sugar was only 8.84 tons, the sugar content representing in this case somewhat more than  $11\frac{1}{2}$  per cent. of the weight of cane crushed. In 1908-9, however, owing in large measure to the effect of frosts, the quantity of cane required to produce one ton of sugar was increased to 9.49 tons, the sugar thus representing only about  $10\frac{1}{2}$  per cent. of the weight of cane crushed. It should be noted also that in 1901-2 no less than 9.76 tons of cane were needed to produce a ton of sugar. It may be remarked in this connection that the systematic study of the beet in Germany shewed that by suitable culture its sugar content might be greatly increased, and this is by no means impossible in the case of sugar-cane.

**6. Sugar Bounties.**—The provision of bounties or similar aids to the sugar-growers of the Commonwealth early occupied the attention of the Commonwealth Parliament, the object in view being that of assisting the industry whilst at the same time diminishing the employment of coloured labour in connection therewith. The earliest legislative provision made with this object in view was that contained in the Excise Tariff 1902, under which an excise duty of three shillings per cwt. of manufactured sugar was charged, and a rebate of four shillings per ton allowed on all sugar-cane delivered for manufacture in the production of which white labour only had been employed after 28th February, 1902. This rebate was calculated on the basis of cane giving 10 per cent. of sugar, and was increased or reduced proportionately according to any variation from this standard, that is to say, the rebate amounted to two shillings per cwt. of the sugar content of the cane treated. In actual practice it was found that this system of rebates was producing effects that had not been anticipated at the time the legislation was passed, and that the greater part of the cost of substituting white for black labour in the sugar-growing industry was thereby being imposed upon the States engaged in the industry, viz., Queensland and New South Wales, instead of being a charge upon the whole Commonwealth. To remedy this state of affairs the Sugar Rebate Abolition Act of 1903 was passed on 30th July, 1903, and the Sugar Bounty Act 1903 received assent on the same day. The rate of bounty provided by this latter Act was, as in the case of the rebate mentioned above, four shillings per ton of cane grown by white labour giving 10 per cent. of sugar, the bounty to be increased or reduced proportionately according to any variation from this standard. This Act remained in force until 31st December, 1906, when it was superseded by the provisions of the Sugar Bounty Act 1905, which extended the principle of bounties to the end of the year 1912, but stipulated that during the years 1911 and 1912 the rates payable on cane delivered should be respectively two-thirds and one-third of the rates prevailing during the earlier years of the period. The rate of bonus allowed under this Act is six shillings per ton of cane of 10 per cent. quality grown by white labour, while under the Excise Tariff 1905, assented to on 21st December, 1905, the excise duty on sugar was, from 1st January, 1907, increased to four shillings per cwt. of manufactured sugar in place of three shillings formerly imposed. This rate of duty will continue in force until 31st December, 1910. During 1911 the rate will be 2s. 8d. per cwt., during 1912 it will be 1s. 4d. per cwt., and after 31st December, 1912, it will be abolished.

**7. Cost of Bounties.**—The amounts paid by the Commonwealth Government in sugar bounties and the expenses in connection therewith during the seven years 1902-3 to 1908-9, as well as the manner in which this expenditure was allocated to the several States, is shewn in the following table:—

**EXPENDITURE ON SUGAR BOUNTIES AND EXPENSES, 1902-3 to 1908-9.**

Year.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	C'wealth.
	£	£	£	£	£	£	£
1902-3 ...	21,999	18,923	8,008	5,743	3,378	2,781	60,827
1903-4 ...	35,273	29,873	12,740	9,115	5,608	4,436	97,045
1904-5 ...	46,880	38,935	16,781	11,990	7,794	5,798	123,178
1905-6 ...	56,950	46,520	20,159	14,439	9,727	6,914	154,709
1906-7 ...	124,492	100,456	43,635	31,299	21,344	14,690	335,916
1907-8 ...	218,543	173,855	75,463	54,697	36,434	25,630	584,622
1908-9 ...	180,079	143,820	62,490	46,068	30,222	21,027	483,706

The above figures comprise for all the years except 1902-3 the expenses connected with the payment of bounties, as well as the amount actually paid in bounties to the growers. Separately stated the bounties and expenses for the period are as follows:—

Year ... ..	1902-3.	1903-4.	1904-5.	1905-6.	1906-7.	1907-8.	1908-9.
	£	£	£	£	£	£	£
Bounties ...	60,827	90,806	121,408	148,106	328,210	577,148	477,090
Expenses ....	*	6,239	6,770	6,603	7,706	7,474	6,616
Total ...	*	97,045	128,178	154,709	335,916	584,622	483,706

\* Not available.

8. **Collection of Sugar Excise.**—The table hereunder contains particulars concerning the net amount of excise duty on sugar collected in respect of the several States for the eight years 1901-2 to 1908-9. In this table refunds and drawbacks have been deducted and the requisite adjustment has been made between the States.

#### SUGAR EXCISE, 1901-2 to 1908-9.

Year.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	C'wealth.
	£	£	£	£	£	£	£
1901-2 ...	119,577	40,189	10,658	781	8,184	10,156	189,545
1902-3 ...	166,952	10,715	61,523	1,332	7,294	13,701	261,517
1903-4 ...	166,646	Dr. 2,307	73,634	1,413	18,464	14,267	272,117
1904-5 ...	183,335	163,247	70,576	34,626	30,980	20,863	503,627
1905-6 ...	183,457	149,120	98,015	45,921	35,339	24,227	536,079
1906-7 ...	211,625	138,982	83,826	50,564	37,109	24,484	546,590
1907-8 ...	266,876	226,638	103,272	63,788	46,238	35,116	741,928
1908-9 ...	250,329	229,409	116,215	69,267	49,434	36,122	750,776

9. **Production by White and Black Labour.**—The following table contains particulars concerning the production of sugar in New South Wales and Queensland during the past seven seasons, and furnishes an indication of the decline in the employment of black labour in the sugar industry during that period:—

#### SUGAR PRODUCTION, 1902-3 to 1908-9.

Season.	New South Wales.			Queensland.			Commonwealth.		
	Sugar Produced by			Sugar Produced by			Sugar Produced by		
	White Labour.	Black Labour.	Total.	White Labour.	Black Labour.	Total.	White Labour.	Black Labour.	Total.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1902-3 ...	19,434	1,526	20,960	12,254	65,581	77,835	31,688	67,107	98,795
1903-4 ...	19,236	2,561	21,797	24,406	65,456	89,862	43,642	68,017	111,659
1904-5 ...	17,812	1,838	19,650	39,404	105,616	145,020	57,216	107,454	164,670
1905-6 ...	18,019	1,964	19,983	50,897	101,362	152,259	68,916	103,326	172,242
1906-7 ...	21,805	1,613	23,418	127,539	54,619	182,158	149,344	56,232	205,576
1907-8 ...	28,247	934	29,181	162,480	22,583	185,063	190,727	23,517	214,244
1908-9 ...	14,351	964	15,315	132,078	18,322	150,400	146,429	19,286	165,715

During the period under review the proportion of sugar produced by black labour declined from 68 per cent. of the total for 1902-3 to less than 12 per cent. of the total for 1908-9.

10. **Imports and Exports of Sugar.**—Notwithstanding the increase in the production of sugar in evidence in the Commonwealth during recent years, Australia's over-sea import trade in cane sugar remained fairly extensive until 1906, the principal countries engaged in supplying this commodity being Java, Mauritius, and Fiji. In 1907 the exports of sugar exceeded the imports for the first time, the value of the net exports being £166,121. In 1908 the imports exceeded the exports by 96,218 cwt. in quantity, and £37,080 in value. The principal countries to which Australian sugar is exported are New Zealand and New Caledonia, but the bulk of the sugar exported from the Commonwealth is not of Australian origin, but merely a re-export of sugar produced elsewhere. Thus of 294,830 cwt. exported during 1908, only 10,259 cwt. were of Australian origin. The sugar so re-exported comes mainly from Fiji, Java, and Mauritius. Particulars concerning the imports and exports of cane sugar for the years 1901 to 1908 are as follows:—

#### IMPORTS AND EXPORTS OF CANE SUGAR, 1901 to 1908.

Year.	Oversea Imports.		Oversea Exports.		Net Imports.*	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	cwt.	£	cwt.	£	cwt.	£
1901 ...	1,970,883	1,239,550	94,764	68,876	1,876,119	1,170,674
1902 ...	1,862,063	1,120,554	66,736	48,751	1,795,327	1,071,803
1903 ...	1,830,595	1,054,338	47,295	33,242	1,783,300	1,021,096
1904 ...	760,702	415,120	58,882	42,699	701,820	372,421
1905 ...	498,670	276,157	223,161	155,514	275,509	120,643
1906 ...	839,519	439,916	185,072	140,466	654,447	299,450
1907 ...	123,351	77,259	365,213	243,380	— 241,862	— 166,121
1908 ...	391,048	245,495	294,830	208,415	96,218	37,080

\* — signifies net exports.

11. **Interstate Trade in Sugar.**—The interstate trade in sugar is an extensive one, the exports from Queensland to the other States of the Commonwealth representing a value of £1,481,483 for the year 1908. The manner in which this trade is distributed amongst the several States is furnished in the table given hereunder:—

#### INTERSTATE TRADE IN CANE SUGAR, 1908.

State.	Imports from other States of the Commonwealth.		Exports to other States of the Commonwealth.		Net Interstate Exports.*	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	cwt.	£	cwt.	£	cwt.	£
New South Wales	968,564	611,443	347,092	280,683	— 621,472	— 330,760
Victoria ...	1,448,571	760,706	100,715	81,492	— 1,347,856	— 679,214
Queensland ...	909	875	2,644,038	1,481,483	2,643,129	1,480,608
South Australia ...	314,106	176,987	68,124	54,292	— 245,982	— 122,695
Western Australia	218,876	178,959	...	...	— 218,876	— 178,959
Tasmania ...	208,997	169,023	54	43	— 208,943	— 168,980

\* — signifies net imports.

## § 14. Vineyards.

1. **Nature and Extent.**—The introduction of the vine into Australia has been set down by different investigators as at various dates, of which 1815 and 1828 appear to have had some measure of support. It would seem, however, that the vine really came out with the First Fleet, which initiated the colonisation of Australia, in 1788, and that consequently the Australian vine is as old as Australian settlement. As already mentioned a report of Governor Hunter's gives the area under vines in 1797 as 8 acres. From New South Wales the vine spread to Victoria and South Australia, and these States have now far outstripped the mother State in the area which they have devoted to its cultivation. In Queensland and Western Australia also, vine-growing has been carried on for many years, but in neither State has the industry progressed with the rapidity attained in Victoria and South Australia. In Tasmania the climate is not favourable to the growth of grapes. The purposes for which grapes are grown in Australia are three in number, viz.—(i.) for wine-making, (ii.) for table use, (iii.) for drying. The total area under vines in the several States from 1860 onwards is given in the following table :—

COMMONWEALTH VINEYARDS, 1860-1 to 1908-9.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.		Acres.
1860-1	1,584	1,138	—	3,180	335	There are no vineyards in Tasmania.	6,237
1865-6	2,126	4,078	110	6,629	634		13,577
1870-1	4,504	5,466	416	6,131	710		17,227
1875-6	4,459	5,081	376	4,972	675		15,563
1880-1	4,800	4,980	739	4,337	659		15,515
1885-6	5,247	9,775	1,483	5,142	624		22,271
1890-1	8,044	20,686	1,981	9,535	1,024		41,270
1895-6	7,519	30,275	2,021	17,604	2,217		59,636
1900-1	8,441	30,634	2,019	20,158	3,325		64,577
1901-2	8,606	28,592	1,990	20,860	3,629		63,677
1902-3	8,790	28,374	1,559	21,692	3,528		63,943
1903-4	8,940	28,513	2,069	22,617	3,324		65,463
1904-5	8,840	28,016	2,194	23,210	3,413		65,673
1905-6	8,754	26,402	2,044	23,603	3,541		64,344
1906-7	8,521	25,855	2,070	22,575	3,525		62,546
1907-8	8,483	26,465	1,973	21,080	3,231		61,232
1908-9	8,251	24,430	1,616	22,031	3,122		59,450

The area devoted to vines in the Commonwealth attained its highest point in the season 1904-5, when a total of 65,673 acres was reached. In the course of the four following seasons this area diminished by 6223 acres, the decline being in evidence in all the States.

The wine-growing industry in Australia, more particularly in Victoria and New South Wales, received a severe check on account of various outbreaks of phylloxera which took place in different parts of these States. With a view to its eradication extensive uprooting of vineyards in the infested areas was undertaken, while further planting within such areas, except with phylloxera-resisting vines, was prohibited.

In the case of New South Wales the area shewn above for 1908-9 is the lowest since 1898-9, in Victoria it is the lowest since 1890-1, in Queensland since 1902-3, in Western Australia since 1898-9, while in South Australia, although the area for 1908-9 was higher than for that in 1907-8, it was lower than had been experienced in any preceding year since 1902-3. The decline is in large measure due to the absence of a sufficient market for the class of wine produced.

**2. Wine Production.**—The production of wine in Australia has not increased as rapidly as the suitability of soil and general favourableness of conditions would appear to warrant. The cause of this is probably twofold, being in the first place due to the fact that the Australians are not a wine-drinking people and consequently do not provide a local market for this product, and in the second to the fact that the new and comparatively unknown wines of Australia find it difficult to establish a footing in the markets of the old world, owing to the competition of well-known brands. Active steps are being taken in various ways to bring the Australian wines under notice, and it may be confidently asserted that when their qualities are duly recognised the wine production of Australia will exhibit a rapid development. Particulars concerning the quantity of wine produced in the several States during the past eight seasons are contained in the table given hereunder:—

**AUSTRALIAN WINE PRODUCTION, 1901-2 to 1908-9.**

Season.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Commonwealth.
	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.	No production of wine in Tasmania.	Gallons.
1901-2 ...	868,479	1,981,475	148,835	2,631,563	185,735		5,816,087
1902-3 ...	806,140	1,547,188	100,852	2,573,424	158,853		5,186,457
1903-4 ...	1,086,820	2,551,150	38,558	2,445,270	138,371		6,260,169
1904-5 ...	928,160	1,832,386	60,433	2,845,853	185,070		5,851,902
1905-6 ...	831,700	1,726,444	66,926	2,755,947	208,911		5,589,928
1906-7 ...	1,140,000	2,044,833	65,016	2,495,434	195,660		5,940,943
1907-8 ...	778,500	1,365,600	90,191	2,061,987	153,755		4,450,033
1908-9 ...	736,262	1,437,106	77,698	3,132,247	132,488		5,515,801

**3. Relation to Population.**—In relation to population the area of the vineyards of the several States exhibits a well-marked decline during the past seven seasons, the Commonwealth total having fallen during the period from 17 to 14 acres per 1000 of the population. Details for the period are furnished in the succeeding table:—

**AREA OF VINEYARDS PER 1000 OF POPULATION.**

Season.	N.S.W.	Victoria.	Q'land.	Sth. Aust.	W. Aust.	Tas.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1901-2 ...	6	24	4	57	19	...	17
1902-3 ...	6	23	3	60	17	...	17
1903-4 ...	6	24	4	62	15	...	17
1904-5 ...	6	23	4	63	14	...	17
1905-6 ...	6	22	3	63	14	...	16
1906-7 ...	6	21	4	59	14	...	15
1907-8 ...	5	21	4	55	12	...	15
1908-9 ...	5	19	3	55	12	...	14

**4. Imports and Exports.**—During the past eight years the importations of wine into the Commonwealth have exhibited a marked fluctuation, declining continuously in value from £161,945 in 1901 to £96,870 in 1904, and thence increasing continuously to £131,690 in 1908. The increase in recent years has, however, been entirely in the case of sparkling wine, other wines having declined almost continuously in quantity and value throughout the period. The principal countries of origin of wine imported into Australia are France, Spain, Portugal, and Germany, the greater portion of the sparkling wines coming from France and of still wines from Spain and Portugal. Particulars relative to the importations of wine into the Commonwealth during the past eight years are given hereunder:—



## COMMONWEALTH IMPORTS OF WINE, 1901 to 1908.

Year.	Quantity.			Value.		
	Sparkling.	Other.	Total.	Sparkling.	Other.	Total.
	Gallons.	Gallons.	Gallons.	£	£	£
1901	55,341	165,472	220,813	104,700	57,245	161,945
1902	46,824	134,513	181,337	80,941	46,828	127,769
1903	41,211	81,222	122,433	78,869	29,014	107,883
1904	38,738	70,982	109,720	69,643	27,227	96,870
1905	38,933	74,358	113,291	71,753	28,231	99,984
1906	43,324	71,980	115,304	81,448	24,685	106,133
1907	50,393	66,138	116,531	94,549	26,397	120,946
1908	56,806	63,144	119,950	106,108	25,582	131,690

The principal countries to which wine is exported from Australia are the United Kingdom and New Zealand, a small but fairly regular export trade being also carried on with India, Ceylon, Fiji, and the South Sea Islands. Details concerning the exports of wine from Australia during the eight years 1901 to 1908 are given in the following table:—

## COMMONWEALTH EXPORTS OF WINE, 1901 to 1908.

Year.	Quantity.			Value.		
	Sparkling.	Other.	Total.	Sparkling.	Other.	Total.
	Gallons.	Gallons.	Gallons.	£	£	£
1901	2,936	863,147	866,083	6,972	122,751	129,723
1902	3,201	1,075,713	1,078,914	5,989	142,994	148,983
1903	2,194	718,284	720,478	4,161	101,016	105,177
1904	2,525	789,032	791,557	4,440	103,272	107,712
1905	2,749	937,932	940,681	4,990	107,988	112,978
1906	2,439	717,821	720,260	4,637	93,046	97,683
1907	2,771	979,527	982,298	5,233	121,811	127,044
1908	2,824	727,534	730,358	4,541	97,402	101,943

The sparkling wine included in the foregoing table consists mainly of foreign wine re-exported.

5. **Interstate Trade.**—A fairly extensive trade in wine is carried on between the States, South Australia being the principal exporting State. Particulars for the year 1908 are furnished hereunder:—

## INTERSTATE TRADE IN WINE, 1908.

State.	Imports from other States of the Commonwealth.		Exports to other States of the Commonwealth.		Net Interstate Exports.*	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Gallons.	£	Gallons.	£	Gallons.	£
New South Wales ...	308,461	57,996	81,344	20,482	—227,117	— 37,514
Victoria ...	129,476	27,165	157,400	38,619	—27,924	— 11,454
Queensland ...	104,411	30,852	1,741	679	—102,670	— 30,173
South Australia ...	23,901	4,457	440,785	91,971	416,884	87,514
Western Australia ...	91,603	23,670	2,592	1,294	— 89,011	— 22,376
Tasmania ...	26,397	9,145	387	240	— 26,010	— 8,905

\* — Signifies net imports.

**6. Other Viticultural Products.**—In addition to grapes for wine-making purposes large quantities are grown in all the States for table use, whilst, particularly in Victoria and South Australia, the drying of raisins and currants is also carried on. The quantities of table grapes grown in the several States during the past eight seasons are as follows :—

TABLE GRAPES, 1901-2 to 1908-9.

Season.	N.S.W.	Victoria.	Q'land.*	S. Aust.*	W. Aust.*	Tasmania.	C'wealth.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1901-2 ...	3,475	5,110	750	2,800	1,100	...	13,235
1902-3 ...	3,561	4,327	300	2,900	1,200	...	12,288
1903-4 ...	4,213	3,862	780	3,000	1,200	...	13,055
1904-5 ...	2,933	3,186	950	3,100	1,500	...	11,669
1905-6 ...	2,749	3,008	870	3,100	1,700	...	11,427
1906-7 ...	5,470	5,184	1,130	3,000	1,700	...	16,484
1907-8 ...	2,978	3,325	1,044	2,805	2,715	...	12,867
1908-9 ...	3,150	3,019	1,336	3,214	1,982	...	12,701

\* Estimated for seasons prior to 1907-8.

Statistics of the quantities of raisins and currants dried are available for a series of years for Victoria and South Australia, and are as follows for the past eight seasons :—

RAISINS AND CURRANTS DRIED, 1901-2 to 1908-9.

Season.	Raisins.		Currants.	
	Victoria.	Sth. Australia.	Victoria.	Sth. Australia.
	lbs.	lbs.	lbs.	lbs.
1901-2 ...	3,083,665	822,080	285,157	382,256
1902-3 ...	3,979,798	1,294,944	416,890	547,232
1903-4 ...	5,986,060	1,463,056	838,955	1,165,472
1904-5 ...	3,393,117	974,064	669,108	1,423,968
1905-6 ...	4,813,240	1,334,928	717,156	1,629,824
1906-7 ...	10,990,224	1,805,776	1,313,760	1,608,432
1907-8 ...	7,685,104	2,742,656	1,169,280	2,235,184
1908-9 ...	7,788,032	3,136,784	1,336,048	2,738,288

In New South Wales, Queensland, and Western Australia also small quantities of raisins and currants are dried, but until recently no statistics were collected. The quantity so produced in New South Wales amounted to 100,912 lbs. in 1907-8, and 160,720 lbs. in 1908-9, while in Queensland 4928 lbs. were produced in 1908-9. For Western Australia there are no particulars available.

## § 15. Orchards and Fruit Gardens.

**1. Nature and Extent.**—Fruit-growing has made rapid progress in the Commonwealth during recent years, the area devoted thereto having increased in the past seven years by no less than 29,370 acres. The States in which the increase was most marked were :—Tasmania, 11,102 acres; Western Australia, 10,090 acres; Victoria, 4891 acres; and South Australia, 4540 acres. During the same period the Queensland fruit-growing area increased slightly, while that in New South Wales exhibited a decline of 2114 acres. The increased areas in Tasmania and Western Australia are mainly due to extensive plantings of apple trees with a view to the possibilities of the London market for fresh fruit. The total area devoted to orchards and fruit gardens in the several States is given hereunder :—

## COMMONWEALTH ORCHARDS AND FRUIT GARDENS, 1901-2 to 1908-9.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1901-2 ...	48,107	50,055	13,243	16,315	6,076	11,485	145,281
1902-3 ...	47,584	50,478	11,690	17,376	6,872	12,675	146,675
1903-4 ...	48,316	51,357	13,784	18,725	7,938	14,134	154,254
1904-5 ...	47,340	52,751	14,424	18,872	9,756	15,461	158,604
1905-6 ...	46,615	52,274	13,970	19,320	11,026	16,519	159,724
1906-7 ...	46,177	54,021	13,310	18,199	12,517	18,050	162,274
1907-8 ...	46,714	54,111	14,397	20,736	15,049	19,441	170,448
1908-9 ...	45,993	54,946	14,104	20,855	16,166	22,587	174,651

The varieties of fruit grown differ materially in various parts of the several States, and range between such fruits as the pineapple, paw-paw, mango, and guava of the tropics, and the strawberry, the raspberry, and the currant of the colder parts of the temperate zone. The principal varieties grown in Victoria are the apple, plum, peach, apricot, cherry, and pear. In New South Wales citrus fruits (orange, lemon, etc.) occupy the leading position, although apples, pears, peaches, plums, and apricots, are also extensively grown. In Queensland the banana, the orange, the pineapple, the apple, the peach, the mango, and the plum are the varieties most largely grown. In South Australia, in addition to the apple, pear, peach, apricot, plum, orange, and lemon, the almond and the olive are also largely grown. In Western Australia the apple, orange, peach, pear, plum, fig, and apricot are the sorts chiefly grown, while in Tasmania, although the apple represents more than two-thirds of the area in that State devoted to fruit-growing, small fruits, such as the currant, raspberry, and gooseberry, are very extensively grown, and the balance of the area is mainly occupied with the pear, plum, apricot, peach, and cherry.

2. **Relation to Population.**—In relation to population the orchards and fruit gardens of the Commonwealth have exhibited an increase during the past seven seasons equal to the decline which was experienced in the case of vineyards. Taking the two in conjunction the relative area under vineyards and orchards has, during the period, remained practically stationary at about 55 acres per 1000 of population. Details for the eight seasons 1901-2 to 1908-9 are as follows :—

## AREA OF ORCHARDS AND FRUIT GARDENS PER 1000 OF POPULATION.

Season.	N.S.W.	Victoria.	Q'land.	Sth. Aust.	W. Aust.	Tas.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1901-2 ...	35	42	26	45	32	67	38
1902-3 ...	34	42	23	48	33	73	38
1903-4 ...	34	42	27	51	36	80	40
1904-5 ...	33	44	28	51	41	86	40
1905-6 ...	32	43	27	52	44	92	40
1906-7 ...	31	44	25	48	48	101	40
1907-8 ...	30	44	27	54	57	108	41
1908-9 ...	29	44	26	52	61	124	41

3. **Commonwealth Imports and Exports.**—A very considerable fruit trade, both import and export, is carried on by the Commonwealth with overseas countries, the major portion of the importations consisting of dried fruits, while the bulk of the exports is made up of fresh fruits. Amongst the imports the principal dried fruits are currants, dates, sultanas, and raisins, and the principal fresh fruits bananas, oranges, lemons, and apples. The currants imported are mainly of Greek origin, the dates of Arabian, Persian, and Turkish, the raisins mainly of French and Turkish, and the sultanas of Turkish origin. Of the fresh fruits imported during 1908 the bananas were chiefly from Fiji, the oranges and lemons from Italy, and the apples from the United States. The

dried fruits imported during the year were valued at £99,518, and the fresh at £107,666. The Commonwealth exports of dried fruits for 1906, representing in all a value of only £2752, consisted mainly of re-exports of currants, dates, etc. In 1907, however, a very marked development in the trade in Australian dried fruits took place, the total export for the year being valued at £76,872, of which £71,506 represented Australian fruits and £5366 re-exports of foreign fruits. In 1908 the total export of dried fruits from Australia was valued at £35,359, of which £33,111 represented Australian fruits, and £2248 re-exports of foreign fruits. The Australian dried fruits exported consisted mainly of raisins, the principal consignees being the United Kingdom, New Zealand, and Canada. The fresh fruits exported during the year were valued at £263,307, and consisted mainly of apples. The principal countries to which these were sent were the United Kingdom, Germany, New Zealand, Brazil, Java, India, Ceylon, and the Philippine Islands. Particulars concerning the overseas imports and exports of dried fruits for the eight years 1901 to 1908 are as follows:—

### COMMONWEALTH OVERSEA IMPORTS AND EXPORTS OF DRIED FRUITS,

1901 TO 1908.

Year.	Oversea Imports.		Oversea Exports.		Net Imports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	lbs.	£	lbs.	£	lbs.	£
1901	14,265,731	179,305	831,996	14,206	13,433,735	165,099
1902	15,312,229	165,926	942,342	14,024	14,369,887	151,902
1903	13,479,256	106,439	913,008	11,775	12,566,248	94,664
1904	14,267,310	107,117	1,729,725	18,497	12,537,585	88,620
1905	17,285,240	134,178	344,174	5,579	16,941,066	128,599
1906	15,659,620	137,732	187,710	2,752	15,471,910	134,980
1907	13,250,392	134,736	5,281,608	76,872	7,968,784	57,864
1908	10,351,443	99,518	2,509,640	35,359	7,841,803	64,159

Similar information with regard to the Commonwealth overseas trade in fresh fruits for the same period is contained in the table given hereunder:—

### COMMONWEALTH OVERSEA IMPORTS AND EXPORTS OF FRESH FRUITS,

1901 TO 1908.

Year.	Oversea Imports.		Oversea Exports.		Net Exports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Centals.	£	Centals.	£	Centals.	£
1901	*	45,955	*	167,926	*	121,971
1902	*	57,744	*	142,613	*	84,869
1903	91,976	47,303	371,158	216,992	279,182	169,689
1904	50,397	31,137	467,343	263,767	416,946	232,630
1905	49,659	32,654	393,982	207,418	344,323	174,764
1906	204,561	82,655	265,743	173,190	61,182	90,535
1907	189,052	95,015	435,534	266,160	246,482	171,145
1908	166,341	107,666	377,926	263,307	211,585	155,641

\* Not available.

4. **Interstate Trade.**—The interstate trade in fresh fruits is very considerable, and for 1908 represented a value of over £570,000. Details concerning the interstate exports of the several States for that year are as follows:—

## INTERSTATE EXPORTS OF FRESH FRUITS, 1908.

Fruits.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	Total.
QUANTITY.							
Apples ...	Centals. 63,814	Centals. 13,880	Centals. 534	Centals. 14,961	...	Centals. 206,039	Centals. 299,228
Bananas ...	4,176	8,610	238,633	3,923	...	...	255,342
Citrus fruits ...	76,107	4,621	23,402	20,653	259	30	125,072
Pineapples ...	1,340	1,175	98,006	114	...	13	100,648
Other fresh fruits	22,093	67,286	14,118	40,223	70	31,254	175,044
Total ...	167,530	95,572	374,693	79,874	329	237,336	955,334
VALUE.							
Apples ...	£ 48,059	£ 10,722	£ 380	£ 9,209	...	£ 150,741	£ 219,111
Bananas ...	3,366	7,369	89,160	2,599	...	...	102,494
Citrus fruits ...	43,987	5,133	16,171	14,634	187	29	80,141
Pineapples ...	923	820	47,224	69	...	5	49,041
Other fresh fruits	16,681	47,388	8,041	27,589	85	23,676	123,460
Total ...	113,016	71,432	160,976	54,100	272	174,451	574,247

Corresponding particulars concerning the interstate importations of fresh fruits for the same year are as follows :—

## INTERSTATE IMPORTS OF FRESH FRUITS, 1908.

Fruits.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	Total.
QUANTITY.							
Apples ...	Centals. 190,700	Centals. 27,681	Centals. 76,073	Centals. 379	Centals. 3,714	Centals. 681	Centals. 299,228
Bananas ...	57,837	141,465	...	32,260	12,127	11,653	255,342
Citrus fruits ...	14,972	89,201	7,601	246	3,167	9,885	125,072
Pineapples ...	60,887	35,047	...	2,192	386	2,136	100,648
Other fresh fruits	120,105	12,962	21,271	638	6,327	13,741	175,044
Total ...	444,501	306,356	104,945	35,715	25,721	38,096	955,334
VALUE.							
Apples ...	£ 142,130	£ 15,515	£ 56,970	£ 412	£ 3,622	£ 462	£ 219,111
Bananas ...	25,274	42,522	...	14,441	10,342	9,915	102,494
Citrus fruits ...	11,734	47,797	7,680	245	3,173	9,512	80,141
Pineapples ...	32,405	13,292	...	1,592	208	1,544	49,041
Other fresh fruits	79,978	7,348	18,784	645	5,564	11,141	123,460
Total ...	291,521	126,474	83,434	17,335	22,909	32,574	574,247

From the foregoing tables it will be seen that the value of the fresh fruits imported from other States exceeded the value of the exports to other States in three cases, viz., in New South Wales, Victoria, and Western Australia, while in the other three States the interstate exports exceeded the imports. The heaviest interstate exportation of apples for the year took place from Tasmania, of bananas and pineapples from Queensland, of citrus

fruits from New South Wales, and of "other fresh fruits" from Victoria. On the other hand, the heaviest importer of apples, pineapples, and "other fresh fruits" was New South Wales, while Victoria was the heaviest importer of citrus fruits and bananas.

A very large interstate trade in dried fruits is also carried on, the trade of 1908 representing a value of £226,448. Particulars concerning the interstate exports of the several States are given hereunder:—

#### INTERSTATE EXPORTS OF DRIED FRUITS, 1908.

Fruits.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Total.
QUANTITY.							
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
Currants ...	62,856	728,500	24,824	1,702,266	...	5,395	2,523,841
Sultanas ...	17,775	1,890,360	4,620	494,376	...	350	2,407,481
Other raisins ...	37,296	1,246,576	2,875	842,226	28,224	772	2,157,969
Dates ...	77,335	168,315	1,501	41,443	16,584	70	305,248
Other dried fruits	58,826	532,344	14,035	1,170,706	1,253	413,632	2,190,796
Total ...	254,088	4,566,095	47,855	4,251,017	46,061	420,219	9,585,335
VALUE.							
	£	£	£	£	£	£	£
Currants ...	1,040	13,887	525	36,477	...	67	51,996
Sultanas ...	407	48,594	105	12,073	...	8	61,187
Other raisins ...	863	27,065	72	18,415	265	18	46,698
Dates ...	747	1,566	21	419	128	1	2,882
Other dried fruits	1,805	15,918	436	35,202	15	10,309	63,685
Total ...	4,862	107,030	1,159	102,586	408	10,403	226,448

Corresponding details relative to the interstate imports of dried fruits into the several States are as follows:—

#### INTERSTATE IMPORTS OF DRIED FRUITS, 1908.

Fruits.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Total.
QUANTITY.							
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
Currants ...	893,819	583,208	418,173	26,310	331,272	271,059	2,523,841
Sultanas ...	1,618,047	9,729	527,130	6,716	149,432	96,427	2,407,481
Other raisins ...	1,277,134	40,392	497,759	6,004	174,224	162,456	2,157,969
Dates ...	74,875	37,358	36,413	17,876	2,862	135,864	305,248
Other dried fruits	842,373	132,109	834,832	19,013	292,209	70,260	2,190,796
Total ...	4,706,248	802,796	2,314,307	75,919	949,999	736,066	9,585,335
VALUE.							
	£	£	£	£	£	£	£
Currants ...	17,320	12,459	9,320	476	7,273	5,148	51,996
Sultanas ...	41,251	153	13,360	171	3,767	2,485	61,187
Other raisins ...	27,968	492	10,516	167	4,164	3,391	46,698
Dates ...	731	351	345	161	27	1,267	2,882
Other dried fruits	23,303	4,167	26,021	459	7,997	1,738	63,685
Total ...	110,573	17,622	59,562	1,434	23,228	14,029	226,448

A large proportion of the dried fruits recorded in the above tables is the production of the irrigation colonies of Mildura in Victoria, and Renmark, in South Australia. The heaviest interstate export of sultanas and "other raisins" took place from Victoria, while South Australia headed the list with interstate exports of currants and "other dried fruits." The only other State which exported at all largely was Tasmania with 413,632 lbs. of "other dried fruits," valued at £10,309. The principal importing States were New South Wales, Queensland, and Western Australia, in the order named. The principal fruits included above under the head of "other dried fruits" are prunes, apricots, and apples.

**5. Jams and Jellies.**—A small overseas trade in jams and jellies is carried on by the Commonwealth, the value of the imports for the year 1908 amounting to £6898, and of the exports to £26,155. The country of origin of the bulk of the importations is the United Kingdom, while the destinations of the exports are principally South Africa, Portuguese East Africa, the Philippine Islands, Ceylon, and Fiji. Particulars relative to imports and exports for the eight years 1901 to 1908 are as follows:—

**COMMONWEALTH OVERSEA TRADE IN JAMS AND JELLIES, 1901 to 1908.**

Year.	Oversea Imports.		Oversea Exports.		Net Exports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	lbs.	£	lbs.	£	lbs.	£
1901 ...	1,312,377	23,358	4,140,072	64,389	2,827,695	41,031
1902 ...	837,746	13,207	5,159,688	77,833	4,321,942	64,626
1903 ...	379,300	7,410	2,097,371	40,386	1,718,071	32,976
1904 ...	384,159	7,270	1,526,747	21,962	1,142,588	14,692
1905 ...	317,182	7,010	1,772,524	25,385	1,455,342	18,375
1906 ...	379,129	8,277	1,580,228	24,009	1,201,099	15,732
1907 ...	297,634	6,967	1,639,239	24,561	1,341,605	17,594
1908 ...	280,525	6,898	1,714,060	26,155	1,433,535	19,257

The trade carried on in jams and jellies between the States of the Commonwealth is a much more extensive one, the principal exporting States being Tasmania and Victoria, and the principal importing States, Queensland, Western Australia, and New South Wales. Details for the year 1908 are furnished in the table hereunder:—

**INTERSTATE TRADE IN JAMS AND JELLIES, 1908.**

State.	Imports from other States of the Commonwealth.		Exports to other States of the Commonwealth.		Net Interstate Exports.*	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	lbs.	£	lbs.	£	lbs.	£
New South Wales ...	5,172,939	71,854	2,930,986	36,164	2,241,953	35,690
Victoria ...	2,191,381	30,263	7,208,823	92,787	5,017,442	62,524
Queensland ...	7,131,174	88,497	400,153	6,406	6,731,021	82,091
South Australia ...	871,650	12,494	1,441,660	18,422	570,010	5,928
Western Australia ...	4,524,022	58,294	720	12	4,523,302	58,282
Tasmania ...	792,946	9,689	8,701,770	117,800	7,908,824	107,611

\* — signifies net imports.

**6. Preserved Fruit.**—Details concerning the quantities and values of preserved fruit imported into and exported from the Commonwealth cannot readily be obtained, owing to the fact that in the Customs returns particulars concerning fruit and vegetables are in certain cases combined. The total value of fruit and vegetables, other than fresh fruits, dried fruits, potatoes, and onions, imported into Australia during 1908 was £44,585, and the corresponding value of exports was £51,348.

## § 16. Minor Crops.

1. **Nature and Extent.**—In addition to the leading crops which in the foregoing pages have been dealt with in some detail, there are many others which, owing either to their nature or to the fact that their cultivation has advanced but little beyond the experimental stage, do not occupy so prominent a position. Some of the more important of these are those which may be classed under the heads of Market Gardens, Nurseries, Grass Seed, Tobacco, Hops, and Millet, while the possibilities of Cotton-growing in the tropical portions of the Commonwealth have in recent years received considerable attention, although the industry cannot yet be said to have assumed definite shape. The total area in the Commonwealth during the season 1908-9 devoted to minor crops was 63,567 acres, of which market gardens accounted for 30,377 acres.

2. **Market Gardens.**—Under this head are included all areas on which are grown mixed vegetables for sale. Where considerable areas are devoted to the production of one vegetable, such for instance as the potato, the onion, the melon, the tomato, etc., these crops are usually not included with market gardens, but are shewn either under some specific head, or under some such general head as "Other Root Crops," or "All other Crops." The area under market gardens in the several States of the Commonwealth during each of the eight seasons 1901-2 to 1908-9 is given in the table hereunder:—

COMMONWEALTH MARKET GARDENS, 1901-2 to 1908-9.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1901-2 ...	7,834	8,752	2,328	9,005	2,142	1,746	31,807
1902-3 ...	8,263	7,937	2,171	9,489	2,262	1,893	32,015
1903-4 ...	8,754	8,455	2,563	9,964	2,463	1,685	33,884
1904-5 ...	8,827	7,904	2,099	10,160	3,538	1,759	34,287
1905-6 ...	9,119	7,333	2,089	10,688	3,550	1,778	34,557
1906-7 ...	9,550	7,906	1,953	8,379	3,789	2,210	33,787
1907-8 ...	10,052	9,022	2,365	2,961	3,543	1,791	29,734
1908-9 ...	10,331	9,279	2,875	2,818	3,471	1,603	30,377

The decline in the Commonwealth total for the season 1907-8 is due to the marked decrease in the area devoted to market gardens in South Australia, and to the smaller falling-off in the cases of Western Australia and Tasmania. In all the other States the area for 1907-8 was in excess of that for 1906-7. In the case of South Australia the falling-off is more apparent than real, being in large part due to a change in the classification of such crops introduced in connection with the new system of collection which came into force for 1907-8. It is believed that the figures given for the earlier years are considerably in excess of the truth.

3. **Grass Seed.**—Particulars concerning the growth of grass seed are available for 1908-9 for all the States except Western Australia. The total area under this crop during that season was 5317 acres, of which 3221 acres were in Tasmania, 1741 acres in Victoria, 160 acres in Queensland, 114 acres in South Australia, and 81 acres in New South Wales. The total yield for 1908-9 was 69,478 bushels, or 13.07 bushels per acre.

4. **Tobacco.**—The tobacco-growing industry is one which has experienced marked fluctuations in Australia and which once promised to occupy an important place amongst the agricultural industries of the Commonwealth. Thus, as early as the season 1888-9 the area under this crop amounted to as much as 6641 acres, of which 4833 were in New South Wales, 1685 in Victoria, and 123 in Queensland. This promise of prosperity was, however, not fulfilled, and after numerous fluctuations, in the course



of which the Victorian area rose in 1895 to over 2000 acres, and that in Queensland to over 1000 acres, the total area under tobacco for the season 1908-9 was only 1700 acres, distributed as follows:—New South Wales, 618 acres; Victoria, 413 acres; and Queensland, 669 acres. This decline in production appears to have been due to the comparatively small demand which existed in Australia for the locally-produced leaf, and to the fact that the cost of production and preparation in the Commonwealth prevented the Australian leaf from obtaining a footing in the outside markets. Probably under more favourable circumstances, and with greater attention given to the production of leaf of the best quality only, the industry is one which will eventually, in Australia, assume considerable proportions. In all the States in which its cultivation has been tried the soil and climate appear to be very suitable for the growth of the plant, and the enormous importations of tobacco in its various forms into the Commonwealth furnish an indication of the extensive local market which exists for an article grown and prepared in such a manner as to meet with the requirements of consumers. The value of the net importations of tobacco into the Commonwealth during the year 1908 amounted to £655,045, comprising unmanufactured tobacco (£464,420), cigars (£160,657), cigarettes (£35,394), snuff (£1330), and a net export of manufactured tobacco to the value of £6756.

**5. Hops.**—Hop-growing in the Commonwealth is practically confined to Tasmania and some of the cooler districts of Victoria, the total area for the season 1908-9 being 1148 acres, of which 956 acres were in Tasmania, 189 acres in Victoria, and 3 acres in South Australia. The Tasmanian area, though still small, has increased rapidly during the past seven years, the total for the season 1901-2 being only 599 acres. On the other hand, the Victorian area, which in 1901-2 was 307 acres, has diminished to only 189 acres in 1908-9. The cultivation of hops was much more extensive in Victoria twenty-five years ago than at present, the area devoted to this crop in 1883-4 being no less than 1758 acres. During the year 1908 the net importations of hops into the Commonwealth represented a weight of 944,940 lbs. and a value of £40,027. The total value of the net importations of hops into Australia during the past eight years amounted to £405,311, thus indicating the existence of a regular and extensive local demand.

**6. Millet.** Millet appears in the statistical records of three of the Commonwealth States, viz., New South Wales, Victoria, and Queensland. The total area devoted thereto in 1908-9 was 2535 acres, by far the greater portion, viz., 1851 acres, being in New South Wales. The particulars here given relate to millet grown for grain and fibre. That grown for green forage is dealt with in the section relating thereto.

**7. Nurseries.**—In all the States somewhat extensive areas are devoted to nurseries for raising plants, trees, etc., but statistics concerning the area so occupied for flowers, fruit trees, etc., are not available, and so far as they relate to forestry are given elsewhere.

**8. Cotton.**—Cotton-growing on a small scale has been tried in Queensland, but so far without very marked success. The area under cotton during the season 1905-6, viz., 171 acres, had fallen by 1906-7 to 138 acres, but during the season 1907-8 an increase in the area devoted to cotton took place, a total of 300 acres being attained. During 1908-9 a further advance to 540 acres was experienced, the resulting yield being 117,521 lbs., valued at £2938. Hopes are entertained that with the invention of a mechanical device for the picking of the cotton the industry will become firmly established, since the soil and conditions appear eminently suitable for the growth of this crop. Small areas in the Northern Territory have also been planted with cotton, while the tropical portions of Western Australia have long been regarded as suitable for its cultivation.

**9. Coffee.**—Queensland is the only State of the Commonwealth in which coffee-growing has been at all extensively tried, and here the results have up to the present time been far from satisfactory. The total area devoted to this crop reached its highest point in the season 1901-2, when an area of 547 acres was recorded. Since then the area continuously declined to 1906-7, when it was as low as 256 acres. During the

season 1907-8 an improvement occurred and the total reached was 304 acres, succeeded by a fall to 285 acres in 1908-9 with a yield of 116,293 lbs., valued at £4361.

**10. Other Crops.**—Miscellaneous small crops are grown in the several States, amongst which may be mentioned pumpkins, melons, tomatoes, rhubarb artichokes, arrowroot, chicory, and flowers.

## § 17. Fertilisers.

**1. General.**—In the early days of settlement and cultivation in the Commonwealth, scientific cultivation was in a much less developed state than it is to-day. The early farmers were neither under the necessity, nor were they as a rule aware of the need, of supplying the constituents to the soil demanded by each class of crop. The widely-divergent character of the soils in the Commonwealth, their degeneration by repeated cropping, the limitations of climatic conditions, the difficulties of following any desired order of rotation of crops, all rendered it necessary to give attention to artificial manuring. The introduction of the modern seed-drill, acting also as a fertiliser distributor, has greatly facilitated the use of artificial manures, and much land formerly regarded as useless for cultivation has now been made available. There is reason to believe that this feature will be even more strikingly characteristic of the future.

**2. Fertilisers Acts.**—In order to protect the interests of users of artificial manures legislation has been passed in each of the States, regulating the sale and preventing the adulteration of fertilisers. The following is a list of such Acts:—

New South Wales ...	The Fertilisers Act of 1904.
Victoria ...	The Artificial Manures Acts of 1904 and 1905.
Queensland ...	The Fertilisers Act of 1905.
South Australia ...	The Fertilisers Act of 1900; amended 1903.
Western Australia ...	The Fertilisers and Feeding Stuffs Act of 1904; amended 1905.
Tasmania ...	The Manures Adulteration Acts of 1893 and 1898.

As regards their main features these measures are practically identical. The words "fertiliser" and "manure," as used in these Acts, mean any substance containing nitrogen, phosphoric acid, or potash, manufactured, produced, or prepared in any manner for the purpose of fertilising the soil or supplying nutriment to plants, but do not include farm-yard or stable manure or similar articles in their natural or unmanufactured state. The Acts provide that every vendor of fertilisers must, within a stated period, forward to the Secretary of Agriculture, or corresponding officer, samples of the fertilisers on sale by him, together with the distinctive name or brands by which they are known, and the price at which he intends to sell during the year. On every bag, package, or bundle of fertiliser sold, or exposed for sale, he must attach a printed label shewing thereon:—

- (i.) The number of net pounds of fertiliser in such bag or parcel;
- (ii.) The figure or trade mark attached to the fertiliser and intended to identify it;
- (iii.) The proportion per centum of nitrogen, phosphoric acid, and potash contained therein.

In addition to the above the vendor must furnish every purchaser with an invoice certificate, signed by himself or his agent, stating his full name and place of business and the quality of the fertiliser sold.

Any officer or analyst appointed under the Acts may enter any manufactory, warehouse, store, vessel, wharf, railway station, conveyance, or other place where fertiliser is manufactured, stored, exposed for sale, or in course of delivery or transit, and demand and take samples of such fertiliser. Every sample so taken must be divided by such officer into three parts, and each marked, sealed, and fastened by him in the presence of the person in charge, and disposed of as follows:—

- (i.) One part to be taken by person in charge.
- (ii.) One part to be used for analysis.
- (iii.) One part to be retained by the officer for future comparison.

Every buyer of fertiliser is entitled to submit a sample to the analyst appointed under the Act, and receive a certificate of its analysis. If the analysis prove it to be under what it is represented to be, the vendor must pay the cost of analysis.

3. **Imports.**—The local production of artificial manures falls short of the existing demand, and large quantities are consequently imported.

The importation of fertilisers has increased over 100 per cent. during the eight years of Federation. The chief items, both as regards quantity and value, are those relating to superphosphates, a fertiliser apparently very suitable for the growing of cereals in Australian soils. The greater quantity of the manufactured superphosphates is obtained from the United Kingdom, whence came over 80 per cent. of the total imported during 1908. Belgium, Germany and the Netherlands also contribute, and in recent years Japan and the United States of America have also assisted in supplying the Australian demand. Guano is imported chiefly from Ocean Island, one of the South Sea group, and in lesser quantities from Malden Island and Surprise Island. Ocean Island is also the principal contributor of rock phosphates, next in order being Christmas Island and the Straits Settlements, while India has practically a monopoly of the bone-dust trade with the Commonwealth.

The increasing demand for artificial manures is shewn in the following table. The figures for 1907 are somewhat lower than those for 1906, but the returns for 1908 shew a substantial excess over any previous year:—

#### IMPORTS OF FERTILISERS, 1904 to 1908.

Fertiliser.		1904.	1905.	1906.	1907.	1908.
Bonedust ... ..	Cwt.	1,710,028 287,024	64,241	80,625	93,798	74,657
" ... ..	£		15,849	20,094	24,103	18,088
Guano ... ..	Cwt.		534,573	818,580	606,630	696,660
" ... ..	£		68,088	103,953	75,130	84,961
Superphosphates ...	Cwt.		1,240,403	1,153,249	780,464	610,596
" ... ..	£	287,024	192,178	170,514	133,352	94,203
Rock Phosphates ...	Cwt.		306,592	547,079	769,630	1,267,665
" ... ..	£		38,327	70,782	103,609	183,817
Other ... ..	Cwt.		33,736	84,979	227,689	197,240
" ... ..	£		10,126	24,659	52,975	60,676
Total ... ..	{ Cwt. £	1,710,028 287,024	2,179,545 324,568	2,684,512 390,002	2,478,211 389,169	2,846,818 441,745

4. **Exports.**—The subjoined table shews the exports of artificial manures for the years 1904 to 1908. Practically the whole of the fertiliser is manufactured locally, and is shipped mainly to New Zealand and the Pacific Islands:—

#### EXPORTS OF FERTILISERS, 1904 to 1908.

Fertiliser.		1904.	1905.	1906.	1907.	1908.
Bonedust ... ..	Cwt.	221,175 65,382	56,822	57,845	59,878	65,491
" ... ..	£		13,988	14,217	16,001	17,069
Guano ... ..	Cwt.		1,020	6,000	5,000	...
" ... ..	£		178	1,050	875	...
Superphosphates ...	Cwt.		100,352	110,530	194,943	250,236
" ... ..	£	65,382	20,260	22,110	41,041	47,418
Rock Phosphates ...	Cwt.		...	4,000	5,028	5,077
" ... ..	£		...	782	1,062	1,145
Soda Nitrate ... ..	Cwt.		...	...	1,980	429
" ... ..	£		...	...	1,168	222
Ammonia Sulphate ...	Cwt.		...	...	...	70,258
" ... ..	£	65,382	...	...	...	45,915
Other ... ..	Cwt.		130,790	109,849	148,816	120,524
" ... ..	£		35,003	34,571	50,813	28,565
Total ... ..	{ Cwt. £	221,175 65,382	288,984 69,429	288,224 72,730	415,645 110,960	512,015 140,334

5. **Statistics of Use of Fertilisers.**—The only statistics available in connection with the use of manures in the Commonwealth are those of Victoria, South Australia, and Western Australia. Particulars concerning the first-mentioned State are given hereunder:—

**FERTILISERS USED IN VICTORIA, 1901-2 to 1908-9.**

Season.	Total Area of Crops.	Farmers Using Manure.	Area Manured.		Manure Used.	
			Aggregate.	Percentage to Total Area of Crop.	Natural (Stable-yard, etc.).	Artificial.
	Acres.	No	Acres.	%	Tons.	Tons.
1901-2 ...	2,965,681	11,439	556,777	18.77	153,611	23,535
1902-3 ...	3,246,568	18,537	1,099,686	33.87	206,676	36,630
1903-4 ...	3,389,069	19,921	1,205,443	35.57	207,817	41,639
1904-5 ...	3,321,785	20,167	1,521,946	45.82	190,903	45,940
1905-6 ...	3,219,962	21,586	1,791,537	55.64	210,507	54,674
1906-7 ...	3,303,586	23,072	1,985,148	60.09	205,906	60,871
1907-8 ...	3,232,523	23,733	2,018,079	62.43	232,394	62,337
1908-9 ...	3,461,761	24,437	2,053,987	59.33	235,492	64,715

The figures relating to the use of fertilisers in South Australia, as shewn in the table below, although not official, may be taken as being approximately correct:—

**FERTILISERS USED IN SOUTH AUSTRALIA, 1901-2 to 1908-9.**

Season.	Total Area of Crops.	Area Manured.		Manure Used.
		Aggregate.	Percentage to Total Area of Crop.	
	Acres.	Acres.	%	Tons.
1901-2 ...	2,236,552	845,000	37.78	37,500
1902-3 ...	2,224,593	1,000,000	44.95	44,500
1903-4 ...	2,256,824	1,170,000	51.84	52,000
1904-5 ...	2,275,506	1,265,600	55.62	56,500
1905-6 ...	2,255,569	1,321,600	58.59	59,000
1906-7 ...	2,157,235	1,366,400	63.54	61,000
1907-8 ...	2,265,017	1,456,000	64.28	65,000
1908-9 ...	2,321,812	2,100,000	90.45	76,500

Corresponding particulars relative to Western Australia for the seasons 1904-5 to 1907-8 are given in the following table, and furnish interesting evidence of the rapid extension of the use of manures in that State:—

**FERTILISERS USED IN WESTERN AUSTRALIA, 1904-5 to 1907-8.**

Season.	Total Area of Crops.	Area Manured.		Manure Used.	
		Aggregate.	Percentage to Total Area of Crops.	Natural (Stable-yard, etc.).	Artificial.
	Acres.	Acres.	%	Loads.	Tons.
1904-5 ...	327,391	205,923	63.90	72,523	10,787
1905-6 ...	364,704	257,469	70.60	83,033	12,676
1906-7 ...	460,825	340,401	73.87	81,653	16,127
1907-8 ...	494,987	391,146	79.02	73,809	17,273

A marked increase in the proportion of cropped land treated with manure is in evidence in all three of the States for which returns are available. Thus in Victoria the area of manured land represented in 1901-2 only 18½ per cent. of the area under crop, as against 59½ per cent. in 1908-9. Similarly in South Australia the percentage

increased from 37 $\frac{3}{4}$  per cent. in 1901-2 to 90 $\frac{1}{2}$  per cent. in 1908-9, and in Western Australia from 64 per cent. in 1904-5 to 79 per cent. in 1907-8.

**6. Local Production of Fertilisers.**—Statistics relative to the local production of fertilisers are necessarily very incomplete, and detailed returns for fertiliser factories other than bone mills are not available. The number of firms engaged in the manufacture of artificial manures in the Commonwealth during the year 1908 was 94, made up as follows:—New South Wales, 12; Victoria, 41; Queensland, 15; South Australia, 16; Western Australia, 5; and Tasmania, 5. If, however, approximately complete returns of the quantities of fertilisers used in the various States could be given, a comparison with the importations would give valuable information, but, as already mentioned, such particulars are only available for three of the States, and even then do not furnish the whole of the information necessary.

**7. Benefits Derived from the Use of Fertilisers.**—There is little doubt that the increased and increasing use throughout the Commonwealth of fertilisers, natural and artificial, combined with the greater attention being devoted to fallowing and to the combination of sheep-farming with agriculture, is having the effect of improving the prospects of those dependent for a livelihood on the products of the soil. Reference has previously been made to the loss to the soil of phosphoric acid which the Commonwealth export of wheat and its milled products involves, and the necessity which thus arises for returning this ingredient in some form. Similarly, other staple products exported impose their respective tolls upon the soil of the Commonwealth, and the increased use of fertilisers furnishes evidence that producers are alive to the necessity for making good the deficiency so arising.

## § 18. Ensilage.

**1. Value to Stockowners.**—The use of ensilage as a substitute for green fodder during periods of drought or spells of dry weather, or for winter use, is less extensive in Australia than the circumstances would appear to warrant. There is, however, a growing disposition on the part of dairy farmers to make silos on their holdings, as they find that dairy cattle eat ensilage greedily, and that by its means the output of milk, both in regard to quantity and quality, may be kept up long after the supply of ordinary green food is exhausted. Sheepbreeders are also recognising the fact that during protracted periods of dry weather the silo enables them to keep their stock in good condition, and that lambing can take place satisfactorily. Ensilage thus obviates the expense of travelling or trucking sheep for hundreds of miles to get beyond the drought area, or the equally costly and even ruinous alternative of providing chaff for food at high prices and costly freight. In the rearing of lambs for the London market, ensilage appears to be destined to play an important part, as the lambs thrive upon it much better than upon dry food. By the judicious economising of the surplus growth of green food with the use of the silo, farmers and squatters can carry more stock on their holdings than they otherwise would be justified in doing. Not only is the great waste of superabundant food thus avoided, but it becomes possible to change into a succulent and nutritious food much growth that in any other state would not be eaten by their stock. Thus such vegetation as marsh mallows, thistles, weeds of all sorts, and even the swamp reed, *Arundo phragmites*, which grows in great quantities in lagoons, billabongs, and swamps, are all eaten with avidity when offered to stock in the form of ensilage. The pit and stack silos are rapidly being superseded by those built of red gum and hardwood or concrete. This is found to a great extent to obviate the loss sustained by mould, at the same time reducing the risk of fire. These silos vary in capacity from forty to 130 tons. A portable silo made of iron which has been lately introduced, is made in sections of such size and weight as to admit of ready handling. These silos can be increased in diameter or height by the addition of further sections.

**2. Government Assistance in the Production of Ensilage.**—The Government of Victoria, recognising the fact that defective methods of making ensilage have often been adopted, leading to partial or total failure, is making special efforts to educate the farming community in this respect, so that mistakes may be avoided and the conditions essential for the production of good ensilage may be better appreciated. These conditions vary with the climate and with the locality.

**3. Quantity Made.**—Particulars concerning the number of silos and the quantity of ensilage made in the several States of the Commonwealth in the seasons 1904-5 to 1908-9 are furnished in the table given hereunder:—

COMMONWEALTH ENSILAGE-MAKING, 1904-5 to 1908-9.

State.	1904-5.		1905-6.		1906-7.		1907-8.		1908-9.	
	*Holdings.	Ensilage Made.	*Holdings.	Ensilage Made.	*Holdings.	Ensilage Made.	*Holdings.	Ensilage Made.	*Holdings.	Ensilage Made.
New South Wales ...	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.
Victoria ...	+	12,609	+	9,321	+	11,849	212	12,856	300	27,469
Queensland ...	300	12,779	160	7,240	210	10,581	203	11,031	392	18,205
South Australia ...	+	1,735	+	1,199	44	3,201	63	2,949	59	4,654
Western Australia ...	120	2,765	125	3,286	+	3,364	56	2,088	67	2,017
Tasmania ...	34	1,127	24	552	23	525	37	1,169	51	1,171
	†	†	†	†	†	†	11	512	†	†
Commonwealth ...	...	131,015	...	121,598	...	129,520	582	30,605	1,869	153,515

\* No. of Holdings on which Ensilage was made. † Figures not available. ‡ Exclusive of Tasmania.

Since the drought of 1902-3 greater attention has been paid to ensilage than was previously the case, and though the quantity made in 1905-6 shews a falling-off this does not necessarily indicate that the quantity on hand was less, as owing to the favourable season pasturage was very abundant, and consequently the ensilage on hand was not availed of to as great an extent as would have been the case under less propitious circumstances. The two following years shew an upward tendency in the quantity produced, while 1908-9 establishes a record both in number of holdings on which ensilage was made and also in the quantity produced.

## § 19. Agricultural Colleges and Experimental Farms.

**1. Introduction.**—It has been thought preferable to refer to what may be called the effort in the direction of agricultural education; in this section rather than under the heading of education.

The virgin soil of a new country rendered attention to scientific methods of farming less necessary in the earlier days of Australian colonisation than at the present time, and it may also be said that the knowledge of scientific farming was then but little developed. In many parts of Australia, moreover, the regular rotation of crops, of vast importance to all agricultural countries, would appear hardly possible owing to the peculiar climatic conditions. These conditions may, however, be utilised, or made less adverse by a more skilful tillage of the soil, and the restoring to it or adding to it such chemical constituents as may be necessary for particular crops. The fostering of industries, other than those pertaining merely to the production of cereals, is also becoming a matter of consequence, and considerable extensions of knowledge have

been made in the past few years in respect to the co-ordination of other industries with agricultural industry. In most of the States agricultural colleges and experimental farms have been established with a view to promoting agriculture and of establishing improved and more scientific systems of stock-breeding and dairying. In these colleges and in some of the farms provision is made for the accommodation of pupils, to whom both practical and theoretical instruction is given by experts in various branches of agriculture. Analyses of soils and fertilisers are made, manures are tested, and elementary veterinary science, etc., is taught, while general experimental work is carried on with cereal and other crops, not merely for the purpose of shewing that it is practicable to produce certain crops in a given place, but also to shew how it is possible to make farming pay best in that locality. Opportunities are afforded for practice in general agricultural work, and instruction is given in the conservation of fodder, in cheese and butter making, in the management, breeding, and preparation for the market of live stock, in the eradication of pests and weeds, and in the carpenters', blacksmiths' and other trades.

Travelling expert lecturers are sent to the various agricultural and dairying centres, and there is a wide distribution of periodical agricultural gazettes and bulletins on matters of importance at special seasons. Lectures are given on agricultural, pastoral, horticultural, and viticultural subjects, according as they have bearing on the industries of the district in which they are given, and practical demonstrations are frequently held with a view of obtaining the best results. Seeds of cereals, potatoes, and fodder plants are distributed throughout the several States for experimental purposes, on the understanding that result reports will be furnished to the department from which the seed was sent. The object of this is to ascertain the varieties of seed best adapted to the soil in the different localities. Attention is also paid to the proper supervision of exports of produce in order to ensure their being placed on the home markets in the best possible condition. In some of the States agricultural instruction is given at technical schools, while experimental elementary agriculture—practically a form of nature study—is taught at many of the primary schools. Courses for the instruction of school-teachers during the holiday recesses have been established at some of the agricultural colleges.

(i.) *Australian Bureau of Agriculture.* In July, 1909, a Bill to establish a Bureau of Agriculture was introduced into the House of Representatives. Under this Bill it is proposed that the Bureau may be charged with any of the following functions:—(a) the acquisition and diffusion among the people of the Commonwealth of information connected with agriculture, dairying, horticulture, viticulture, live stock and forestry; (b) the collection, propagation and distribution of new and valuable seeds and plants; (c) the carrying out of experiments and investigations; (d) the investigation of pests or diseases affecting plants or live stock, and the means for preventing their spread or effecting their eradication; (e) the publication of reports of the experiments of experimental farms; (f) the publication of reports and bulletins dealing with any matter of importance in regard to production in Australia, and (g) such other functions as may be prescribed. It is also proposed that arrangements may be made with the Government of any State in respect to the carrying out of experiments and investigations, the supply and distribution of information, the exchange and distribution of seeds and plants; and any matters conducing to the development in Australia of agricultural, pastoral, dairying, horticultural and viticultural industries and forestry. Each year a report is to be furnished to Parliament shewing the condition of the various industries and forestry in Australia and of the nature of the work done by the Bureau during the preceding year.

(ii.) *Particulars of Agricultural Colleges and Experimental Farms.* In the table given below particulars of agricultural colleges and experimental farms in the several States of the Commonwealth in 1908-9 are shewn. Tasmania is the only State in which such colleges or farms are not established:—

**PARTICULARS OF AGRICULTURAL COLLEGES AND EXPERIMENTAL FARMS IN THE  
COMMONWEALTH, 1908-9.**

Particulars.	N.S.W	Vic.	Q'land.	S.A.	W.A.	C'wealth
Number of colleges ... ..	1	2	1	1	...	5
Number of experimental farms ...	14	5	7	4	5	35
Total number of students ...	276	185	53	55	21	590
Total number of hands employed	131	92	56	19	29	327
Area under cereals and hay ... Acres	1,869	1,161	445	866	1,009	5,350
Area under fruit trees and vines... "	330	129	78	84	28	649
Area under all other crops ... "	1,181	434	247	214	245	2,321
Total area under crop ...	3,380	1,724	770	1,164	1,282	8,320
Area of arable land ...	4,584	3,482	1,403	2,841	3,919	16,229
Total area of farms ...	14,617	9,120	13,232	4,671	7,320	48,960
Number of Live Stock—						
Horses ... .. No.	329	148	168	79	58	782
Cattle ... ..	889	351	743	67	224	2,274
Sheep ... ..	3,751	4,693	1,371	2,950	1,846	14,611
Pigs ... ..	440	349	229	245	246	1,509
Value of plant and machinery ... £	9,064	7,240	6,167	1,792	3,015	27,278
Value of produce for year ... £	18,977	7,793	3,971	3,383	1,513	35,637

2. **New South Wales.**—In order to meet the demand for agricultural training, and for the purpose of conducting experiments in various branches of agriculture and of disseminating agricultural knowledge, an agricultural college and farm and fourteen experimental farms have been established by the New South Wales Government. Theoretical instruction in agriculture, with practical illustrations, forms part of the curriculum of the Sydney Technical College. At the Hurlstone Continuation College there is a special course in both theoretical and practical agriculture for teachers. Instruction in "nature knowledge" is given in the State primary schools, many of which have their own experimental plots. As a means of further encouraging the study of agriculture the Department of Public Instruction has a travelling inspector in agriculture, whose duty it is to visit the country and metropolitan schools, giving lectures on the value, necessity, and advantages of agricultural knowledge, and giving practical demonstrations wherever practicable.

(i.) *The Hawkesbury Agricultural College*, situated near the town of Richmond, on the Hawkesbury River, about thirty-eight miles from Sydney, is under the control of the Agricultural Department and provides accommodation for about 250 students. Attached to the college is a farm of 3551 acres, of which 1019 acres were under crop in the season 1908-9.

- (a) *The course of instruction* comprises the principles of agriculture; the breeding, rearing, feeding, and management of live stock; agricultural chemistry, botany, vegetable pathology, and entomology; veterinary science and practice; bacteriology; meteorology; agricultural mechanics; elements of surveying and farm book-keeping; all kinds of practical farm work, including the use of farm implements and machinery; dairying, carpentry, saddlery, blacksmithing, and elementary agricultural engineering; the management of poultry and bees and all branches of orchard and garden work. The course extends over two years, and is divided into four sessions. At the end of the course students may undergo examination for the purpose of obtaining the college diploma.



(b) *Experimental Work.* In addition to the education of the students extensive experimental operations are carried on at the farm for the general benefit of agriculturists. Large numbers of farmers visit the institution in quest of information. During the winter vacation arrangements are made for a winter school for farmers. This school has been in operation for four years. The course extends over one month.

(ii.) *Experimental Farms, Orchards, and Vineyards.* Experimental farms have been established at Wagga, Bathurst, Coolabah, Grafton, Glen Innes, Cowra, Wollongbar, and Nyngan. There are irrigation farms at Moree, Pera, and Yanco, and a dairy stud farm at Berry, while viticultural stations have been established at Howlong and Raymond Terrace. At the farms at Wagga, Bathurst, Wollongbar, and Berry, accommodation is provided for students. The educational work undertaken at the four farms where students are received is more practical than academic. Scientific lectures are given as far as possible, and the students, at the end of the full course, undergo an examination for the purpose of obtaining the farm certificate. The fees payable are not large, amounting, as a rule, to about £25 per annum for residential students. With regard to the farm operations, the objects of each farm are to demonstrate the most economic and effective systems of producing and harvesting crops; to carry out experiments to determine the suitability or otherwise of crops, not only for the district where the farm is situated but for other districts having similar climate and soils; and to carry out scientific agricultural experiments generally.

(iii.) *Particulars of Agricultural College and Experimental Farms.* The following table shews the number of students at the Hawkesbury College and at the four experimental farms at which students are received for each year from 1904 to 1908 inclusive:—

**NEW SOUTH WALES.—NUMBER OF STUDENTS AT GOVERNMENT AGRICULTURAL COLLEGE AND EXPERIMENTAL FARMS, 1904 to 1908.**

Name.	1904.	1905.	1906.	1907.	1908.
Hawkesbury Agricultural College ...	153	144	201	230	190
Wagga Farm ...	40	41	40	63	52
Bathurst Farm ...	23	18	25	23	25
Wollongbar Farm...	11	14	9	18	7
Berry Dairy Stud Farm ...	3	11	7	11	2
Total ...	230	228	282	345	276

At the Wagga farm a specialty is made of growing seed wheats and fruits for drying, and of breeding dairy stock and swine. The Bathurst farm is devoted to the cross-breeding of sheep, fruit-growing, cereal culture, and general mixed farming. At Coolabah experiments in the dry districts have been carried on, while at Wollongbar experiments have been made on a large scale with grasses for the grazing of dairy cattle, and steps have been taken to assist the dairying industry in the surrounding districts.

The following table gives particulars of the Hawkesbury College and of thirteen experimental farms for the year ended the 31st March, 1909.

As the farm at Nyngan was not opened until 1909 details concerning its operations are not yet available, but will be included in the next issue of the Year Book.

**NEW SOUTH WALES.—PARTICULARS OF GOVERNMENT AGRICULTURAL COLLEGE  
AND EXPERIMENTAL FARMS AT THE 31st MARCH, 1909.**

Name of College or Farm.	Total Area of Farm.	Total Area under Crop.	Area under Cereals and Hay.	Area under Fruit Trees and Vines.	Area under all other Crops.	Number of Hands Employ'd	Value of Plant and Machinery.	Value of Produce for the Year.
	Acres.	Acres.	Acres.	Acres.	Acres.	No.	£	£
Hawkesbury	3,551	1,019	694	42	283	34	1,520	6,000
Wagga ...	3,228	1,034	494	95	445	17	1,672	7,340
Bathurst ...	670	403	205	37	161	15	1,653	1,644
Coolabah <sup>1</sup> ...	2,282	91	55	3	33	3	350	254
Moree <sup>2</sup> ...	80	62	34	3	25	3	140	267
Wollongbar	263	55	20	...	35	7	600	342
Berry <sup>3</sup> ...	333	44	15	...	29	4	330	380
Howlong <sup>4</sup> ...	224	56	14	41	1	7	200	174
Grafton ...	1,000	140	94	...	46	11	456	775
Glen Innes ...	1,050	133	105	24	4	8	503	668
Cowra ...	936	175	94	...	81	9	800	738
Pera <sup>2</sup> ...	67	46	20	25	1	3	200	350
Raym'd Ter. <sup>4</sup>	610	10	...	10	...	5	3	...
Yanco <sup>2</sup> ...	323	112	25	50	37	5	637	45

1. The total area of this farm is 15,000 acres, but 12,718 acres have been let for grazing purposes.  
2. Irrigation farm. 3. Dairy stud farm. 4. Viticultural station.

(iv.) *Other Forms of Agricultural Instruction.* Agricultural education at the Technical College at Sydney includes the following studies:—The character and prospects of Australian agriculture; climate and rainfall; selection of land, clearing, fencing, building and draining; irrigation and water storage; the cultivation of crops; manures; live stock; dairying; sheep and wool; farm and dairy chemistry; the treatment of fungus and insect pests; fruit-growing and preserving; vine-growing and wine-making; pigs, poultry and bee-keeping; and horticulture and home-gardening. Elementary agriculture forms the first year's course, and advanced agriculture is dealt with during the second year. With the object of giving lectures and demonstrations on various subjects, the scientific and expert staff of the agricultural laboratories in Sydney as well as those attached to the college and farm staffs are from time to time placed at the disposal of the farming community, and are constantly in demand by agricultural societies, farmers' and settlers' associations, and other similar bodies. The publication of the *Agricultural Gazette* is a valuable means of imparting knowledge on agricultural matters. Seeds grown at the experimental farms are distributed from a central dépôt in Sydney for trial purposes among the farmers, and are also available to State school teachers for use in connection with the experimental plots, which are now attached to many of the primary schools throughout the State. The only condition in the granting of such samples is that the recipients shall in due course forward a report of their experiments to the Agricultural Department.

3. *Victoria.*—In 1884, the Agricultural Colleges Act, passed to make provision for the establishment of agricultural colleges and experimental farms in Victoria, provided for the permanent reservation from sale of 150,000 acres of Crown lands by way of endowment of agricultural colleges and experimental farms, which, together with other lands reserved as sites for such institutions prior to the passing of the Act, are vested in three trustees appointed by the Governor. Provision was made for the appointment of a Council of Agricultural Education, consisting of eleven members, five of whom are elected by the members of the Agricultural Societies of the State, five are nominated by the Governor, whilst the Secretary for Agriculture is also a member of the Council and its Treasurer. Two agricultural colleges and five experimental farms, orchards and vineyards have now been established in different parts of the State under this Act. There are four Agricultural High Schools under the control of the Education Department, while elementary experimental agriculture is taught at many of the State primary

schools. Instruction in agriculture is also given at the technical schools at Melbourne and Bairnsdale.

(i.) *Agricultural Colleges.* The two colleges are situated respectively (a) at Dookie, in the Goulburn Valley district, and (b) at Longerenong, in the Wimmera district.

(a) *The Dookie Agricultural College*, with its farm of 5118 acres, is situated in a rich agricultural country, eminently suited for farming, grazing, viticulture, and horticulture. The college buildings were erected during 1886, and since then numerous additions have been made, so that at the present time accommodation is provided for over 100 students, and provision will shortly be made to accommodate more. The farm is equipped with modern dairy and cowbyres, piggeries, poultry plant, cellars, etc., also large stables and stallion boxes, shearing shed, slaughterhouse, mechanics' and carpenters' shops, silos, barn, sheds, cattle and sheep yards, steam and oil engines, and numerous modern implements of agriculture. Half the students' time is devoted to practical work on the farm, and half to scientific, theoretical, and other work. On the farm the student is taught to manage live stock, handle implements and machinery, work the separator, drive engines, prune vines and trees, break-in horses, shoe horses, mend a break, and erect buildings. At the college instruction is given in determining the fertility of soils, the effects of manuring, the importance of drainage, the improvement of stock and crops, irrigation, and the treatment and eradication of diseases in plants and animals. Considerable attention is paid to experimental work in connection with cereals. The rearing of new varieties of wheat, suitable for the different parts of the State of Victoria, has special attention paid to it. Manurial tests are carried out each year and the results published for the benefit of the farmers. The stock comprise over eighty horses, as well as good herds and flocks of pedigreed cattle, sheep, pigs, and poultry. The annual charge made to residential students is £28 per head. The number of students during 1908-9 was 108.

(b) *The Longerenong Agricultural College*, reopened in 1905, can accommodate forty students, and that number was on the rolls during last year. The farm contains an area of 2386 acres, and is particularly adapted for demonstrating what can be done in farming with irrigation, water being supplied by one of the channels of the Western Wimmera Irrigation Trust. Including fallow land, about 800 acres are under cultivation each season; the orchard and vineyard cover an area of about thirty acres. In addition to a number of well-bred horses and cattle, there is a small flock of pedigree sheep. Lamb-raising is one of the principal industries. The course may be taken by either resident or non-resident students, the former doing both class and farm work, while the latter attend for class work only on alternate days. The syllabus of instruction includes the principles and practice of agriculture, agricultural chemistry, agricultural physics and mechanics, botany, entomology, geology, surveying, bookkeeping, mathematics, and English. The fees for resident students amount to £18 5s. per annum, and for non-resident students to £5 per annum.

(ii.) *Agricultural High Schools and Technical Colleges.* At the end of the year 1909 there were in operation, four agricultural high schools controlled by the Education Department, viz., Wairnambool, Sale, Shepparton and Wangaratta. Similar institutions are to be established in the near future at Ballarat, Mildura, and Leongatha, the sites having already been acquired, the direct aims being to give to boys such an education as will direct their attention specially towards the land as a means of gaining a livelihood; to promote agriculture as an occupation and a profession; to provide a central institution for the dissemination of agricultural information by evening lectures, conferences, and literature; to superintend the Government experimental plots; to record

and interpret their results; and to provide a summer school in agriculture for primary school teachers. The course of instruction comprises agricultural science, climatology, physics, chemistry, geography, drawing, English, mathematics, and farm practice. At the Working Men's College at Melbourne lectures are given on agricultural chemistry, wool-classing, poultry-breeding, etc., and at the School of Mines at Bairnsdale a complete course in theoretical and practical agriculture is given, extending over a period of two years. Agricultural courses are also held at the Ballarat School of Mines and at the Gordon College, Geelong.

(iii.) *Experimental Farms.* Experimental farms, orchards, and vineyards have been established at Rutherglen, Wyuna, Whitfield, Heytesbury, and Burnley, demonstrating different methods of cultivation, manuring, stock-breeding, the cultivation of economic plants, the improvement of varieties of cereals by selection and cross fertilisation, and the testing of fodder plants. Six demonstration orchards have been established to shew the effect of proper cultivation and pruning of fruit trees in various districts and the suitability of the trees for the district. At Burnley Horticultural Gardens students are trained in horticulture. Areas have been planted at Rutherglen and Wahgunyah with phylloxera-resistant vines for distribution to vignerons to enable them to reconstitute their vineyards.

(iv.) *Other Forms of Agricultural Instruction.* Since the establishment of butter factories throughout Victoria a travelling dairy formerly utilised has been discontinued. Demonstrations in cheese-making are, however, still given by an expert, while other experts also visit the factories and supply information and instruction. Practical lessons are also given by experts in fruit-preserving, drying, and candying, also in flax manufacture, cider-making, poultry-dressing, and the preparation of poultry for export. In addition to these lectures a system of short course classes in agriculture has been established. These classes are held at various centres and lectures are given on the principles of agriculture, the care of farm stock, sheep-breeding and management, dairy-farming, agricultural engineering, and orchard and garden work. In many of the State schools of Victoria elementary agriculture is taught. In connection with these schools there are experimental plots varying in area from half an acre to rather less than a quarter of an acre. Experiments are conducted to shew the benefits of cultivation, drainage, and rotation of crops, to ascertain fodder and other crops suitable for the locality, and to test manures. In some of the schools milk-testing is taught, and the economic native woods, common weeds, and insects are dealt with.

(v.) *Particulars of Agricultural Colleges and Experimental Farms.* The table given hereunder furnishes particulars relating to the agricultural colleges of Dookie and Longerenong, and the experimental farms at Rutherglen, Whitfield, and Wyuna. As the total area of the plots at Burnley and Heytesbury is only about thirty acres and twenty acres respectively, figures relative thereto have been omitted from this table:—

**VICTORIA.—PARTICULARS OF GOVERNMENT AGRICULTURAL COLLEGES AND EXPERIMENTAL FARMS FOR THE YEAR 1908-9.**

Name of College or Farm.	Total Area of Farm.	Total Area under Crop.	Area under Cereals and Hay.	Area under Fruit Trees & Vines.	Area under all other Crops.	Number of Hands Employed.	Value of Plant and Machinery.	Value of Produce for the Year.
	Acres.	Acres.	Acres.	Acres.	Acres.	No.	£	£
Dookie ...	5,118	821	583	70	168	44	4,000	3,500
Longerenong	2,386	417	376	27	14	7	1,010	1,958
Rutherglen	913	190	122	29	39	25	1,000	1,200
Whitfield ...	113	40	26	2	12	3	30	240
Wyuna* ...	540	256	54	1	201	11	1,200	900

\* Particulars are for year 1907-8.

4. **Queensland.**—Organised experimental agriculture in Queensland dates from the establishment of the Department of Agriculture and Stock, but such work as has been

done in connection with stock-breeding, other than that carried on by private individuals, has been of later birth, and has been confined to dairy stock and draught horses. Agriculture in Queensland in the early nineties was upon the well-defined lines of the other States, so that the knowledge to be gained as to what could be profitably adapted to Queensland, with its varied climate and rainfall, covered a wide field. Instructors were appointed conversant with the different lines of agriculture, of which grain cultivation, dairying, fruit-growing, tobacco cultivation, and tropical agriculture, such as sugar, rubber, and spices, are the most important. This has been followed by the establishment of an agricultural college, of farms in the temperate parts of the State, and of nurseries in the tropical parts. With wheaten grain a system of experiments has been carried out for some years with the distinctive object of evolving a type of wheat adapted for Queensland, and as far as possible resistant to the attacks of rust. In dairying, a commencement was made by despatching to the different farming centres properly equipped travelling dairies with the latest appliances. The export of Queensland dairy produce has arisen through this effort. No travelling dairies are, however, now employed. A fruit farm has been established, at which fruits suitable for or likely to adapt themselves to the Queensland climate and conditions have been experimented with during a series of years. To cope with the insect and fungus pests to which such fruits are peculiarly susceptible, careful inspection is made of fruits in the markets and for export, and every effort is put forth to prevent the introduction of fresh diseases and to exterminate those which are already within the State.

(i.) *Gatton Agricultural College.* In 1897 the Queensland Government established an agricultural college at Gatton, about fifty-eight miles west of Brisbane, with an associated farm of 1692 acres. Accommodation is provided for sixty residential students. Instruction is afforded in various branches of practical farming and theoretical agriculture, the practical feature being regarded as the more important. Elementary science and physics, dairying, gardening, elementary chemistry, veterinary science, horticulture, stock-breeding, elementary bacteriology, and agricultural chemistry are also taught. A dairy herd of the best known and favoured breeds has been established at the college, whence the young stock of pure breed have been distributed throughout the State. A course for the instruction of school teachers during the summer recess has been established at the college by the Education Department, and the knowledge thus acquired is imparted by the teachers, not only to the school children, but also to the farmers and dairymen. On the 31st December, 1908, there were thirty-seven students on the books of the college.

(ii.) *Experimental Farms and Technical Colleges.*

(a) *Experimental Farms* are carried on by the Government at Westbrook (near Toowoomba), Gindie, Biggenden, Hermitage (near Warwick), Warren, and Roma. At the Hermitage farm arrangements were made during the year 1906, whereby instruction in general farm work is given to a number of boys who, from circumstances, are unable to receive the advantages of the college course, and this system has now been applied to the farm at Biggenden. The pupils are apprenticed for a term of three years and are instructed in experimental and acclimatisation work, stock-breeding, hybridising, orchard work, etc. These youths are paid nothing for the first twelve months, £12 for the second, and £24 for the third. A State nursery has been established at Kamerunga, near Cairns, and a sugar experimental station at Mackay, but the State tobacco farm at Texas was relinquished during 1906.

(b) *Technical Colleges.* At the technical colleges established in various parts of the State instruction is given in certain agricultural subjects. Thus, at Brisbane, Ipswich, and Maryborough, botany, milk and cream testing, fruit preserving and pickling are dealt with; and at Brisbane wool-classing also. At Bundaberg, Gympie, Rockhampton, South Brisbane, and Toowoomba milk and cream testing is taught, whilst instruction is given in dairy-farming at Warwick.

(iii.) *Other Forms of Agricultural Instruction.* Free lectures are from time to time given at different centres by the Agricultural Department's technical instructors on all agricultural, horticultural, and pastoral subjects. A monthly *Agricultural Journal* is issued, in addition to pamphlets on special subjects. Seeds which are new to the country are distributed free. In the primary schools instruction is given in nature study and in economic gardening, prizes being awarded both for practical and theoretical work.

(iv.) *Particulars of Agricultural College and Experimental Farms.* The table given below contains particulars of the Gatton Agricultural College and the seven experimental farms. Figures relating to the technical colleges are not available:—

**QUEENSLAND.—PARTICULARS OF GOVERNMENT AGRICULTURAL COLLEGE AND EXPERIMENTAL FARMS FOR THE YEAR 1908.**

Name of College or Farm.	Total Area of Farm.	Total Area under Crop.	Area under Cereals and Hay.	Area under Fruit Trees and Vines.	Area under all other Crops.	Number of Hands Employ'd	Value of Plant and Machinery	Value of Produce for the Year.
	Acres.	Acres.	Acres.	Acres.	Acres.	No.	£	£
Gatton ...	1,692	306	203	7	96	23	2,300	3,000
Biggenden ...	211	29	9	5	15	1	1,349	206
Roma ...	790	126	73	13	40	5	307	200
Gindie ...	8,666	34	26	4	4	4	115	115
Westbrook ...	280	70	12	32	26	4	400	450
Warren ...	1,128	27	12	5	10	8	211	...
Kamerunga ...	32	22	...	3	19	7	...	...
Hermitage ...	433	156	110	9	37	4	700	...

5. **South Australia.**—To this State belongs the honour of starting the first experimental farm in the Commonwealth. As far back as the year 1879 a resolution was passed by the local Parliament in favour of the establishment of a School of Agriculture, with an experimental farm, under the charge of a professor of agriculture. Active operations in this connection were commenced in 1882, when the first series of plots of wheat were sown at Roseworthy. Experimental work, chiefly directed towards improving the wheat yield, has been developed along three main lines, viz.: (a) The improvement of varieties of wheat, (b) the improvement of methods of cultivation, and (c) the use of manures. The Central Agricultural Bureau, established at Adelaide under the control of an Advisory Board, has an extensive membership distributed throughout the agricultural districts of the State. It assists farmers by the dissemination of knowledge; by helping to introduce new economic plants; by improving the breed of stock; and it acts as a means of keeping the Agricultural Department in touch with the producers. The branches of the bureau hold meetings at regular intervals in their several districts, ideas and methods as regards practical subjects are interchanged, and discussions are held on matters of general interest to agriculturists. The Agricultural Department issues a monthly journal, and from time to time special bulletins and pamphlets regarding cultivation, manuring, diseases of stock, etc.

(i.) *The Roseworthy Agricultural College.* The Roseworthy College, situated seven miles from Gawler, and affording accommodation for about fifty resident pupils—who must be at least sixteen years of age on admission—has two main objects, viz.: (a) To train young men for the practice of agriculture, horticulture, and viticulture, and (b) to conduct experiments with a view to the advancement of the rural industries in South Australia. The attached farm is 1792 acres in extent. The course extends over a period of three years, the fees for residential students being £30 per annum. The curriculum includes both scientific and technical subjects, viz., chemistry, physics, anatomy, physiology, botany, and entomology; agriculture, viticulture, oenology, fruit culture, veterinary science, dairying, book-keeping, surveying, wool-classing, and general rural economy. Fifty-four students were on the roll during 1908.

(ii.) *Experimental Farms.* During the year 1905-6 three experimental farms were handed over to the Agricultural Department, namely, the homestead block at Kybybolite of 1040 (now 2257) acres, 59 acres of reclaimed swamp at Murray Bridge, and 84 acres at

Parafield. A similar farm has recently been established at Loxton. On these, experiments are carried on with regard to the growing of different varieties of wheat, oats, and barley, both for grain and for hay crops, and also with regard to the growing of root and fodder crops. Investigations cover the manuring of crops, different methods of cultivation, rotation of crops, irrigation, the hybridisation and selection of cereals, feeding of animals, fruit-growing, and wine-making.

(iii.) *Government Dairy Farm.* Towards the close of 1908 the Government acquired a property of 1600 acres of good agricultural land at Turretfield, nine miles from Gawler, with the object of converting it into a model dairy farm. About 500 acres were cultivated during 1909, the produce of which is to be set aside mainly for ensilage purposes. Special provision has been made for the conservation of fodder, and large silos have been erected for the storage of the green feed. There were about sixty cows in milk during the latter part of 1909, particular care being taken to obtain the best strains for milking purposes. A feature of the farm is its piggery, and baconers are sent to the Adelaide market with advantageous results. Cheese and pasteurised cream are also marketed profitably.

(iv.) *Other Forms of Agricultural Instruction.* Lectures are given by the experts of the Agricultural Department under arrangement with the School of Mines at Adelaide and at country branches of that institution, while practical demonstrations are also given by the horticultural instructor. No instruction is given by travelling dairies, but the dairy instructor visits districts as arranged and gives instruction and advice on all matters pertaining to dairying. Lectures and practical demonstrations are given by experts all over the State, principally under the auspices of the Agricultural Bureau or local committees. Though no systematic scheme for agricultural teaching in the primary schools exists, numbers of individual teachers have taken up experimental elementary agriculture—practically a form of nature study—with satisfactory results. Seed of special varieties of wheat is from time to time distributed gratis to applicants; also seed of barley and oats, and of fodder plants of a special character, likely to suit prevailing conditions.

(v.) *Particulars of Agricultural College and Experimental Farms.* The subjoined table gives details of the several farms in the State during 1908-9 :—

**SOUTH AUSTRALIA.—PARTICULARS OF AGRICULTURAL COLLEGE AND EXPERIMENTAL FARMS FOR THE YEAR 1908-9.**

Name of College or Farm.	Total Area of Farm.	Total Area under Crop.	Area under Cereals and Hay.	Area under Fruit Trees and Vines.	Area under all other Crops.	No. of Hands Employ'd	Value of Plant and Machinery.	Value of Produce for the Year.
	Acres.	Acres.	Acres.	Acres.	Acres.	No.	£	£
Roseworthy	1,792	656	490	67	99	10	1,217	3,000
Kybybolite...	2,257	378	277	17	84	3	*	*
Murray Bridge	59	42	14	...	28	2	350	143
Parafield ...	84	42	39	...	3	2	225	240
Loxton ...	480	46	46	...	...	2	*	*

\* Information not available.

6. *Western Australia.*—A considerable amount of developmental work has been done of late years towards the promulgation of agricultural knowledge on the three State farms at Chapman, Narrogin, and Hamel, and, more recently still, on the experimental farms at Brunswick and Nangeenah.

(i.) *The Chapman Farm* stands in the centre of a vast stretch of country lying twenty-five miles north of Geraldton and fifteen miles east of Northampton. Until a few years ago the expanse of land referred to was almost exclusively devoted to grazing, and it was mainly to prove its capabilities, and thus promote settlement, that the farm was established. The whole of the available land has since been selected, and settlement has outrun the extent of the area in question. Collaterally the object of the farm has been extended; it has become the medium whereby practical instruction in farming is provided for intending settlers in quest of a training which will fit them for

their work. The farm is well watered by the Chapman River and by wells served by windmills; it is securely fenced and subdivided. Stud stock are kept and bred, the young stock being sold annually. The stock consists of a stud of Suffolk Punch horses, a herd of Dexter Kerries, a flock of pure-bred Shropshire ewes and rams, Angora goats, and various kinds of poultry.

(ii.) *The Narrogin Farm.* The initial object of this farm was to practically demonstrate the larger return consequent upon improved cultivation of the land; to raise stud-stock for the benefit of the farmers, to raise clean seeds for sowing their land, and to offer a field for training farmers' sons and others wishing to settle on the land. Students are admitted at an annual fee of £10; they are taught the practical farm work, such as handling live stock, and the use of various farm implements. Lectures are given at intervals by the scientific staff attached to the Agricultural Department. Experimental work is a merely subsidiary feature. The total area is 2826 acres. During the year 1908-9 there were twenty students on the rolls.

(iii.) *The Hamel State Farm.* Hitherto only experimental work has been carried out on the Hamel State farm, consisting chiefly of testing new varieties of grasses and fodder plants, cereals, fruits and tubers. Students are not taken on at the farm, the work having been carried out chiefly by a gang of good conduct prisoners.

(iv.) *Other Forms of Agricultural Instruction.* The Government dairy expert is continually travelling and lecturing on dairying, and lectures are also given by the field-officer, the horticultural and viticultural experts, and others. Demonstrations are also given in the cultivation of vines and fruit trees, including budding, grafting, and pruning. A regular monthly journal and bulletins at frequent intervals on matters of importance are issued by the Agricultural Department. The distribution of seeds and plants is now practically confined to seeds of fodder plants. While there are no specific regulations, recipients are asked, with a view to collating information as to the most suitable varieties in different localities, to report results. Experimental plots are conducted at some of the State schools under the direction of the teachers. A special feature of the entomological work carried out by the Department of Agriculture is the collection, breeding and distribution of parasites on insect pests. This work has been carried out with excellent results, several pests which were formerly a great source of trouble and expense being now practically non-existent. Experimental farms have been established at Brunswick, Nangeenan and Chapman.

(v.) *Particulars of State and Experimental Farms.* Particulars of the farms at Narrogin, Chapman, Hamel, Brunswick, and Nangeenan for the year 1908-9 are given hereunder:—

**WESTERN AUSTRALIA.—PARTICULARS OF STATE AND EXPERIMENTAL FARMS  
FOR THE YEAR 1908-9.**

Name of Farm.	Total Area of Farm.	Total Area under Crop.	Area under Cereals and Hay.	Area under Fruit Trees and Vines.	Area under all other Crops.	Number of Hands Employed	Value of Plant and Machinery.	Value of Produce for Year.
	Acres	Acres.	Acres.	Acres.	Acres.	No.	£	£
Narrogin ...	2,826	527	420	13	94	7	680	*
Chapman ...	1,276	249	200	2	47	3	350	513
Hamel ...	130	32	7	10	15	2	155	*
Brunswick...	1,000	140	82	3	55	13	1200	*
Nangeenan...	2,088	334	300	...	34	4	630	1000

\* Figures not available.

7. *Tasmania.*—In Tasmania there is a Council of Agriculture consisting of eleven members, whose duties are to collect and publish information of every kind calculated to prove beneficial to agriculturists, such as suitability of various districts for growth or production of animal and vegetable products, information respecting plants, methods of cultivation, of breeding and feeding animals, and how best to improve the same: to prevent as far as possible the introduction and spread of diseases and pests, and to publish bulletins, abstracts, and reports containing all such information



as may be desirable. Other matters embrace the employment of experts in any branch of agricultural science, distribution of plants and seeds for experiment, and the establishment of local boards of agriculture in different parts of the State. Lectures are given by the experts from time to time, and useful information and knowledge is diffused by means of the monthly gazette published by the Council, and also by means of special bulletins. There are no agricultural colleges or experimental farms, and practically no agricultural teaching is given in the elementary schools.

## § 20. Government Loans to Farmers.

1. **Introduction.**—All the Australian States have established systems under which financial aid is rendered to agriculturists by the Government. The principle upon which such aid is founded was probably first practically applied in Germany, viz., in the year 1770, when the *Landschaften Bank* was created. The establishment of the *Credit Foncier* nearly a century later in France was a creation of a similar character. This latter institution was designed to enable house and land owners to raise money on mortgage at a low rate of interest, with facility for repayment by an annuity including redemption of the capital. It dates from 1852, but the mortgage bank known as the *Caisse Hypothécaire*, which, after a struggling existence, was finally liquidated in 1846, was based essentially on the same principle. Over the operations of the *Credit Foncier*, created under governmental patronage and invested with such special privileges as to virtually constitute it a monopoly, the Government exercised a direct control, viz., by appointing its governor and its two deputy-governors. The *Credit Foncier* was empowered to lend money only on a first mortgage, and to the amount of one-half of the estimated value of houses and farms, and one-third that of vineyards, woods, and other plantations, and the commission charged could not exceed six-tenths per cent. The system developed and adopted in the Commonwealth, with the object of assisting farmers to make improvements or to develop or utilise the agricultural or pastoral resources of the land, is analogous. Particulars of advances made under the Closer Settlement and similar Acts are dealt with in the section on Closer Settlement. (See page 301.)

2. **Particulars of Transactions in each State, 1906 to 1909.**—The subjoined table give particulars of transactions in each State in which advances to farmers are made, for the years 1906 to 1909 inclusive. Tasmanian figures are not available :—

### STATE GOVERNMENT ADVANCES DEPARTMENTS.—PARTICULARS OF LOANS TO FARMERS, 1906 to 1909.\*

State.	TOTAL ADVANCED TO DATE.				BALANCE DUE.			
	1906.	1907.	1908.	1909.	1906.	1907.	1908.	1909.
	£	£	£	£	£	£	£	£
New South Wales	647,623	683,308	789,333	1,062,625	411,208	401,741	423,511	591,292†
Victoria ...	2,021,333	2,111,308	2,254,488	2,492,698	1,328,547	1,225,805	1,202,785	1,293,404†
Queensland	98,484	129,361	153,228	187,014	94,268	112,216	119,344	136,946
South Australia	1,011,110	1,109,362	1,233,264	1,386,153	602,365	613,730	631,413	668,535
Western Australia	394,164	525,177	743,598	1,004,675	323,464	420,534	610,202	835,239
Commonwealth ...	4,172,714	4,558,516	5,173,911	6,133,165	2,759,852	2,774,026	2,987,255	3,525,416
	ANNUAL PROFITS.				ACCUMULATED PROFITS.			
	£	£	£	£	£	£	£	£
New South Wales	†	†	†	4,661	†	†	†	6,583
Victoria ...	7,260	6,430	6,751	7,037	55,768	62,198	68,949	75,987
Queensland	444	1,051	1,326	1,405	246	1,297	2,623	4,028
South Australia	3,314	3,598	3,797	4,218	21,984	25,582	29,380	33,598
Western Australia	3,754	3,988	4,637	6,061	9,187	13,557	18,194	24,255
Commonwealth ...	14,772	15,067	16,511	23,382	87,185	102,634	119,146	144,451

\* Compiled from figures furnished by the Government Savings Bank of Victoria. † Returns not available. ‡ Balance after deduction of special principal payments in advances.

3. **New South Wales.**—(i.) *Initial Legislation.* New South Wales adopted the principle of advances to settlers on 4th April, 1899, when the Advances to Settlers Act received assent. The objects of this Act were to authorise the raising of a loan for making temporary advances to settlers; to provide for the making and repayment of such advances; and for purposes incidental to, or consequent on, those objects. In order to provide the funds necessary for the carrying out of this Act, the Colonial Treasurer was authorised to sell inscribed stock, secured upon the Consolidated Revenue, to an amount not exceeding £500,000, to be sold in amounts of £10 or some multiple of £10, and bearing interest at the rate of  $3\frac{1}{2}$  per cent. per annum, payable half-yearly. A board, consisting of not more than three members appointed by the Governor, called the Advances to Settlers Board, was appointed to deal with applications for loans and to decide whether they should be granted. The maximum amount that was authorised to be advanced to any one person was £200, and was to be repaid in full, together with interest at the rate of 4 per cent., within ten years of the making of the loan, but on no account was a loan to be granted except on the recommendation of the Board and when the security given was deemed satisfactory. An Amendment Act was passed in 1902, by which the advance limit of £200 was increased to £500, and the period within which repayments were to be made was extended to thirty-one years. In the latter part of the same year a further Amendment Act came into force. Under the provisions of this Act, the amount of inscribed stock was increased to £1,000,000, and the maximum amount of advance to any person was raised to £1500, interest on the latter being payable at the rate of not less than 4 per cent. per annum.

(ii.) *Legislation now in Force.* The above Acts were all repealed by the Government Savings Bank Act of 1906, which received assent on 21st December of that year. All property held by the Advances to Settlers Board was to be vested in three Commissioners appointed under this Act, who were styled "The Commissioners of the Government Savings Bank of New South Wales." An Advances Department of the Savings Bank was constituted, and debentures to the amount of £305,000 (that being the amount of stock issued under the Advances to Settlers Acts and held at the beginning of this Act) were issued, an equivalent amount of Government stock transferred to the Savings Bank Department being, at the same time, cancelled. All moneys, securities, documents, property, etc., held by or on behalf of the Advances to Settlers Board were transferred to, and became vested in, the Commissioners, and were carried to the accounts of the Advances Department of the Savings Bank.

(iii.) *Security on which, and Objects for which, Advances are made.* The Commissioners are authorised to issue debentures to the amount of £2,000,000, bearing interest at a rate not exceeding 4 per cent. per annum. They may lend moneys from the Advances Department (a) upon mortgage of an estate of inheritance in fee simple in any land in the State; (b) upon mortgage of conditional purchases with or without associated conditional leases, homestead grants or selections, settlement leases or purchases, or conditional purchase leases; and (c) on deposit at call or short notice in the Treasury on any bank of issue in the State, or on deposit in the Savings Bank Department. Loans may be made for any of the following purposes:—(a) To pay off existing encumbrances or to purchase the land; (b) to pay off money to the Crown in respect of the land; (c) to make improvements or to develop the agricultural or horticultural resources of the land; and (d) to build homes on the land.

(iv.) *Amount and Repayment of Advances.* No loan to any one person may amount to less than £50 or more than £2000, and applications for loans not exceeding £500 have priority over those of a larger amount. In no case does the amount of the advance exceed 80 per cent. of the Commissioners' valuation of the security. Advances may be made up to two-thirds of the value of the interest of the borrower in the land, buildings and improvements, except where the land is held as a conditional lease, homestead grant, settlement lease, homestead selection, settlement purchase, or conditional purchase as to which the first five years' certificate has not issued, in which cases the amount advanced may not exceed one-half of the holder's interest in the improvements. Loans are made only in respect of first mortgages, and except in the case of loans on the security of free-

holds or certificated conditional purchases, are repayable by equal half-yearly instalments within such period, not exceeding thirty-one years, as the Commissioners think fit. Loans granted on the security of freeholds and certificated conditional purchases are repayable either in the same manner as loans on other securities just mentioned, or at the expiration of a fixed term not exceeding five years, during which period interest only is payable.

(v.) *Advances on Purchases of Farms.* To facilitate close settlement on private estates suitable for the purpose, the Commissioners are authorised to make advances in order to assist persons in purchasing land. In the case of such advances the title to the land must be either freehold or a certificated conditional purchase, and the amount advanced may not exceed 80 per cent. of the Commissioners' valuation.

(vi.) *Particulars of Advances to Farmers, 1904 to 1908.* The following table shews particulars of the advances made up to the 30th June in each year from 1904 to 1906, inclusive, and to the 31st December in 1907 and 1908:—

**PARTICULARS OF GOVERNMENT ADVANCES TO FARMERS IN NEW SOUTH WALES,  
1904 TO 1908.**

Particulars.	1904.	1905	1906.	1907.*	1908.*
Total applications received No.	9,572	10,431	11,188	12,397	13,796
Total amount applied for ... £	1,420,001	1,581,581	1,718,431	2,166,901	2,794,898
Total applications refused or withdrawn ... No.	4,415	4,611	4,927	5,138	5,583
Total applications approved No.	5,194	5,646	6,178	6,856	8,164
Total amount advanced ... £	502,828	563,596	647,624	789,334	1,062,626
Av. amount advanced per loan £	97	100	105	115	130
Repayments of principal ... £	110,083	157,191	236,415	365,823	470,548

\* Year ended 31st December.

4. **Victoria.**—(i.) *Legislation.* The Advances Department of the Government Savings Bank of Victoria was established by the Savings Bank Act of 1896, amended in 1901 and again in 1903. The funds for the purpose of making advances are raised by the issue of mortgage bonds, the total amount of which is limited to £3,000,000.

(ii.) *Security on which Advances Granted.* In order to assist farmers, graziers, market gardeners, or other persons employed in agricultural, horticultural, viticultural, or pastoral pursuits, the Savings Bank Commissioners are empowered to make advances, either by instalments or otherwise, upon the security of any lands held by such person either (a) in fee simple, or (b) under a Crown lease in which the rent received is taken by the Crown in part payment of the lands demised. Security must be, in every case, a first mortgage. A loan may be either in cash or in mortgage bonds at par face value at the option of the Commissioners.

(iii.) *Amount of Advances.* The limits of the advances are £50 and £2000, as in New South Wales, applications for advances under £500 having also similar priority. In the case of land held in fee simple or under lease as specified in (b) above, the amount of the advance which may be made must not exceed two-thirds of the actual value of such land at the time of advance, which is reduced by the amount of all rent payable in respect of the land, previous to the issue of a Crown grant for such. If the person appointed by the Commissioners as valuator of any land certify that the improvements effected thereon increase the productive power of the land and exceed £2 per acre, the Commissioners may make, notwithstanding anything contained above, an advance of fifteen shillings for every acre so improved.

(iv.) *Special Provision for Vineyards, Orchards, etc.* In the case of land which has acquired a special value by reason of being cultivated as vineyards, hop-grounds, orchards, fruit-growing plantations, etc., advances may be made on the following terms:—(a) The total amount which may be at any time advanced upon any such land may not be

more than £100,000 in the whole. (b) The amount of two-thirds of the actual value referred to above may be increased by one-quarter of any special increase in value, but such increase is in no case to be considered as greater than £30 an acre. (c) No advance may be for a longer period than fifteen years.

(v.) *Purposes for which Advances Granted.* Advances are made for the following purposes only:—(a) To pay off existing liabilities; (b) to pay off money owing to the Crown in respect of the land; (c) to make improvements or to improve and develop the agricultural, horticultural, viticultural, or pastoral resources of the land.

(vi.) *Repayment of Advances.* The rate of interest charged on loans, originally fixed at  $4\frac{1}{2}$  per cent. per annum, may, by the Amendment Act of 1903, be altered by the Commissioners with the approval of the Governor-in-Council, up to but not beyond 5 per cent. per annum. All advances, together with interest, must be repaid by sixty-three half-yearly instalments, or such smaller number as may be agreed upon between the borrower and the Commissioners.

(vii.) *Particulars of Advances to Farmers, 1904 to 1909.* The following table gives particulars as to the loans raised and repaid by the Advances Department, the number and amount of applications received and granted, and the amounts advanced and repaid for each financial year from 1904-5 to 1908-9, inclusive:—

**LOANS TO FARMERS.—TRANSACTIONS OF ADVANCES DEPARTMENT OF GOVERNMENT SAVINGS BANK, VICTORIA, DURING EACH FINANCIAL YEAR, 1904 to 1909.**

Particulars.	1904-5.	1905-6	1906-7.	1907-8.	1908-9.	Total to the 30th June, 1909.
Loans raised ... £	200,000	100,000	100,000	100,000	100,000	2,383,600
„ repaid ... £	30,325	79,675	104,675	79,500	30,000	703,750
Applications received No.	689	788	550	704	825	11,834
„ „ Amount, £	323,352	319,650	217,572	344,703	468,085	5,703,975
Applications granted No.	370	371	295	390	502	6,354
„ „ Amount, £	147,140	143,515	98,840	162,615	250,895	*2,728,750
Amounts advanced ... £	140,890	131,034	89,975	143,180	238,210	2,492,698
„ repaid ... £	109,226	152,626	189,547	168,800	151,437	1,180,494.

\* Of this amount £2,492,698 has been actually paid over to borrowers, a further sum of £23,535 being in course of settlement; the balance represents applications withdrawn or lapsed, or amounts offered but not accepted.

The number of loans at the 30th June, 1909, was 3109, and the average balance of each loan was £422 1s. 4d. The falling-off in the number of applications and amount of advances during the year 1906-7 was due, no doubt, partly to the fact that farmers had been favoured with good seasons during several years past, and partly also to the gradual fall in the rates charged for loans by other lenders. The number of repayments by farmers which became due during the year 1907-8 was 6842, representing amounts of £55,926 for interest and £27,470 for principal. These instalments have been well met, and on 30th June, 1909, there were only eleven farmers in arrear, the amount of principal in arrear amounting to £42, and of interest to £85.

(viii.) *Seed Advances Acts.* In 1896 and 1903, Acts were passed to enable seed and fodder to be advanced on certain terms to cultivators of land. These measures applied only to the season in which they were passed. Under the first-mentioned Act the Treasurer was authorised to pay out of the Consolidated Revenue a sum not exceeding £15,000, but no cultivator was to receive such quantity of seed as would sow more than 100 acres, and he had to give a preferable lien over the produce of all crop harvested within twelve months. By the Act of 1903 the amount authorised to be lent was £100,000, in sums not exceeding value of £65 where granted on the security of a mortgage or license lien, or £40 where granted on the security of a preferable lien on crops. The borrower was required to give, as security, a mortgage over his farm or a license lien over the improvements thereon, and also, if required, a preferable lien on crops some-

what similar to that laid down in the previous Act. In 1904 an Act was passed to enable seed and manure to be advanced on certain terms to cultivators of land within the area controlled by the Carrum Irrigation and Water Supply Trust.

5. **Queensland.**—(i.) *Legislation.* The Queensland Government was authorised, under the Agricultural Bank Act of 1901, to establish a bank for the purpose of promoting the occupation, cultivation, and improvement of the agricultural lands of the State, and a body of three trustees was appointed to administer the Act. The Government was empowered to raise a sum not exceeding £250,000 by the issue of debentures, bearing interest at a rate of not more than 4 per cent. The original Act was amended in 1904 and again in 1905, the latter amendment specifying that no advance be made to any alien.

(ii.) *Security on which and Purposes for which Advances are made.* Advances may be made to owners of agricultural lands or to occupiers of Crown lands held either as agricultural farms or homesteads, grazing farms or homesteads, unconditional selections, or miners' homestead leases, and may be for any of the following purposes:—(a) The payment of existing liabilities; (b) agricultural, dairying, horticultural, or viticultural pursuits on the holding; (c) making improvements or adding to improvements already made; (d) the purchase of stock, machinery, or implements. Advances are only made on the security of first mortgages.

(iii.) *Amount and Repayment of Advances.* No advance may exceed ten shillings in the pound of the fair estimated value of the holding in the cases of (a) and (b) above, while in the other cases the limit of the amount of the advance is twelve shillings in the pound of such value, and the advance at any time must not exceed £800. Applications for amounts not larger than £200 have priority over those for a larger amount. During the first five years following the date of the loan the borrower must pay interest at the rate of 5 per cent. per annum. After the expiration of that period the loan, together with the interest, must be repaid by half-yearly instalments within twenty years, the amount of such half-yearly instalment being £4 0s. 3d. for each £100 advanced. In the case of advances for the purposes of paying off existing liabilities or of buying stock, machinery, or implements, the loan must be repaid by equal half-yearly instalments of the amount of £3 11s. for every £100 advanced within twenty-five years from the date of its granting.

(iv.) *Transactions of Agricultural Bank, 1905 to 1909.* The subjoined table shews particulars of the transactions of the Agricultural Bank for each year ended 30th June, from 1905 to 1909, inclusive:—

**PARTICULARS OF TRANSACTIONS OF THE AGRICULTURAL BANK, QUEENSLAND,  
DURING EACH FINANCIAL YEAR, 1905 TO 1909.**

Particulars.	1904-5.	1905-6.	1906-7.	1907-8.	1908-9.
Applications received ... No.	699	834	503	512	586
Amount, £	108,667	120,256	69,472	70,107	92,363
Applications granted ... No.	296	558	313	319	430
Amount, £	35,233	69,178	36,357	36,706	50,113
Amounts advanced ... £	18,358	59,106	30,877	23,868	25,885
" repaid ... £	311	3,229	12,908	16,716	16,184
" outstanding to date £	38,417	94,268	112,216	119,344	136,947

6. **South Australia.**—(i.) *Legislation.* Under the State Advances Act of 1895, amended in 1896 and 1901, a State Bank has been established in South Australia for the purpose of making advances (i.) to farmers and other producers, (ii.) in aid of industries on the security of lands held in fee simple or under Crown leases, and (iii.) to local authorities upon the security of their rates. The bank, managed by a board consisting of five trustees appointed by the Governor, has funds raised by the issue of mortgage bonds, carrying interest at a rate not exceeding 4 per cent., to an amount not greater

than the total amount due to the bank for State advances, and in any case not greater than £3,000,000. On 23rd December, 1908, the Advances to Settlers on Crown Lands Act was passed. This measure is referred to in (iv.) below. Several Acts have, from time to time, been passed dealing with seed wheat advances. These were, in the main, similar to those enacted in Victoria, referred to in 4 (viii.) above.

(ii.) *Amount and Repayment of Advances.* No advance to farmers or to other producers, or in aid of any industry, may exceed three-fifths of the unimproved value of the fee simple of the land and permanent improvements thereon, and if the land has acquired a special additional value by reason of cultivation as a vineyard or orchard, *plus* one-third of such special additional value. If the advance be on the security of a Crown lease, the amount of the loan may not exceed one-half the selling value of the lease, including the interest of the holder in any improvements on the land. The amount lent to any one person at any time may not exceed £5000. Advances are repayable by half-yearly instalments, the rate of interest, up to the limit of 5 per cent. per annum, being a matter of arrangement between the bank and the borrower.

(iii.) *Transactions of the State Bank, 1904 to 1908.* In addition to assisting farmers and other producers, the State Bank makes, as mentioned above, advances in aid of industries and also to local authorities. The following table shews particulars of the total transactions of the State Bank for each year from 1904 to 1908 inclusive:—

**SOUTH AUSTRALIA.—PARTICULARS OF TRANSACTIONS OF THE STATE BANK**  
FOR EACH YEAR ENDED 31ST MARCH, 1904 TO 1908.

Particulars.	1904.	1905.	1906.	1907.	1908.
Loans raised ... .. £	58,285	23,675	46,015	57,165	64,180
„ repaid ... .. £	32,195	36,560	38,465	50,515	53,015
„ outstanding ... .. £	346,080	333,145	340,695	347,345	358,510
Applications received ... No.	362	225	271	260	250
„ „ Amount, £	107,159	63,340	94,794	111,609	138,466
Applications granted ... No.	230	126	180	146	210
„ „ Amount, £	61,530	24,865	56,181	67,420	93,177
Amounts advanced ... .. £	55,507	24,529	51,826	58,060	76,092
„ repaid ... .. £	31,940	37,200	39,531	51,265	50,727
„ outstanding to date £	349,532	336,861	349,156	355,951	381,316

(iv.) *The Advances to Settlers on Crown Lands Act 1908.* Under this Act a Board, called the Advances to Settlers Board, was created. The Treasurer is authorised to set apart a sum not exceeding £200,000 in any one financial year for the purpose of loans to settlers. The maximum amount which may be advanced to any one settler is £400, and for a period of five years following the date on which the advance is made the settler is required to pay interest at the rate of 5 per cent. per annum, payable half-yearly. At the expiration of that period it is provided that he must repay the amount advanced by fifty equal half-yearly instalments, together with interest at 5 per cent. on the balance outstanding. A rebate of 1 per cent. interest is allowed if the half-yearly payment is made within fourteen days of the date on which it falls due. Advances may be made on prescribed security for the purpose of making improvements on a holding, such as ring-barking, clearing, boring for water, etc., or for discharging a mortgage existing on a holding. The amount of the advance may not exceed a sum equal to fifteen shillings in the pound on the value of improvements already made, and may not exceed twelve shillings in the pound on improvements made if the land be mortgaged.

7. *Western Australia.—(i.) Legislation.* By the Agricultural Bank Act of 1894 the Governor of Western Australia was empowered to establish a bank for the purpose of promoting the occupation, cultivation, and improvement of the agricultural lands of the State. This Act was amended from time to time until a consolidating Act was passed in the year 1906 repealing all previous enactments on the subject. Under this last

Act the bank was placed under the control of three trustees, appointed by the Governor, in whom is vested the whole of the bank property. The necessary funds are provided for by the issue of mortgage bonds bearing interest at a rate not exceeding 4 per cent. per annum. The amount authorised to be raised was £1,000,000, but by an Amendment Act in 1907 this sum was increased to £1,500,000. In the latter half of the year 1909, a Bill to amend the Act of 1906 was introduced into Parliament.

(ii.) *Purposes for which Advances may be made.* The bank is authorised to make advances for (a) ringbarking, clearing, fencing, draining, or water conservation; (b) for discharging any existing mortgage; or (c) for the purchase of stock for breeding purposes.

(iii.) *Amount of Advances.* Advances may be made to an amount not exceeding £300 up to the full value of the improvements proposed to be made. Further advances may be made to an amount not exceeding £200 up to half the value of additional improvements proposed to be made. No advance, however, for the purpose of discharging existing mortgages may be made to an amount exceeding three-quarters of the value of improvements already made, and the total advances to any one person may not at any time exceed £500. Not more than £100 may be advanced to any person for the purpose of purchasing stock. Advances are made only on a first mortgage, but a second mortgage may be taken as collateral security.

(iv.) *Repayment of Advances.* During the five years following the date of the loan the borrower pays interest only, at the rate of 5 per cent. per annum. After the expiration of that period the amount advanced, with interest at 5 per cent., must be repaid within twenty-five years by equal half-yearly instalments. In the case of advances for the purpose of buying stock the bank fixes the time and manner of repayment.

(v.) *Particulars of Transactions of Agricultural Bank, 1904 to 1909.* The following gives particulars of transactions of the Agricultural Bank for each year from 1904 to 1909, inclusive:—

**PARTICULARS OF TRANSACTIONS OF AGRICULTURAL BANK, 1904 to 1909,**  
**AMOUNTS ADVANCED FOR WHICH IMPROVEMENTS HAVE BEEN EFFECTED—**

Year ended the 30th June.	Amounts Advanced.	Improvements Effected.							
		Clearing.	Cultivating.	Ring-barking.	Fencing.	Drain-ing.	Wells and Reservoirs.	Build-ings.	Total.
	£	£	£	£	£	£	£	£	£
1904	215,000	243,870	60,454	10,787	17,265	1,675	9,861	33,168	377,080
1905	297,600	310,602	67,342	12,454	21,243	2,012	12,355	44,203	470,211
1906	394,164	398,376	86,837	17,044	30,805	2,596	15,482	57,005	608,145
1907	525,178	512,471	108,588*	26,845	46,524	3,273	21,616	75,953	795,270
1908	743,599	643,341	120,688*	44,363	98,663	4,127	34,789	82,325	1,028,296
1909	1,004,675	780,907	124,338*	62,711	177,410	4,675	48,543	83,708	1,282,292

\* Including £4321 for orchards.

**† LOANS APPROVED FOR WHICH IMPROVEMENTS WERE IN PROGRESS—**

Year ended the 30th June.	Amounts Approved	Improvements in Progress.							
		Clearing.	Cultivating.	Ring-barking.	Fencing	Drain-ing.	Wells and Reservoirs.	Build-ings.	Total.
	£	£	£	£	£	£	£	£	£
1904	95,650	73,018	23,314	2,488	6,079	897	7,857	11,234	129,887
1905	91,306	75,268	22,025	3,984	8,363	741	6,771	11,996	129,148
1906	117,511	110,126	33,297	7,469	15,008	695	7,969	14,313	188,877
1907	211,675	169,645	21,153	10,927	42,212	859	14,156	8,009	266,961

† 1907 was the last year for which this return was kept.

The following table gives particulars as to the amount of loans raised and repaid, the number and amount of applications received and granted, and the amounts lent and repaid for each financial year from 1904-5 to 1908-9, inclusive :—

**WESTERN AUSTRALIA.—PARTICULARS OF TRANSACTIONS OF THE AGRICULTURAL BANK FOR EACH FINANCIAL YEAR, 1904-5 to 1908-9.**

Particulars.	1904-5.	1905-6	1906-7.	1907-8.	1908-9.
Applications received ... No.	971	1,270	1,970	2,598	2,915
"    "    Amount, £	140,275	171,750	278,625	368,710	433,575
Applications granted ... No.	795	1,073	1,604	2,453	2,628
"    "    Amount, £	102,875	127,725	211,675	308,700	347,525
Amounts advanced ... £	83,479	95,782	131,271	218,421	261,077
"    repaid ... £	22,586	23,917	34,201	28,754	36,040
"    outstanding to date £	251,600	323,465	420,535	610,202	835,239

8. *Tasmania.*—(i.) *Legislation.* Under the State Advances Act 1907, assented to 22nd November of that year, authority is given to make advances to persons holding land on credit purchase. Three persons called "the Trustees of the Agricultural Bank of Tasmania" have power to administer the provisions of the Act. Funds were raised by the issue of debentures or inscribed stock for a sum not exceeding £50,000, interest at 4 per cent. per annum being payable on same.

(ii.) *Purposes for which Advances may be made.* Loans may be granted for any of the following purposes:—(a) payment of liabilities already existing on the holding; (b) carrying on agricultural, dairying, grazing, or horticultural pursuits; (c) making or adding to improvements.

(iii.) *Amount of Loans.* The minimum amount of any loan must not be less than £25, and the maximum not greater than £500. No advance may exceed one-half of the amount actually paid to the Crown in respect of the land held by the borrower under purchase upon the credit system, *plus* one-half of the present value of any improvements upon such land.

(iv.) *Repayment of Loans.* Interest at the rate of 6 per cent. per annum is payable on all advances made. After five years the borrower must begin to pay off the principal in fifty half-yearly instalments, but the advance may, at the option of the borrower, be repaid at any time sooner than is provided, and in larger instalments.

(v.) *Particulars of the operations of the Agricultural Bank.* During the year ended 30th June, 1909, seventy-seven applications for advances were made, which, with forty-nine carried over from the previous year, made a total of 126 applications, representing £15,865. Of these, ninety-four, of a value of £6571, were granted, the amount advanced being £5687. The amount repaid during the year was £30, leaving a balance of £5657 outstanding.

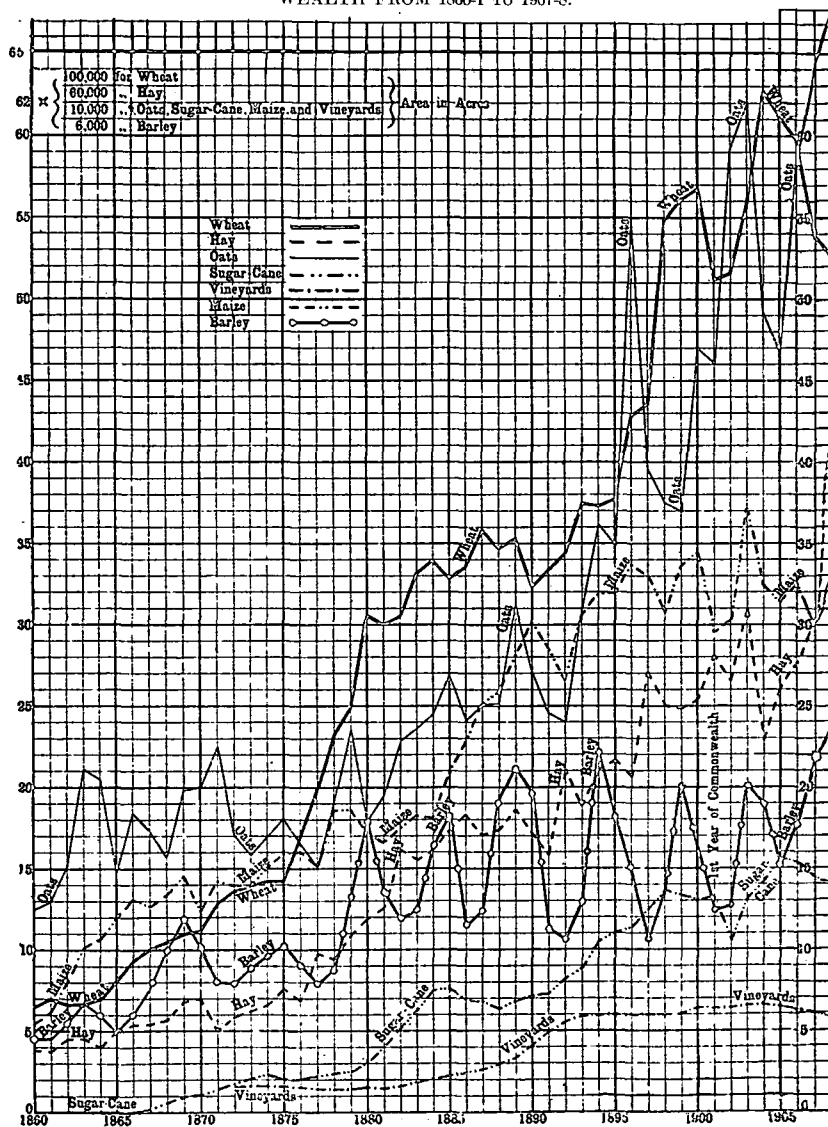
## § 21. Graphical Representation of Crops.

1. *Areas of Principal Crops.*—A graphical representation of the areas in the Commonwealth devoted to each of the leading crops from 1860 to the present time is furnished on page 437.

(i.) *Wheat.* In the case of wheat, the Commonwealth's principal crop, the graph indicates that the forty-eight seasons under review divide themselves naturally into five distinct periods, three of moderate and fluctuating increases and two of extremely rapid increases. Thus, between the seasons 1860-1 and 1875-6, a moderate rate of increase was in evidence, the area increasing from 640,000 to 1,420,000 acres. During the five succeeding seasons a very rapid increase took place, the total in 1880-1 amounting to over



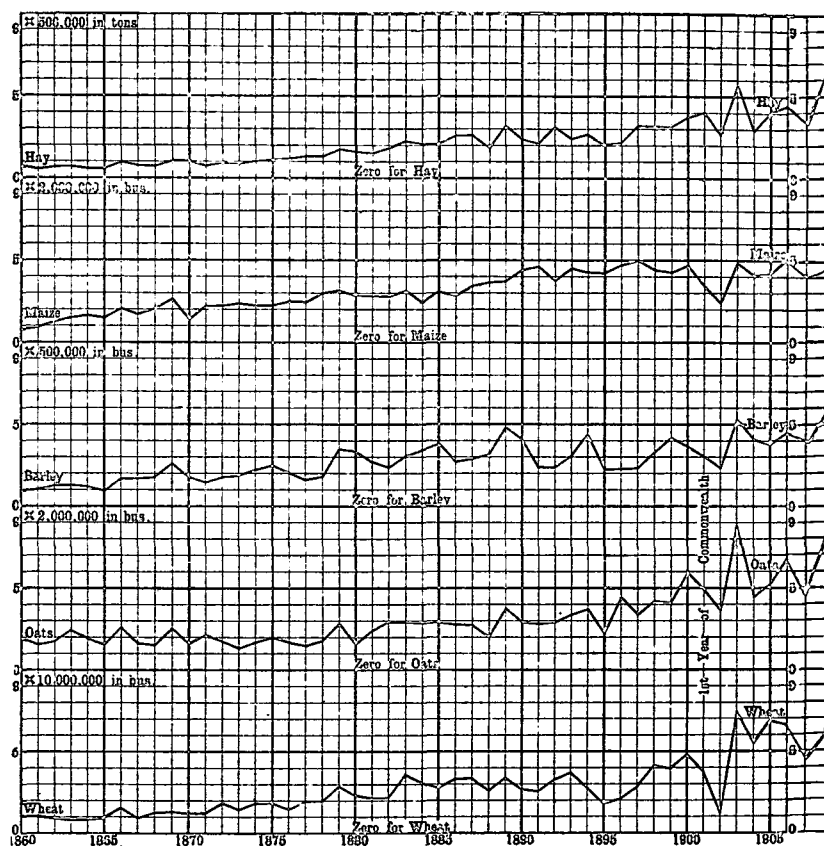
GRAPHS SHEWING THE AREA UNDER THE PRINCIPAL CROPS IN THE COMMONWEALTH FROM 1860-1 TO 1907-8.



(See pages—for wheat, 370; oats, 378; maize, 382; barley, 385; hay, 393; sugar-cane, 398; and vineyards, 403.)

EXPLANATION OF GRAPHS.—The base of each small square represents an interval of one year, while the vertical height represents a number of acres, varying with the nature of the crop in accordance with the scale given in the upper left-hand corner of the diagram. The height of each graph above the base line denotes, for the crop to which it relates, the total area grown in the Commonwealth during the successive seasons.

GRAPHS SHEWING THE PRODUCTION OF THE PRINCIPAL CROPS IN THE COMMON-WEALTH FROM 1860-1 TO 1907-8.



(See pages—for wheat, 370; oats, 378; maize, 382; barley, 386; and hay, 395.)

EXPLANATION OF GRAPHS.—In this diagram a separate base line is provided for each of the crops dealt with. In each instance the base of a small square represents an interval of one year the vertical height of such square representing in the case of the wheat graph, 10,000,000 bushels; oats, 2,000,000 bushels; barley, 500,000 bushels; maize, 2,000,000 bushels; and hay, 500,000 tons. The height of each graph above its base line denotes the aggregate yield in the Commonwealth of that particular crop during the successive seasons.

3,000,000 acres. For fifteen years thereafter the increase in area was not large, and in two seasons, viz., 1885-6 and 1890-1, marked decreases were experienced. The total increase for the fifteen years was about 700,000 acres, the total for 1895-6 being rather more than 3,750,000 acres. The succeeding five years witnessed a rapid increase in area to a total of more than 5,600,000 acres, followed by a further period of marked fluctuations; this latter period, however, contained the season of maximum wheat-cropping, viz., 1904-5, when an area of 6,270,000 acres was so cropped.

(ii.) *Hay.* Hay-growing, which, next to the growing of wheat for grain, is the most important branch of agriculture in the Commonwealth, will be seen from the graph to have fluctuated very considerably from year to year during the period under review, these fluctuations being due in the main to seasonal variations and to variations in the relative prices of grain and hay crops. It will be seen that the features of the graphs are a moderate increase from 1860-1 to 1875-6, a fairly rapid increase from 1875-6 to 1882-3, moderate increase thence to 1896-7, succeeded by marked fluctuations from this point onwards with, on the whole, a moderate rate of increase until 1908-9 when the maximum of 2,450,000 acres was attained.

(iii.) *Oats.* The graph relating to oats exhibits extremely marked fluctuations from year to year in the area devoted to this crop, the general tendency, however, being one of increase. This feature was specially marked from 1892-3 to 1896-7, while the succeeding years were characterised by very extensive fluctuations. During the past three seasons the area under oats has increased rapidly to a maximum of 676,000 acres in 1908-9.

(iv.) *Maize.* The graph relating to maize indicates that the area devoted thereto in Australia, although somewhat fluctuating, increased with fair rapidity until the season 1896-7, since when it has varied above and below the point then reached, on the whole remaining practically stationary. The maximum area under maize, viz., 372,000 acres, was attained in the season 1903-4.

(v.) *Sugar-Cane.* In the case of sugar-cane the graph shews a fairly rapid rate of increase to 1874-5, followed by a period of five years during which the area increased but slowly. From 1879-80, however, the sugar-cane area rose rapidly until in 1884-5 a total of more than 75,000 acres was reached. Then followed a period of diminished cultivation, and it was not until 1892-3 that so high a total was again attained. After this the area rose rapidly to 136,000 acres in 1898-9, but during the next five years a decline took place, the area for 1903-4 being 132,000 acres. A marked decline was in evidence in 1902-3, and a corresponding recovery in 1903-4. The season of maximum area, viz., 156,000 acres, was 1905-6, since when a persistent decline in area has been in evidence.

(vi.) *Barley.* The Commonwealth barley crop, although not an extensive one, is yet one which has exhibited from time to time very marked fluctuations in area. The graph representing this crop is consequently a very irregular line. The total has, on the whole, increased but slightly since 1880, rapid increases in certain years being succeeded by equally rapid decreases in subsequent years. The maximum area under barley, viz., 140,000 acres, was attained in the season 1908-9.

(vii.) *Vines.* The graph relating to area under vines, from 1872-3 onwards, indicates that there were two periods of very slow increase, one from 1872-3 to 1881-2, the other from 1893-4 to 1904-5. Between these, viz., from 1881-2 to 1893-4, a moderate rate of increase of area was experienced, the total for the Commonwealth advancing during that time from 14,600 acres to 57,400 acres, while since 1904-5 the area has fallen consistently. The season of maximum area under vineyards was 1904-5, with a total of about 65,700 acres.

2. **Production.**—The diagram on page 438 furnishes a graphical representation of the aggregate yields from 1860-1 to 1903-9 of five of the principal crops of the Commonwealth.

(i.) *Wheat.* This graph brings out clearly the fact that while on the whole the production of wheat in the Commonwealth is increasing with fair rapidity, the fluctuations in the total quantity produced are more marked in recent than in earlier years. Thus since the year 1890 there have been three seasons of extremely low output, viz., in 1891-2, 1895-6, and 1902-3, with aggregate yields respectively of 25,700,000 bushels, 18,300,000 bushels, and 12,400,000 bushels. On the other hand there have been three seasons in which the total production was exceptionally high. These will be seen from the graph to have been the seasons 1893-4, 1900-1, and 1903-4, the total yields for which were 37,100,000 bushels, 48,400,000 bushels, and 74,100,000 bushels respectively. Each of these yields represented at the date of its attainment the maximum Australian wheat crop, the last-mentioned being the highest yet reached.

(ii.) *Oats.* From 1860-1 to 1880-1 the oat crop of the Commonwealth, although exhibiting from year to year fluctuations more or less marked, gave no indications of a tendency to increase with the advance in population. This is well shewn in the diagram, by the persistence with which the graph for this period adheres to the line denoting 4,000,000 bushels, the yield for 1880-1 being actually lower than that for 1860-1. From this latter season to 1894-5 the variation was on a somewhat higher level, and is shewn in the diagram to have been in the vicinity of the line representing 6,000,000 bushels. From this point onwards a tendency to more rapid increase in production is in evidence, obscured somewhat by extensive fluctuations corresponding to those referred to above in the case of wheat. Thus in 1895-6 and 1902-3 the total yields were only 4,400,000 and 7,300,000 bushels respectively, while in 1900-1 and 1903-4 aggregates respectively of 12,000,000 and 17,500,000 bushels were reached, this latter being the maximum oat crop of the Commonwealth.

(iii.) *Barley.* The Australian barley crop will from the graph be seen to have fluctuated very considerably throughout, these variations being due rather to fluctuations in the area sown than to adverse seasons. From 1879-80 to 1902-3 the curve rises above and falls below the line representing 1,500,000 bushels. For more recent years the graph bears evidence of an increasing, though still fluctuating, output. The maximum barley crop of the Commonwealth was that of 2,870,000 bushels in 1908-9.

(iv.) *Maize.* The maize graph indicates a rapid increase in output from 1860-1 to 1869-70, followed by a moderate increase from the latter season to 1886-7, and a further rapid increase to 1891-2. From the last-mentioned season onwards the production has fluctuated considerably, but little increase has, on the whole, been experienced, the total for 1891-2 being 9,300,000 bushels, as compared with 10,200,000 bushels for 1906-7, the maximum Australian maize crop. As in the case of all other crops, the maize yield for 1903-4 was much higher than those for the years immediately preceding and succeeding.

(v.) *Hay.* The graph relating to the Commonwealth output of hay indicates a fairly continuous increase in production from the season 1860-1, when the total stood at 340,000 tons, to that of 1887-8, when it reached 1,330,000 tons. In subsequent years marked fluctuations have been in evidence, but the tendency has, on the whole, been one of increase. The maximum hay crop of the Commonwealth was that of the season 1908-9, when the total production reached 3,140,000 tons.