

## 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 1901-11. 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 1910-11.

Season.	New South Wales.	Victoria.	Queens- land.	South Australia.	Western Australia.	Tas- mania.	Common- wealth.
	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	736,520	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	201,838	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	493,837	257,028	9,353,902
1908-9 ...	2,717,085	3,461,761	535,900	2,321,812	585,339	269,346	9,891,243
1909-10 ...	3,180,561	3,658,535	606,790	2,530,301	722,086	274,026	10,972,299
1910-11 ...	3,386,017	3,952,070	667,113	*2,746,694	855,024	286,920	11,893,838

\* Including Northern Territory, 360 acres.

The increase in the area under crop during the past ten years has been most marked in the case of New South Wales, the total advancing from 2,445,564 acres in the season 1900-1 to 3,386,017 in 1910-11, an increase of 940,453 acres. During the same period an increase of 837,938 acres was experienced in Victoria, 653,686 acres in Western Australia, 376,654 acres in South Australia, 209,716 in Queensland, and 62,568 acres in Tasmania. The total area under crop in the Commonwealth increased during the period by 3,081,375 acres, and the total for 1910-11 was the highest ever attained by the Commonwealth. The 1910-11 figures were also the highest ever attained by any of the States.

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 ten seasons, increased at a rate which is somewhat greater than that at which the population of the Commonwealth has increased. This relatively greater increase is in evidence in all the States, being most marked in the case of Western Australia, which has now a larger area under crop per head of population than any State except South Australia. Details for the ten 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 ...	1,656	2,451	954	6,224	1,123	1,327	2,200
1902-3 ...	1,604	2,687	538	6,231	1,085	1,376	2,186
1903-4 ...	1,786	2,813	1,094	6,321	1,263	1,419	2,375
1904-5 ...	1,838	2,755	1,027	6,332	1,368	1,222	2,356
1905-6 ...	1,909	2,660	984	6,220	1,458	1,235	2,339
1906-7 ...	1,900	2,708	1,039	5,886	1,806	1,320	2,335
1907-8 ...	1,691	2,622	976	6,062	1,940	1,356	2,248
1908-9 ...	1,740	2,769	962	6,018	2,254	1,405	2,337
1909-10 ...	1,971	2,865	1,050	6,440	2,718	1,419	2,538
1910-11 ...	2,060	3,037	1,114	6,750	3,089	1,480	2,688

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 1910-11 only about one acre in every 160. In Victoria the area under crop was about one acre in every 14, in Tasmania one in 58, in New South Wales one in 59, in South Australia one in 89, in Queensland one in 643, and in Western Australia one in 730.

**PERCENTAGE OF AREA UNDER CROP TO TOTAL AREA OF EACH STATE AND OF COMMONWEALTH FOR SEASONS 1901-2 to 1910-11.**

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.*	W. Aust.	Tas.	C'wealth.
	%	%	%	%	%	%	%
1901-2 ...	1.147	5.273	0.113	0.919	0.035	1.386	0.442
1902-3 ...	1.132	5.772	0.064	0.915	0.037	1.472	0.445
1903-4 ...	1.282	6.025	0.132	0.928	0.045	1.547	0.489
1904-5 ...	1.347	5.906	0.126	0.935	0.052	1.348	0.492
1905-6 ...	1.430	5.725	0.122	0.927	0.058	1.372	0.496
1906-7 ...	1.423	5.873	0.130	0.887	0.074	1.459	0.501
1907-8 ...	1.295	5.747	0.124	0.931	0.079	1.532	0.491
1908-9 ...	1.368	6.155	0.125	0.955	0.094	1.605	0.520
1909-10 ...	1.601	6.505	0.141	1.040	0.116	1.633	0.576
1910-11 ...	1.705	7.026	0.155	1.129	0.137	1.710	0.625

\* Exclusive of Northern Territory.

5. **Artificially-Sown Grasses.**—In all the States considerable areas are devoted to artificially-sown grasses, frequently sown on uncultivated land after burning off. Complete statistics regarding the area under such 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 1910-11.

Season.	New South Wales.	Victoria.	Queens-land.	South Australia.	Western Australia.	Tasmania.	Common-wealth.
	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	807,924	1,029,711	82,784	23,297	10,265	491,422	2,445,403
1909-10	888,937	988,671	108,438	23,343	9,017	439,450	2,457,856
1910-11	1,055,303	991,195	140,196	26,416	8,348	493,233	2,714,691

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. The areas contained in the above table relate in most cases to grasses sown for grazing purposes on uncultivated land, generally after burning off, and are consequently not included with "area under crop."

## § 3. Relative Importance of Crops.

1. **Various Crops.**—In the following table are furnished details concerning the areas in the several States under each of the principal crops for the season 1910-11 :—

## DISTRIBUTION OF CROPS IN AUSTRALIA, 1910-11.

Crop.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	N. Ter.	Total for C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Wheat ...	2,128,826	2,398,089	106,718	2,104,717	581,862	52,242	2	7,372,456
Oats ...	77,961	392,681	2,537	77,674	61,918	63,887	...	676,688
Maize ...	213,217	20,151	180,862	619	46	...	19	414,914
Barley—								
Malting ...	4,981	30,609	3,222	23,245	1,449	3,902	...	67,408
Other ...	2,101	22,078	2,356	11,228	1,920	1,333	...	41,016
Beans and Peas ...	275	11,068	55	9,957	843	20,041	...	42,239
Rye ...	4,193	2,640	105	1,043	762	1,261	...	10,004
Other Cereals ...	...	...	2	202	41	...	12	257
Hay ...	638,577	832,669	98,558	440,177	175,432	72,992	...	2,258,405
Green Forage ...	179,382	71,826	89,667	20,728	4,545	8,695	19	374,862
Grass Seed ...	5	1,295	1,169	17	...	1,775	...	4,261
Orchards & other Fruit Gardens	47,533	57,375	15,153	22,410	16,738	25,934	13	185,156
Vines—								
Productive ...	7,518	20,024	1,528	20,367	2,393	...	...	51,830
Unproductive ...	803	3,388	106	2,585	402	...	...	7,284
Market Gardens	9,813	10,778	2,317	2,818	3,576	1,741	58	31,101
Sugar Cane—								
Productive ...	5,596	...	94,641	...	...	...	...	100,237
Unproductive ...	8,167	...	47,138	...	...	...	...	55,305
Potatoes ...	44,452	62,904	8,326	7,812	1,791	26,230	...	151,515
Onions ...	241	6,161	101	270	29	62	...	6,864
Other root crops	694	2,584	4,439	349	123	5,774	2	13,965
Tobacco ...	1,096	329	655	...	...	...	...	2,080
Broom Millet ...	4,467	650	422	...	...	...	...	5,569
Pumpkins and Melons	5,070	2,477	4,160	...	282	...	...	11,980
Hops ...	...	121	...	3	...	1,039	...	1,163
All other crops	1,019	2,142	2,876	113	872	12	235	7,270
<b>Total Area...</b>	<b>3,386,017</b>	<b>3,952,070</b>	<b>667,113</b>	<b>2,746,334</b>	<b>855,024</b>	<b>286,920</b>	<b>360</b>	<b>11,893,838</b>

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 1910-11 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 maize 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 wheat, while in Tasmania hay, oats, and wheat occupy the leading positions. For the Commonwealth as a whole, the wheat, hay, and oat crops represent nearly 87 per cent. of the total area under crop.

**PROPORTION OF AREA UNDER CHIEF CROPS, 1910-11.**

Crop.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	N. Ter.	C'wealth.
	%	%	%	%	%	%	%	%
Wheat ...	62.87	60.68	16.00	76.64	68.05	18.21	...	61.99
Hay ...	18.86	21.07	14.77	16.03	20.52	25.44	...	18.99
Oats ...	2.30	9.94	0.38	2.83	7.24	22.27	...	5.69
Maize ...	6.30	0.51	27.11	0.02	...	...	5.28	3.49
Green Forage	5.30	1.82	13.44	0.75	0.53	3.03	5.28	3.15
Orchards and Fruit G'dens	1.40	1.45	2.27	0.82	1.96	9.04	3.61	1.56
Sugar Cane...	0.41	...	21.25	...	...	...	...	1.31
Potatoes ...	1.31	1.59	1.25	0.28	0.21	9.14	...	1.27
Barley ...	0.21	1.33	0.84	1.26	0.39	1.82	...	0.91
Vineyards ...	0.25	0.59	0.24	0.84	0.33	...	...	0.50
All Other ...	0.79	1.02	2.45	0.53	0.77	11.05	85.83	1.14
Total	100.00	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, 1906-7 to 1910-11.**

Crop.	1906-7.	1907-8.	1908-9.	1909-10.	1910-11.
	Acres.	Acres.	Acres.	Acres.	Acres.
Wheat ...	5,977,794	5,383,911	5,262,473	6,586,236	7,372,456
Hay ...	1,654,399	1,811,579	2,452,682	2,228,029	2,258,405
Oats ...	581,843	642,814	676,156	698,448	676,688
Maize ...	325,581	299,579	323,875	364,585	414,914
Green Forage	236,484	439,725	413,511	306,082	374,862
Orchards and Fruit Gardens	162,274	169,299	173,388	178,798	185,156
Sugar Cane	153,864	144,763	140,883	142,261	155,542
Potatoes	146,681	143,511	125,685	137,070	151,515
Barley	106,436	131,099	140,243	143,013	108,424
Vineyards	62,546	61,232	59,450	58,151	59,114
All other Crops	144,898	126,390	122,897	129,626	136,762
Total	9,552,800	9,353,902	9,891,243	10,972,299	11,893,83

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 1910-11, and a minimum in 1908-9, while hay reached its maximum area in 1908-9 and its minimum in 1906-7. Of the other crops maize, orchards and fruit gardens, sugar-cane and potatoes attained their maximum areas in 1910-11, oats and barley in 1909-10, green forage in 1907-8, and vineyards in 1906-7.

### § 4. Wheat.

1. **Progress of Wheat-Growing.**—(i.) *Acres.* 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 1910-11.

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	92,393	40,898	5,156,049
1903-4	1,561,111	1,968,599	138,096	1,711,174	137,946	49,414	5,566,340
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	29,102	5,262,473
1909-10	1,990,180	2,097,162	117,160	1,895,738	448,918	37,078	6,586,236
1910-11	2,128,826	2,398,089	106,718	*2,104,719	581,862	52,242	7,372,456

\* Including Northern Territory, 2 acres.

The area devoted in the Commonwealth to the production of wheat for grain was higher for the season 1910-11 than for any previous season, exceeding the area for 1909-10, the previous record season, by 786,220 acres, and that for 1908-9 by no less than 2,109,983 acres. The maximum area under wheat for grain was attained by the several States in the following seasons :— New South Wales, Victoria, South Australia and Western Australia 1910-11 ; Queensland 1904-5 ; and Tasmania, 1897-8. The average area under wheat in the Commonwealth in the past ten seasons was 5,881,814 acres. The seasons 1904-5, 1905-6, 1906-7, 1909-10 and 1910-11 exceeded this average, while the remaining five seasons fell short of it. According to the preliminary reports available it appears that the area of wheat reaped for grain in 1911-12 will fall short of that for 1910-11, and will probably not exceed 7,200,000 acres.

(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 1910-11.

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	1,958,640	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
1909-10	28,532,029	28,780,100	1,571,589	25,133,851	5,602,368	793,660	90,413,597
1910-11	27,913,547	34,813,019	1,022,373	*24,344,760	5,897,540	1,120,744	95,111,983

\* Including Northern Territory, 20 bushels.

The wheat harvest of 1910-11 was the largest ever reaped in the Commonwealth, and exceeded by no less than 4,698,386 bushels that of 1909-10, the next largest harvest, these being the only two occasions on which a yield exceeding 75,000,000 bushels has been obtained. The only other occasions on which a yield exceeding 60,000,000 bushels has been reaped were the seasons 1903-4, 1905-6, 1906-7 and 1908-9. The prospects for the forthcoming harvest of 1911-12, although not so good as for the two preceding seasons, are still fair, and it appears probable that the aggregate yield for the season will exceed 75,000,000 bushels. For latest particulars to date of going to press, see Appendix.

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

## YIELD OF WHEAT PER ACRE, 1901-2 to 1910-11.

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
1909-10	14.34	13.72	13.41	13.26	12.48	21.41	13.73
1910-11	13.11	14.52	9.58	11.57	10.14	21.45	12.90
Average for 10 seasons	11.00	10.36	13.03	9.21	10.91	20.18	10.33

As the above figures shew, there were remarkable variations in the average yields, chiefly due of course 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 1910-11 was below that for 1909-10 which was the best since 1866-7, when, however, the area under wheat was only about one-eighth of the area so cropped in 1910-11. Victoria was the only State with an increase in the average yield per acre, Tasmania was approximately the same as in the previous year, the falling-off being in the other four States.

(iv.) *Relation to Population.* During the past ten seasons the Commonwealth's production of wheat per head of population has varied between  $3\frac{1}{2}$  bushels in 1902-3 and  $21\frac{1}{2}$  bushels in 1910-11. The State in which wheat-growing occupies the most important position relatively to population is South Australia, which in 1910-11 had a yield which averaged close upon 60 bushels per head. Queensland is the State in which the average production of wheat per head is least. Particulars for the past ten 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	10,766	10,023	3,340	22,299	4,943	5,499	10,082
1902-3	1,131	2,127	12	17,801	4,649	4,887	3,194
1903-4	19,179	23,678	4,707	36,998	8,348	4,195	18,932
1904-5	11,312	17,495	4,095	33,456	8,409	4,282	13,723
1905-6	13,937	19,347	2,140	55,551	9,228	4,166	16,747
1906-7	14,664	18,542	2,057	47,656	10,811	3,512	16,234
1907-8	6,017	9,816	1,271	51,211	11,494	3,398	10,730
1908-9	9,915	18,670	2,159	50,275	9,477	3,655	14,789
1909-10	17,679	22,537	2,720	63,971	21,087	4,110	20,910
1910-11	16,981	26,750	1,707	59,835	21,304	5,783	21,494

\* Exclusive of Northern Territory.

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 ranging from Belgium with a maximum of  $39\frac{1}{2}$  bushels per acre to Algeria with a minimum of  $8\frac{1}{2}$  bushels per acre. Australia with approximately 13 occupies an intermediate position:—

#### AVERAGE YIELD OF WHEAT IN VARIOUS COUNTRIES.

Country.	Year.	Average Yield in bushels per acre.	Country.	Year.	Average Yield in bushels per acre.
Belgium...	1909	39.22	United States...	1909	15.30
Denmark	1909	36.90	Hungary	1909	14.36
United Kingdom	1909	33.85	Servia	1906	14.34
Netherlands	1909	31.82	Rumania	1909	13.18
Germany	1909	30.50	<b>Australia</b>	<b>1910</b>	<b>12.90</b>
Sweden	1909	29.29	Bulgaria	1909	12.48
New Zealand	1910	25.73	Russia in Europe	1909	12.46
Canada*	1909	21.51	Caucasia	1909	12.31
France	1909	21.19	Uruguay	1908	12.15
Japan	1909	20.13	India	1909	10.88
Austria	1909	19.27	Argentine Republic	1909	10.72
Italy	1909	16.33	Siberia	1909	8.51
Spain	1909	15.42	Algeria	1908	8.27

\* Exclusive of British Columbia.

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:—



## WHEAT YIELDS OF VARIOUS COUNTRIES.

Country.	Year.	Yield in Bushels.	Country.	Year.	Yield in Bushels.
United States ...	1909	714,778,456	Austria ...	1909	56,990,960
Russia in Europe ...	1909	606,114,176	Rumania ...	1909	54,996,920
India ...	1910	356,794,664	Bulgaria ...	1909	32,063,352
France ...	1909	345,185,224	Algeria ...	1908	29,731,384
Italy ...	1909	189,907,656	Japan ...	1909	22,294,832
Canada* ...	1909	166,744,000	Belgium ...	1909	15,501,464
Argentine Republic ...	1909	156,119,824	Servia ...	1906	13,207,225
Spain ...	1909	144,064,400	Mexico ...	1905	9,390,670
Germany ...	1909	137,961,104	New Zealand ...	1910	8,290,221
Hungary ...	1909	125,871,880	Uruguay ...	1908	7,427,774
Caucasia (Russia) ...	1909	103,251,696	Sweden ...	1909	6,691,576
<b>Australia</b> ...	<b>1910</b>	<b>95,111,983</b>	Netherlands ...	1909	4,029,512
Siberia (Russia) ...	1909	71,473,976	Denmark ...	1909	3,685,784
United Kingdom ...	1909	63,196,696			

\*Exclusive of British Columbia.

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 1905 to 1909 :—

## WORLD'S PRODUCTION OF WHEAT.

Year ...	1905.	1906.	1907.	1908.	1909.
Production ...	1,000,000 bushels. 3,225	1,000,000 bushels. 3,324	1,000,000 bushels. 3,031	1,000,000 bushels. 3,079	1,000,000 bushels. 3,513

In this estimate the figures given for Australia and New Zealand relate to the agricultural year ending on 31st March in the year specified.

For the five years referred to the Australian production of wheat aggregated 332,600,000 bushels, thus representing about 2 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 2,800,000,000 bushels, so that the Australian production of wheat represented nearly 12 per cent. of that of the British Empire, while the British Empire production represented about 17 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 for British-grown wheat :—

## PRICES OF BRITISH WHEAT PER QUARTER, 1861 to 1910.

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	1904 ...	28 4	30 6	26 3
1871 ...	56 8	60 0	52 6	1905 ...	29 8	32 3	26 8
1881 ...	45 4	55 2	40 9	1906 ...	28 3	30 9	25 9
1891 ...	37 0	41 8	32 3	1907 ...	30 7	36 3	26 0
1901 ...	26 9	27 8	25 8	1908 ...	32 0	35 6	30 5
1902 ...	28 1	31 8	24 10	1909 ...	36 11	44 9	31 4
1903 ...	26 9	30 3	24 11	1910 ...	31 8	33 9	29 0

(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,  
1906 to 1910.**

Country.	Average Price per Imperial Quarter.					Country.	Average Price per Imperial Quarter.				
	1906.	1907.	1908.	1909.	1910.		1906.	1907.	1908.	1909.	1910.
U. States—	s. d.	s. d.	s. d.	s. d.	s. d.	British India	s. d.	s. d.	s. d.	s. d.	s. d.
A. Coast ...	30 7	33 9	36 3	38 6	37 3	...	29 4	33 9	37 8	40 8	35 5
P. Coast ...	30 11	31 9	36 1	38 6	37 3	Argentina ...	29 10	31 6	35 6	39 9	34 11
Australia ...	31 2	33 8	37 7	41 5	37 2	Rumania ...	28 11	30 2	38 5	40 9	34 2
Germany ...	27 7	25 0	33 7	38 3	36 11	Chile ...	...	36 8	35 1	39 1	33 7
Canada ...	30 8	34 1	35 1	39 3	36 9	Bulgaria ...	27 5	25 9	35 10	...	32 11
Russia—											
Nthn. Ports	28 6	32 11	35 5	39 3	35 7						
Stn. Ports	29 10	32 8	38 3	39 3	35 7						

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

**EXPORT VALUES OF AUSTRALIAN WHEAT, 1901 to 1910.**

Year ...	1901.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.
Price per bushel	2s. 9d.	3s. 1d.	3s. 1d.	3s. 2d.	3s. 5d.	3s. 3d.	3s. 4d.	4s. 1d.	4s. 2d.	4s. 2d.

The export values here shown 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 hereunder shews the imports, exports, and net exports of wheat and flour during each year of the period 1901-10. 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 54,760,000 bushels in 1910, the net exports for that period averaging 37,830,000 bushels.

**IMPORTS AND EXPORTS OF WHEAT AND FLOUR, COMMONWEALTH,  
1901 to 1910.**

Year.	Imports.			Exports.			Net Exports.
	Wheat.	Flour.	Total.	Wheat.	Flour.	Total.	
	Bushels.	Eq. Bshls. <sup>1</sup>	Bushels.	Bushels.	Eq. Bshls. <sup>1</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 <sup>2</sup>
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
1909	128	4,000	4,128	31,549,498	6,498,450	38,047,948	38,043,820
1910	325	8,600	8,925	47,761,895	6,997,300	54,759,195	54,750,270

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 1906-10. The countries are as shewn in the Australian Customs returns, but owing to the fact that wheat ships are frequently instructed to call for orders at various ports, the countries in which these ports are, 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, 1906 to 1910.**

Country to which Exported.	1906.	1907.	1908.	1909.	1910.	Total for Five Years.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
U. Kingdom	20,138,149	21,487,355	11,538,962	26,030,722	36,998,625	116,193,813
Sth. African Union ...	4,163,228	4,156,705	2,475,283	3,234,603	3,001,145	17,030,964
Peru ...	1,244,112	1,204,897	253,865	627,417	1,270,360	4,600,651
Canary Is. ...	327,255	...	...	288,410	3,280,215	3,845,880
Chile ...	2,212,410	568,675	75,617	...	102,025	2,958,727
Belgium ...	42,442	57,448	40,810	120,237	1,174,210	1,435,147
Spain ...	864,367	...	...	310,957	...	1,175,324
India ...	437,317	31,573	485,078	101,135	...	1,055,103
France ...	27,803	19,103	19,542	24,803	918,815	1,010,066
Italy ...	208,528	7,773	...	483,783	54,140	754,224
Japan ...	40,710	313,419	57	61,448	231,320	646,954
China ...	10,487	599,222	...	42	...	609,751
Germany ...	59,960	33,278	...	40,403	290,905	424,546
Egypt ...	161,470	179,132	70,045	...	...	410,647
Philippine I. ...	833	...	...	178,153	...	178,986
Ceylon ...	164,358	4,835	510	308	820	170,831
New Zealand	548	36,340	31,622	72,130	8,410	149,050
New Caledonia ...	60,563	4,153	722	3,275	470	69,183
Other Countries ...	97,795	80,222	35,275	21,672	430,435	665,399
Total ...	30,262,335	28,784,130	15,027,388	81,549,498	47,761,895	153,385,246

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

### EXPORTS OF FLOUR FROM THE COMMONWEALTH, 1906 to 1910.

Country to which Exported.	1906.	1907.	1908.	1909.	1910.	Total for Five Years.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Sth. African Union	38,080	28,208	23,662	24,460	29,535	143,945
United Kingdom	26,796	7,181	13,545	33,128	23,223	103,873
Portuguese East Africa	11,139	22,678	17,689	16,496	22,517	90,519
Java ...	15,021	17,320	13,492	13,346	18,808	77,987
Straits Settlements	17,608	18,133	5,665	6,250	12,374	60,030
Philippine Islands	12,126	16,947	9,790	11,803	9,359	60,025
Hong Kong	20,455	25,332	481	1,511	1,742	49,521
New Zealand	1,032	6,427	14,464	5,439	3,148	30,510
New Caledonia	3,613	4,293	4,056	3,897	4,049	19,908
Mauritius	5,471	2,579	3,461	3,090	2,894	17,495
Ceylon	2,408	2,345	2,716	2,257	2,287	12,013
China	586	6,479	363	300	816	8,544
Japan	4,793	491	1	337	815	6,437
Fiji	1,168	1,362	...	1,810	1,760	6,100
Guam	496	...	...	...	...	496
Other Countries	6,089	3,663	7,418	5,845	6,619	29,634
Total	166,881	163,438	116,803	129,969	139,946	717,037

During the five years under review the export of wheat to the United Kingdom totalled 116,193,813 bushels or about 76 per cent. of the total export for the period. On the other hand, the export of flour to the United Kingdom aggregated only 103,873 tons or about 14½ per cent. of the total export. During the five years the heaviest exports of flour have been to South Africa, the United Kingdom, Portuguese East Africa, Java, the Straits Settlements, the Philippine Islands and Hong Kong.

(iii.) *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 during the past five years represents, on the average, about 23 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 ten years the net exports from the Commonwealth of wheat and its milled products have amounted to 232,851,144 bushels of wheat, 1,023,401 tons of flour, and 4,421,818 bushels of bran, pollard, and sharps. On the basis of the figures quoted above this export would contain no less than 120,000,000 lbs. of phosphoric acid, the value of which as a fertiliser would be about £750,000.

6. **Value of the Wheat Crop.**—The estimated value of the wheat crop in each State and in the Commonwealth during the season 1910-11 is shewn below :—

#### VALUE OF THE WHEAT CROP,\* 1910-11.

State.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	N.Ter'ty.	C'w'lt'h.
	£	£	£	£	£	£	£	£
Aggregate value	4,855,790	5,910,960	204,475	4,209,611	1,081,216	196,130	5	16,458,187
Value per acre	£2/5/8	£2/9/4	£1/18/4	£2/0/0	£1/17/2	£3/15/1	£2/10/0	£2/4/8

\* Exclusive of the value of straw.

### § 5. Oats.

1. **Progress of Cultivation.**—Oats comes next in importance to wheat amongst the grain crops cultivated last season, but while wheat grown for grain accounted for 62 per cent., oats represented less than 6 per cent. of the area under crop in the Commonwealth. The progress of cultivation of oats since 1860 is shewn in the table hereunder, and more fully in the graphs hereinafter:—

#### CULTIVATION OF OATS, 1860-1 to 1910-11.

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	58,320	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
1909-10	81,452	384,226	2,789	85,346	73,342	71,293	698,448
1910-11	77,991	392,681	2,537	77,674	61,918	63,887	676,688

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 1910-11.

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 ...	1,119,558	11,124,940	38,811	1,280,235	739,303	1,946,010	16,248,857
1909-10 ...	1,966,586	7,913,423	50,018	1,209,131	1,248,162	2,347,548	14,734,868
1910-11 ...	1,702,706	9,699,127	50,469	1,136,618	776,233	2,063,303	15,428,456

The principal oat-growing State of the Commonwealth is Victoria. During the past ten seasons it has produced about 65½ 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 New South Wales, Western Australia and Tasmania, the highest production of oats for any season was that of 1909-10, while Victoria and Queensland experienced a maximum yield in 1903-4, and South Australia in 1908-9. 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 15,428,456 bushels for 1910-11 ranks third.

**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 ten 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 ...	21.31	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 ...	18.70	26.50	21.60	16.31	12.43	34.35	24.03
1909-10 ...	24.14	20.60	17.93	14.17	17.02	32.93	21.10
1910-11 ...	21.83	24.70	19.89	14.63	12.54	32.30	22.80
Average for 10 Seasons ...	19.51	21.10	21.30	14.33	15.10	30.87	20.84

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 1910-11 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 ten 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	500	5,558	83	1,306	845	9,734	2,559
1902-3	251	3,644	1	1,739	792	9,767	1,883
1903-4	879	11,152	137	2,529	1,150	8,867	4,479
1904-5	448	5,145	29	1,546	945	6,366	2,222
1905-6	594	5,975	11	2,397	1,135	6,438	2,597
1906-7	944	7,252	54	2,445	1,792	10,673	3,327
1907-8	560	4,219	18	2,340	2,836	8,049	2,207
1908-9	717	8,897	70	3,318	2,847	10,150	3,839
1909-10	1,219	6,197	87	3,077	4,698	12,156	3,408
1910-11	1,036	7,453	84	2,794	2,804	10,646	3,487

\* Exclusive of Northern Territory.

5. **Value of Oat Crop.**—The estimated value of the oat crop of the several States of the Commonwealth for the season 1910-11 is as follows :—

#### VALUE OF OAT CROP,\* 1910-11.

State.	N.S.W.	Victoria.	Q'land.	Sth. Aust.	W. Aus.	Tas.	C'wealth.
Aggregate value	£225,250	£1,000,223	£8,832	£113,662	£103,498	£257,913	£1,709,378
Value per acre ...	£2/17/9	£2/10/11	£3/9/8	£1/9/3	£1/13/5	£4/0/9	£2/10/6

\* Exclusive of the value of Straw.

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 ten years 1901 to 1910 are given hereunder :—

#### COMMONWEALTH IMPORT AND EXPORT OF OATS, 1901 to 1910.

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
1909	320,543	32,607	339,258	35,375	18,715	2,768
1910	19,510	2,232	129,490	14,893	109,980	12,661

\* — 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 the United Kingdom, the Philippine Islands, and India 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 1910 amounted to 797,735 lbs., and represented a value of £9,342.

8. **Comparison 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, 1909.

Country.	Quantity of Oats produced	Country.	Quantity of Oats produced	Country.	Quantity of Oats produced.
	Bushels.		Bushels.		Bushels
United States ...	976,729,464	U'd. Kingdom	178,736,968	Argentina ...	26,236,192
Russian Empire	936,869,360	Austria ...	144,225,912	Rumania ...	25,143,352
Germany ...	515,725,600	Hungary ...	80,907,120	Netherlands	18,762,392
Canada* ...	353,466,000	Sweden ...	67,329,624	<b>Australia ...</b>	<b>14,734,868</b>
France ...	320,947,272	Denmark ...	40,590,522	New Zealand	13,804,000

\* Exclusive of British Columbia.

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 Denmark, for which particulars are not available, according to the magnitude of the average yield of oats for the year 1909, the results are as follows:—

#### YIELD OF OATS PER ACRE, 1909.

Country.	Average per Acre.	Country.	Average per Acre.	Country.	Average per Acre.
	Bushels.		Bushels.		Bushels.
Netherlands ...	53.67	New Zealand ...	36.62	Hungary ...	27.48
Germany ...	48.44	France ...	33.09	Argentina ...	24.05
United Kingdom...	44.49	Austria ...	31.54	<b>Australia...</b>	<b>21.10</b>
Canada* ...	38.00	United States ...	29.42	Rumania...	21.01
				Russian Empire...	20.25

\* Exclusive of British Columbia.

10. **Price of Oats.**—The average wholesale prices of oats in the markets of the several capitals for the year 1910 are given in the following table:—

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

Particulars.	Sydney.	Melbourne	Brisbane.	Adelaide.	Perth.	Hobart.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Average price per bushel ...	2 5	2 1	3 4	1 10	2 7	2 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 1910-11 being 394,079 acres, or nearly 95 per cent. of the total for the Commonwealth. Of the balance, Victoria contributed 20,151 acres, South Australia 619 acres, Western Australia 46 acres, and the Northern Territory 19 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, and 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 fluctuated somewhat during the succeeding seventeen years, it may be considered to have remained at about that figure. The greatest divergence during the period occurred in 1903-4, when a record total of 371,906 acres was harvested. From 1908-9 onwards, however, a continuous increase in the area devoted to maize has been in evidence, and the total of 414,914 acres for 1910-11 is the highest ever attained. 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, and a further improvement to 212,797 acres in 1909-10, which was well maintained in the succeeding season 1910-11. In Queensland the area appears to be on the increase, and that for 1910-11 was the highest ever attained in that State, while the area cropped in 1909-10 had only twice been previously exceeded, viz., in 1906-7 and 1903-4. The area under maize in New South Wales in 1910-11 represents only 6½ per cent. of that State's total area under crop, while in the case of Queensland the maize crop represents over 27 per cent. of the total.

### AREA UNDER MAIZE, STATES AND COMMONWEALTH, 1875-6 to 1910-11.

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
1909-10	212,797	19,112	132,313	210	153	364,585
1910-11	213,217	20,151	180,862	†638	40	414,914

\* Particulars for previous years not available. † Including 19 acres, Northern Territory.

3. **Total Yield.**—In the matter of maize yield the season 1910-11 was a record one, the total production of that cereal for the Commonwealth exceeding 13,000,000 bushels. On only three previous occasions has a total of more than 10,000,000 bushels been reached, viz., in 1897-8, 10,036,083 bushels; in 1906-7, 10,172,254 bushels; and in 1909-10, 10,770,648 bushels. Particulars concerning the yield from 1875 onwards are as hereunder:—

**MAIZE CROP, STATES AND COMMONWEALTH, 1875-6 to 1910-11.**

Season.	N.S.W.	Victoria.	Queensland.	S. Aust.	W. Aust.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1875-6 ...	3,410,517	37,177	1,006,486	...	1,200	4,455,380
1880-1 ...	4,518,897	49,299	1,409,607	...	896	5,978,699
1885-6 ...	4,336,163	181,240	1,574,294	...	1,417	6,093,114
1890-1 ...	5,713,205	574,083	2,373,803	...	1,526	8,662,617
1895-6 ...	5,687,030	351,891	2,391,378	...	600	8,430,899
1900-1 ...	6,292,745	604,180	2,456,647	...	1,399	9,354,971
1901-2 ...	3,844,993	615,472	2,569,118	...	5,203	7,034,786
1902-3 ...	3,049,269	750,524	1,033,329	...	2,110	4,835,232
1903-4 ...	6,836,740	904,239	1,923,623	...	2,487	9,667,089
1904-5 ...	4,951,132	623,736	2,542,766	...	896	8,118,530
1905-6 ...	5,539,750	641,216	2,164,674	...	428	8,346,068
1906-7 ...	5,763,000	704,961	3,703,374	...	919	10,172,254
1907-8 ...	4,527,852	508,761	3,093,789	*6,263	1,080	8,137,745
1908-9 ...	5,216,038	650,462	2,767,600	19,043	2,136	8,655,279
1909-10 ...	7,093,255	1,158,031	2,508,761	3,361	2,240	10,770,648
1910-11 ...	7,594,130	982,103	4,460,306	16,824	718	13,044,081

\* Particulars for previous years not available. † Including 449 bushels, Northern Territory.

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 ten seasons, 1901-2 to 1910-11:—

**AVERAGE YIELD OF MAIZE PER ACRE, COMMONWEALTH AND STATES,  
1901-2 to 1910-11.**

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	26.51	...	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
1909-10 ...	33.36	60.59	18.96	16.00	14.64	29.54
1910-11 ...	35.62	48.74	24.66	10.70	15.61	31.44
Average for 10 Seasons	28.32	57.30	20.90	†13.55	12.29	26.60

\* Particulars for previous years not available. † Average for 4 Seasons.

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 1910-11 has been estimated at £1,805,548, made up as follows:—

**VALUE OF MAIZE CROP, 1910-11.**

State.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	N. Ter'ty.	C'wealth.
Aggregate value	£1,012,550	£122,763	£669,046	£956	£153	£80	£1,805,548
Value per acre	£4/15/0	£6/1/10	£3/14/0	£1/10/11	£3/6/6	£4/4/3	£4/7/0

6. **Relation to Population.**—During the past ten seasons the Commonwealth production of maize has ranged between  $1\frac{1}{4}$  bushels per head of population in 1902-3 and 3 bushels per head in 1910-11. 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  $7\frac{1}{2}$  bushels per head in 1910-11. Details for the several States for the ten seasons are as follows:—

**MAIZE PRODUCTION PER 1000 OF POPULATION, 1901-2 to 1910-11.**

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.*	W. Aust.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1901-2 ... ..	2,795	509	5,070	...	27	1,839
1902-3 ... ..	2,175	621	2,017	...	10	1,248
1903-4 ... ..	4,797	751	3,716	...	11	2,468
1904-5 ... ..	3,402	517	4,844	...	4	2,053
1905-6 ... ..	3,723	530	4,073	...	2	2,069
1906-7 ... ..	3,873	578	6,871	...	4	2,486
1907-8 ... ..	2,976	413	5,668	†17	4	1,955
1908-9 ... ..	3,340	520	4,968	49	8	2,045
1909-10 ... ..	4,398	907	4,342	9	8	2,491
1910-11 ... ..	4,620	755	7,446	16	3	2,948

\* Exclusive of Northern Territory.

† 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 and 1909 also, owing to the small harvests of seasons 1907-8 and 1908-9, the imports of maize were largely in excess of the exports. Details of imports and exports for the past ten years are as follows:—

**COMMONWEALTH IMPORTS AND EXPORTS OF MAIZE, 1901 to 1910.**

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
1909 ... ..	628,063	104,367	5,054	999	623,009	103,368
1910 ... ..	183,730	19,554	12,557	1,904	121,173	17,650

\* — 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 Pacific Islands, 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 1910 these importations amounted to 466,010 lbs., and represented a value of £6997.

9. **Maize-growing in other Countries.**—The world's production of maize for the year 1909 has been estimated by the United States Department of Agriculture at 3,672,600,000 bushels, and of this quantity the United States of America was responsible for 2,687,500,000 bushels, or about 75 per cent. The other leading maize-producing countries of the world are Austria-Hungary, Argentine Republic, Italy, Rumania, Mexico, and Russia, in the order mentioned.

10. **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 1910:—

**AVERAGE PRICE OF MAIZE PER BUSHEL, 1901 to 1910.**

Year	...	1901.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.
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	s. d. 4 2	s. d. 2 11

## § 7. Barley.

1. **Area under Barley.**—The area devoted to barley in the Commonwealth is one which has fluctuated very considerably, but the net result of these fluctuations has left it in practically the same position as that which it occupied thirty years ago. The principal barley-growing State is Victoria, which, for the season 1910-11, accounted for 48½ 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 1910-1911.**

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	5,293	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	480	21,493	3,783	8,281	76,260
1903-4	10,057	47,760	22,881	28,697	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	28,122	3,590	5,328	106,436
1907-8	11,890	63,074	6,943	37,321	6,019	5,852	131,099
1908-9	9,517	64,648	7,385	44,911	7,308	6,474	140,243
1909-10	15,091	58,603	13,109	41,895	8,022	6,293	143,013
1910-11	7,082	52,687	5,578	34,473	3,369	5,235	108,424

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, 1910-11.**

State.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	C'wealth.
	Acres.	Acres	Acres.	Acres.	Acres.	Acres.	Acres
Malting barley	4,981	30,609	3,222	23,245	1,449	3,902	67,408
Other barley ...	2,101	22,078	2,356	11,228	1,920	1,333	41,016
Total ...	7,082	52,687	5,578	34,473	3,369	5,235	108,424

It will be seen that, taking the Commonwealth as a whole, about 62 per cent. of the area devoted to this grain in 1910-11 was 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 1910-11 amounted to 2,226,368 bushels, falling short of the record yield of 1908-9, by 647,836 bushels. Particulars concerning the yields of the several States from 1875 onwards are as follows:—

**COMMONWEALTH BARLEY CROP, 1875-6 to 1910-11.**

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	81,383	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
1909-10	272,663	1,023,384	193,586	691,421	101,673	153,654	2,436,384
1910-11	82,005	1,340,387	83,621	544,471	33,566	142,318	2,226,368

4. **Value of Barley Crop.**—The estimated value of the total barley crop of the Commonwealth for the season 1910-11 was £400,054. The extent to which the several States have contributed to this total is 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 ...	£15,190	£252,521	£18,580	£86,942	£5,473	£21,348	£400,054
Value per acre	£2/2/11	£4/15/10	£3/6/8	£2/10/5	£1/12/6	£4/1/7	£3/13/10

\* Exclusive of the value of Straw.

5. **Relation to Population.**—During the ten seasons 1901-2 to 1910-11, the quantity of barley produced in the Commonwealth has averaged about half a bushel per head of population. For the season 1910-11 the production ranged from about  $1\frac{1}{2}$  bushels per head in South Australia to one-twentieth of a bushel in New South Wales. Details for the period are as follows:—

**BARLEY PRODUCTION PER 1000 OF POPULATION, 1901-2 to 1910-11.**

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.*	W. Aust.	Tas.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1901-2 ... ..	75	573	547	677	179	956	397
1902-3 ... ..	13	464	7	888	218	1,121	296
1903-4 ... ..	122	1,048	986	1,367	237	1,161	690
1904-5 ... ..	183	725	632	965	156	881	508
1905-6 ... ..	75	877	116	1,395	198	570	470
1906-7 ... ..	103	1,029	294	1,340	191	765	550
1907-8 ... ..	49	859	119	1,517	299	787	479
1908-9 ... ..	107	1,209	247	2,140	287	827	679
1909-10 ... ..	169	801	335	1,760	383	796	563
1910-11 ... ..	50	1,002	140	1,338	121	734	503

\* Exclusive of Northern Territory.

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 excellent 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. In 1909 also a fairly heavy export took place, mainly to the United Kingdom. Particulars of the Commonwealth oversea imports and exports of barley for the ten years 1901 to 1910 are contained in the following table:—

**COMMONWEALTH IMPORTS AND EXPORTS OF BARLEY, 1901 to 1910.**

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
1909 ... ..	51,332	12,356	188,946	23,774	137,614	16,418
1910 ... ..	34,684	8,498	39,146	5,155	4,462	— 3,343

\* — signifies net imports.

It will be seen that in only three years out of the ten dealt with have the Commonwealth exports of barley exceeded the imports, viz., in 1904, 1905, and 1909. During the ten years the total importations amounted to 2,826,456 bushels, valued at £542,333,

and the total exports to 1,123,863 bushels, valued at £143,850, giving a net importation of 1,702,593 bushels in quantity and £398,483 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, China and Japan. The total imported during 1910 amounted to only 5465 lbs. in weight, with a value of £60.

A more considerable export trade in Australian pearl and Scotch barley is carried on, mainly with the United Kingdom and New Zealand, the total exports for 1909 reaching 1,155,346 lbs. valued at £3573, and for 1910, 119,837 lbs. valued at £510.

**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 ten years are given hereunder:—

#### COMMONWEALTH IMPORTS AND EXPORTS OF MALT, 1901 to 1910.

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
1909 ...	110,563	35,239	470	174	110,093	35,065
1910 ...	108,168	34,696	258	66	107,910	34,630

**8. 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 1909 are as follows, the Australian figures being added for the sake of comparison:—

#### PRODUCTION OF BARLEY IN VARIOUS COUNTRIES, 1909.

Country.	Production of Barley.	Country.	Production of Barley.
	Bushels.		Bushels.
Russian Empire ...	456,143,976	Canada* ...	55,398,000
United States ...	165,107,368	France ...	44,718,296
Germany ...	154,086,752	Rumania ...	19,338,520
Spain ...	78,293,904	Sweden ...	13,429,072
Austria ...	73,229,416	Netherlands ...	3,229,176
Hungary ...	71,760,328	Australia ...	2,436,384
United Kingdom ...	68,944,752	New Zealand ...	1,304,000

\* Exclusive of British Columbia.

**9. Average Yield.**—The average yield per acre of barley varies considerably in the different States, being as a rule highest in Tasmania and Victoria, and lowest in Western

Australia and New South Wales. Details for each State for the ten seasons 1901-2 to 1910-11 are given in the following table :—

**AVERAGE YIELD PER ACRE OF BARLEY, 1901-2 to 1910-11.**

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 ...	17.50	23.38	18.64	18.39	10.19	24.50	20.49
1909-10 ...	18.07	17.46	14.77	16.50	12.67	24.42	17.04
1910-11 ...	11.58	25.44	14.99	15.79	9.96	27.19	20.53
Average for 10 Seasons ...	14.74	21.43	18.36	16.59	12.27	24.68	19.06

10. **Price of Barley.**—The average prices of barley in the Melbourne market during each of the years 1903 to 1910 are given in the following table :—

**AVERAGE PRICE OF BARLEY PER BUSHEL, 1903 to 1910.**

Particulars.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.
	s. d.	s. d.	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	3 10	4 1
Cape barley ...	3 1	1 9	2 7	2 4	2 8	3 8	2 7	2 5

**§ 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 1910-11 was 42,239 acres, giving a total yield of 931,867 bushels, or an average of 22.06 bushels per acre, being 2.39 over the average yield for the decennium ended 1910-11, which was 19.67 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 1910-11 was 10,004 acres, yielding 128,091 bushels, and giving an average of 12.80, this being almost identical with the average for the past ten seasons, which is 12.75 bushels per acre. Nearly 45 per cent. of the rye grown during the season was produced in New South Wales, 25 per cent. in Victoria, and 18 per cent. in Tasmania. In addition to these grain crops a small area of rice was for some years 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 declined from 1113 acres in 1892-3 to 7 acres in 1908-9 and disappeared from the records for 1909-10. Twelve acres were, however, under cultivation during 1910-11 in the Northern Territory, producing 784 bushels of rice. 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 usually ranking second and New South Wales third. For the season 1909-10, however, owing mainly to the prevalence of the Irish potato blight the Tasmanian area fell to 21,375 acres, a lower figure than has been recorded for any season since 1898-9. In consequence of this, the second place for 1909-10 was occupied by New South Wales, Tasmania being third. New South Wales maintained this position in 1910-11, having 44,452 acres under potatoes, and Tasmania 26,230. The area devoted to this crop in the Commonwealth, which has fluctuated somewhat, reached its highest point in the season 1910-11, with a total of 151,515 acres.

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

#### COMMONWEALTH AREA UNDER POTATOES, 1890-1 to 1910-11.

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	35,159	125,685
1909-10	35,725	62,390	7,708	8,131	1,741	21,375	137,070
1910-11	44,452	62,904	8,326	7,812	1,791	26,230	151,515

2. **Total Yield.**—For the season 1910-11, Victoria's production represented about 41 per cent. of the total for the Commonwealth, New South Wales and Tasmania coming next in order with 30½ and 17½ per cent. respectively. 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 1910-11.

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	50,386	115,352	11,308	20,328	6,297	64,606	268,277
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
1909-10	100,143	174,970	13,544	18,569	5,948	73,862	387,036
1910-11	121,033	163,312	15,632	23,920	5,864	70,090	399,851

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 average yield during the past ten seasons being over 4 tons per acre. The lowest average yield is that obtained in Queensland

with an average of just under two tons for the same period. Particulars for each State for the ten seasons 1901-2 to 1910-11 are given hereunder:—

**AVERAGE YIELD OF POTATOES, COMMONWEALTH AND STATES, 1901-2 to 1910-11.**

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
1909-10	2.80	2.80	1.76	2.28	3.42	3.46	2.82
1910-11	2.72	2.60	1.88	3.06	3.27	2.67	2.64
Average for 10 Seasons	2.36	2.85	1.92	2.65	2.97	4.07	2.96

4. **Value of Potato Crop.**—The estimated value of the potato crop of each State for the season 1910-11 is furnished in the following table, together with the value per acre:—

**VALUE OF POTATO CROP, 1910-11.**

State.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	C'wealth.
Total value	£673,330	£596,089	£132,872	£114,816	£73,300	£350,450	£1,940,857
Value per acre	£15/2/11	£9/9/6	£15/19/2	£14/13/11	£40/18/6	£13/7/3	£12/16/2

5. **Relation to Population.**—The average production of potatoes per annum per head of the population of the Commonwealth for the past ten seasons has been approximately 210 lbs. 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 nearly a ton, and in 1910-11 about 7½ cwt. Details for the past ten 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 ...	28	104	44	42	30	655	84
1902-3 ...	22	140	6	79	31	911	103
1903-4 ...	40	139	34	88	20	936	115
1904-5 ...	33	77	37	54	23	597	75
1905-6 ...	34	95	21	56	25	347	66
1906-7 ...	77	137	29	61	20	983	124
1907-8 ...	37	110	24	54	22	767	90
1908-9 ...	46	122	21	56	26	634	91
1909-10 ...	62	137	23	47	22	382	90
1910-11 ...	93	125	26	59	21	362	90

\* Exclusive of Northern Territory.

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, the Pacific Islands, and the Philippine Islands. Thus, during 1907, out of a total export of 17,842 tons, 13,346 tons went to New Zealand, 2102 tons to the Pacific

Islands, and 2112 tons to the Philippine Islands. 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 over-sea imports and exports of potatoes for the ten years 1901 to 1910 are contained in the following table:—

**COMMONWEALTH IMPORTS AND EXPORTS OF POTATOES, 1901 to 1910.**

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
1909 ...	138	1,202	2,604	16,370	2,466	15,168
1910 ...	1,665	1,313	7,089	42,395	5,424	41,082

\* — signifies net imports.

**7. Comparison with Other Countries.**—The following table will furnish means for comparing the potato crop of Australia for 1909 with those of some of the leading potato-producing countries of the world for the same year:—

**POTATO CROPS OF VARIOUS COUNTRIES, 1909.**

Country.	Yield.	Country.	Yield.
	Tons.		Tons.
Germany ...	45,955,616	Belgium (1908) ...	2,218,467
Russian Empire ...	31,835,241	Sweden ...	1,502,000
France (1908) ...	16,736,899	Denmark ...	585,000
Austria ...	12,843,356	Japan (1908) ...	567,351
United States ...	9,127,000	Norway ...	535,000
United Kingdom ...	6,877,272	<b>Australia ...</b>	<b>387,036</b>
Hungary (1908) ...	4,300,517	New Zealand ...	180,500
Canada * ...	2,477,000	Luxemburg ...	163,310
Netherlands ...	2,357,000		

\* Exclusive of British Columbia.

## § 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 1910-11 being only 20,829 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 1910-11 was 6864 acres giving a total yield of 41,276 tons, and averaging 6.01 tons per acre. The area devoted in 1910-11 to root crops other than potatoes and onions, viz., 13,965 acres, yielded 153,667 tons, and gave an average of 11 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 overseas trade is carried on by the Commonwealth is that of onions. During the year 1910 overseas imports of onions amounted to 97 tons, obtained principally from the Straits Settlements. For the same year the exports of onions totalled 3927 tons, the principal countries to which they were exported being New Zealand, Canada, the Philippine Islands, and the Pacific Islands.

## § 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 1910-11 represented about 19 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 1910-11.

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	68,804	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	20,068	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	458,172	621,139	64,498	298,396	149,830	64,965	1,657,000
1907-8	542,761	682,194	54,037	328,672	131,056	73,859	1,812,579
1908-9	715,896	956,371	65,004	424,924	201,874	88,613	2,452,682
1909-10	630,491	864,359	72,298	424,448	158,629	77,804	2,228,029
1910-11	638,577	832,669	98,558	440,177	175,432	72,992	2,258,405

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 1910-11 was, with the exception of that for 1908-9, the highest on record.

**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

shown 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, 1906-7 to 1910-11.

Kind of Hay Crop.	1906-7.	1907-8.	1908-9.	1909-10.	1910-11.
	Acres.	Acres.	Acres.	Acres.	Acres.
<b>NEW SOUTH WALES—</b>					
Wheaten ... ..	316,945	365,925	490,828	380,784	422,972
Oaten ... ..	94,420	132,325	169,441	178,968	142,805
Barley ... ..	843	937	1,566	1,917	2,241
Lucerne ... ..	45,964	43,574	54,061	68,822	70,559
<b>Total ... ..</b>	<b>458,172</b>	<b>542,761</b>	<b>715,896</b>	<b>630,491</b>	<b>638,577</b>
<b>VICTORIA—</b>					
Wheaten ... ..	231,408	210,927	278,005	186,400	240,026
Oaten ... ..	377,887	460,192	662,141	660,525	575,791
Other ... ..	11,844	11,075	16,225	17,434	16,852
<b>Total ... ..</b>	<b>621,139</b>	<b>682,194</b>	<b>956,371</b>	<b>864,359</b>	<b>832,669</b>
<b>QUEENSLAND—</b>					
Wheaten ... ..	8,664	2,084	4,075	9,031	19,894
Oaten ... ..	9,260	5,629	9,314	16,752	13,052
Lucerne ... ..	44,178	44,101	48,247	42,935	61,750
Other ... ..	2,396	2,223	3,368	3,580	3,862
<b>Total ... ..</b>	<b>64,498</b>	<b>54,037</b>	<b>65,004</b>	<b>72,298</b>	<b>98,558</b>
<b>SOUTH AUSTRALIA—</b>					
Wheaten ... ..	...	271,067	348,307	318,197	336,439
Oaten ... ..	...	48,151	68,659	96,496	96,062
Lucerne ... ..	...	3,767	3,162	2,537	2,055
Other ... ..	...	5,687	4,796	7,218	5,621
<b>Total ... ..</b>	<b>298,396*</b>	<b>328,672</b>	<b>424,924</b>	<b>424,448</b>	<b>440,177</b>
<b>WESTERN AUSTRALIA—</b>					
Wheaten ... ..	116,164	95,123	151,745	101,590	135,521
Oaten ... ..	32,521	33,854	48,309	55,006	38,637
Lucerne ... ..	1,145	2,079	124	254	233
Other ... ..	...	...	1,696	1,779	1,041
<b>Total ... ..</b>	<b>149,830</b>	<b>131,056</b>	<b>201,874</b>	<b>158,629</b>	<b>175,432</b>

\* 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 1910-11 amounted to 3,175,851 tons, or 22,655 tons more than were produced in 1909-10. This represents the largest hay crop ever harvested in the Commonwealth, the highest previous records being that of 3,137,374 tons for the season 1908-9, and 3,153,196 for 1909-10. For many years past the State of Victoria has been the largest hay producer in the Commonwealth, and in the season 1910-11 accounted for more than 40 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 1910-11.

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 ...	730,014	1,415,746	92,947	591,141	170,008	137,518	3,137,374
1909-10 ...	981,201	1,186,738	96,854	574,475	195,182	118,746	3,153,196
1910-11 ...	843,044	1,292,410	151,252	595,064	178,891	115,190	3,175,851

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 1910-11:—

#### VALUE OF HAY CROP, 1910-11.

Particulars.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Commonwealth.
Total value...	£2,514,020	£2,649,440	£431,856	£1,517,413	£987,038	£403,165	£8,502,932
Value per acre	£3/18/9	£3/3/8	£4/7/8	£3/8/11	£5/12/6	£5/10/6	£3/15/4

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 ten 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. The average per decennium was 25 cwt. Particulars for the several States for the seasons 1901-2 to 1910-11 are given hereunder:—

## AVERAGE YIELD OF HAY PER ACRE, 1901-2 to 1910-11.

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
1909-10 ... ..	1.56	1.37	1.34	1.35	1.23	1.53	1.42
1910-11 ... ..	1.32	1.55	1.53	1.35	1.02	1.58	1.41
Average for 10 seasons ...	1.12	1.37	1.55	1.23	1.03	1.52	1.26

6. **Relation to Population.**—During the past ten seasons the Commonwealth hay production per head of population has varied between 7 cwt. in 1902-3 and  $14\frac{1}{2}$  cwt. in 1903-4 and 1908-9; averaging about  $11\frac{1}{2}$  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 ten 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 ... ..	339	731	241	964	463	624	529
1902-3 ... ..	174	498	45	865	443	497	351
1903-4 ... ..	573	1,024	263	1,344	543	631	741
1904-5 ... ..	252	427	154	819	475	397	363
1905-6 ... ..	309	714	107	1,201	557	483	507
1906-7 ... ..	418	722	175	1,088	620	565	552
1907-8 ... ..	248	554	142	1,007	540	519	420
1908-9 ... ..	467	1,132	167	1,532	655	717	741
1909-10 ... ..	608	929	168	1,462	735	615	729
1910-11 ... ..	513	993	253	1,463	648	594	718

\* Exclusive of Northern Territory.

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 Cape Colony. These colonies also took 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 £17,804 only in 1910, while the exports of fodder which amounted in value to £142,472 in 1904, had shrunk to £37,057 in 1910.

During 1910 the principal consignees of the hay and chaff exported from the Commonwealth were India, the Straits Settlements, New Zealand and Ceylon, while the principal countries to which compressed fodder was exported were the Philippine Islands and New Zealand.

Imports of hay and chaff into the Commonwealth are usually unimportant, and for the year 1910 totalled 111 tons, valued at £444, obtained principally from New Zealand.

**8. 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 1910 represented by 5,152,518 tons from 2,955,420 acres, while from permanent grasses a yield of 10,142,356 tons of hay was obtained from 6,545,190 acres, giving a total of 15,294,874 tons from 9,500,610 acres, or about 32 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 1910-11 was 374,862 acres, which was 68,780 acres more than the corresponding area for 1909-10. Of this total the New South Wales area represented about 48 per cent., that in Queensland 24 per cent., while that in Victoria amounted to 19 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 1910-11.

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	4,262	205,168
1902-3 ...	109,353	31,145	51,279	14,937	636	3,509	190,859
1903-4 ...	77,130	33,165	26,576	19,241	672	3,212	159,996
1904-5 ...	87,718	29,902	35,861	20,362	1,643	4,266	179,752
1905-6 ...	95,058	34,041	66,183	23,842	1,873	4,882	225,879
1906-7 ...	122,914	36,502	50,513	17,985	3,265	5,326	236,505
1907-8 ...	260,810	59,897	91,444	15,434	4,773	6,367	438,725
1908-9 ...	235,539	63,066	87,675	16,086	4,902	6,243	413,511
1909-10 ...	118,960	56,586	100,493	17,226	6,068	6,749	306,082
1910-11 ...	179,382	71,826	89,667	*20,747	4,545	8,695	374,862

\* Including 19 acres Northern Territory.

**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 1910-11 may be taken approximately as £1,709,000, or about £2 17s. 7d. 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 ten 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 ...	82	27	79	38	8	24	54
1902-3 ...	78	26	100	42	3	20	54
1903-4 ...	54	28	51	54	3	18	41
1904-5 ...	60	25	68	57	7	23	45
1905-6 ...	64	28	125	66	7	26	56
1906-7 ...	83	30	94	49	13	29	58
1907-8 ...	171	49	168	41	19	34	105
1908-9 ...	151	50	157	42	19	33	98
1909-10 ...	74	44	174	44	23	35	71
1910-11 ...	109	55	150	51	16	45	85

\* Exclusive of Northern Territory.

## § 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 155,542 acres under sugar-cane in the Commonwealth for the season 1910-11 there were 141,779 acres, or about 91 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 since then it has fallen every year and in 1910-11 had dropped to 13,763 acres, the lowest area under sugar-cane since 1882-3. In Queensland, on the other hand, although fluctuations in area are in evidence throughout, the general trend has been one of satisfactory increase, the area under cane for the season 1910-11 being the highest on record, that for 1905-6 being the next highest 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 there was a marked increase in 1909-10, while in 1910-11 there was a further increase when it rose to 141,779 acres. The area under sugar-cane in the Commonwealth from 1865 onwards is given in the following table :—

## AREA UNDER SUGAR-CANE, 1865-6 to 1910-11.

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	1902-3	20,160	85,338	105,498
1870-1	4,082	6,342	10,424	1903-4	20,182	111,516	131,698
1875-6	6,454	13,459	19,913	1904-5	21,525	120,317	141,842
1880-1	10,971	20,224	31,195	1905-6	21,805	134,107	155,912
1885-6	16,419	59,186	75,605	1906-7	20,580	133,284	153,864
1890-1	20,446	50,922	71,368	1907-8	17,953	126,810	144,763
1895-6	32,927	77,247	110,174	1908-9	16,981	123,902	140,883
1900-1	22,114	108,535	130,649	1909-10	14,083	128,178	142,261
1901-2	20,809	112,031	132,840	1910-11	13,763	141,779	155,542

**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 quantity required for plants. In the season 1910-11 the New South Wales total comprised 5596 acres of productive and 8167 acres of unproductive cane, while in the case of Queensland the productive cane amounted to 94,641 acres and the unproductive to 47,138 acres.

**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 1,294,650 tons for 1909-10. The average yield per acre of productive cane is much higher in New South Wales than in Queensland, the average during the last decade being 22.18 for the former and 15.81 for the latter State. During the six seasons 1901-2 to 1906-7 in the case of New South Wales the yield 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 1909-10, on the other hand, owing mainly to the decline in area of productive cane, the total yield amounted to only 131,081 tons, the lowest for the State since 1888. In 1910-11 there was a further decline in the acreage of productive cane; the yield of over 28½ tons per acre, however, was so excellent that the production exceeded that of the previous season by 29,230 tons of cane. In Queensland the average yield per acre for 1910-11 was by far the highest recorded for that State, viz., 19.45 tons. Particulars relative to the total and average yields of the Commonwealth sugar crops for the seasons 1901-2 to 1910-11 are as follows:—

YIELD OF SUGAR-CANE, 1901-2 to 1910-11.

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	1,051,886	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
1909-10 ...	131,081	1,163,569	1,294,650	20.23	14.53	14.95
1910-11 ...	160,311	1,840,447	2,000,758	28.65	19.45	19.96

A preliminary estimate for Queensland for the season 1911-12 states that the prospects are extremely favorable, but that the total yield of cane in that State will probably be somewhat below that of the previous season in the absence of the unusually large "stand over" which obtained in 1910-11, unless the average tonnage per acre for 1911-12 season is very much in excess of the record average yield of its predecessor.

**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 2 tons in 1909-10 and 3½ tons in 1906-7. Details for the period 1906-7 to 1910-11 are as follows:—

## SUGAR-CANE PRODUCTION PER 1000 OF POPULATION.

State.	1906-7.	1907-8.	1908-9.	1909-10.	1910-11.
	Tons.	Tons.	Tons.	Tons.	Tons.
New South Wales ... ..	149	182	93	81	98
Queensland ... ..	3,208	3,051	2,573	2,014	3,072
Commonwealth ... ..	477	467	373	299	452

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 while 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 11½ per cent. of the weight of cane crushed. In 1908-9, 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 10½ per cent. of the weight of cane crushed, while in 1909-10 only 8.65 tons of cane were required to each ton of sugar, the sugar representing about 11½ per cent. of the weight of cane crushed. The especially favourable weather existing throughout 1910 resulted in a very high average quantity of cane per acre being obtained, while the moisture which caused this led to a slight diminution in the saccharine density as compared with the previous year. In 1910-11 the quantity of cane required to produce one ton of sugar was 8.73 tons, the sugar produced representing about 11½ 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 coloured 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. During the 1910 Session of the Commonwealth Parliament an Amending Act (the Sugar Bounty Act 1910) was passed repealing the provision for successive decrements in the amount of bounty payable, and thus leaving the bounty at full rate applicable for an indefinite time. The rate of bonus allowed under this Act is six shillings per ton of cane of 10 per cent. quality grown by white labour, provided that the rates of wages and conditions of employment of such labour are fair and reasonable, in accordance with the provisions of the Act. 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 was, under the original Act, to continue in force until 31st December, 1910, reducing to 2s. 8d. per cwt. for 1911, 1s. 4d. per cwt. for 1912, and being abolished after 31st December, 1912. The Excise (Sugar) Act 1910, however, repealed these provisions for reduction and abolition, leaving the duty in force at the full rate for an indefinite time.

**7. Cost of Bounties.**—The amounts paid by the Commonwealth Government in sugar bounties and the expenses in connection therewith during the period 1902-3 to 1910-11 are shewn in the following table:—

**SUGAR BOUNTIES AND EXPENSES. 1902-3 to 1910-11.**

Year.	1902-3.	1903-4.	1904-5.	1905-6.	1906-7.	1907-8.	1908-9.	1909-10.	1910-11.
	£	£	£	£	£	£	£	£	£
Bounties	60,827	90,806	121,408	148,106	328,210	577,148	477,090	402,131	630,610
Expenses	*	6,239	6,770	6,603	7,706	7,474	6,616	5,648	6,862
	*	97,045	128,178	154,709	335,916	584,622	483,706	407,779	637,472

\* 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 ten years 1901-2 to 1910-11. In this table refunds and drawbacks have been deducted and the requisite adjustment has been made between the States:—

**SUGAR EXCISE, 1901-2 to 1910-11.**

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
1909-10 ...	137,672	229,981	126,626	9,373	32,526	12,538	548,716
1910-11 ...	*	*	*	*	*	*	794,649

\* Particulars for each State not available for 1910-11.

**9. Production by White and Coloured Labour.**—The following table contains particulars furnished by the Commonwealth Treasury concerning the production of sugar in New South Wales and Queensland during the past nine seasons, and furnishes

an indication of the decline in the employment of coloured labour in the sugar industry during that period :—

### SUGAR PRODUCTION, 1902-3 to 1910-11.

Season.	New South Wales.			Queensland.			Commonwealth.		
	Sugar Produced by—			Sugar Produced by—			Sugar Produced by—		
	White Labour.	Coloured Labour.	Total.	White Labour.	Coloured Labour.	Total.	White Labour.	Coloured 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 ...	23,247	934	29,181	162,480	22,583	185,063	190,727	23,517	214,244
1908-9 ...	14,351	964	15,315	132,049	18,358	150,407	146,400	19,322	165,722
1909-10 ...	13,839	815	14,654	118,298	14,451	132,749	132,137	15,266	147,403
1910-11 ...	17,986	892	18,828	191,486	15,778	207,264	209,422	16,670	226,092

During the period under review the proportion of sugar produced by coloured labour declined from 68 per cent. of the total for 1902-3 to less than 7½ per cent. of the total for 1910-11.

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; while in the following year the excess of imports over exports was 1,832,943 cwt., value £1,004,308. In 1910 the net imports fell in quantity to 548,479 cwt. and in value to £297,958. The principal countries to which Australian sugar is exported are South African Union, 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 161,024 cwt. exported during 1909, only 4099 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 1910 are as follows:—

### IMPORTS AND EXPORTS OF CANE SUGAR, 1901 to 1910.

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
1909 ...	1,993,967	1,122,863	161,024	118,555	1,832,943	1,004,308
1910 ...	680,166	406,709	131,687	108,751	548,479	297,958

\* — signifies net exports.

### § 14. Vineyards.

1. **Nature and Extent.**—The introduction of the vine into Australia has been set down by different investigators as at various dates, the years 1815 and 1828 being principally favoured. It would seem, however, that the vine was really brought 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 1910-11.

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	22,586	3,525		62,557
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
1909-10	8,330	22,768	1,695	22,441	2,917		58,151
1910-11	8,321	23,412	1,634	22,952	2,795		59,114

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 six following seasons this area diminished by 6559 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 States of Victoria and South Australia increases in the area under vines were in evidence in 1910-11, while in Western Australia, Queensland and New South Wales, small decreases were shewn.

**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 expected 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 ten seasons are contained in the table given hereunder:—

#### AUSTRALIAN WINE PRODUCTION, 1901-2 to 1910-11.

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	1,865,600	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
1909-10 ...	808,870	991,941	91,410	2,569,797	140,559		4,602,577
1910-11 ...	805,600	1,362,420	74,306	3,470,058	153,665		5,866,049

**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 ten seasons, the Commonwealth total having fallen during the period from 17 to 13 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	58	19	...	17
1902-3 ...	6	23	3	61	17	...	17
1903-4 ...	6	24	4	63	15	...	17
1904-5 ...	6	23	4	65	14	...	17
1905-6 ...	6	22	4	65	14	...	16
1906-7 ...	6	21	4	62	14	...	15
1907-8 ...	6	21	4	56	13	...	15
1908-9 ...	5	20	3	57	12	...	14
1909-10 ...	5	18	3	57	11	...	13
1910-11 ...	5	18	3	56	10	...	13

\* Exclusive of Northern Territory.

**4. Imports and Exports.**—During the past ten 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, then increasing continuously to

£133,114 in 1908 and decreasing again in 1909 to £116,021, and again increasing in 1910 to £126,402. 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 ten years are given hereunder:—

#### COMMONWEALTH IMPORTS OF WINE, 1901 to 1910.

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	67,906	118,299	94,549	26,397	120,946
1908	56,806	68,252	125,058	106,108	27,006	133,114
1909	47,669	60,946	108,615	91,046	24,975	116,021
1910	50,982	70,903	121,885	97,296	29,106	126,402

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 ten years 1901 to 1910 are given in the following table:—

#### COMMONWEALTH EXPORTS OF WINE, 1901 to 1910.

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	728,421	731,245	4,541	98,333	102,874
1909	2,649	974,413	977,062	4,455	121,116	125,571
1910	2,880	949,033	951,913	5,340	123,593	128,933

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

**5. 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 ten seasons are as follows:—



TABLE GRAPES, 1901-2 to 1910-11.

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	3,018	1,336	3,214	1,982	...	12,700
1909-10 ...	4,181	3,189	1,520	2,496	3,928	...	15,314
1910-11 ...	3,914	2,913	1,254	2,531	3,200	...	13,812

\* 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 ten seasons:—

RAISINS AND CURRANTS DRIED, 1901-2 to 1910-11.

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
1909-10 ...	9,076,928	3,114,496	3,069,696	4,037,824
1910-11 ...	8,883,616	3,891,440	2,956,128	4,509,232

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, 160,720 lbs. in 1908-9, 165,984 lbs. in 1909-10, and 297,472 lbs. in 1910-11. For Queensland and 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 ten years by no less than 38,381 acres. The States in which the increase was most marked were:—Tasmania, 14,449 acres; Western Australia, 10,662 acres; Victoria, 7320 acres; and South Australia, 6095 acres. During the same period the Queensland fruit-growing area increased slightly, while that in New South Wales exhibited a decline of 915 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 1910-11.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1901-2 ...	48,448	50,055	14,396	16,315	6,076	11,485	146,775
1902-3 ...	48,019	50,478	12,818	17,376	6,872	12,675	148,238
1903-4 ...	48,832	51,357	15,607	18,725	7,938	14,134	156,593
1904-5 ...	47,340	52,751	15,882	18,872	9,756	15,461	160,062
1905-6 ...	46,615	52,274	15,390	19,320	11,026	16,519	161,144
1906-7 ...	46,177	54,021	14,249	18,199	12,517	18,050	163,213
1907-8 ...	46,714	54,111	14,397	20,736	13,900	19,441	169,299
1908-9 ...	45,880	54,946	14,104	20,855	15,016	20,757	171,558
1909-10 ...	45,892	56,108	15,360	21,760	15,609	24,069	178,798
1910-11 ...	47,533	57,375	15,153	*22,423	16,738	25,934	196,156

\* Including 13 acres Northern Territory.

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 nine 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 ten seasons 1901-2 to 1910-11 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	41	28	45	31	66	38
1902-3 ...	34	42	25	49	32	71	38
1903-4 ...	34	43	30	52	35	77	40
1904-5 ...	33	44	30	53	41	83	40
1905-6 ...	31	43	29	53	44	89	40
1906-7 ...	31	44	26	50	49	97	40
1907-8 ...	31	44	26	55	55	103	41
1908-9 ...	29	44	25	54	58	109	41
1909-10 ...	28	44	27	55	59	125	41
1910-11 ...	29	44	25	55	60	134	42

\* Excluding Northern Territory.

**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 1910 the bananas were chiefly from Fiji, the oranges and lemons from Italy, and the apples from Canada. The dried fruits imported during the year were valued at £89,076, and the fresh at £90,100. In 1907 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. There was a further decline in 1909, when the total value of exports was only £13,013, made up of £11,826 of Australian produce, and £1187 of re-exports. There was a small increase in the total exports in 1910, which amounted to £14,765; this, however, was accounted for by re-exports of the value of £2720, the exports of dried fruits of Australian origin shewing a decline amounting to £977. The principal consignees of Australian dried fruits exported were United Kingdom, Canada, and New Zealand. The fresh fruits exported during the year were valued at £322,694, and consisted mainly of apples. These were all of Australian origin with the exception of re-exports valued at £1987. The principal countries to which these were sent were the United Kingdom, Germany, New Zealand, Brazil, Java, and India. The value of the net imports of dried fruits for the year 1910 was £74,311, whilst in the case of fresh fruits, the value of the net exports was £232,594, the largest net export value since 1904.

Particulars concerning the overseas imports and exports of dried fruits for the ten years 1901 to 1910 are as follows :—

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

1901 to 1910.

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
1909	13,242,198	121,059	1,089,730	13,013	12,152,468	108,046
1910	9,885,118	89,076	973,171	14,765	8,911,947	74,311

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 1910.**

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	50,897	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
1909	250,311	146,081	372,308	243,699	121,997	97,618
1910	137,733	90,100	500,661	322,694	362,928	232,594

\* Not available.

4. **Jams and Jellies.**—A small oversea trade in jams and jellies is carried on by the Commonwealth, the value of the imports for the year 1910 amounting to £8859, and of the exports to £23,372. 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, Ceylon, and Fiji. Particulars relative to imports and exports for the ten years 1901 to 1910 are as follows:—

**COMMONWEALTH OVERSEA TRADE IN JAMS AND JELLIES, 1901 to 1910.**

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
1909 ...	334,738	7,956	1,706,400	26,124	1,371,662	18,168
1910 ...	365,752	8,859	1,814,002	28,372	1,448,250	19,513

5. **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 1910 was £55,155, and the corresponding value of exports was £21,593.

## § 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 1910-11 devoted to minor crops was 72,530 acres, of which market gardens accounted for 31,101 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 ten seasons 1901-2 to 1910-11 is given in the table hereunder:—

COMMONWEALTH MARKET GARDENS, 1901-2 to 1910-11.

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
1909-10 ...	10,254	10,214	2,677	2,734	3,481	1,720	31,130
1910-11 ...	9,813	10,778	2,317	*2,876	3,576	1,741	31,101

\* Including 58 acres Northern Territory.

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 1910-11 for all the States except Western Australia. The total area under this crop during that season was 4261 acres, of which 1775 acres were in Tasmania, 1295 acres in Victoria, 1169 acres in Queensland, 17 acres in South Australia, and 5 acres in New South Wales. The total yield for 1910-11 was 79,236 bushels, or 18.6 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 1910-11 was only 2080 acres, distributed as follows:—New South Wales, 1096 acres; Victoria, 329 acres; and Queensland, 655 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 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 1910 amounted to £645,111, comprising unmanufactured tobacco (£440,350), cigars (£118,788), cigarettes (£37,726), manufactured tobacco (£47,155), and snuff (£1092).

5. **Pumpkins and Melons.**—The total area under this crop in the Commonwealth during 1910-11 was 11,989 acres, of which 5070 acres were in New South Wales, 2477 acres in Victoria, 4160 acres in Queensland, and 282 acres in Western Australia; the production for the first three named was 19,753, 23,851 and 15,402 tons respectively; the quantity produced in Western Australia is not available.

6. **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 1910-11 being 1163 acres, of which 1039 acres were in Tasmania, and 121 acres in Victoria. The Tasmanian area, though still small, has increased rapidly during the past nine 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 121 acres in 1910-11. 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 1910 the net importations of hops into the Commonwealth represented a weight of 1,117,243 lbs. and a value of £59,288. The total value of the net importations of hops into Australia during the past ten years amounted to £500,109, thus indicating the existence of a regular and extensive local demand.

7. **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 1910-11 was 5569 acres, by far the greater portion, viz., 4467 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.

8. **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.

9. **Cotton.**—Cotton-growing on a small scale has been tried in Queensland, but so far without very marked success. The area under cotton has fluctuated very considerably during the past five years, ranging during that period between 138 acres in 1906-7 and 540 acres in 1908-9. During 1910-11, 460 acres were devoted to this crop in Queensland, giving a yield of 151,438 lbs. of seed cotton, valued at £3786. 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, and 15 acres were under cultivation in 1910-11. The crops, however, proved

a failure, owing to a tidal wave. The tropical portions of Western Australia have also long been regarded as suitable for its cultivation.

10. **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 and 200 acres in 1910-11. In the last-mentioned season the yield amounted to 151,050 lbs., valued at £5664.

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

### § 17. Bounties on Agricultural Products.

1. **General.**—The Bounties Act of 1907 passed by the Federal Parliament in order to encourage the manufacture and production of certain articles in the Commonwealth, includes among the number of items on which bonuses are payable, several agricultural products. The most important of these, viz., sugar, has been referred to on page 393 of this publication. Minor products of the soil on which these bounties are payable are as set out in the following table :—

#### AGRICULTURAL PRODUCTS (OTHER THAN SUGAR) ON WHICH BOUNTIES ARE PAYABLE.

Article.	Period dating from 1st July, 1907, during or in respect of which Bounty may be paid.	Rates of Bounty.	Maximum amounts which may be paid in any one year.
Cotton, ginned ... ..	8 years	10 % on market value	£ 6,000
Fibres—			
New Zealand flax ... ..	10 "	10 " "	3,000
Flax and hemp ... ..	5 "	10 " "	8,000
Jute ... ..	5 "	20 " "	9,000
Sisal hemp ... ..	10 "	10 " "	3,000
Oil materials supplied to an oil factory for the manufacture of oil			
Cottonseed ... ..	8 "	10 " "	1,000
Linseed (flax seed) ... ..	5 "	10 " "	5,000
Rice, uncleaned ... ..	5 "	20s. per ton	1,000
Coffee, raw, as prescribed	8 "	1d. per lb.	1,500
Tobacco leaf for the manufacture of cigars, high grade, of a quality to be prescribed ... ..	5 "	2d. "	4,000
Fruits—			
Dates (dried) ... ..	15 "	1d. "	1,000
Dried (except currants and raisins) or candied, and exported ...	5 "	10 % on market value	6,000

Although the rate of bonus on the several articles, is, as shewn above, fairly liberal, the bounties have not been availed of to any great extent, as will be seen from the following table, which gives particulars as to the quantity of the articles raised and the amounts paid as bounties in respect thereof for the four financial years which have elapsed since the operation of the Act :—

**PARTICULARS OF BOUNTIES PAID ON AGRICULTURAL PRODUCTS (OTHER THAN SUGAR), 1907-8 to 1910-11.**

Article.	Quantity produced on which Bounties were paid.				Amount paid as Bounties.			
	1907-8.	1908-9.	1909-10.	1910-11.	1907-8.	1908-9.	1909-10.	1910-11.
Cotton, ginned ... .. lbs.	662	21,865	24,994	53,173	£ 10	£ 32	£ 34	£ 91
Fibres—								
Flax and hemp... .. tons	...	32	28	28	...	126	120	123
Sisal hemp ... .. "	...	14	11	45	...	34	25	113
Oil materials supplied to an oil factory for the manufacture of oil—								
Cottonseed ... .. lbs.	...	36,491	45,610	96,312	...	12	10	22
Linseed (flax seed) ... cwt.	...	36	...	...	...	6	...	...
Coffee, raw, as prescribed lbs.	2,111	53,365	28,134	26,825	9	222	117	113
Tobacco leaf for the manufacture of cigars, high grade, of a quality to be prescribed ... .. lbs.	...	14,538	33,093	10,902	...	121	276	90
Fruits—								
Dried (except currants and raisins) or candied, and exported ... .. lbs.	54,992	12,096	23,332	454,075	1,061	28	104	940

During the year 1910-11 the total amount paid in respect of cotton, sisal hemp, cottonseed, and coffee was claimed by the State of Queensland. South Australia collected £483, Tasmania £378, and Victoria £79 of the fruit bonus, while £83 of the bounty paid for tobacco leaf was paid to Queensland, the remaining £7 being earned in Victoria. The lastmentioned State also claimed the total amount paid for flax and hemp.

No bounties have yet been paid on New Zealand flax, jute, uncleaned rice or dates.

### § 18. 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 in force:—

New South Wales ...	The Fertilisers Act of 1904.
Victoria ... ..	The Artificial Manures Acts of 1904 and 1910.
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 250 per cent. during the ten years of Federation. The chief items, both as regards quantity and value, are those relating to phosphates, 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 70 per cent. of the total imported during 1910, while Japan contributed about 17½ per cent., and Germany nearly 6 per cent., the balance, representing 6½ per cent., being imported from Sweden, Belgium, and the Netherlands. Ocean Island, with about 78 per cent., is the principal contributor of rock phosphates, the balance being obtained from Christmas Island. Guano is imported chiefly from Ocean Island, one of the South Sea group, and in lesser quantities from Malden Island, 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. It will be noticed that the quantity of rock phosphates imported during the last three years has shewn a marked increase over previous years. This was particularly large during 1910, when an increase of over 100 per cent. is shown over the quantity imported in the previous year. The figures for the manufactured superphosphates shew an increase of about 50 per cent. during that year.

## COMMONWEALTH IMPORTS OF FERTILISERS, 1906 to 1910.

Fertiliser.		1906.	1907.	1908.	1909.	1910.
Bonedust ... ..	Cwt.	80,625	93,798	74,657	71,959	12,740
" ... ..	£	20,094	24,103	18,088	17,632	3,294
Guano ... ..	Cwt.	818,580	606,630	606,660	468,315	788,304
" ... ..	£	103,953	75,130	84,961	56,723	89,961
Superphosphates ...	Cwt.	1,153,249	780,464	610,596	757,515	1,196,613
" ... ..	£	170,514	133,352	94,203	105,229	174,751
Rock Phosphates ...	Cwt.	547,079	769,630	1,267,665	1,006,030	2,112,127
" ... ..	£	70,782	103,609	183,817	143,246	294,212
Other ... ..	Cwt.	84,979	227,689	197,240	151,241	377,327
" ... ..	£	24,659	52,975	60,676	38,007	107,573
Total ... {	Cwt.	2,684,519	2,478,211	2,846,818	2,454,960	4,487,111
	£	390,002	389,169	441,745	360,837	669,791

4. **Exports.**—The subjoined table shews the exports of artificial manures for the years 1906 to 1910. Practically the whole of the fertiliser is manufactured locally, and is shipped mainly to New Zealand and the Pacific Islands:—

## COMMONWEALTH EXPORTS OF FERTILISERS, 1906 to 1910.

Fertiliser.		1906.	1907.	1908.	1909.	1910.
Bonedust ... ..	Cwt.	57,845	59,878	65,491	62,637	80,602
" ... ..	£	14,217	16,001	17,069	16,571	19,066
Guano ... ..	Cwt.	6,000	5,000	...	...	2,812
" ... ..	£	1,050	875	...	...	490
Superphosphates ...	Cwt.	110,530	194,943	250,236	235,939	260,261
" ... ..	£	22,110	41,041	47,418	44,041	51,061
Rock Phosphates ...	Cwt.	4,000	5,028	5,077	3,320	11,190
" ... ..	£	782	1,062	1,145	658	1,819
Soda Nitrate ... ..	Cwt.	...	1,980	429	3,579	6,215
" ... ..	£	...	1,168	222	2,075	2,844
Ammonia Sulphate ...	Cwt.	...	...	70,258	69,894	69,015
" ... ..	£	...	...	45,915	42,766	43,061
Other ... ..	Cwt.	109,849	148,816	130,524	177,189	229,841
" ... ..	£	34,571	50,813	28,565	33,880	48,989
Total ... {	Cwt.	288,224	415,645	512,015	552,558	650,936
	£	72,730	110,960	140,334	139,901	167,340

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

## FERTILISERS USED IN NEW SOUTH WALES, 1907-8 to 1910-11.

Season.	Total Area of Crops.	Area Manured.		Manure Used.	
		Aggregate.	Percentage to Total Area of Crop.	Natural (Stable-yard, etc.).	Artificial.
	Acres.	Acres.	%	Loads.	Tons.
1907-8 ... ..	2,572,873	423,678	16.47	144,021	13,356
1908-9 ... ..	2,717,085	509,262	18.74	216,078	15,545
1909-10 ... ..	3,180,561	826,197	25.98	189,008	21,659
1910-11 ... ..	3,386,017	1,030,554	30.43	186,204	25,017

Particulars for Victoria for the past ten seasons are as follows:—

### FERTILISERS USED IN VICTORIA, 1901-2 to 1910-11.

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
1909-10 ...	3,658,535	26,690	2,407,331	65.80	197,446	77,579
1910-11 ...	3,952,070	27,845	2,714,854	68.69	203,884	86,316

The figures relating to the use of fertilisers in South Australia, for the only years for which they are available, are shewn in the table below:—

### FERTILISERS USED IN SOUTH AUSTRALIA, 1907-8 to 1910-11.

Season.	Total Area of Crops.	Area Manured.		Manure Used.	
		Aggregate.	Percentage to Total Area of Crop.	Natural (Stable-yard, etc.).	Artificial.
	Acres.	Acres.	%	Loads.	Tons.
1907-8 ...	2,265,017	1,573,861	69.49	124,092	60,008
1908-9 ...	2,321,812	1,712,394	73.75	120,648	64,842
1909-10 ...	2,530,301	2,031,832	80.30	133,935	76,413
1910-11 ...	2,746,334	2,235,378	81.40	129,918	81,899

Corresponding particulars relative to Western Australia for the seasons 1904-5 to 1910-11 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 1910-11.

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 ...	493,837	391,146	79.21	73,809	17,273
1908-9 ...	585,339	493,545	84.32	61,834	21,358
1909-10 ...	722,086	608,870	84.32	67,263	24,654
1910-11 ...	855,024	773,561	90.47	62,229	33,194

A marked increase in the proportion of cropped land treated with manure is in evidence in all of the States for which returns are available. Thus in New South Wales the area of manured land represented in 1907-8 only  $16\frac{1}{2}$  per cent. of the area under crop, as against  $30\frac{1}{2}$  per cent. in 1910-11. Similarly in Victoria the percentage increased from  $18\frac{3}{4}$  per cent. in 1901-2 to over  $68\frac{1}{2}$  per cent. in 1910-11, in South Australia from  $69\frac{1}{2}$  per cent. in 1907-8 to  $81\frac{1}{2}$  per cent. in 1910-11, and in Western Australia from 64 per cent. in 1904-5 to  $90\frac{1}{2}$  per cent. in 1910-11.

**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 1910 was 78, made up as follows:—New South Wales, 20; Victoria, 24; Queensland, 13; South Australia, 12; Western Australia, 6; and Tasmania, 3. 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 four 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.

## § 19. 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 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. The silos vary in capacity from forty to 130 tons. A portable silo made of iron which has been devised, 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 1906-7 to 1910-11 are furnished in the table given hereunder:—

COMMONWEALTH ENSILAGE-MAKING, 1906-7 to 1910-11.

State.	1906-7.		1907-8.		1908-9.		1909-10.		1910-11.	
	*Holdings.	Ensilage Made.	*Holdings.	Ensilage Made.	*Holdings.	Ensilage Made.	*Holdings.	Ensilage Made.	*Holdings.	Ensilage Made.
	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.
New South Wales ...	...	11,849	212	12,856	300	27,468	364	34,847	258	29,616
Victoria ...	210	10,581	203	11,031	392	18,205	518	27,280	460	25,969
Queensland ...	44	3,201	63	2,949	59	4,654	79	4,517	97	5,804
South Australia ...	†	3,364	56	2,088	67	2,017	81	2,244	68	1,530
Western Australia ...	23	525	37	1,169	51	1,171	28	770	14	414
Tasmania ...	†	†	11	512	11	512	13	686	21	1,073
Commonwealth ...	...	129,520	582	30,605	880	54,027	1,083	70,344	918	64,406

\* 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 during the four seasons ended 1909-10 a continuous and fairly rapid increase was in evidence in all the States, both in the number of holdings on which ensilage was made, and in the quantity produced. The season for 1910-11 shews a falling-off in all the States, with the exception of Queensland and Tasmania; in these two States there was an increase both as regards the number of holdings and quantity made. The reduction in the States indicated cannot be accepted as an indication of a lessening of appreciation of the benefits of ensilage, but rather of the fact that stocks had not been drawn upon to any great extent during the previous two seasons.

## § 20. 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 to 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 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 was proposed that the Bureau 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 was also proposed that arrangements 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 was to be furnished to Parliament shewing the condition of the various industries and forestry in Australia and the nature of the work done by the Bureau during the preceding year. This Bill, however, lapsed, and further legislative action has not since been taken.

(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 1910-11 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, 1910-11.**

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 ...	13	7	7	6	4	37
Total number of students ...	244	192	61	57	8	562
Total number of hands employed	180	120	62	34	20	416
Area under cereals and hay ... Acres	1,856	1,316	516	1,403	899	5,990
Area under fruit trees and vines... "	355	148	72	83	17	675
Area under all other crops ... "	1,116	437	244	226	296	2,319
Total area under crop ...	3,327	1,901	832	1,712	1,212	8,984
Area of arable land ...	4,785	4,499	1,328	3,821	3,041	17,474
Total area of farms ...	17,240	9,191	13,206	13,379	7,005	60,021
Number of Live Stock—						
Horses ... No.	374	172	200	150	62	958
Cattle ...	950	460	835	100	210	2,555
Sheep ...	3,132	3,695	1,133	2,658	1,049	11,667
Pigs ...	647	316	189	160	258	1,570
Value of plant and machinery ... £	10,270	9,097	7,480	6,745	2,605	36,197
Value of produce for year ... £	20,005	11,330	5,428	6,609	3,882	47,254

2. **New South Wales.**—In order to meet the demand for agricultural training, and or the purpose of conducting experiments in various branches of agriculture and of disseminating agricultural knowledge, an agricultural college and farm and thirteen experimental farms are now 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 778 acres were under crop in the season 1910-11.

(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 five years. The course extends over one month.

(ii.) *Experimental Farms, Orchards, and Vineyards*. Experimental farms have been established at Wagga, Bathurst, Grafton, Glen Innes, Cowra, Wollongbar, Dural, and Nyngan. There are irrigation farms at 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 shows the number of students at the Hawkesbury College and at the four experimental farms at which students are received for each year from 1906 to 1910 inclusive:—

**NEW SOUTH WALES.—NUMBER OF STUDENTS AT GOVERNMENT AGRICULTURAL COLLEGE AND EXPERIMENTAL FARMS, 1906 to 1910.**

Name.	1906.	1907.	1908	1909.	1910.
Hawkesbury Agricultural College ...	201	230	190	188	154
Wagga Farm ...	40	63	52	49	42
Bathurst Farm ...	25	23	25	32	33
Wollongbar Farm...	9	18	7	11	12
Berry Dairy Stud Farm ...	7	11	2	...	...
Total ...	282	345	276	280	241



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, 1911.

Coolabah and Moree farms were closed in May, 1910, the operations of the former being transferred to Nyngan; a farm was opened at Coonamble in March, 1911.

**NEW SOUTH WALES. — PARTICULARS OF GOVERNMENT AGRICULTURAL COLLEGE AND EXPERIMENTAL FARMS AT THE 31st MARCH, 1911.**

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	778	444	40	294	23	1,852	5,750
Wagga ...	3,228	939	569	95	275	21	1,700	6,845
Bathurst ...	680	461	157	44	260	44	1,900	2,000
Wollongbar	262	82	21	.1	60	12	300	202
Berry <sup>1</sup> ...	323	69	45	...	24	5	235	355
Howlong <sup>2</sup> ...	224	46	9	37	...	8	190	232
Grafton ...	1,000	165	140	...	25	8	580	2,000
Glen Innes ...	1,050	140	111	19	10	19	503	481
Cowra ...	996	286	142	2	142	14	1,250	1,132
Pera <sup>3</sup> ...	556	67	22	45	...	3	400	567
Raym'd Ter. <sup>2</sup>	610	25	...	25	...	6	10	115
Yanco <sup>3</sup> ...	323	79	56	20	3	7	750	293
Nyngan ...	4,400	160	140	...	20	4	500	...
Dural ...	37	30	...	27	3	6	100	3

1. Dairy stud farm.

2. Viticultural station.

3. Irrigation farm.

(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 seven experimental farms, orchards and vineyards are now in existence in different parts of the State. There are five 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 comprises nearly ninety horses, as well as good herds and flocks of pedigree cattle, sheep, pigs, and poultry. The annual charge made to residential students is £32 5s. per head. The number of students during 1910 was 107.

(b) *The Longerenong Agricultural College*, reopened in 1905, can accommodate forty students, and thirty-nine were on the rolls during last year. The farm has 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 1911 there were in operation, seven agricultural high schools controlled by the Education Department, viz., Warrnambool, Sale, Shepparton, Wangaratta, Ballarat, Warragul, and Mansfield. Similar institutions are to be established in the near future at Mildura and Leongatha, the sites having already been acquired. The direct aims are 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 are now in existence at Rutherglen, Whitfield, Wyuna, Burnley, Rosedale, and Marlo (Gippsland), 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. In several districts experimental plots are conducted by the local agricultural society.

(iv.) *Other Forms of Agricultural Instruction.* The *Journal of the Department of Agriculture*, published monthly, deals with various matters relating to agriculture, and is a valuable means of disseminating information. 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. Agricultural societies have been

formed in many country towns. They arrange lectures, competitions, and form experimental plots, etc., and receive subsidies from the State for such purposes. A Chair of Agriculture was established in 1911 and there is now a course of agriculture at the Melbourne University by which students can attain the degrees of the Diploma of Agriculture, and Bachelor of Agricultural Science.

The Bachelor of Agricultural Science course extends over a period of four years, during which time candidates have to attend lectures, laboratory and field work as prescribed by the Faculty of Agriculture in the following subjects, and pass examinations therein:—Chemistry (including agricultural), agricultural zoology (including entomology and botany), natural philosophy, comparative anatomy and physiology of domestic animals, physical geology, economic bacteriology and pathology of the infective diseases. During the fourth year, candidates have to perform at Dookie Agricultural College, or some other institution recognised for the purpose by the Council of the University, such work as may be prescribed by the Faculty in the theory and practice of agriculture and agricultural engineering, and to satisfy the Faculty that they have passed a satisfactory examination therein. After completion of the four years' course, candidates have to spend not less than four months in field work in places devoted to special branches of agricultural work. When candidates have fulfilled these conditions and have also passed an examination in book-keeping, they may then be admitted to the Degree of Bachelor of Agricultural Science. During the first year there are exhibitions open in chemistry, biology and natural philosophy. An exhibition of twenty pounds may be awarded to the candidate who at the second year honour examination stands highest in the subjects of the year, and at the honour examination in the third year the Wrixon exhibition is open under similar conditions.

Candidates for the Diploma of Agriculture have to pass three examinations and complete three years. During the first and second year they have to attend lectures, laboratory and field work as prescribed, and pass examinations therein. The subjects for the first year are chemistry (including agricultural), and biology with laboratory work, agricultural zoology and entomology, botany and physical geology. The second year's subjects are economic bacteriology and pathology of the infective diseases, comparative anatomy and physiology of domestic animals, agricultural bio-chemistry and agricultural botany (including micology). Prior to entering on the third year, candidates must, at some examination approved by the Faculty, have passed in elementary mathematics, including the use of logarithms and elementary plane trigonometry; they are then required to perform at the Dookie Agricultural college or other recognised institution such work as may be prescribed by the Faculty in the theory and practice of agriculture, and satisfy the Faculty that they have passed a satisfactory examination therein. Having complied with the foregoing conditions, and also passed an examination in book-keeping and land surveying, they may be admitted to the Diploma of Agriculture.

Candidates having obtained the Diploma of Agriculture may, at any time, proceed to the Degree of Bachelor of Agricultural Science by matriculating in the University and by passing in the order prescribed in such subjects as together with those that have already been passed will complete the degree, provided that the conditions relating to attendance at lectures, and the performance of the required laboratory, field and practical work be complied 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 seven experimental farms:—

**VICTORIA.—PARTICULARS OF GOVERNMENT AGRICULTURAL COLLEGES AND  
EXPERIMENTAL FARMS FOR THE YEAR 1910-11.**

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	906	658	72	176	45	4,750	6,172
Longerenong	2,386	427	353	27	47	15	1,090	2,838
Rutherglen	913	213	143	32	38	31	834	1,752
Whitfield ...	113	51	30	2	19	3	250	428
Wyuna*	540	228	95	1	132	12	1,622	...
Heytesbury*†	33	27	10	...	17	2	80	...
Burnley ...	32	14	...	13	1	8	250	100
Rosedale ...	21	11	7	...	4	2	170	...
Marlo ...	35	24	20	1	3	1	60	40

\* Figures for 1909-10; those for 1910-11 not available. † Closed during 1911.

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, 1910, there were forty-six 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 1910.**

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 Ma- chinery.	Value of Produce for the Year.
	Acres.	Acres.	Acres.	Acres.	Acres.	No.	£	£
Gatton ...	1,692	263	169	6	88	30	1,400	2,846
Biggenden ...	211	30	6	4	20	1	450	200
Roma ...	791	82	55	13	14	7	2,500	262
Gindie ...	8,611	44	25	4	15	4	1,000	250
Westbrook ...	300	82	26	37	19	5	500	600
Warren ...	1,128	43	29	5	9	5	800	370
Kamerunga	40	22	...	3	19	6	200	200
Hermitage ...	433	266	206	...	60	4	630	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.

(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 1890 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 students were on the roll during 1910.

(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 2256) acres, 59 acres of reclaimed swamp at Murray Bridge, and 110 acres at Parafield. A similar farm subsequently established at Loxton is carried on in conjunction with one at Veitch's Well. During 1910 farms were established at Shannon and Minburra. 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. Owing to the large demand for seed wheat, an extension of the Parafield scheme of experimental work was necessary, and 350 acres of the Turretfield Dairy Farm were reserved by the Agricultural Department for seed plots; 100 acres were sown for 1910 season with the most approved types of wheat. There were about sixty cows in milk during the latter part of 1910, 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 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. The *Journal of the Department of Agriculture* is issued monthly and special bulletins and pamphlets regarding cultivation, manuring, diseases of stock, etc., are published from time to time. It is proposed to establish a training school of agriculture in the near future.

(v.) *Particulars of Agricultural College and Experimental Farms.* The subjoined table gives details of the several farms in the State during 1910-11 :—

**SOUTH AUSTRALIA.—PARTICULARS OF AGRICULTURAL COLLEGE AND  
EXPERIMENTAL FARMS FOR THE YEAR 1910-11.**

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	1,890	739	589	67	83	12	1,217	4,050
Kybybolite...	2,256	397	263	16	118	7	885	750
Murray Bridge	59	24	14	...	10	2	420	385
Parafield ...	110	42	39	...	3	3	1,100	250
Loxton and Veitch's Well	4,600	427	415	...	12	3	1,533	924
Shannon ...	1,164	83	83	...	...	4	320	250
Minburra ...	3,300	...	...	...	...	3	1,270	...

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 Nangeenan.

(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, which has an area of 1280 acres, 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 Keries, 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 1910 there were eight students on the rolls.

(iii.) *The Hamel State Farm.* This farm, which formerly carried out experimental work consisting chiefly of testing new varieties of grasses and fodder plants, cereals, fruits and tubers, was closed in September, 1909.

(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.

(v.) *Particulars of State and Experimental Farms.* Particulars of the farms at Narrogin, Chapman, Brunswick, and Nangeenan for the year 1910 are given hereunder:—

**WESTERN AUSTRALIA.—PARTICULARS OF STATE AND EXPERIMENTAL FARMS  
FOR THE YEAR 1910.**

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	336	280	13	43	4	600	647
Chapman ...	1,280	341	302	...	39	6	351	629
Brunswick ...	811	200	17	3	180	6	844	1000
Nangeenan...	2,088	335	300	1	34	4	810	1606

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 suitableness of various districts for growth or production of animal and vegetable products, information respecting plants, methods of cultivation, 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.

## § 21. 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 *Crédit 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 *Crédit 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 *Crédit 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 298.)

2. **Particulars of Transactions in each State, 1908 to 1911.**—The subjoined table gives particulars of transactions in each State in which advances to farmers are made, for the years 1908 to 1911 inclusive. Tasmanian figures are not available for 1908.

### STATE GOVERNMENT ADVANCES DEPARTMENTS.—PARTICULARS OF LOANS TO FARMERS, 1908 to 1911.\*

State.	TOTAL ADVANCED TO DATE.				BALANCE DUE.			
	1908.	1909.	1910.	1911.	1908.	1909.	1910.	1911.
	£	£	£	£	£	£	£	£
New South Wales †	789,333	1,062,625	1,362,853	1,617,192	423,511	591,292†	795,113†	928,086
Victoria ...	2,254,488	2,492,698	2,657,713	2,797,323	1,202,785	1,293,404†	1,308,425†	1,306,657
Queensland ...	153,228	187,014	235,793	306,944	119,344	136,946	163,640	206,997
South Australia §	1,233,264	1,386,153	1,544,946	1,786,762	631,413	668,535	710,316	819,818
Western Australia	743,598	1,004,675	1,257,082	1,540,241	610,202	835,239	935,960	976,811
Tasmania ...	...	5,687	9,187	14,610	...	5,657	8,521	13,561
Commonwealth...	5,173,911	6,138,852	7,067,574	8,063,072	2,987,255	3,531,073	3,921,975	4,251,930.
	ANNUAL PROFITS.				ACCUMULATED PROFITS.			
	£	£	£	£	£	£	£	£
New South Wales †	†	4,661	5,390	8,200	†	6,583	8,039	15,606
Victoria ...	6,751	7,037	5,926	3,022	68,949	75,987	81,913	84,936†
Queensland ...	1,326	1,405	1,974	2,548	2,623	4,028	6,003	8,551
South Australia §	3,797	4,218	4,587	6,662	29,380	33,598	38,186	44,848
Western Australia	4,637	6,061	6,823	6,753	18,194	24,255	31,078	37,531
Tasmania ...	...	...	(—) 98	48	...	...	(—) 98	(—) 50
Commonwealth...	16,511	23,382	24,602	27,333	119,146	144,451	165,121	191,722

\* Compiled from figures furnished by the Government Savings Bank of Victoria. † For years ended 31st December prior. ‡ Returns not available. § Balance after deduction of special principal payments in advances. § Includes loans to farmers and other producers and to local bodies on the security of their own rates. ¶ Including profits in connection with House and Shop loans.

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 freeholds 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.) *Closer Settlement Promotion Act 1910.* In 1910 an Act was passed whereby intending settlers might acquire by direct purchase from the owner, areas of private land suitable for closer settlement, under the same conditions, regarding residence, the payment of purchase money etc. as apply to settlement purchases under the Closer Settlement Acts. The purchasers are financed to the extent of 95 per cent. of the purchase money, not exceeding the bank's valuation of the properties. At the close of 1910, twelve estates were under consideration, the purchase prices aggregating £108,234. It is anticipated that a considerable amount of business will be done under this Act which will materially expand the operations of advances to farmers in this State.

(vii.) *Particulars of Advances to Farmers, 1906 to 1910.* The following table shews particulars of the advances made up to the 30th June in the year 1906, and to the 31st December in 1907, 1908, 1909 and 1910:—

**PARTICULARS OF GOVERNMENT ADVANCES TO FARMERS IN NEW SOUTH WALES,  
1906 to 1910.**

Particulars.	1906.*	1907.†	1908.†	1909.†	1910.†
Total applications received No.	11,188	12,397	13,796	15,497	16,861
Total amount applied for ... £	1,718,431	2,166,901	2,794,898	3,583,748	4,219,028
Total applications refused or withdrawn ... No.	5,010	5,541	5,632	6,256	6,725
Total applications approved No.	6,178	6,856	8,164	9,241	10,136
Total amount advanced ... £	647,624	789,333	1,062,625	1,362,853	1,617,192
Av. amount advanced per loan £	105	115	130	147	172
Repayments of principal ... £	236,415	365,823	470,548	566,102	689,106

\* Year ended 30th June. † 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 4½ 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, 1906 to 1911.* 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 1906-7 to 1910-11 inclusive:—

**LOANS TO FARMERS.—TRANSACTIONS OF ADVANCES DEPARTMENT OF GOVERNMENT SAVINGS BANK, VICTORIA, DURING EACH FINANCIAL YEAR, 1906 to 1911.**

Particulars.	1906-7.	1907-8.	1908-9.	1909-10.	1910-11.	Total to the 30th June, 1911.
Bonds & debentures issued £	100,000	100,000	100,000	200,000	700,000	3,483,600
„ „ redeemed £	104,675	79,500	30,000	125,025	100,000	1,228,775
Applications received No.	550	704	825	669	684	13,187
„ „ Amount, £	217,572	344,703	468,085	319,060	356,410	6,379,445
Applications granted No.	295	390	502	416	339	7,109
„ „ Amount, £	98,840	162,615	250,895	177,765	149,610	*3,056,125
Amounts advanced ... £	89,975	143,180	238,210	165,015	139,610	2,797,323
„ repaid ... £	189,547	168,800	151,437	153,355	156,817	1,490,666

\* Of this amount £2,797,323 has been actually paid over to borrowers, a further sum of £28,935 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, 1911, was 3096, and the average balance of each loan was £422 Os. 11d. 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 1910-11 was 7105, representing amounts of £59,664 for interest and £29,740 for principal. These instalments have been well met, and on 30th June, 1911, there were only six farmers in arrear, the principal in arrear amounting to £26, and interest to £42.

(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 the 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 somewhat 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 Os. 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, 1907 to 1911.* The subjoined table shews particulars of the transactions of the Agricultural Bank for each year ended 30th June, from 1907 to 1911 inclusive:—

**PARTICULARS OF TRANSACTIONS OF THE AGRICULTURAL BANK, QUEENSLAND,**

**DURING EACH FINANCIAL YEAR, 1907 TO 1911.**

Particulars.	1906-7.	1907-8.	1908-9.	1909-10.	1910-11.
Applications received... No.	503	512	586	746	1,101
"    "    Amount, £	69,472	70,107	92,363	114,901	165,562
Applications granted ... No.	313	319	430	680	905
"    "    Amount, £	36,357	36,706	50,113	79,518	114,606
Amounts advanced ... £	30,877	23,868	33,786	48,245	71,150
"    repaid ... £	12,929	16,740	16,184	21,551	27,793
"    outstanding to date £	112,216	119,344	136,947	163,641	206,998

**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, 1907 to 1911.* 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 transactions with farmers of the State Bank for each year from 1907 to 1911 inclusive:—

**SOUTH AUSTRALIA.—PARTICULARS OF TRANSACTIONS OF THE STATE BANK.**

FOR EACH YEAR ENDED 31ST MARCH, 1907 TO 1911.

Particulars.	1907.	1908.	1909.	1910.	1911.
Loans raised ... .. £	57,165	64,180	138,700	57,089	49,279
„ repaid ... .. £	50,515	53,015	123,600	4,056	3,146
Applications received ... No.	260	250	796	301	399
„ „ Amount, £	111,609	138,466	348,777	192,619	300,098
Applications granted ... No.	146	210	718	234	190
„ „ Amount, £	67,420	93,177	224,820	79,037	127,729
Amounts advanced ... £	58,060	76,092	166,752	71,870	91,405
„ repaid ... .. £	51,265	50,727	105,501	52,960	50,014
„ outstanding to date £	355,951	381,316	442,567	461,477	502,868

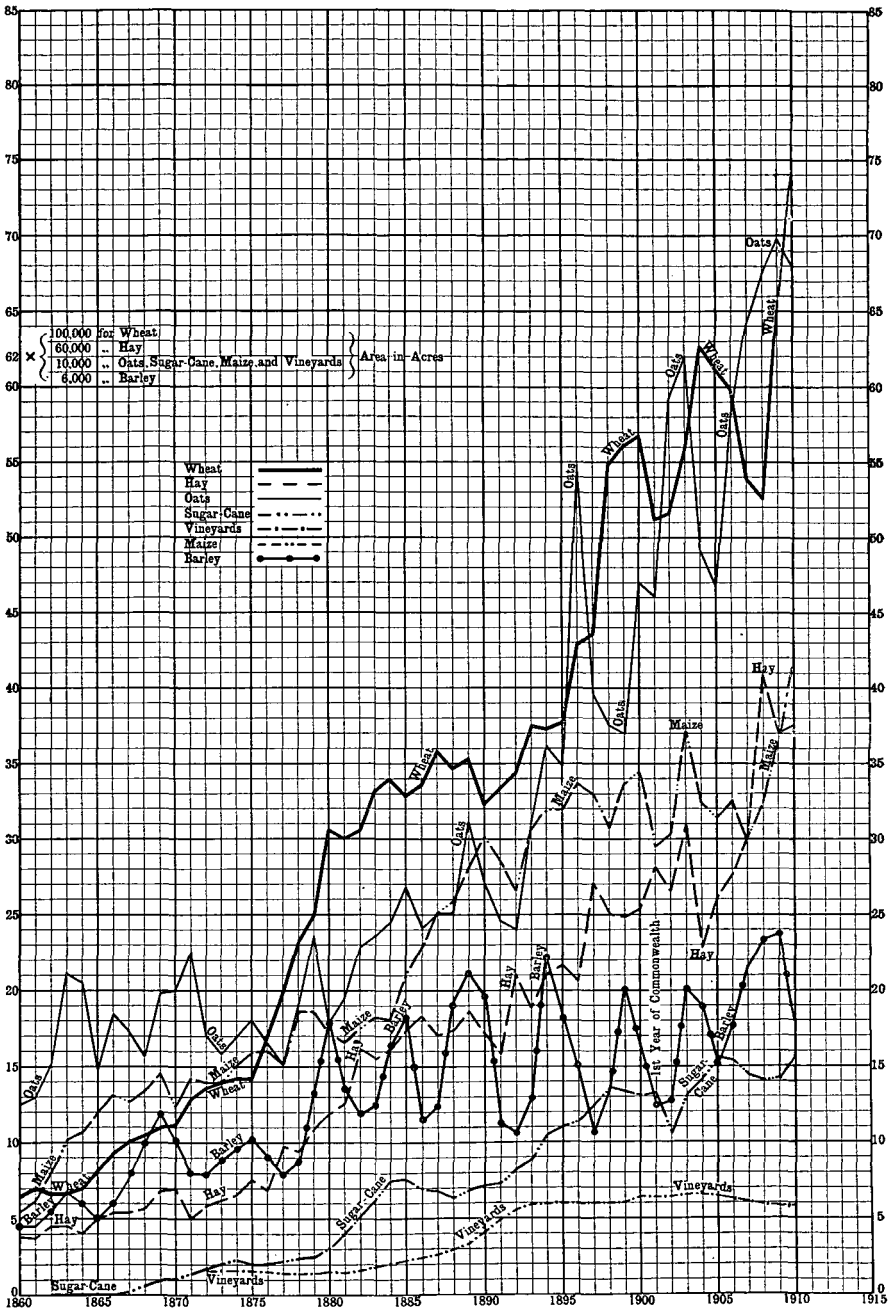
(iv.) *The Advances to Settlers on Crown Lands Acts 1908 and 1909.* Under the 1908 Act a Board, called the Advances to Settlers Board, was created. The Treasurer is authorised to set apart a sum not exceeding £200,000 in any one financial year for the purpose of loans to settlers. The maximum amount which may be advanced to any one settler is £600, 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; or for stocking a holding, provided that the necessary improvements have been made on the land. 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.

During the year ended 30th June, 1909, thirty-four applications, amounting to £6095 were received for advances under this Act. Of these, eleven, representing a value of £1775, were granted, the amount actually advanced being £276. For the year 1909-10, the number of applications for advances was 102, aggregating £19,577, and fifty-five, totalling £9418, were approved of. As, however, some of these were granted by instalments, the actual amount advanced was £8087. During 1910-11, there were 109 applications received, aggregating £21,996; of these, 82, amounting to £15,131, were granted, of which amount £12,747 was advanced by the close of the year. On the 30th June, 1911, the sum of £19,022 represented the amount of advances outstanding on that date.

**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, and by a further amendment in 1909 it was increased to £2,000,000. In the latter half of the year 1910, a Bill was introduced into Parliament by which it was proposed to make the amount authorised to be raised £2,500,000.

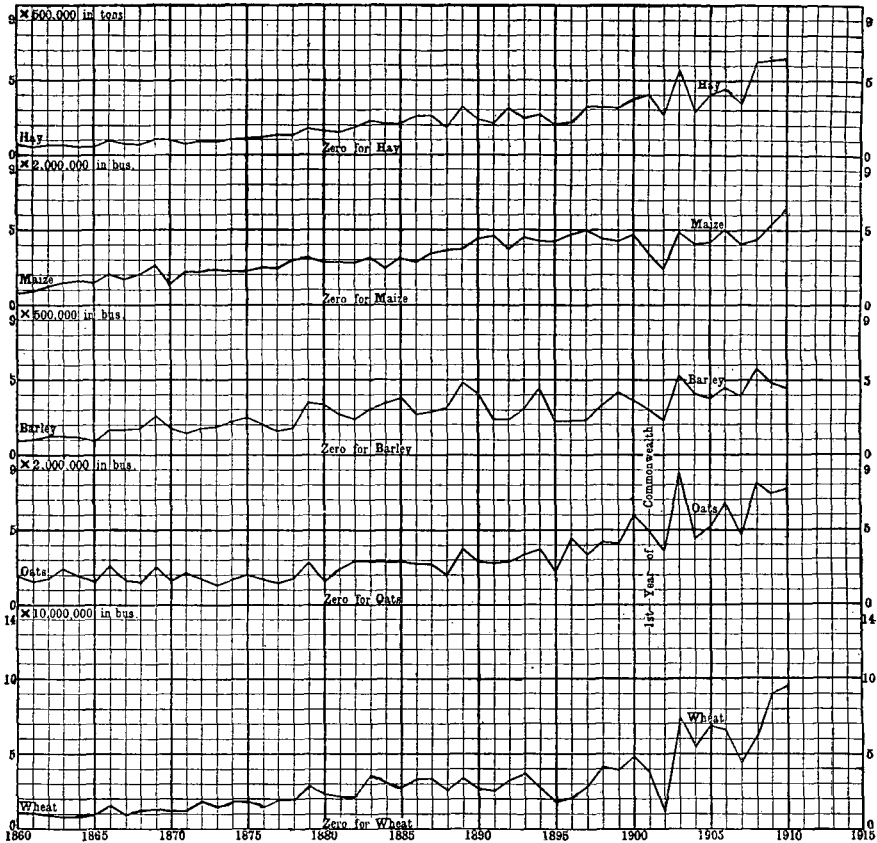


GRAPHS SHEWING THE AREA UNDER THE PRINCIPAL CROPS IN THE COMMON-WEALTH FROM 1860-1 TO 1909-10.



**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 on the left-hand of the diagram. The height of each graph above the base line denotes, for the crop to which it relates, the total area under cultivation in the Commonwealth during the successive seasons.

GRAPHS SHEWING THE PRODUCTION OF THE PRINCIPAL CROPS IN THE COMMON-  
WEALTH FROM 1860-1 TO 1909-10.



(See pages—for wheat, 365; oats, 372; barley, 379; maize, 376; and hay, 388.)

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.

(ii.) *Purposes for which Advances may be made.* The bank is authorised to make advances for (a) ring-barking, clearing, fencing, draining, or water conservation; (b) for discharging any existing mortgage; (c) for the purchase of stock for breeding purposes; or (d) for the purchase of agricultural machinery manufactured in Western Australia subject to the employees engaged in the manufacture of such machinery being paid the ruling rate of wages.

(iii.) *Amount of Advances.* Advances may be made to an amount not exceeding £400 up to the full value of the improvements proposed to be made. Further advances may be made to an amount not exceeding £250 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 £750. Not more than £100 may be advanced to any person for the purpose of purchasing stock or agricultural machinery. Advances are made only on a first mortgage, but a second mortgage may be taken as a collateral security. When any land is held by two or more persons as joint proprietors, the amount to be advanced may be multiplied by the number of such joint proprietors.

(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 1911.* The following table gives particulars of transactions of the Agricultural Bank for each year from 1904 to 1911 inclusive :—

#### PARTICULARS OF TRANSACTIONS OF AGRICULTURAL BANK, 1904 to 1911.

AMOUNTS ADVANCED FOR WHICH IMPROVEMENTS HAVE BEEN EFFECTED—

Year ended the 30th June.	Amounts Advanced.	Improvements Effectuated.							Total.
		Clearing.	Cultivating.	Ring-barking.	Fencing.	Draining.	Wells and Reservoirs.	Buildings.	
	£	£	£	£	£	£	£	£	£
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
1910	1,259,550	899,712†	124,782*	81,042	240,729	5,043	61,887	83,868	1,496,563
1911	1,540,242	1,031,891†	124,812*	107,676	297,077	5,386	78,581	83,868	1,729,291

\* Including £4321 for orchards.

† Including £6300 in 1910 and £8611 in 1911 for poison and blackboy grubbing.

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 1906-7 to 1910-11 inclusive :—

**WESTERN AUSTRALIA.—PARTICULARS OF TRANSACTIONS OF THE AGRICULTURAL  
BANK FOR EACH FINANCIAL YEAR, 1906-7 to 1910-11.**

Particulars.	1906-7.	1907-8.	1908-9.	1909-10.	1910-11.
Applications received ... No.	1,970	2,598	2,915	2,593	2,839
"    "    Amount, £	278,625	368,710	433,575	439,425	534,650
Applications granted ... No.	1,604	2,453	2,628	2,502	2,636
"    "    Amount, £	211,675	308,700	347,525	392,650	468,200
Amounts advanced ... £	131,271	218,421	261,077	252,407	283,159
"    repaid ... £	34,201	28,754	36,040	151,686	242,307
"    outstanding to date £	420,535	610,202	835,239	935,960	976,812

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 is £25, and the maximum £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 eighteen months 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 £11,110. Of these, ninety-four, of a value of £6571, were granted, the amount advanced being £5687. The amount repaid during the period was £30, leaving a balance of £5657 outstanding. For the year 1909-10, the number of applications for loans was eighty-two, totalling £5845. The trustees of the bank approved of sixty-one of these, amounting to £3593, and refused eleven, representing a value of £850, owing to the applicants not being entitled to loans in accordance with the Act. During the year one borrower failed to comply with the requirements of his mortgage deed and his selection was sold.

During 1910-11, ninety applications for loans totalling £7393 were received. Of these, 71, amounting to £5448, were approved and five were not entertained; the remainder were awaiting consideration of the trustees at the end of the year. The sum of £5423 was actually paid to borrowers during the year, making the total amount advanced under the Act to 30th June, 1911, £14,610, of which £1049 had been repaid.

## § 22. 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 430.

(i.) *Wheat.* In the case of wheat, the Commonwealth's principal crop, the graph indicates that the fifty-one 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 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 two seasons of maximum wheat-cropping, viz., that of 1909-10, when an area of 6,586,000 acres was so cropped, and that of 1910-11, when the area amounted to 7,372,456 acres.

(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 2,453,000 acres was attained, succeeded by a decline in 1909-10 to 2,228,000 acres, and a slight increase in 1910-11 to 2,258,405 acres.

(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, especially during the period 1892-3 to 1896-7. During the past four seasons following 1905-6 the area under oats has increased rapidly to a maximum of 698,000 acres in 1909-10, the succeeding year experiencing a slight falling off, when an area of 677,000 acres was so cropped.

(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 up to 1909-10. The maximum area under maize prior to 1910-11, viz., 372,000 acres, was attained in the season 1903-4; in 1910-11 this record was exceeded by 43,000 acres.

(v.) *Sugar-Cane.* In the case of sugar-cane the graph shows 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. The season of maximum area, viz., 156,000 acres, was 1905-6. A marked decline in area was in evidence during the four following seasons; in the year 1910-11, however, the former maximum was again attained.

(vi.) *Barley.* The Commonwealth barley crop has exhibited from time to time very marked fluctuations in area. The graph representing this crop shews 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., 143,000 acres, was attained in the season 1909-10.

(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 431 furnishes a graphical representation of the aggregate yields from 1860-1 to 1910-11 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 have been 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 five 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, 1903-4, 1909-10, and 1910-11, the total yields for which were 37,100,000 bushels, 48,400,000 bushels, 74,100,000 bushels, 90,400,000 bushels, and 95,100,000 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 the 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 10,770,000 bushels for 1909-10, the maximum Australian maize crop up to that date; this was exceeded in the following season, when the production of maize amounted to 13,044,081 bushels. 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 indicated 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 1910-11, when the total production reached 3,176,000 tons.