SECTION VIII.

AGRICULTURAL PRODUCTION.

NOTE.—Except where otherwise stated, the "agricultural" years hereinafter mentioned are taken as ending on the 31st March.

§ 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 60 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 and Territories at quinquennial intervals since 1860 and during each of the last three seasons. 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 to 1913-14.

Season.	New South Wales.	Victoria.	Queensland.	South Australia.	W. Aust.	Tasmania.	N.T.	Fed. Terr.	Commonwealth.
	Acres.	Acres.	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	201,338	224,352	...	...	8,812,463
1905-6	2,840,235	3,219,962	522,748	2,255,569	364,704	230,237	...	...	9,433,455
1910-11	3,386,017	3,952,070	667,113	2,746,334	855,024	286,920	360	...	11,893,838
1911-12	3,628,513	3,640,241	526,388	2,965,338	1,072,653	270,000	375	3,509	12,107,017
1912-13	3,737,085	4,079,356	668,483	3,062,998	1,199,991	286,065	330	3,741	13,038,049
1913-14	4,567,592	4,391,321	747,814	3,169,559	1,537,923	264,140	354	4,309	14,683,012

The increase in the area under crop during the past thirteen years has been most marked in the case of New South Wales, Western Australia and Victoria, the respective increases being 2,122,028, 1,336,585, and 1,277,189 acres. During the same period an increase of 799,879 acres was experienced in South Australia, 290,417 in Queensland, and 39,788 acres in Tasmania. The total area under crop in the Commonwealth increased during the period by 5,870,549 acres, and the total for 1913-14 was the highest ever attained by the Commonwealth. During the past eight seasons the percentage of increase was particularly high in Western Australia, viz., 321½ per cent. New South Wales had an increase of 60¾ per cent., while Queensland, South Australia, Victoria, and Tasmania added to their areas under crop to the extent of 43, 40½, 36½ and 14¾ per cent. respectively. The increase for the whole of the Commonwealth during the same period was over 55½ per cent.

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 seasons under review, with the exception of 1911-12, 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 1901-2 and for the past five seasons are as follows:—

TOTAL AREA UNDER CROP PER 1000 OF POPULATION.

Season	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aus.	Tas.	Northern Territory	Federal Terr.	C'wlth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1901-2 ...	1,656	2,451	954	6,224	1,123	1,327	...	...	2,200
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	109	...	2,688
1911-12 ...	2,169	2,671	846	7,091	3,646	1,396	115	1,827	2,650
1912-13 ...	2,102	2,955	1,050	7,122	3,920	1,451	95	1,928	2,755
1913-14 ...	2,494	3,110	1,133	7,203	4,796	1,310	96	2,168	3,014

4. **Relation to Total Area.**—The next table furnishes a comparison of the area under crop in the Commonwealth and the several States and Territories, with the respective total areas. For the Commonwealth as a whole, the area under crop represented for 1913-14 only about one acre in every 130. In Victoria the area under crop was about one acre in every 13, in New South Wales one in 45, in Tasmania one in 64, in South Australia one in 77, in Western Australia one in 407, in Queensland one in 575, in the Northern Territory one in 946,658, and in the Federal Territory one in 136.

PERCENTAGE OF AREA UNDER CROP TO TOTAL AREA OF EACH STATE AND OF COMMONWEALTH FOR SEASONS 1901-2 and 1909-10 to 1913-14.

Season.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aus.	Tas.	Northern Territory	Federal Terr.	C'w lth.
	%	%	%	%	%	%	%	%	%
1901-2 ...	1.147	5.273	0.113	0.919	0.035	1.386	...	...	0.442
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	0.0001	...	0.625
1911-12 ...	1.832	6.472	0.123	1.219	0.172	1.609	0.0002	0.609	0.636
1912-13 ...	1.887	7.253	0.156	1.259	0.192	1.705	0.0001	0.641	0.685
1913-14 ...	2.230	7.807	0.174	1.303	0.246	1.574	0.0001	0.738	0.771

5. **Artificially-Sown Grasses.**—In all the States considerable areas are devoted to artificially-sown grasses, frequently sown on uncultivated land after burning off. Statistics regarding the area under such grasses are as shewn hereunder:—

AREA UNDER SOWN GRASSES, 1901-2 and 1909-10 to 1913-14.

Season.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia	Tasmania.	Fed. Terr.	Commonwealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1901-2	467,839	162,954	34,679	23,510	3,711	314,422	...	1,007,115
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
1911-12	1,119,738	1,041,772	166,175	30,431	5,760	505,940	50	2,869,866
1912-13	1,152,399	1,085,346	205,363	30,377	5,168	508,714	50	*a* 2,987,419
1913-14	1,234,405	1,094,566	236,582	30,277	6,919	605,559	50	*a*3,208,362

(*a*) Including 2 acres Northern Territory 1912-13, and 4 acres 1913-14.

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 1913-14 :—

DISTRIBUTION OF CROPS IN AUSTRALIA, 1913-14.

Crop.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	N.T.	Fed. Terr.	Total for C'wealth
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres	Acres.
Wheat	3,203,572	2,565,861	132,655	2,267,851	1,097,193	18,432	9	1,825	9,287,398
Oats	103,262	442,060	4,093	116,932	133,625	58,886	8	154	859,020
Maize	156,793	17,962	156,775	239	38	...	45	27	331,879
Barley—									
Malting ...	16,392	44,584	6,274	71,537	6,417	6,735	...	5	151,944
Other	4,209	38,767	2,552	19,015	5,085	988	...	4	70,620
Beans and Peas	460	12,630	69	9,031	1,551	15,091	7	...	38,839
Rye	4,913	1,779	91	1,242	679	850	...	5	9,559
Other Cereals ...	...	...	5	10	14	...	45	...	74
Hay	798,978	977,684	76,469	568,550	246,640	84,138	61	2,152	2,754,672
Green Forage ...	146,093	98,963	171,290	49,948	13,126	7,037	21	26	486,504
Grass Seed ...	...	1,452	736	11	...	1,460	10	...	3,669
Orchards&other Fruit Gardens	51,457	67,183	20,072	24,425	20,575	32,200	50	59	216,021
Vines—									
Productive ...	7,328	17,926	1,449	21,737	2,325	...	...	...	50,765
Unproductive	825	4,509	88	4,471	539	...	...	...	10,432
Market Gardens	10,585	10,777	2,611	2,265	2,851	769	60	22	29,940
Sugar Cane—									
Productive ...	6,198	...	102,803	...	...	...	...	...	109,001
Unproductive	7,034	...	44,940	...	...	...	1	...	51,975
Potatoes... ...	38,695	74,574	10,085	10,809	5,229	30,811	...	30	170,233
Onions	208	6,121	96	309	116	82	...	...	6,932
Other root crops	1,334	2,515	3,998	462	172	4,083	10	...	12,574
Tobacco... ...	1,992	284	731	...	...	...	...	...	3,007
Broom Millet ...	1,970	515	399	...	...	...	10	...	2,894
Pumpkins and Melons ...	4,206	2,233	6,556	249	743	...	12	...	13,999
Hops	...	117	...	3	...	1,353	...	...	1,473
All other crops	1,088	2,825	2,977	463	1,005	1,225	5	...	9,588
Total Area...	4,567,592	4,391,321	747,814	3,169,559	1,537,923	264,140	354	4,309	14,683,012

2. **Relative Areas of Crops in States and Territories.**—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 and Territories to the total area under crop for the season 1913-14 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 green forage, maize, and sugar cane, while in Tasmania hay, oats, and orchards occupy the leading positions. For the Commonwealth as a whole, the wheat, hay, and oat crops represent nearly 88 per cent. of the total area under crop.

PROPORTION OF AREA UNDER CHIEF CROPS, 1913-14.

Crop.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	N.T.	Federal Terr.	C'wealth
	%	%	%	%	%	%	%	%	%
Wheat ...	70.14	58.43	17.74	71.55	71.34	6.98	2.54	42.35	63.25
Hay ...	17.49	22.26	10.23	17.94	16.04	31.85	17.23	49.94	18.76
Oats ...	2.26	10.07	0.55	3.69	8.69	22.29	2.26	3.57	5.85
Maize ...	3.43	0.41	20.96	0.01	...	...	12.71	0.63	2.26
Green Forage	3.20	2.25	22.91	1.58	0.85	2.66	5.93	0.60	3.31
Orchards and Fruit G'dens	1.13	1.53	2.68	0.77	1.34	12.19	14.13	1.37	1.47
Sugar Cane...	0.29	...	19.76	...	...	...	0.28	...	1.10
Potatoes ...	0.85	1.70	1.35	0.34	0.34	11.66	...	0.70	1.16
Barley ...	0.45	1.90	1.18	2.86	0.75	2.92	...	0.21	1.52
Vineyards ...	0.18	0.51	2.06	0.83	0.19	...	...	...	0.42
All Other ...	0.58	0.94	0.58	0.43	0.46	9.45	44.92	0.63	0.90
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

3. **Relative Positions of States and Territories in regard to Principal Crops.**—The relative proportion of acreage of the several crops and position regarding them in each State and Territory is shewn in the following table. New South Wales exhibits the largest area under wheat and maize; Victoria the leading position in regard to hay, oats, orchards and fruit gardens, and potatoes; and Queensland first in sugar cane and green forage, and second in maize. South Australia had the largest area under vineyards, and barley; Western Australia second position in oats and fourth in wheat, hay, barley, and vineyards; while Tasmania was third in regard to potatoes, orchards and fruit gardens.

RELATIVE POSITIONS OF THE SEVERAL STATES AND TERRITORIES IN REGARD TO AREA UNDER EACH OF THE PRINCIPAL CROPS DURING THE SEASON 1913-14.

Crop.		N.S.W.	Vict.	Q'land.	S. Aust.	W.A.	Tas.	N.T.	Federal Terr.	C'wlth.
Wheat ...	... %	34.49	27.63	1.43	24.42	11.81	0.20	...	0.02	100.00
	position	1	2	5	3	4	6	...	7	
Hay ...	... %	29.00	35.49	2.78	20.64	8.95	3.06	...	0.08	100.00
	position	2	1	6	3	4	5	...	7	
Oats ...	... %	12.02	51.46	0.48	13.61	15.56	6.85	...	0.02	100.00
	position	4	1	6	3	2	5	...	7	
Maize ...	... %	47.25	5.41	47.24	0.07	0.01	...	0.01	0.01	100.00
	position	1	3	2	4	6	...	5	7	
Green Forage	... %	30.03	20.34	35.21	10.27	2.70	1.44	...	0.01	100.00
	position	2	3	1	4	5	6	...	7	
Orchards and Fruit Gardens...	... %	23.82	31.10	9.29	11.31	9.52	14.91	0.02	0.03	100.00
	position	2	1	6	4	5	3	8	7	
Sugar Cane	... %	8.22	...	91.78	...	...	...	...	...	100.00
	position	2	...	1	...	...	...	...	...	
Potatoes ...	... %	22.66	42.79	7.64	6.20	3.00	17.68	0.01	0.02	100.00
	position	2	1	4	5	6	3	8	7	
Barley ...	... %	9.25	37.45	3.97	40.69	5.17	3.47	...	...	100.00
	position	3	2	5	1	4	6	...	...	
Vineyards ...	.. %	13.32	36.66	2.51	42.83	4.68	...	...	...	100.00
...	position	3	2	5	1	4	...	...	...	
All other crops	... %	20.20	32.09	11.71	10.93	5.55	19.38	0.12	0.02	100.00
	position	2	1	4	5	6	3	7	8	
Total area under crop	%	31.11	29.91	5.09	21.59	10.47	1.80	...	0.03	100.00
	position	1	2	5	3	4	6	8	7	

4. **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, 1909-10 to 1913-14.

Crop.	1909-10.	1910-11.	1911-12.	1912-13.	1913-14.
	Acres.	Acres.	Acres.	Acres.	Acres.
Wheat	6,586,236	7,372,456	7,427,834	7,339,651	9,287,398
Hay	2,228,029	2,258,405	2,518,288	3,217,041	2,754,672
Oats	698,448	676,688	616,857	874,034	859,020
Maize	364,585	414,914	340,065	314,936	331,879
Green Forage	306,082	374,862	424,440	428,006	486,504
Orchards and Fruit Gardens ...	178,798	185,156	194,524	205,174	216,021
Sugar Cane	142,261	155,542	144,283	155,567	160,976
Potatoes	137,070	151,515	130,463	128,889	174,262
Barley	143,013	108,424	116,466	181,387	222,564
Vineyards	58,151	59,114	60,602	62,388	61,197
All other Crops	129,626	136,762	133,195	130,976	128,519
Total	10,972,299	11,893,838	12,107,017	13,038,049	14,683,012

During the period under review the area devoted to the several crops has varied considerably, that under wheat attaining a maximum in the season 1913-14, and a minimum in 1909-10, while hay reached its maximum area in 1912-13 and its minimum in 1909-10. Of the other crops green forage, orchards and fruit gardens, sugar cane, potatoes and barley attained their maximum areas in 1913-14, maize in 1910-11, and oats and vineyards in 1912-13.

§ 4. Wheat.

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

AREA UNDER WHEAT, 1860-1 to 1913-14.

Season.	N.S.W.	Victoria.	Q'land.	Sth. Aust.	W. Aust.	Tas.	N.T.	Fed. Terr.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acs.	Acs.	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
1905-6	1,939,447	2,070,517	119,356	1,757,036	195,071	41,319	...	...	6,122,746
1910-11	2,128,826	2,398,089	106,718	2,104,717	581,862	52,242	2	...	7,372,456
1911-12	2,379,968	2,164,066	42,962	2,190,782	612,104	37,208	2	742	7,427,834
1912-13	2,230,500	2,085,216	124,963	2,079,633	793,096	25,226	3	1014	7,339,651
1913-14	3,203,572	2,565,861	132,655	2,267,851	1,097,193	18,432	9	1825	9,287,398

The area devoted in the Commonwealth to the production of wheat for grain was higher for the season 1913-14 than for any previous season, there being an increase in all the States with the exception of Tasmania, which shewed a falling-off. Prior to 1913-14

the maximum area under wheat for grain was attained by the several States in the following seasons:—New South Wales, and South Australia, 1911-12; Victoria, 1910-11; Queensland, 1904-5; Western Australia, 1912-13; and Tasmania, 1897-8. The average area under wheat in the Commonwealth in the past ten seasons was 6,703,466 acres. The past four seasons exceeded this average, while the previous six seasons fell short of it.

(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 1913-14.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	N. T.	Federal Terr.	C'wealth.
	Bushels.	Bushels.	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
1905-6 ...	20,737,200	23,417,670	1,137,321	20,143,798	2,308,305	776,478	...	...	68,520,772
1910-11 ...	27,913,547	34,813,019	1,022,373	24,344,740	5,897,540	1,120,744	20	...	95,111,983
1911-12 ...	25,080,111	20,891,877	285,109	20,352,720	4,358,904	659,615	20	7,991	71,636,347
1912-13 ...	32,466,506	26,223,104	1,975,505	21,496,216	9,168,594	630,315	...	20,830	91,981,070
1913-14 ...	37,996,068	32,936,245	1,769,432	16,936,988	13,331,350	349,736	...	24,313	103,344,132

The harvest of 1913-14 was the largest ever reaped in the Commonwealth, and exceeded by 8,232,149 bushels that of 1910-11, the next largest harvest; the 1912-13 yield was 91,981,070 bushels, and that for 1909-10 was 90,413,597 bushels, these being the only four occasions on which a yield exceeding 90,000,000 bushels has been obtained. The harvest for 1914-15 will probably be very poor, the prolonged drought having been very disastrous to the wheat areas. The estimated yield at time of writing was about 30,000,000 bushels, the lowest since 1902. Later information will, however, be found in the Appendix.

(iii.) *Average Yields.* In the next table will be found the average yield of wheat per acre in each of the seasons 1901-2 and 1909-10 to 1913-14 and for the decennium:—

YIELD OF WHEAT PER ACRE, 1901-2 and 1909-10 to 1913-14.

Season.	N.S.W.	Vic.	Q'land.	S. Aus.	W. Aus.	Tasmania.	N.T.	Fed. Terr.	C'wealth
	Bushels.	B'shls.	B'shls.	B'shls.	B'shls.	B'shls.	B'shls.	B'shls.	B'shls.
1901-2 ...	10.64	6.91	19.40	4.60	10.10	21.86	...	...	7.54
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	10.00	...	12.90
1911-12 ...	10.54	9.65	6.64	9.29	7.12	17.73	10.00	10.77	9.64
1912-13 ...	14.56	12.58	15.81	10.34	11.56	24.99	...	20.54	12.53
1913-14 ...	11.86	12.84	13.34	7.47	12.15	18.97	...	13.32	11.13
Average for 10 ... seasons	11.61	11.55	12.04	10.20	10.76	20.50	...	14.84	11.18

As the above figures shew, there were considerable variations in the average yields, chiefly due of course to the vagaries of the season.

For the Commonwealth as a whole the average yield for 1913-14 of 11.13 bushels per acre was 0.05 below the average yield of 11.18 per acre during the last ten seasons. The highest average yield for any State was in Tasmania with 18.97 bushels per acre. Queensland, Victoria, and Western Australia producing an average of 13.34, 12.84, and 12.15 respectively. New South Wales and South Australia had an average yield of 11.86 and 7.47 bushels per acre respectively, the former being 0.25 above and the latter 2.73 below the average for the decennium.

(iv.) *Relation to Population.* During the seasons embraced in the following table, the Commonwealth's production of wheat per head of population has varied between 3¼ bushels in 1902-3 and 21½ bushels in 1910-11. The State in which wheat-growing occupies the most important position relatively to population is South Australia, which in 1909-10 had a yield which averaged close upon 64 bushels per head. Taking a series of years Queensland is the State in which the average production of wheat per head is least; during 1913-14, however, Tasmania shews the lowest average. Particulars for 1901-2 and the past five seasons are as follows :—

AUSTRALIAN WHEAT PRODUCTION PER 1000 OF POPULATION.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	N.T.	Fed. Terr.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bush'ls	Bush'ls	Bushels.
1901-2	10,766	10,023	3,340	22,299	4,943	5,499	...	...	10,082
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	6	...	21,494
1911-12	14,993	15,330	485	48,671	14,817	3,409	6	4,056	15,955
1912-13	18,265	18,995	3,104	49,981	29,950	3,196	...	10,737	19,433
1913-14	20,743	23,324	2,680	38,489	41,572	1,734	...	12,230	21,212

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 38¾ bushels per acre, to Tunis with a minimum of 2½ bushels per acre. Australia with approximately 12½ occupies a subordinate position. (See table on previous page.)

AVERAGE YIELD OF WHEAT IN VARIOUS COUNTRIES, 1912.

Country.	Average Yield in bushels per acre.	Country.	Average Yield in bushels per acre.
Belgium	38.70	Servia (1911)	16.04
Netherlands	38.58	United States	15.46
Germany	33.68	Italy	14.10
Sweden (1910)	32.48	**Australia***	**12.53**
New Zealand	30.05	India	12.12
United Kingdom	29.13	Argentine Republic ...	11.61
Bulgaria	23.03	Spain	11.41
Austria	21.70	Uruguay (1911)	10.96
Egypt (1911)	21.69	Russia in Europe	10.25
Japan	21.13	Russia in Asia	10.16
Canada	20.42	Portugal (1911)	9.78
France	20.03	Algeria	7.52
Hungary	19.27	Tunis	2.42
Rumania	16.86		

* 1913, 11.13.

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 YIELD OF VARIOUS COUNTRIES, 1912.

Country.	Yield in Bushels.	Country.	Yield in Bushels.
United States	708,064,000	Bulgaria	63,732,334
Russia in Europe	621,813,850	United Kingdom	57,402,304
India	358,388,806	Egypt	30,891,407
France	325,073,376	Algeria	27,164,344
Canada	199,236,000	Japan	25,690,320
Argentine Republic ...	198,360,000	Belgium	15,343,694
Hungary	184,591,439	Servia	15,307,488
Russia in Asia	177,179,404	Portugal	11,846,400
Italy	165,674,683	Uruguay	8,754,400
Germany	160,180,258	Sweden	7,589,728
Spain	109,753,493	Netherlands	5,513,696
Australia*	**91,981,070**	New Zealand†	5,179,626
Rumania	86,176,264	Tunis	3,609,376
Austria	67,557,616	Denmark	3,477,888

*1913—103,344,132. †1913—5,231,700.

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 1909 to 1913 :—

WORLD'S PRODUCTION OF WHEAT.

Year	1909.	1910.	1911.	1912.	1913.
Production	1,000,000 bushels. 3,472	1,000,000 bushels 3,466	1,000,000 bushels. 3,432	1,000,000 bushels. 3,676	1,000,000 bushels. 3,999

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 411,734,000 bushels, thus representing slightly over 2¼ 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 3,478 million bushels, so that the Australian production of wheat represented 11.8 per cent. of that of the British Empire, while the British Empire production represented 19.3 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 prime importance 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 1913.

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	1906 ...	28 3	30 9	25 9
1871 ...	56 8	60 0	52 6	1907 ...	30 7	36 3	26 0
1881 ...	45 4	55 2	40 9	1908 ...	32 0	35 6	30 5
1891 ...	37 0	41 8	32 3	1909 ...	36 11	44 9	31 4
1901 ...	26 9	27 8	25 8	1910 ...	31 8	33 9	29 6
1902 ...	28 1	31 8	24 10	1911 ...	31 8	33 4	30 0
1903 ...	26 9	30 3	24 11	1912 ...	34 9	39 2	29 10
1904 ...	28 4	30 6	26 3	1913 ...	31 8	34 3	30 0
1905 ...	29 8	32 3	26 8				

(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, 1909 TO 1913.

Country.	Average Price per Imperial Quarter.					Country.	Average Price per Imperial Quarter.				
	1909.	1910.	1911.	1912.	1913.		1909.	1910.	1911.	1912.	1913.
	s. d.	s. d.	s. d.	s. d.	s. d.		s. d.	s. d.	s. d.	s. d.	s. d.
Australia ...	41 5	37 2	34 10	38 5	37 6	Germany ...	38 3	36 11	33 6	36 8	31 0
Russia ...	39 3	35 7	33 4	37 6	33 11	Bulgaria ...	...	32 11	35 1	36 4	...
Rumania ...	40 9	34 2	34 7	37 3	33 3	United States	38 6	37 3	34 9	35 9	35 1
British India	40 8	35 5	33 7	37 0	36 6	Argentina ...	39 9	34 11	33 4	35 6	35 8
Chile... ...	39 1	33 7	33 0	36 9	36 7	Canada ...	39 3	36 9	34 10	35 2	34 8

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, 1904 to 1913.

Particulars.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1912.	1913.
Price per bushel	3s. 2d.	3s. 5d.	3s. 3d.	3s. 4d.	4s. 1d.	4s. 2d.	4s. 2d.	3s. 6d.	3s. 11d.	3s. 9d.

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

5. **Imports and Exports of Wheat and Flour.**—(i.) *Quantities.* The table hereunder shews the imports, exports, and net exports of wheat and flour during 1901 and 1909 to 1913. 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. During 1903 the Commonwealth imports of wheat and flour were equivalent to 12,607,940 bushels of wheat. This importation was necessitated by the failure of the crop in the preceding season. In ordinary seasons the import of wheat and flour is negligible. During the past five years the export has ranged between 38,047,948 bushels in 1909 and 63,942,390 bushels in 1911, the net exports for that period averaging 50,353,000 bushels.

IMPORTS AND EXPORTS OF WHEAT AND FLOUR, COMMONWEALTH, 1901 AND 1909 TO 1913.

Year.	Imports.			Exports.			Net Exports.
	Wheat.	Flour.	Total.	Wheat.	Flour.	Total.	
	Bushels.	Eq. Bshls.[1]	Bushels.	Bushels.	Eq. Bshls.[1]	Bushels.	Bushels.
1901	22,992	302,550	325,542	20,260,058	4,840,700	25,100,758	24,775,216
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
1911	113	12,150	12,263	55,147,840	8,794,550	63,942,390	63,930,127
1912	1,483	7,300	8,783	32,604,248	8,404,700	41,008,948	41,000,165
1913	60	2,650	2,710	42,922,887	11,082,900	54,005,787	54,003,077

1. Equivalent in bushels of wheat.

(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 1909-13. 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 to which these ports belong cannot always be considered as the ultimate destination of the whole of the wheat said to be exported to them.

EXPORTS OF WHEAT FROM THE COMMONWEALTH, 1909 to 1913.

Country to which Exported.	1909.	1910.	1911.	1912.	1913.	Total for Five Years.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
U. Kingdom	26,030,722	36,998,625	37,475,188	23,099,670	27,922,717	151,526,922
Sth. African Union ...	3,234,603	3,001,145	2,458,780	1,784,382	4,482,865	14,961,775
Canary Is.*	238,410	3,280,215	4,756,647	3,107,257	1,477,005	12,859,534
France ...	24,803	918,815	5,468,993	53,773	1,943,208	8,409,592
Peru ...	627,417	1,270,360	1,594,610	1,201,682	943,130	5,637,199
Belgium ...	120,237	1,174,210	1,639,140	1,414,263	1,742,803	6,090,653
Chile ...	...	102,025	477,573	...	...	579,598
Japan ...	61,448	231,320	99,560	42,550	1,215,778	1,650,656
Germany ...	40,403	290,905	255,740	556,508	290,553	1,434,109
India ...	101,135	...	...	...	...	101,135
China ...	42	...	...	...	...	42
Italy ...	483,783	54,140	...	488,697	1,879,923	2,906,543
Egypt ...	...	...	156,485	427,988	92,413	676,886
Philippine I.	178,153	...	152	1,667	...	179,972
New Zealand	72,130	8,410	12,247	1,695	...	94,482
New Caledonia ...	3,275	470	642	1,400	1,129	6,916
Ceylon ...	308	820	1,325	1,487	1,748	5,688
Other Countries ...	332,629	430,435	750,758	421,229	929,615	2,864,666
Total ...	31,549,498	47,761,895	55,147,840	32,604,248	42,922,887	209,986,368

* For orders.

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

EXPORTS OF FLOUR FROM THE COMMONWEALTH, 1909 to 1913.

Country to which Exported.	1909.	1910.	1911.	1912.	1913.	Total for Five Years.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Sth. African Union	24,460	29,535	35,136	26,230	38,209	153,570
United Kingdom	33,128	23,323	24,616	38,535	18,894	138,496
Java	13,346	18,808	30,964	29,275	38,103	130,496
Portuguese East Africa ...	16,496	22,517	8,421	4,264	15,612	67,310
Philippine Islands	11,803	9,359	16,634	16,240	14,366	68,402
StraitsSettlements	6,250	12,374	22,036	15,177	21,625	77,462
Hong Kong ...	1,511	1,742	5,687	1,952	2,466	13,358
New Zealand ...	5,439	3,148	2,818	1,641	3,057	16,103
New Caledonia ...	3,897	4,049	4,174	4,012	4,143	20,275
Mauritius ...	3,090	2,894	1,974	1,240	1,906	11,104
Ceylon	2,257	2,287	3,046	3,901	5,454	16,945
China	300	816	1,656	1,738	2,188	6,698
Fiji	1,810	1,760	2,230	2,429	2,619	10,848
Japan	337	815	269	453	610	2,484
Other Countries ...	5,845	6,519	16,230	21,007	52,406	102,007
Total ...	129,969	139,946	175,891	168,094	221,658	835,558

During the five years under review the export of wheat to the United Kingdom totalled 151,526,922 bushels, or about 72 per cent. of the total export for the period. On the other hand, the export of flour to the United Kingdom aggregated only 138,496 tons, or about 16½ per cent. of the total export. During the five years the heaviest exports of flour have been to South Africa, the United Kingdom, Java, Portuguese East Africa, the Philippine Islands, the Straits Settlements, and New Caledonia.

(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, slightly over 16½ per cent. of the total equivalent in wheat exported as wheat or flour from 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 to bring 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 lb.	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 lb., of which 0.13 lb. is in the flour and 0.35 lb. in the offal.

During the past ten years the net exports from the Commonwealth of wheat and its milled products have amounted to 342,049,930 bushels of wheat, 1,537,549 tons of flour, and 7,303,769 bushels of bran, pollard, and sharps. On the basis of the figures quoted above this export would contain no less than 177,000,000 lbs. of phosphoric acid, the value of which as a fertiliser would be over a million pounds sterling.

(iv.) *Local Consumption of Wheat.* The estimated consumption of wheat for food and for seed purposes in the Commonwealth during the past nine years is given in the following tables:—

WHEAT USED FOR HUMAN CONSUMPTION IN THE COMMONWEALTH.

Year.	Flour Milled.	Net Exports of Flour.		Net Quantity Available for Home Consumption.		Net Quantity Available per Head of Population.	
		Flour.	Flour in Biscuits Exp'ted.	Flour.	Equivalent in Terms of Wheat.	Flour.	Equivalent in Terms of Wheat.
	Tons.	Tons.	Tons.	Tons.	Bushels.	Tons.	Bushels.
1905 ...	596,908	153,206	1,100	442,602	22,130,100	.1106	5.531
1906 ...	613,923	166,005	1,570	446,348	22,317,400	.1099	5.496
1907 ...	652,135	163,064	1,840	487,231	24,361,550	.1182	5.908
1908 ...	552,388	116,625	1,810	433,953	21,697,650	.1035	5.173
1909 ...	603,688	129,889	1,980	471,819	23,590,950	.1104	5.519
1910 ...	649,282	139,774	2,340	507,168	25,358,400	.1161	5.803
1911 ...	691,301	175,649	2,570	513,082	25,654,100	.1143	5.713
1912 ...	677,053	167,948	2,820	506,285	25,314,250	.1090	5.450
1913 ...	760,613	221,605	2,600	536,408	26,820,400	.1117	5.583
Aggregate 9 years ...	5,797,291	1,433,765	18,630	4,344,896	217,244,800	.1115	5.576

ESTIMATED QUANTITY OF WHEAT USED FOR SEED PURPOSES IN THE COMMONWEALTH.

Year.	Wheat for Seed Purposes.		
	Quantity.	Per Acre.	Per Head of Population.
	Bushels.		Bushels.
1905	6,747,000	.946	1.686
1906	6,664,000	.954	1.641
1907	6,261,000	.960	1.518
1908	6,429,000	.962	1.533
1909	7,322,000	.960	1.713
1910	8,332,000	.966	1.907
1911	8,282,000	.922	1.844
1912	8,484,000	.919	1.827
1913	9,747,000	.908	2.029
Aggregate for 9 years	68,268,000	.941	1.752

In addition to the above there is to be taken into consideration grain fed to poultry and other live stock. This, doubtless, varies in quantity from year to year according to the prices current for wheat, and other causes. No data is available on which to base an estimate of actual quantity so consumed. The flour available for human consumption necessarily fluctuates from year to year coincident with stocks being heavy or light. In 1907 the flour available per head of population, after deducting net exports from quantity milled, shewed a substantial increase over the average for the previous two years, this, however, being counterbalanced by a decline in the following year. The average quantity of flour consumed per annum for the nine years under consideration was 0.1115 tons per head of population, this, when expressed in equivalent terms in wheat, representing 5.576 bushels. The estimates of quantity of grain used for seed purposes have been based on data supplied by the Agricultural Departments of the several States, giving average quantities of seed used per acre for wheat sown either for grain, hay or green fodder. The average annual quantity thus used during the nine years was 1.752 bushels per head of population, and 0.941 bushels per acre sown.

Reference will be found in a subsequent section to Commonwealth and State legislation for control of trade and prices of commodities during the war. Various State Boards and Commissions and a Federal Royal Commission were appointed to collect information and to report on such matters as the supply of foodstuffs and other necessaries required by, and available for, Australia, and other important matters relating to conditions of trade and industry arising from the war.

6. **Value of the Wheat Crop.**—The estimated value of the wheat crop in each State and in the Commonwealth during the season 1913-14 is shewn below :—

VALUE OF THE WHEAT CROP,* 1913-14.

Particulars.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Terr.	C'w'lth.
	£	£	£	£	£	£	£	£
Aggregate value	6,775,970	6,038,312	442,358	3,105,114	2,332,986	69,947	4,330	18,769,017
Value per acre	£2/2/4	£2/7/1	£3/6/8	£1/7/5	£2/2/6	£3/15/11	£2/7/5	£2/0/5

* 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 over 63 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, 1860-61 to 1913-14.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Federal Terr.	C'wealth
	Acres.	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
1905-6	38,543	312,052	533	56,950	15,713	42,776	...	466,567
1910-11	77,991	392,681	2,537	77,674	61,918	63,887	...	676,688
1911-12	70,880	302,238	557	107,881	77,488	57,583	167	616,794
1912-13	84,979	439,242	4,232	155,545	127,645	62,445	196	874,284
1913-14	103,262	442,060	4,093	116,932	133,625	58,886	154	859,020*

* Including 8 acres, Northern Territory.

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 1913-14.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	Fed. Terr.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bush'ls	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
1905-6	883,081	7,232,425	5,858	869,146	283,987	1,200,024	...	10,474,521
1910-11	1,702,706	9,699,127	50,469	1,136,618	776,233	2,063,303	...	15,428,456
1911-12	1,152,827	4,585,326	5,783	1,349,480	961,385	1,504,633	2,337	9,561,771
1912-13	1,669,259	8,323,639	82,420	1,673,508	2,105,812	2,257,258	4,816	16,116,712
1913-14	1,832,616	8,890,321	56,236	1,200,740	1,655,681	1,593,664	2,790	15,232,048

The principal oat-growing State of the Commonwealth is Victoria. During the past five seasons it has produced about 55½ per cent. of the total quantity of oats grown in the Commonwealth; Tasmania, New South Wales, Western Australia, and South Australia come next in order of importance. In New South Wales and Tasmania, the highest production of oats for any season was that of 1909-10, while Victoria experienced a maximum yield in 1903-4, and Queensland, South Australia and Western Australia in 1912-13. For the Commonwealth as a whole the record yield was that of 17,541,210 bushels in the season 1903-4, while the yields of 16,248,857 and 16,116,712 for 1908-9 and 1912-13 respectively, rank second and 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 in each of the seasons 1901-2 and 1909-10 to 1913-14, and also for the decennium, are given in the succeeding table:—

AVERAGE YIELD OF OATS PER ACRE.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Terr.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bush'ls	Bushels.
1901-2 ...	21.31	20.43	27.50	13.54	16.78	31.48	...	21.22
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
1911-12 ...	16.25	15.17	10.38	12.51	12.41	26.13	13.99	15.50
1912-13 ...	19.64	18.95	19.48	10.76	16.50	36.15	24.57	18.43
1913-14 ...	17.75	20.11	13.74	10.27	12.39	27.06	18.12	17.73
Average for 10 Seasons	19.19	20.45	17.95	12.95	14.40	30.86	19.23	19.65

The smallest average yield per acre for the Commonwealth for the past ten-year period was that experienced in the season 1907-8, being 14.29, while the largest was that of the season 1903-4, amounting to 28.25 bushels per acre.

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 1913-14 about 7.9 bushels per head, as compared with 3.1 bushels per head for the Commonwealth as a whole. Particulars for the seasons 1901-2 and 1909-10 to 1913-14 are furnished in the succeeding table :—

OAT PRODUCTION PER 1000 OF POPULATION.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Federal Territory.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1901-2	500	5,558	83	1,306	845	9,734	...	2,559
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
1911-12	689	3,365	9	3,227	3,268	7,777	1,217	2,093
1912-13	939	6,029	129	3,891	6,879	11,446	2,482	3,405
1913-14	1,000	6,296	85	2,729	5,163	7,902	1,403	3,126

5. **Value of Oat Crop.**—The estimated value of the oat crop of the several States of the Commonwealth for the season 1913-14 is as follows :—

VALUE OF OAT CROP,* 1913-14.

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Terr.	C'wealth.
Aggregate value	£244,350	£777,903	£11,247	£100,062	£179,365	£219,129	£370	£1,532,426
Value per acre	£2/7/4	£1/15/2	£2/15	17/1	£1/6/10	£3/14/5	£2/8/1	£1/15/8

* 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, 1908, and 1912. The quantities and values of oats imported into and exported from the Commonwealth during the years 1901 and 1909 to 1913 are given hereunder :—

COMMONWEALTH IMPORT AND EXPORT OF OATS, 1901 and 1909 to 1913.

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
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
1911	4,522	639	391,465	46,493	386,943	45,854
1912	2,939,325	398,114	106,275	14,688	—2,833,050	— 383,426
1913	146,102	20,282	111,280	14,102	— 34,822	— 6,180

Note. — 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 1913 amounted to 805,039 lbs., and represented a value of £10,124, while the exports amounted to 670,200 lbs., valued at £9,386, principally to Portuguese East Africa and the South African Union.

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, 1912.

Country.	Quantity of Oats produced.	Country.	Quantity of Oats produced	Country.	Quantity of Oats produced.
	Bushels.		Bushels.		Bushels.
United States ...	1,375,216,000	Argentina ...	95,054,560	Spain ...	18,895,352
Russia in Europe ...	796,083,600	Russia in Asia	94,962,184	**Australia*** ...	**16,116,712**
Germany ...	481,499,576	Sweden ...	73,554,248	Netherlands	14,947,856
Canada ...	315,356,976	Hungary ...	65,688,240	New Zealand	14,870,448
France ...	304,360,648	Denmark ...	40,826,368	Norway ...	11,248,496
United Kingdom	164,800,632	Belgium ...	28,780,928	Algeria ...	10,131,128
Austria ...	141,852,448	Italy ...	23,219,424	Bulgaria ...	9,889,744
		Rumania ...	20,132,832		

* 1913—15,232,048 bushels.

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, Sweden and Norway, for which particulars are not available, according to the magnitude of the average yield of oats for the year 1912, the results are as follow :—

YIELD OF OATS PER ACRE, 1912.

Country.	Average per Acre.	Country.	Average per Acre.	Country.	Average per Acre.
	Bushels.		Bushels.		Bushels.
Belgium ...	44.44	Argentina ...	32.27	Russia in Europe	19.31
Germany ...	44.43	France ...	30.95	Italy	18.52
Netherlands ...	43.90	Austria ...	30.76	**Australia*** ...	**18.43**
United Kingdom...	40.44	Bulgaria ...	25.02	Russia in Asia ...	16.72
New Zealand ...	38.45	Hungary ...	24.23	Spain	14.78
United States ...	36.27	Rumania ...	21.35		
Canada ...	34.22	Algeria... ...	21.31		

* 1913—17.73 bushels.

10. **Price of Oats.**—The average wholesale prices of oats in the markets of the several capitals for the year 1913 are given in the following table:—

AVERAGE WHOLESALE PRICE OF OATS PER BUSHEL, 1913.

Particulars.	Sydney.	Melbourne.	Brisbane.	Adelaide.	Perth.	Hobart.
Average price per bushel ...	s. d. 3 0	s. d. 2 4	s. d. 4 3	s. d. 1 10	s. d. 2 3	s. d. 2 8

§ 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 1913-14 being 313,568 acres, or over 94 per cent. of the total for the Commonwealth. Of the balance, Victoria contributed 17,962 acres, South Australia 239 acres, Western Australia 38 acres, the Northern Territory 45 acres, and Federal Territory 27 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. For 1908-9 and the two following seasons a continuous increase in the area devoted to maize was in evidence, and the total of 414,914 acres for 1910-11 is the highest ever attained. The unfavourable weather conditions during 1911-12 resulted in the acreage under maize for that season being reduced by 74,849 acres as compared with its predecessor; the 1912-13 season shewed a further slight decline, and that of 1913-14 a slightly upward tendency.

AREA UNDER MAIZE, 1875-6 to 1913-14.

Season.	N.S.W.	Victoria.	Queensland.	South Aust.	W. Aust.	N.T.	Fed. Terr.	C'wealth.
	Acres.	Acres.	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
1905-6	189,353	11,785	113,720	...	43	...	...	314,901
1910-11	213,217	20,151	180,862	*619	46	19	...	414,914
1911-12	167,712	18,223	153,916	97	29	19	69	340,065
1912-13	176,415	19,98	117,993	176	25	35	56	314,686
1913-14	156,793	17,96	156,775	239	38	45	27	331,879

* Particulars for years prior to 1907-8 not available.

3. **Total Yield.**—The average yield per acre of this cereal for the season 1913-14 was not so high as that obtaining for some of the previous years, but compared favourably with the average for the decade, being only 0.3 bushels below the decennium average. The 1910-11 crop was a record one, and exceeded 13,000,000 bushels. The average annual production of maize during the last decade was 9,371,394 bushels. Particulars concerning the yield from 1875 onwards are as hereunder:—

MAIZE CROP, 1875-6 to 1913-14.

Season.	N.S.W.	Victoria.	Queensland.	S. Aust.	W. Aust.	N.T.	Fed. Terr.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	B'shls.	B'shls.	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
1905-6	5,539,750	641,216	2,164,674	...	428	...	...	8,346,068
1910-11	7,594,130	982,103	4,460,306	*6,375	718	449	...	13,044,081
1911-12	4,506,547	792,660	3,637,562	1,490	401	400	795	8,939,855
1912-13	5,111,056	715,299	2,524,371	2,628	470	1,400	934	8,356,158
1913-14	4,452,989	800,529	3,915,376	2,336	421	1,350	320	9,173,321

* Particulars for years prior to 1907-8 not available.

4. **Average Yield.**—In the following table particulars are given of the average yield per acre of the maize crops of the several States for the seasons 1901-2 and 1909-10 to 1913-14, and also for the decennium:—

AVERAGE YIELD OF MAIZE PER ACRE, 1901-2 and 1909-10 to 1913-14.

Season.	N.S.W.	Victoria.	Q'sland.	S. Aust.	W. Aust.	N.T.	Fed. Terr.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	B'shls.	Bushels.
1901-2 ...	22.98	61.42	21.96	*	10.16	...	...	23.86
1909-10 ...	33.36	60.59	18.96	16.00	14.64	...	...	29.54
1910-11 ...	35.62	48.74	24.66	10.30	15.61	23.63	...	31.44
1911-12 ...	26.87	43.50	23.63	15.36	13.83	21.05	11.52	26.29
1912-13 ...	28.93	35.79	21.39	14.93	18.80	40.00	16.68	26.53
1913-14 ...	28.40	44.57	24.97	9.77	11.08	30.00	11.85	27.64
Average for 10 Seasons	29.99	48.88	22.87	†13.33	12.31	‡30.50	‖13.48	27.94

* Particulars not available. † Average for 7 seasons. ‡ Average for 4 seasons.
‖ Average for 3 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 1913-14 has been estimated at £1,963,314, made up as follows:—

VALUE OF MAIZE CROP, 1913-14.

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	N.T.	Federal Terr.	C'wealth.
	£	£	£	£	£	£	£	£
Aggregate value	853,490	130,086	978,844	526	105	203	60	1,963,314
Value per acre	£5/8/10	£7/4/10	£6/4/10	£2/4/0	£2/15/3	£4/10/3	£2/4/5	£5/18/4

6. **Relation to Population.**— During the past ten seasons the Commonwealth production of maize has ranged between 1¾ bushels per head of population in 1912-13 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 3¾ bushels per head in 1903-4 and 7½ bushels per head in 1910-11. Details for the several States for the seasons 1901-2 and 1909-10 to 1913-14 are as follow:—

MAIZE PRODUCTION PER 1000 OF POPULATION, 1901-2 and 1909-10 to 1913-14.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	N. T.	Federal Terr.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1901-2	2,795	509	5,070	*	27	...	...	1,839
1909-10	4,398	907	4,342	9	8	...	...	2,491
1910-11	4,620	755	7,446	16	3	132	...	2,948
1911-12	2,786	596	5,921	4	1	121	447	2,013
1912-13	2,875	518	3,967	6	2	403	481	1,765
1913-14	2,431	567	5,931	5	1	368	161	1,883

* Particulars not available.

7. **Australian and Foreign Maize Production.**—The following table gives the production of maize in Australia and in the leading maize-producing countries of the world. The figures shew that of the total production the United States of America was responsible for 78 per cent.

PRODUCTION OF MAIZE IN VARIOUS COUNTRIES, 1912.

Country.	Production of Maize.	Country.	Production of Maize.
	Bushels.		Bushels.
United States	3,029,752,000	Bulgaria	51,426,664
Hungary	192,206,480	Servia (1911)	24,747,480
Argentine Republic ...	183,666,664	Spain	23,391,792
Rumania	100,708,808	Canada	16,569,800
Italy	92,064,752	Austria	14,581,280
Russia in Europe ...	74,068,200	Russia in Asia	13,500,840
Egypt	53,732,392	**Australia***	**8,306,158**

* 1913, 9,173,321 bushels.

8. **Comparison of Yields.**—The average yield per acre of maize in the Commonwealth of 26½ bushels may be regarded as highly satisfactory when compared with that of other maize-producing countries. Canada, Bulgaria, Egypt, United States of America, and Hungary, are the only countries shewing a higher average. The remaining countries shewn in the following table had average yields per acre ranging from 12¾ to 23½ bushels.

AVERAGE YIELD OF MAIZE IN VARIOUS COUNTRIES, 1912.

Country.	Average yield per acre.	Country.	Average yield per acre.
	Bushels.		Bushels.
Canada	56.58	Spain	20.36
Bulgaria	32.03	Rumania	19.61
Egypt	31.72	Austria	19.52
United States of America ...	28.29	Argentine Republic	19.41
Hungary	27.13	Russian Empire	18.27
Australia*	**25.67**	Servia (1911)	17.16
Italy	23.39	Russia in Asia	12.78

* 1913, 27.64 bushels.

9. **Oversea Imports and Exports.**—Except in the years 1902, 1903 and 1912, when many of the maize crops failed, the Commonwealth oversea trade in maize has been practically insignificant. In the first of the years mentioned nearly two million, and in each of the latter two years 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 1901 and the past five years are as follows:—

COMMONWEALTH IMPORTS AND EXPORTS OF MAIZE, 1901 and 1909 to 1913.

Year.	Imports.		Exports.		Net Imports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Bushels.	£	Bushels.	£	Bushels.	£
1901 ...	188,423	24,764	533	75	187,890	24,689
1909 ...	628,063	104,367	5,054	999	623,009	103,368
1910 ...	133,730	19,554	12,557	1,904	121,173	17,650
1911 ...	31,764	4,925	19,914	3,438	11,850	1,487
1912 ...	1,133,755	218,233	37,968	8,402	1,095,787	209,831
1913 ...	273,123	53,387	15,261	3,349	257,862	50,038

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

10. **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 1912 these importations amounted to 437,635 lbs., and represented a value of £6,738.

11. **Price of Maize.**—The average wholesale price of maize in the Sydney market is given in the following table for each of the years 1904 to 1913:—

AVERAGE PRICE OF MAIZE PER BUSHEL, 1904 to 1913.

Particulars.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1912.	1913.
Average price per bushel	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	s. d. 3 0	s. d. 4 8	s. d. 4 1

§ 7. Barley.

1. **Area under Barley.**—The area devoted to barley in the Commonwealth has fluctuated very considerably, though with a tendency to increase during the past few years. Taking a series of years the principal barley-growing State is Victoria. For the season 1913-14 South Australia attained the lead for the first time and accounted for 40½ per cent. of the Commonwealth area devoted to this crop; Victoria was next in importance with a percentage of 37½; the remaining 22 per cent. being represented by New South Wales, Western Australia, Queensland, and Tasmania in the order named. 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 1913-14.

Season.	N.S.W.	Victoria.	Q'land.	Sth. Aust.	W. Aust.	Tasmania.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1875-6	4,817	31,568	613	13,969	5,014	5,939	61,920
1880-1	8,056	68,630	1,499	13,074	6,363	8,297	105,919
1885-6	5,298	74,112	406	16,493	6,178	6,833	109,320
1890-1	4,937	87,751	584	14,472	5,322	4,376	117,442
1895-6	7,590	78,438	721	14,184	1,932	6,178	109,043
1900-1	9,435	58,853	7,533	15,352	2,536	4,502	98,211
1905-6	9,519	40,938	5,201	26,250	3,665	5,372	90,945
1910-11	7,082	52,687	5,578	34,473	3,369	5,235	108,424
1911-12	10,803	53,541	1,634	40,743	3,664	6,081	116,466
1912-13	16,909	71,631	9,447	68,964	5,626	8,802	*181,387
1913-14	20,601	83,351	8,826	90,552	11,502	7,723	*222,564

* Including 1 acre Northern and 7 acres Federal Territory in 1912-13, and 9 acres Federal Territory 1913-14.

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 for 1913-14 season are as follows:—

AREA UNDER MALTING AND OTHER BARLEY, 1913-14.

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	North. Ter.	Fed. Ter.	C'wealth.
	Acres.	Acres.	Acre .	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Malting barley	16,392	44,584	6,274	71,537	6,417	6,735	...	5	151,944
Other barley	4,209	38,767	2,552	19,015	5,085	988	...	4	70,620
Total ...	20,601	83,351	8,826	90,552	11,502	7,723	...	9	222,564

It will be seen that, taking the Commonwealth as a whole, about 68 per cent. of the area devoted to this grain in 1913-14 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 1913-14 amounted to 3,920,425 bushels, giving an average yield of 17.61 bushels per acre as compared with 18.93 for the decennium. Particulars concerning the yields of the several States from 1875 onwards are as follows:—

COMMONWEALTH BARLEY CROP, 1875-6 to 1913-14.

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
1905-6	111,266	1,062,139	61,816	505,916	49,497	106,042	1,896,676
1910-11	82,005	1,340,387	83,621	544,471	33,566	142,318	2,226,368
1911-12	129,008	1,024,584	15,369	702,855	37,011	148,009	2,056,836
1912-13	289,562	1,744,527	146,847	1,318,734	93,418	265,908	*3,859,116
1913-14	303,297	1,812,890	115,975	1,332,714	167,915	187,484	*3,920,425

* Including 120 bushels, Federal Territory, 1912-13, 150 bushels 1913-14.

4. **Value of Barley Crop.**—The estimated value of the total barley crop of the Commonwealth for the season 1913-14 was £564,871. The extent to which the several States have contributed to the total is shewn in the following table:—

VALUE OF BARLEY CROP,* 1913-14.

Particulars.	N.S.W.	Victoria.	Q'land.	Sth. Aust.	W. Aust.	Tas.	Fed. Terr.	C'wealth.
Total value ...	£68,980	£256,564	£17,397	£161,906	£26,365	£33,629	£30	£564,871
Value per acre	£3/7/0	£3/1/7	£1/19/5	£1/15/9	£2/5/10	£4/7/1	£3/6/8	£2/10/9

* Exclusive of the value of straw.

5. **Relation to Population.**—During the seasons embraced in the following table, the quantity of barley produced in the Commonwealth has averaged about half a bushel per head of population. For the season 1913-14 the production ranged from about 3 bushels per head in South Australia to one-sixth of a bushel in New South Wales. Details for the period are as follows:—

BARLEY PRODUCTION PER 1000 OF POPULATION, 1901-2 AND 1909-10 to 1913-14.

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
1909-10	169	801	335	1,760	383	796	563
1910-11	50	1,002	140	1,338	121	734	503
1911-12	78	771	25	1,709	129	778	458
1912-13	163	1,264	231	3,066	305	1,348	815
1913-14	166	1,284	176	3,029	524	930	805

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, 1903, and 1912, 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 droughts of those periods. 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 551,821 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 years 1901 and 1909 to 1913 are contained in the following table:—

COMMONWEALTH IMPORTS AND EXPORTS OF BARLEY, 1901 and 1909 to 1913.

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
1909 ...	51,332	12,356	188,946	28,774	137,614	16,418
1910 ...	34,684	8,498	39,146	5,155	4,462	— 3,343
1911 ...	218,316	58,922	9,420	1,256	—208,896	— 57,666
1912 ...	546,177	109,466	1,426	322	—544,751	—109,144
1913 ...	22,810	6,026	7,414	1,069	—15,396	—4,957

Note. — signifies net imports.

Only in three years during the period embraced in the above table have the Commonwealth exports of barley exceeded in value the imports, viz., in 1904, 1905, and 1909. During the last ten years the total importations amounted to 2,140,279 bushels, valued at £449,348, and the total exports to 1,102,096 bushels, valued at £137,529, giving a net importation of 1,038,183 bushels with a value of £311,819.

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 and Japan. The total imported during 1913 amounted to only 8,083 lbs. in weight, with a value of £60.

From time to time a considerable export trade in Australian pearl and Scotch barley has been carried on, mainly with the United Kingdom and New Zealand, the total exports for 1909 reaching 1,155,346 lbs., valued at £3,573, and for 1910, 119,337 lbs., valued at £510. During 1911 and 1912, the exports were only 588 lbs., valued at £8, and 712 lbs., valued at £10, respectively; in 1913, however, they increased to 62,992 lbs., with a value of £406.

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 years 1901 and 1909 to 1913 are given hereunder :—

COMMONWEALTH IMPORTS AND EXPORTS OF MALT, 1901 AND 1909 to 1913.

Year.	Imports.		Exports.		Net Imports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Bushels.	£	Bushels.	£	Bushels	£
1901	516,135	140,615	...	...	516,135	140,615
1909	110,563	35,239	470	174	110,093	35,065
1910	108,168	34,696	258	66	107,910	34,630
1911	102,760	32,798	82	32	102,678	32,766
1912	128,800	45,226	117	48	128,683	45,178
1913	85,002	31,071	120	55	84,882	31,016

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 1912 are as follows, the Australian figures being added for the sake of comparison :—

PRODUCTION OF BARLEY IN VARIOUS COUNTRIES, 1912.

Country.	Production of Barley.	Country.	Production of Barley.
	Bushels.		Bushels.
Russia in Europe ...	436,352,472	Rumania ...	20,636,384
United States ...	217,016,000	Chili (1911) ...	15,207,600
Germany	153,485,416	Sweden	13,237,952
Austria	71,853,504	Egypt (1911) ...	10,409,664
Hungary	69,215,024	Italy	8,064,450
United Kingdom ...	58,207,200	Servia (1911) ...	4,423,216
Spain	57,578,528	Belgium ...	4,081,368
Japan	48,561,920	**Australia*** ...	**3,859,116**
France	47,435,296	Netherlands ...	3,211,312
Canada	42,253,440	Tunis	3,070,832
Russia in Asia ...	38,657,232	Norway... ...	2,990,800
Algeria	31,562,568	New Zealand† ...	1,377,610
Denmark	21,941,944		

* 1913 3,920,425 bushels. † 1913: 1,205,628 bushels.

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 1901-2 and the past five seasons, and also for the decennium, are given in the following table :—

AVERAGE YIELD PER ACRE OF BARLEY, 1901-2 and 1909-10 to 1913-14.

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
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
1911-12 ...	11.94	19.14	9.41	17.25	10.10	24.34	17.66
1912-13 ...	17.12	24.35	15.54	19.12	16.60	30.21	21.28
1913-14 ...	14.72	21.75	13.14	14.72	14.60	24.28	17.61
Average for 10 Seasons ...	14.88	21.64	15.57	16.76	12.85	24.94	18.93

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

AVERAGE PRICE OF BARLEY PER BUSHEL, 1904 to 1913.

Particulars.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911	1912.	1913.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Malting barley	3 6	4 0	4 5	4 8	4 10	3 10	4 1	4 10¼	5 11½	3 11½
Cape barley ...	1 9	2 7	2 4	2 8	3 8	2 7	2 5	2 8	4 11	3 0

§ 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 crops for the season 1913-14 was 38,839 acres, giving a yield of 648,009 bushels, or an average of 16.69 bushels per acre, being 2.22 below the average yield for the decennium ended 1913-14, which was 18.91 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 1913-14 was 9,559 acres, yielding 113,181 bushels, and giving an average of 11.84, this being slightly below the average for the past ten seasons, which is 12.24 bushels per acre. Nearly 60 per cent. of the rye grown during the season was produced in New South Wales, 17 per cent. in Victoria, and 10¾ per cent. in South Australia. In addition to these grain crops a small area of rice has for some years been cultivated in Queensland and the Northern Territory. The results obtained, however, have not up to the present been very satisfactory. 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 prior to 1909-10 usually ranking second, and New South Wales third; the relative positions of these two States have, however, been reversed during the last five seasons. The lower figures for Tasmania relating to 1909-10 and onwards may be attributed mainly to the prevalence of the Irish potato blight in that State.

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

COMMONWEALTH AREA UNDER POTATOES, 1890-1 to 1913-14.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Terr.	C'wealth.
	Acres.	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
1905-6 ...	26,374	44,670	7,170	9,540	2,145	28,634	...	118,533
1910-11...	44,452	62,904	8,326	7,812	1,791	26,230	...	151,515
1911-12...	43,079	47,692	7,688	7,412	2,705	21,818	69	130,463
1912-13...	34,093	47,575	8,822	8,581	5,175	24,612	31	128,889
1913-14...	38,695	74,574	10,085	10,809	5,229	30,811	30	170,233

2. **Total Yield.**—For the season 1913-14, Victoria's production represented about 42¾ per cent. of the total for the Commonwealth, New South Wales and Tasmania coming next in order with 22½ 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 1913-14.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Terr.	C'wealth.
	Tons.	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
1905-6 ...	50,386	115,352	11,308	20,328	6,297	64,606	...	268,277
1910-11...	121,033	163,312	15,632	23,920	5,864	70,090	...	399,851
1911-12...	75,040	119,092	13,087	22,668	9,312	62,164	126	301,489
1912-13...	91,600	191,112	16,386	33,078	13,558	72,565	42	418,341
1913-14...	106,805	176,602	16,548	32,950	17,803	80,389	44	431,141

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 3½ tons per acre. The lowest average yield is that obtained in Queensland

with an average of a little under two tons for the same period. Particulars for each State for the seasons 1901-2 and 1909-10 to 1913-14, and also for the past decennium, are given hereunder:—

AVERAGE YIELD OF POTATOES, 1901-2 and 1909-10 to 1913-14.

Season.	N.S.W.	Victoria.	Q'land.	S.Aust.	W. Aust.	Tas.	Federal Terr.	C'wealth.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1901-2	1.50	3.13	2.25	2.41	3.14	4.51	...	2.94
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
1911-12	1.74	2.50	1.70	3.06	3.44	2.85	1.83	2.31
1912-13	2.69	4.02	1.86	3.85	2.62	2.95	1.35	3.25
1913-14	2.76	2.37	1.64	3.05	3.40	2.61	1.47	2.53
Average for 10 Seasons	2.60	2.73	1.79	2.68	3.05	3.42	1.63	2.75

4. **Value of Potato Crop.**—The estimated value of the potato crop of each State for the season 1913-14 is furnished in the following table, together with the value per acre:—

VALUE OF POTATO CROP, 1913-14.

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Federal Territory.	C'wealth.
Tot. value	£442,220	£750,559	£198,576	£130,081	£124,424	£361,750	£200	£2,025,810
Value per acre ...	£11/8/7	£10/1/3	£19/13/0	£12/0/8	£27/4/9	£11/14/10	£6/13/4	£11/18/0

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 195 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 1911-12 about 6½ cwt. Details for the seasons 1901-2 and 1909-10 to 1913-14 are as follows:—

POTATO PRODUCTION PER 1000 OF POPULATION.

Season.	N.S.W.	Victoria.	Q'land.	Sth. Aust.	W. Aust.	Tas.	Federal Terr.	C'wealth.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1901-2 ...	28	104	44	42	30	655	...	84
1909-10 ...	62	137	23	47	22	382	...	90
1910-11 ...	93	125	26	59	21	362	...	90
1911-12 ...	45	90	21	55	32	327	69	67
1912-13 ...	52	138	26	77	44	368	22	88
1913-14 ...	59	125	25	75	56	398	22	88

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, 2,102 tons to the Pacific

Islands, and 2,112 tons to the Philippine Islands. On the other hand, when in 1902, 1903, and 1912, the droughts of those periods had brought about a shortage in some of the States, importations from New Zealand took place to the extent of 11,471 tons and 2,279 tons in the first two years, and 17,732 tons in 1912. The quantities and values of the Commonwealth oversea imports and exports of potatoes for 1901 and the past five years are contained in the following table :—

COMMONWEALTH IMPORTS AND EXPORTS OF POTATOES, 1901 and 1909 to 1913.

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
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
1911 ...	245	1,881	1,834	12,241	1,589	10,360
1912 ...	18,151	163,249	1,619	15,331	— 16,532	—147,918
1913 ...	996	5,537	1,689	12,012	693	6,475

Note. — signifies net imports.

7. **Comparison with Other Countries.**—The following table will furnish means for comparing the potato crop of Australia for 1912 with those of some of the leading potato-producing countries of the world for the same year :—

POTATO CROPS OF VARIOUS COUNTRIES, 1912.

Country.	Yield.	Country.	Yield.
	Tons.		Tons.
Germany	49,402,528	Sweden	1,593,322
Russia in Europe ...	36,229,977	Italy	1,507,969
France	14,783,677	Russia in Asia ...	1,035,927
Austria	12,340,049	Norway	722,582
United States ...	10,196,000	Denmark ...	695,171
Hungary	5,945,196	Japan (1909) ...	589,376
United Kingdom ...	5,726,342	**Australia*** ...	**418,341**
Belgium	3,253,067	Luxemburg ...	232,522
Netherlands (1911) ...	2,506,760	New Zealand ...	155,835
Canada	2,033,575		

* 1913, 431,141 tons.

§ 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 1913-14 being only 19,506 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 1913-14 was 6,932 acres, giving a total yield of 28,455 tons, and averaging 4.1 tons per acre. The area devoted in 1913-14 to root crops other than potatoes and onions, viz., 12,547 acres, yielded 80,348 tons, and gave an average of 6.39 tons per acre. The areas and yields here given are exclusive of the production of "market gardens," a reference to which will be made later.

2. **Commonwealth Imports and Exports.**—The only root crop, other than potatoes, in which any considerable oversea trade is carried on by the Commonwealth is that of onions. During the year 1912 oversea imports of onions amounted to 3,763 tons, obtained principally from Japan, the United States, and New Zealand, of which total 2,747 tons went to New South Wales and 837 tons to Queensland. For the same year the exports of onions totalled 3,678 tons, the principal countries to which they were exported being the Philippine Islands, the Pacific Islands, and the United States of America. 1,510 tons were imported during 1913 and 3,813 tons exported, of which 1,318 tons were shipped to New Zealand and 961 to Philippine 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 1912-13 represented nearly 25 per cent. of the area under crop in the Commonwealth, and 17½ per cent. for 1913-14. 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 1913-14.

Season.	N.S.W.	Victoria.	Q'land.	Sth. Aust.	W. Aust.	Tas.	N. T.	Fed. Terr.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1860-1	46,584	90,921	276	55,818	6,626	31,837	...	...	232,062
1865-6	61,909	97,902	1,449	101,996	8,824	30,244	...	...	302.324
1870-1	65,404	163,181	3,671	140,316	17,173	33,612	...	...	423,357
1875-6	77,125	155,274	8,531	161,429	17,319	34,758	...	...	454,436
1880-1	131,153	249,656	12,022	272,567	19,563	31,615	...	...	716,576
1885-6	219,886	421,036	28,881	312,672	19,677	41,693	...	...	1,043,845
1890-1	175,242	413,052	31,106	345,150	23,183	45,381	...	...	1,033,114
1895-6	319,296	464,482	28,609	362,972	63,804	54,748	...	...	1,293,911
1900-1	466,236	502,105	42,497	341,330	104,254	61,541	...	...	1,517,963.
1905-6	438,036	591,771	37,425	317,924	124,906	64,350	...	...	1,574,412
1910-11	638,577	832,669	98,558	440,177	175,432	72,992	...	...	2,258,405
1911-12	651,866	860,205	61,299	521,182	344,032	77,466	18	2,220	2,518,288
1912-13	944,725	1,203,728	87,643	647,069	231,690	99,839	10	2,337	3,217,041
1913-14	798,978	977,684	76,469	568,550	246,640	84,138	61	2,152	2,754,672

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 1912-13 was the highest on record, and that for 1913-14 the next.

2. **Kinds of Hay.**—Particulars concerning the kind of crop cut for hay are furnished in the returns prepared by five of the States. In the case of Tasmania the bulk consists of oaten hay; full particulars, however, are not available for that State.

Details for the past five seasons are given in the following table:—

KINDS OF HAY GROWN, 1909-10 to 1913-14.

Kind of Hay Crop.	1909-10.	1910-11.	1911-12.	1912-13.	1913-14.
NEW SOUTH WALES—	Acres.	Acres.	Acres.	Acres.	Acres.
Wheaten	380,784	422,972	439,591	703,509	533,890
Oaten	178,968	142,805	146,162	181,400	209,821
Barley	1,917	2,241	2,309	1,703	1,395
Lucerne	68,822	70,559	63,804	56,403	52,457
Other	...	...	...	1,710	1,415
Total	630,491	638,577	651,866	944,725	798,978
VICTORIA—					
Wheaten	186,400	240,026	304,388	386,370	220,560
Oaten	660,525	575,791	535,146	790,268	729,678
Other	17,434	16,852	20,671	27,090	27,446
Total	864,359	832,669	860,205	1,203,728	977,684
QUEENSLAND—					
Wheaten	9,031	19,894	1,763	12,710	12,648
Oaten	16,752	13,052	5,403	19,539	16,020
Lucerne	42,935	61,750	51,059	50,814	44,270
Other	3,580	3,862	3,074	4,580	3,531
Total	72,298	98,558	61,299	87,643	76,469
SOUTH AUSTRALIA—					
Wheaten	318,197	336,439	401,648	492,980	411,101
Oaten	96,496	96,062	113,011	147,963	151,694
Lucerne	2,537	2,055	2,411	2,414	2,378
Other	7,218	5,621	4,112	3,712	3,377
Total	424,448	440,177	521,182	647,069	568,550
WESTERN AUSTRALIA—					
Wheaten	101,590	135,521	284,073	176,744	195,497
Oaten	55,006	38,637	58,393	52,904	49,801
Lucerne	254	233	167	205	264
Other	1,779	1,041	1,399	1,837	1,078
Total	158,629	175,432	344,032	231,690	246,640

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.

3. **Total Yield.**—The Commonwealth hay crop for the season 1913-14 amounted to 3,372,596 tons, or 582,715 tons less than that produced in the previous season, which represented the largest ever harvested in the Commonwealth, the highest previous records being that of 3,153,196 tons for the season 1909-10, and 3,175,887 for

1910-11. For many years past the State of Victoria has been the largest hay producer in the Commonwealth, and in the season 1912-13 accounted for 35½ 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 1913-14.

Season.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	N. T.	Fed. Ter.	Commonwealth.
	Tons.	Tons.	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
1905-6	459,182	864,177	56,829	435,546	139,380	90,077	...	...	2,045,191
1910-11	843,080	1,292,410	151,252	595,064	178,891	115,190	...	...	3,175,887
1911-12	727,054	1,032,288	94,553	605,239	299,695	107,684	40	1,420	2,867,973
1912-13	1,105,350	1,572,933	119,867	714,766	255,751	183,709	10	2,925	3,955,311
1913-14	952,489	1,350,374	103,935	571,616	278,585	112,958	81	2,558	3,372,596

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 1913-14:—

VALUE OF HAY CROP, 1913-14.

Particulars.	New South Wales.	Victoria.	Queensland.	South Aust.	Western Aust.	Tasmania.	N. T.	Fed. Ter.	Commonwealth.
Total value ...	£3,893,700	£2,768,267	£545,358	£1,571,944	£798,818	£395,353	£349	£11,220	£9,984,909
Value per acre	£4/17/6	£2/16/8	£7/2/8	£2/15/3	£3/4/9	£4/14/0	£4/1/8	£5/4/3	£3/12/6

5. **Average Yield per Acre.**—The States of the Commonwealth in which the highest average yields per acre have been obtained during the decennium are those of Tasmania and Queensland, these being also the States in which the smallest areas are devoted to this crop. For the same period the lowest yield for the Commonwealth as a whole was that of 19 cwt. per acre in 1907-8, 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 and 1909-10 to 1913-14, and also for the decennium, are given hereunder:—

AVERAGE YIELD OF HAY PER ACRE, 1901-2 and 1909-10 to 1913-14.

Season.	N.S.W.	Vic.	Q'land.	S. Aus.	W.Aus.	Tas.	N. T.	Fed. Terr.	Com'-wealth.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1901-2	1.07	1.34	1.94	0.94	0.97	1.78	...	...	1.20
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
1911-12	1.12	1.20	1.54	1.16	0.87	1.39	2.22	0.72	1.14
1912-13	1.17	1.31	1.36	1.10	1.10	1.84	1.00	1.25	1.23
1913-14	1.19	1.38	1.36	1.01	1.13	1.34	1.33	1.19	1.22
Average for 10 seasons	1.15	1.34	1.45	1.22	1.03	1.50	*1.47	1.03	1.24

* Average for 3 years.

6. **Relation to Population.**—During the past ten seasons the Commonwealth hay production per head of population has varied between 7 cwt. in 1904-5 and 16¾ cwt. in 1912-13; averaging about 12½ 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 seasons 1901-2 and 1909-10 to 1913-14 are given hereunder:—

HAY PRODUCTION PER 1000 OF POPULATION.

Season.	N.S.W.	Vict.	Q'lnd.	S. Aust.	W. Aust.	Tas.	N. T.	Fed. Ter.	C'wlth.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1901-2 ...	339	231	241	964	463	624	...	...	529
1909-10 ...	608	929	168	1,462	735	615	...	...	729
1910-11 ...	513	993	253	1,463	648	594	...	...	718
1911-12 ...	440	777	154	1,472	1,045	566	12	899	639
1912-13 ...	622	1,139	188	1,662	835	932	3	1,508	836
1913-14 ...	520	956	157	1,299	869	560	22	1,287	692

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 only £20,846 in 1913, while the exports of compressed and other fodder, which amounted in value to £142,472 in 1904, had shrunk to £32,811 in 1913.

During 1913 the principal consignees of the hay and chaff exported from the Commonwealth were India, the Straits Settlements, and Ceylon, while the principal countries to which compressed fodder was exported were the Philippine Islands, New Zealand, and Hong Kong.

Imports of hay and chaff into the Commonwealth are usually unimportant, and for the year 1913 totalled 68 tons, valued at £291, obtained 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 prominent places. 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., for the year 1913, amounted to 5,231,040 tons from 3,025,345 acres, while from permanent grasses a yield of 10,164,048 tons of hay was obtained from 6,798,877 acres, giving a total of 15,395,088 tons from 9,890,482 acres, or about 31⅓ 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 1913-14 was 486,504 acres, which was 58,498 acres more than the corresponding area for 1912-13. Of this total the Queensland area represented about 35¼ per cent., that in New South Wales 30 per cent., while

that in Victoria amounted to 20½ 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 1913-14.

Season.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	N. T.	Fed. Terr.	C'wealth.
	Acres.	Acres.	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
1905-6	95,058	34,041	66,183	23,842	1,873	4,882	...	...	225,879
1910-11	179,382	71,826	89,667	20,728	4,545	8,695	19	...	374,862
1911-12	211,693	75,177	93,049	33,673	5,021	5,627	19	181	424,440
1912-13	154,522	84,460	135,354	39,954	7,339	6,304	60	13	428,006
1913-14	146,093	98,963	171,290	49,948	13,126	7,037	21	26	486,504

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 1913-14 may be taken approximately as £1,594,834, or about £3 5s. 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 seasons 1901-2 and 1909-10 to 1913-14 are given hereunder :—

AREA UNDER GREEN FORAGE PER 1000 OF POPULATION.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	N. T.	Fed. Terr.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1901-2	82	27	79	38	8	24	...	...	54
1909-10	74	44	174	44	23	35	...	...	71
1910-11	109	55	150	51	16	45	6	...	85
1911-12	128	57	151	82	18	30	6	102	95
1912-13	87	61	213	93	24	32	17	7	90
1913-14	80	70	259	114	41	35	6	13	100

§ 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 160,976 acres under sugar-cane in the Commonwealth for the season 1913-14 there were 147,743 acres, or about 92 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; from that time, with slight variations, it gradually fell to 13,232 acres in 1913-14, 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 1913-14 being the highest on record, that for 1910-11 being the next highest and that for 1912-13 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. Owing to unfavourable climatic conditions the area under cane for 1911-12 shewed a falling off of 11,403 acres, or a reduction of about 8 per cent.; the figures for the two following seasons, however, shewed an increase. The area under sugar-cane in the Commonwealth from 1865 is given in the following table:—

AREA UNDER SUGAR-CANE, 1865-6 to 1913-14.

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	1900-1	22,114	108,535	130,649
1870-1	4,082	6,342	10,424	1905-6	21,805	134,107	155,912
1875-6	6,454	13,459	19,913	1910-11	13,763	141,779	155,542
1880-1	10,971	20,224	31,195	1911-12	13,907	130,376	144,283
1885-6	16,419	59,186	75,605	1912-13	13,914	141,652	*155,567
1890-1	20,446	50,922	71,368	1913-14	13,232	147,743	*160,976
1895-6	32,927	77,247	110,174				

* Including 1 acre Northern Territory.

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 1913-14 the New South Wales total comprised 6,198 acres of productive and 7,034 acres of unproductive cane, while in the case of Queensland the productive cane amounted to 102,803 acres and the unproductive to 44,940 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 2,271,558 tons for the record season 1913-14. 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 23.53 tons for the former and 16.60 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. The yield per acre for 1911-12 was approximately the same as for the previous year, but owing to the falling off in the acreage cropped, a decline to the extent of 12,512 tons was in evidence in regard to the quantity of cane produced. The area of productive cane for 1912-13 shewed an increase of 893 acres, but the yield, however, was 6,885 tons below that of the previous season, the average tons per acre being 22.96 for 1912-13 as against 28.18 for 1911-12. The area of productive cane in this State for 1913-14 shewed an increase of only 61 acres; nevertheless, owing to the exceptionaly high average yield per acre, the total cane produced in that season exceeded that of 1912-13 by 45,056 tons. In Queensland the average yield per acre for 1910-11 was by far the highest recorded for that State prior to 1913-14, viz., 19.45 tons, while that for the latter year was 20.29, being 3.69 above the average in that State for the last ten years. Particulars relative to the total and average yields of the Commonwealth sugar crops for the seasons 1901-2 and 1909-10 to 1913-14 are as follows:—

YIELD OF SUGAR-CANE, 1901-2 and 1909-10 to 1913-14.

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
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
1911-12 ...	147,799	1,534,451	1,682,250	28.18	16.02	16.65
1912-13 ...	140,914	994,212	*1,135,141	22.96	12.72	13.47
1913-14 ...	185,970	2,085,588	2,271,558	30.05	20.29	20.84

* Including 15 tons Northern Territory.

A preliminary estimate for Queensland for the season 1914-15 states that the prospects in many districts are favourable, but that a falling off will be experienced in others. The yield will probably prove to be about 1,890,600 tons of cane, a decrease of 380,900 tons on the previous year's returns. The sugar production is expected to be about 210,000 tons of raw sugar.

4. **Relation to Population.**—The sugar-cane production of the Commonwealth during the past five seasons has averaged about 7½ cwt. per head of population. In Queensland, the principal sugar-producing State, the production of cane per head has ranged between 1½ tons in 1912-13 and 3 tons in 1913-14. Details for the period 1909-10 to 1913-14 are as follows:—

SUGAR PRODUCTION PER 1000 OF POPULATION.

State.	1909-10.	1910-11.	1911-12.	1912-13.	1913-14.
	Tons	Tons.	Tons.	Tons.	Tons.
New South Wales	81	98	89	79	102
Queensland	2,014	3,072	2,498	1,562	3,159
Commonwealth	299	452	375	240	466

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 10⅔ 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 11¼ 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. During 1910-11 and the three following seasons the quantity of cane required to produce one ton of sugar was 8.73, 8.85, 8.79, and 8.59 tons in the order named, the sugar produced representing about 11½ per cent. of the weight of cane crushed in each of those years, while the average quantity of sugar obtained per acre crushed was 2.23 tons in 1910, 1.81 in 1911, 1.45 in 1912 and 2.36 in 1913. *It* should be noted 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 could 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, and at the same time diminishing the employment of coloured labour in connection therewith. An account of the various Acts in connection with sugar bounties and sugar excise tariffs will be found on pages 394 to 396 of the Year Book No. 6. In 1912 the Sugar Excise Repeal Act and the Sugar Bounty Abolition Act were passed by the Federal Parliament, conditionally on the Queensland Parliament approving of legislation prohibiting the employment of coloured labour in connection with the industry. The State Sugar Cultivation Act, the Sugar Growers Act, and the Sugar Growers' Employees Act, of 1913, having been approved of, the 1912 Federal Acts, which repeal all previous enactments in regard to excise on sugar and bounty on cane, came into force by proclamation in July 1913.

7. **Beet Sugar.**—During the past few years an effort has been made to revive the sugar-beet industry in Victoria. During 1910-11 £554 was paid as bounty on 1,847 tons of beet, £2,244 on 7,481 tons during 1911-12, £1,667 on 6,207 tons during 1912-13, and £1,001 on 3,330 tons during 1913-14.

8. **Cost of Bounties.**—The amounts paid by the Commonwealth Government in sugar bounties and the expenses in connection therewith during the period 1909-10 to 1913-14 are shewn in the following table :—

SUGAR BOUNTIES AND EXPENSES, 1909-10 to 1913-14

Particulars.	1909-10.	1910-11.	1911-12.	1912-13.	1913-14.
	£	£	£	£	£
Bounties ...	402,132	630,762	543,503	370,306	149,244
Expenses ...	5,645	6,862	*	*	*
	407,777	637,624	*	*	*

* Not available.

9. ***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 years 1901-2 and 1909-10 to 1913-14. In this table refunds and drawbacks have been deducted and the requisite adjustment has been made between the States :—

SUGAR EXCISE, 1901-2 and 1909-10 to 1913-14.

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
1909-10 ...	137,672	229,981	126,626	9,373	32,526	12,538	548,716
1910-11 ...	*	*	*	*	*	*	794,645
1911-12 ...	*	*	*	*	*	*	748,670
1912-13 ...	*	*	*	*	*	*	518,508
1913-14 ...	*	*	*	*	*	*	†179,148

* Amounts not allocated to separate States. † Excise duty on sugar was abolished from 25th July, 1913.

10. **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 since 1902, 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 1913-14.

Season.	New South Wales.			Queensland.			Commonwealth.		
	Cane Sugar Produced by—			Cane Sugar Produced by—			Cane 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 ...	28,247	934	29,181	162,480	22,583	185,063	190,727	23,517	214,244
1908-9 ...	14,351	964	15,315	132,049	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 ...	17,936	892	18,828	191,406	15,776	207,182	209,342	16,668	226,010
1911-12 ...	16,412	887	17,299	160,091	10,371	170,462	176,503	11,258	187,761
1912-13 ...	16,483	240	16,723	106,088	6,453	112,541	122,571	6,693	129,264
1913-14*...	17,240	55	17,295	198,437	8,759	207,196	215,677	8,814	224,491

* Estimated.

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 4 per cent. of the total for 1913-14. The sugar production of 1914-15 is expected to be less than that of the previous season, the estimated yield of raw sugar being 210,000 tons.

11. **Employment of White and Coloured Labour.**—The estimated number of white and coloured persons engaged in the sugar industry is shewn in the following table. In 1905 coloured labour represented nearly 28 per cent. of the total number engaged; in 1912, the latest year for which information is available, the percentage had fallen to under 5 per cent.:—

ESTIMATED NUMBER OF WHITE AND COLOURED PERSONS ENGAGED IN SUGAR INDUSTRY, 1905 to 1912.

Year.	White Labour.	Coloured Labour.	Total persons engaged.
1905	23,162	8,952	32,114
1906	33,700	7,576	41,276
1907	41,800	4,068	45,868
1908	38,198	3,319	41,517
1909	36,619	2,325	38,944
1910	34,120	2,077	36,197
1911	29,776	1,778	31,554
1912	27,380	1,383	28,763

12. **Imports and Exports of Sugar.**—Notwithstanding the increase in the production of sugar in 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 4,811 tons in quantity and £37,080 in value. The principal countries to which sugar is exported are South African Union, the Pacific Islands, the United Kingdom, and Portuguese East Africa, 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 3,419 tons exported during 1913, only 6 tons 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 1901 and the past five years are as follows:—

IMPORTS AND EXPORTS OF CANE SUGAR, 1901 and 1909 to 1913.

Year.	Oversea Imports.		Oversea Exports.		Net Imports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	tons.	£	tons.	£	tons.	£
1901 ...	98,544	1,239,550	4,738	68,876	93,806	1,170,674
1909 ...	99,698	1,122,863	8,051	118,555	91,647	1,004,308
1910 ...	34,008	406,709	6,584	108,751	27,424	297,958
1911 ...	33,276	404,474	7,331	120,956	25,945	283,518
1912 ...	98,481	1,189,763	2,257	39,614	96,224	1,150,149
1913 ...	74,861	864,768	3,419	54,322	71,442	810,446

§ 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 1913-14.

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		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
1905-6 ...	8,754	26,402	2,044	23,603	3,541		64,344
1910-11 ...	8,321	23,412	1,634	22,952	2,795		59,114
1911-12 ...	8,231	24,193	1,371	23,986	2,821		60,602
1912-13 ...	8,163	24,579	1,428	25,208	3,010		62,388
1913-14 ...	8,153	22,435	1,537	26,208	2,864		61,197

There are no vineyards in Tasmania.

The area devoted to vines in the Commonwealth attained its maximum in the season 1904-5, when a total of 65,673 acres was reached. Each of the five following seasons shewed a decrease, the area in 1909-10 being only 58,151 acres.

The wine-growing industry in Australia, more particularly in Victoria and New South Wales, received a severe check various outbreaks of phylloxera. 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.

2. **Wine Production.**—The production of wine in Australia has not increased as rapidly as the suitability of soil and climate 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 1901-2 and the past five seasons are contained in the table given hereunder:—

AUSTRALIAN WINE PRODUCTION, 1901-2 and 1909-10 to 1913-14.

Season.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Commonwealth.
	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.		Gallons.
1901-2 ...	868,479	1,981,475	148,835	2,631,563	185,735	No production of wine in Tasmania.	5,816,087
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
1911-12 ...	850,210	983,423	57,358	2,921,597	162,559		4,975,147
1912-13 ...	719,100	1,206,111	54,627	3,974,838	149,132		6,103,808
1913-14 ...	561,100	1,121,491	58,897	2,759,665	208,738		4,709,891

3. **Relation to Population.**—In relation to population the area of the vineyards of the several States exhibits a well-marked decline from 1901 to 1908, the Commonwealth total having fallen during the period from 17 to 13 acres per 1000 of the population; during the past five seasons, however, the relation has remained stationary. 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
1909-10	5	18	3	57	11	...	13
1910-11	5	18	3	56	10	...	13
1911-12	5	18	2	57	10	...	13
1912-13	5	18	2	59	10	...	13
1913-14	4	16	2	60	9	...	13

4. **Imports and Exports.**—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 1901 and the past five years are given hereunder:—

COMMONWEALTH IMPORTS OF WINE, 1901 and 1909 to 1913.

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
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
1911	78,115	75,446	153,561	153,561	31,363	184,924
1912	67,851	85,874	153,725	132,830	36,377	169,207
1913	68,907	81,006	149,913	138,563	34,797	173,360

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 1901 and the past five years are given in the following table :—

COMMONWEALTH EXPORTS OF WINE, 1901 and 1909 to 1913.

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
1909	2,649	974,413	977,062	4,455	121,116	125,571
1910	2,830	949,033	951,913	5,340	123,593	128,933
1911	2,343	1,097,624	1,099,967	4,126	147,608	151,734
1912	2,467	784,371	786,838	4,803	116,327	121,130
1913	1,768	701,872	703,640	3,767	102,263	106,030

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, while, 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 1901-2 and the past five seasons are as follows :—

TABLE GRAPES, 1901-2 and 1909-10 to 1913-14.

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
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
1911-12 ...	4,223	3,102	973	2,123	3,506	...	13,927
1912-13 ...	3,893	2,624	1,046	2,194	1,891	...	11,648
1913-14 ...	3,883	2,849	1,306	2,067	2,690	...	12,795

* Estimated.

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 1901-2 and the past five seasons :—

RAISINS AND CURRANTS DRIED, 1901-2 and 1909-10 to 1913-14.

Season.	Raisins.		Currants.	
	Victoria.	Sth. Australia.	Victoria.	Sth. Australia.
	lbs.	lbs.	lbs.	lbs.
1901-2	3,083,665	822,080	285,157	382,256
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
1911-12	11,527,488	3,880,912	5,240,368	5,229,840
1912-13	12,283,824	3,947,776	5,413,744	5,847,296
1913-14	13,473,936	3,981,376	6,954,976	5,507,040

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, 297,472 lbs. in 1910-11, 429,968 lbs. in 1911-12, 494,704 in 1912-13, and 545,888 lbs. in 1913-14. In Western Australia 176,400 lbs. were dried during 1912-13, and 199,024 lbs. during 1913-14. For Queensland 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 59,428 acres. The States in which the increase is most marked are:—Tasmania, 18,066 acres; Victoria, 15,826 acres; Western Australia, 12,637 acres; and South Australia, 5,700 acres. During the same period the Queensland fruit-growing area increased 4,465 acres, while that in New South Wales exhibited a slight increase of 2,625 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 and 1909-10 to 1913-14.

Season	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	N.T.	Fed. Terr.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1901-2...	48,448	50,055	14,396	16,315	6,076	11,485	...	...	146,775
1909-10	45,892	56,108	15,360	21,760	15,609	24,069	...	...	178,798
1910-11	47,533	57,375	15,153	22,410	16,738	25,934	13	...	185,156
1911-12	48,385	59,985	16,817	23,214	18,194	27,868	13	48	194,524
1912-13	49,329	63,209	18,556	23,905	19,540	30,575	...	60	205,174
1913-14	51,457	67,183	20,072	24,425	20,575	32,200	50	59	216,021

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 four-fifths 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. The following table gives the acreage under the principal kinds of fruit grown, and the quantity and value of fruit produced. The acreages shewn are exclusive of young trees not yet bearing. The acreages for each kind of fruit in Victoria are not available :—

PARTICULARS OF THE PRINCIPAL KINDS OF FRUIT GROWN IN THE SEVERAL STATES OF THE COMMONWEALTH DURING THE SEASON 1913-14.

Fruit.		N.S.W. (a)	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	C'wealth.
Apples	... acres	6,251	...	835	6,664	5,675	16,952	...
	bushels	495,898	1,653,035	49,423	450,240	425,715	1,925,867	
	£	120,000	371,933	21,005	119,905	114,411	385,173	1,132,427
Apricots	... acres	1,021	...	90	1,930	326	616	...
	bushels	86,572	308,307	5,946	144,962	25,123	50,380	...
	£	25,970	96,346	1,189	49,372	12,561	11,335	196,773
Bananas	... acres	256	...	7,400	...	122	...	...
	bunches	72,943	...	1,037,936	...	(b) 2,709	...	...
	£	25,530	...	129,742	...	2,438	...	157,710
Lemons	... acres	2,698	...	121	482	125	...	...
	bushels	180,597	57,652	13,311	28,936	16,587	...	...
	£	58,690	21,620	3,993	8,681	4,769	...	97,753
Nectarines and peaches	acres	5,855	...	1,063	1,413	890	78	...
	bshls.	353,949	368,814	56,380	92,146	62,946	6,005	...
	£	106,220	133,140	13,955	34,445	19,408	1,952	309,120
Oranges	... acres	10,111	...	2,407	1,814	1,230	...	...
	bushels	661,217	63,542	375,544	139,952	101,623	...	...
	£	247,960	30,182	112,663	59,480	47,001	...	497,286
Pineapples	acres	35	...	3,014	...	...	...	...
	dozen	8,439	...	744,906	...	...	...	...
	£	1,370	...	74,491	...	...	...	75,861
Pears	... acres	1,482	...	112	866	685	913	...
	bushels	152,557	476,430	3,304	86,852	81,707	150,447	...
	£	53,390	123,078	1,156	25,312	21,448	33,851	258,235
Other fruits	acres	8,501	...	3,022	4,146	1,441	2,424	...
	£	240,900	204,684	58,319	94,561	36,788	66,160	701,412
Total	... acres	36,210	49,432	18,064	17,315	10,494	20,983	(c)152,548
	£	880,030	980,983	416,513	391,756	258,824	498,471	3,427,077 (c)

(a) Including Federal Territory, 43 acres, value £580. (b) Bushels. (c) Including 50 acres Northern Territory, value £500.

2. **Relation to Population.**—In relation to population the orchards and fruit gardens of the Commonwealth have exhibited an increase during the last ten years, more than compensating for 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, shewing 55 acres per 1000 of population in 1901-2, and 57 in 1913-14. Details for 1901-2 and the past five seasons 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.	N.T.	Fed. Terr.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres	Acres.	Acres.	Acres.
1901-2...	35	41	28	45	31	66	...	...	38
1909-10	28	44	27	55	59	125	...	...	41
1910-11	29	44	25	55	60	134	4	...	42
1911-12	29	44	27	56	62	144	4	25	43
1912-13	28	46	29	56	64	155	...	31	43
1913-14	28	48	30	56	64	160	14	30	44

3. **Commonwealth Imports and Exports.**—A very considerable fruit trade, both import and export, is carried on by the Commonwealth with oversea 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, the dates of Arabian, Persian, and Turkish, the raisins mainly of Spanish, and the sultanas of Turkish origin. Of the fresh fruits imported during 1913, the bananas were chiefly from Fiji, the oranges and lemons from Italy, and the apples from the United States and Canada. In 1907 a very marked development in the trade in Australian dried fruits fruits took place, the total export for the year being valued at £76,872, of which £71,506 represented Australian fruits and £5,366 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 £2,248 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 £1,187 of re-exports. There was a small increase in the total exports in 1910 and 1911, the exports for the latter year amounting to £23,900; 1912 experienced a further and more substantial increase, the value of dried fruits exported in that year being £48,012. In 1913 the export value was £32,099; of this sum £31,089 represented Australian produce, and the balance of £1,010 re-exports of foreign fruits. The principal consignees of Australian dried fruits exported were United Kingdom and New Zealand. The fresh fruits exported during the year were valued at £399,800, and consisted mainly of apples. These were all of Australian origin with the exception of re-exports valued at £1,015. The principal countries to which these were sent were the United Kingdom, Germany, New Zealand, Argentine Republic, and Uruguay.

Particulars concerning the oversea imports and exports of dried fruits for 1901 and the last five years are as follows :—

COMMONWEALTH OVERSEA IMPORTS AND EXPORTS OF DRIED FRUITS, 1901 AND 1909 TO 1913.

Year.	Oversea Imports.		Oversea Exports.		Net Imports.	
	Quantity.	Value.	Quantity.	Value.	Qurantity.	Value.
	lbs.	£	lbs.	£	lbs.	£
1901	14,265,731	179,305	831,996	14,206	13,433,735	165,099
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
1911	6,526,498	68,942	1,291,795	23,900	5,234,703	45,042
1912	7,484,432	81,913	2,545,779	48,012	4,938,653	33,901
1913	10,551,877	112,439	2,478,585	32,099	8,073,292	80,340

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

COMMONWEALTH OVERSEA IMPORTS AND EXPORTS OF FRESH FRUITS, 1901 AND 1909 TO 1913.

Year.	Oversea Imports.		Oversea Exports.		Net Exports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Centals.	£	Centals.	£	Centals.	£
1901	*	45,955	*	167,926	*	121,971
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
1911	338,749	197,924	651,837	420,780	313,088	222,856
1912	306,079	217,796	674,695	468,306	368,616	250,510
1913	472,331	356,060	584,914	399,800	112,583	43,740

* 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 1913 amounting to £12,213, and of the exports to £29,402. The country of origin of the bulk of the importations is the United Kingdom, while the destinations of the exports are principally South Africa, Ceylon, Philippine Islands and Fiji. Particulars relative to imports and exports for 1901 and the last five years are as follow:—

COMMONWEALTH OVERSEA TRADE IN JAMS AND JELLIES, 1901 and 1909 to 1913.

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
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
1911 ...	322,487	8,304	1,288,729	20,896	966,242	12,592
1912 ...	476,504	13,081	1,429,338	23,089	952,834	10,008
1913 ...	453,951	12,213	1,858,231	29,402	1,404,280	17,189

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 1913 was £50,740, and the corresponding value of exports was £23,069.

§ 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, Pumpkins and Melons, Turnips, Mangolds, Sugar Beet, 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 be beyond the experimental stage. The total area in the Commonwealth during the season 1913-14 devoted to minor crops was 76,463 acres, of which market gardens accounted for 29,940 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 1901-2 and each of the last five seasons is given in the table hereunder:—

COMMONWEALTH MARKET GARDENS, 1901-2 and 1909-10 to 1913-14.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	N.T.	Federal Terr.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1901-2 ...	7,834	8,752	2,328	9,005	2,142	1,746	...	...	31,807
1909-10 ...	10,254	10,214	2,677	2,784	3,481	1,720	...	...	31,130
1910-11 ...	9,813	10,778	2,317	2,818	3,576	1,741	*58	...	31,101
1911-12 ...	9,488	10,331	2,293	2,848	3,120	2,144	58	10	30,292
1912-13 ...	9,836	10,414	2,386	2,857	3,664	1,458	50	11	30,676
1913-14 ...	10,585	10,777	2,611	2,265	2,851	†769	60	22	29,940

* Included with South Australia prior to 1910-11. † Other than Market Gardens included in previous years.

The area for 1909-10 was in excess of that for 1901-2 in all the States with the exception of South Australia, where the falling-off is more apparent than real, being in large part due to a change in the classification of 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 reality. During the past five seasons there has been very little variation in the total area of market gardens in any of the States; Victoria shews the largest increase, viz., 1,598 acres.

3. **Grass Seed.**—The total area under this crop during 1913-14, exclusive of New South Wales, for which State no figures are available, was 3,669 acres, of which 1,460 acres were in Tasmania, 1,452 acres in Victoria, 736 acres in Queensland, and 11 acres in South Australia. The total yield for 1913-14, including New South Wales, was 38,081 bushels.

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 6,641 acres, of which 4,833 were in New South Wales, 1,685 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 1,000 acres, the total area under tobacco for the season 1913-14 was only 3,007 acres, distributed as follows:—New South Wales, 1,992 acres; Victoria, 284 acres; and Queensland, 731 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. Since 1907-8, however, a gradual increase has taken place both in area under the crop and production of leaf. 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 1913 amounted to £987,420, comprising unmanufactured tobacco £697,546, cigars £183,408, cigarettes £56,436, manufactured tobacco £49,172, and snuff £858.

5. **Pumpkins and Melons.**—The total area under this crop in the Commonwealth during 1913-14 was 13,999 acres, of which 4,206 acres were in New South Wales, 2,233 acres in Victoria, 6,556 acres in Queensland, and 743 acres in Western Australia; the production for the first three named was 13,656, 21,271 and 20,208 tons respectively; the quantity produced in Western Australia is not available.

6. **Sugar Beet.**—The area under this crop in the Commonwealth during 1913-14 was 1,099 acres, of which all but 6 acres were in Victoria. The production amounted to 7,448 tons, as compared with 6,253 tons from 938 acres the previous season.

7. **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 1913-14 being 1,473 acres, of which 1,353 acres were in Tasmania, and 117 acres in Victoria; a small area of 3 acres was also grown in South Australia. 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 117 acres in 1913-14. The cultivation of hops was much more extensive in Victoria some thirty years ago than at present, the area devoted to this crop in 1883-4 being no less than 1,758 acres. During the year 1913 the net importations of hops into the Commonwealth represented a weight of 1,503,298 lbs. and a value of £92,150. The total value of the net importations of hops into Australia during the past ten years amounted to £578,513, thus indicating the existence of a regular and extensive local demand.

8. **Millet.**—Millet appears in the statistical records of three of the Commonwealth States. The total area devoted thereto in 1913-14 was 2,894 acres, of which 1,970 acres were in New South Wales, 515 in Victoria, and 399 in Queensland. 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.

9. **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.

10. **Cotton.**—Cotton-growing on a small scale has been tried in Queensland, but so far without very marked success; 214 acres were devoted to this crop in 1913-14, giving a yield of 35,230 lbs. of unginned cotton, valued at £881. 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 1912-13. The tropical portions of Western Australia have also long been regarded as suitable for its cultivation.

11. **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 the area increased to 304 acres, declining to 285 acres in 1908-9, 200 acres in 1910-11, 198 acres in 1911-12, 196 acres in 1912-13, and 165 acres in 1913-14. In the last-mentioned season the yield amounted to 182,223 lbs., valued at £6,833.

12. **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 339 of this publication. Minor products of the soil on which these bounties are payable are as follows:—

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 assigned 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

* Any unexpended amount assigned in any year is available for the years following.

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 five financial years ended 1913-14 :—

PARTICULARS OF BOUNTIES PAID ON AGRICULTURAL PRODUCTS (OTHER THAN SUGAR), 1909-10 to 1913-14.

Article.	Quantity produced on which Bounties were paid.					Amount paid as Bounties.				
	1909-10.	1910-11.	1911-12.	1912-13.	1913-14.	1909-10.	1910-11.	1911-12.	1912-13.	1913-14.
						£	£	£	£	£
Cotton, ginned ...lbs.	24,994	51,493	60,443	46,043	9,642	34	91	116	95	21
Fibres—										
Flax and hemp tons	28	28	137	101	137	120	123	480	215	318
Sisal hemp ... ,,	11	45	8	...	...	25	112	18	...	...
Oil materials supplied to an oil factory for the manufacture of oil—										
Cottonseed ... lbs.	45,616	97,997	99,209	84,479	6,306	10	22	21	13	1
Linseed (flax seed) cwt.	...	...	...	100	...	...	...	...	9	...
Coffee, raw, as prescribed ... ... lbs.	28,134	26,645	16,269	30,053	17,540	117	112	68	125	73
Tobacco leaf for the manufacture of cigars, high grade, of a quality to be prescribed. lbs	33,093	10,902	9,258	25,820	41,263	276	90	78	215	344
Fruits—										
Dried (except currants and raisins) or candied, & exported. lbs.	23,932	548,123	636,452	196,837	142,928	104	1,078	1,734	587	433

During the year 1913-14 the total amount paid in respect of cotton, cottonseed, and coffee was claimed by the State of Queensland. South Australia collected £426, and Tasmania £7 of the fruit bonus, while £325 of the bounty paid for tobacco leaf was paid to Queensland, the remainder being earned in New South Wales and Victoria, the amounts being £6 and £13 respectively. Victoria 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 in fact, aware of such necessity, 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 essential 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 productive. 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. A list of these Acts and their main features will be found in Year Book No. 6. (pages 406 and 407).

3. **Imports.**—The local production of artificial manures has assumed large proportions during the last few years, though considerable quantities are still imported.

The importation of fertilisers has increased over 200 per cent. since 1901. The chief items, as regards both quantity and value, are those relating to phosphates, a fertiliser which has proved itself to be very suitable for the growing of cereals in Australian

soils. The greatest quantity of the manufactured superphosphates imported from any one country during 1913 was obtained from Japan, whence came 41½ per cent. of the total imported, while the United Kingdom contributed 34½ per cent., Germany 21 per cent., and Belgium 2½ per cent., the small balance being imported from the Netherlands. Ocean Island, with 66 per cent., was the principal contributor of rock phosphates; of the balance about 16 per cent. was obtained from the South Sea Islands (so described), and 15 per cent. from the Caroline and other Pacific Islands, and 3 per cent. from Christmas Islands. Guano was imported chiefly from Malden Island, and the balance, which was about 10 per cent., from the United Kingdom, while the East Indies had practically a monopoly of the bone-dust trade with the Commonwealth during 1913.

The imports of artificial manures during the last five years is shewn in the following table. It will be noticed that the quantity of rock phosphates imported during that period has shewn a substantial increase. The imports were particularly large during 1910 and 1913. The figures for the manufactured superphosphates shewed an increase of about 50 per cent. during 1910, those for 1911 shew a further increase of some 5 per cent., while those for 1912 shew a decrease of 23 per cent., and those for 1913 one of 45 per cent. as compared with those of their respective previous year.

COMMONWEALTH IMPORTS OF FERTILISERS, 1909 to 1913.

Fertiliser.		1909.	1910.	1911.	1912.	1913.
Bonedust	Cwt.	71,959	12,740	4,164	8,769	15,241
"	£	17,632	3,294	1,086	2,309	4,378
Guano	Cwt.	468,215	788,304	484,003	541,873	26,819
"	£	56,723	89,961	52,447	64,833	5,733
Superphosphates ...	Cwt.	757,515	1,196,613	1,254,892	967,480	534,198
" " ...	£	105,229	174,751	183,832	155,643	89,474
Rock Phosphates ...	Cwt.	1,006,030	2,112,127	1,721,140	1,963,640	3,200,648
" "	£	143,246	294,212	228,292	259,994	397,634
Other	Cwt.	151,241	377,327	161,121	247,026	279,308
"	£	38,007	107,573	47,479	82,769	90,202
Total ...	Cwt.	2,454,960	4,487,111	3,625,320	3,728,788	4,056,314
	£	360,837	669,791	513,136	565,548	587,421

4. **Exports.**—The subjoined table shews the exports of artificial manures for the years 1909 to 1913. Practically the whole of the fertiliser is manufactured locally, and is shipped mainly to New Zealand, Japan and the Pacific Islands:—

COMMONWEALTH EXPORTS OF FERTILISERS, 1909 to 1913.

Fertiliser.		1909.	1910.	1911.	1912.	1913.
Bonedust	Cwt.	62,637	80,602	122,456	125,546	86,295
"	£	16,571	19,066	34,787	38,188	26,023
Guano	Cwt.	...	2,812	2,719	500	6,242
"	£	...	490	603	100	848
Superphosphates ...	Cwt.	235,939	260,261	200,925	182,377	257,629
" " ...	£	44,041	51,051	38,007	34,400	47,396
Rock Phosphates ...	Cwt.	3,320	11,190	2,106	...	18,555
" " ...	£	658	1,819	353	...	3,050
Soda Nitrate ...	Cwt.	3,579	6,215	6,107	5,523	10,154
"	£	2,075	2,844	3,098	2,660	5,386
Ammonia Sulphate	Cwt.	69,894	69,015	56,630	73,193	46,067
" " ...	£	42,766	43,081	37,141	51,022	31,577
Other	Cwt.	177,189	229,841	215,382	146,348	237,734
"	£	33,880	48,989	53,510	49,316	63,154
Total ...	Cwt.	552,558	659,936	606,325	533,487	662,676
	£	139,991	167,340	167,499	175,686	177,434

5. **Statistics of Use of Fertilisers.**—The statistics available in connection with the use of manures in the Commonwealth for a series of years refer to New South Wales, Victoria, South Australia, and Western Australia; those for Tasmania were collected for the first time for 1911-12. Particulars concerning the first-mentioned State are given hereunder:—

FERTILISERS USED IN NEW SOUTH WALES, 1909-10 to 1913-14.

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.
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
1911-12	3,628,513	1,407,453	38.80	178,689	33,820
1912-13	3,737,085	1,642,078	43.94	170,312	38,918
1913-14	4,567,592	2,224,623	48.70	166,503	50,476

Particulars for Victoria for 1901-2 and the past five seasons are as follows:—

FERTILISERS USED IN VICTORIA, 1901-2 and 1909-10 to 1913-14.

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
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
1911-12 ...	3,640,241	26,159	2,676,408	73.52	205,739	82,581
1912-13 ...	4,079,356	29,524	3,029,418	74.26	222,253	94,010
1913-14 ...	4,391,321	30,610	3,401,013	77.45	219,423	105,612

The figures relating to the use of fertilisers in South Australia are shewn in the table below:—

FERTILISERS USED IN SOUTH AUSTRALIA, 1909-10 to 1913-14.

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.
1909-10 ...	2,530,301	2,031,832	80.30	133,935	76,413
1910-11 ...	2,746,334	2,235,578	81.40	129,918	81,899
1911-12 ...	2,965,338	2,511,130	84.68	134,503	87,475
1912-13 ...	3,062,998	2,603,136	84.99	111,434	91,607
1913-14 ...	3,169,559	2,584,814	81.55	100,435	97,023

Corresponding particulars relative to Western Australia for the seasons 1909-10 to 1913-14 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, 1909-10 to 1913-14.

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.
1909-10... ...	722,086	608,870	84.32	67,263	24,654
1910-11... ...	855,024	773,561	90.47	62,229	33,194
1911-12... ...	1,072,653	992,463	92.52	51,600	43,843
1912-13... ...	1,199,991	1,120,334	93.36	55,085	47,563
1913-14... ...	1,537,923	1,459,218	94.88	58,390	58,962

Statistics relating to the use of manures in Tasmania were collected for the first time in 1911-12, particulars for the past three seasons being as follows:—

FERTILISERS USED IN TASMANIA, 1911-12 to 1913-14.

Season.	Total Area of Crops.	Area Manured.		Manure Used.	
		Aggregate.	Percentage to Total Area of Crops.	Natural (Stableyard, etc.).	Artificial.
	Acres.	Acres.	%	Tons.	Tons.
1911-12... ...	270,000	129,914	48.12	25,792	8,750
1912-13... ...	286,065	137,653	48.12	27,328	9,272
1913-14... ...	264,140	136,764	51.78	30,530	14,398

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 1908-9 only 18¾ per cent. of the area under crop, as against nearly 49 per cent. in 1913-14. Similarly, in Victoria the percentage increased from 18¾ per cent. in 1901-2 to 59⅓ per cent. in 1908-9 and to 77½ per cent. in 1913-14, in South Australia from 73¾ per cent. in 1908-9 to over 81½ per cent. in 1913-14, and in Western Australia from 64 per cent. in 1904-5 to nearly 95 per cent. in 1913-14.

6. **Local Production of Fertilisers.**—Statistics relative to the local production of fertilisers are 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 at latest available date was 86, made up as follows:—New South Wales, 18; Victoria, 32; Queensland, 15; South Australia, 13; Western Australia, 6; and Tasmania, 2. 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 prior to 1911-12, 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, have for some years been 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. The Government also undertakes the erection of silos on very liberal terms, repayment extending over a series of years. Experts supervise the erection of the silos, and give practical lessons as to packing them, etc. The New South Wales Government have, by giving advice in the "Agricultural Gazette" and by the issue of special bulletins, taken steps towards the education of the farmers. Silos have also been erected on the various experimental farms with a view to demonstrating the value of ensilage. No financial assistance is, however, given in New South Wales in this connection.

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 1909-10 to 1913-14, are furnished in the table given hereunder:—

COMMONWEALTH ENSILAGE-MAKING, 1909-10 to 1913-14.

State or Territory.	1909-10.		1910-11.		1911-12.		1912-13.		1913-14.	
	*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	364	34,847	258	29,616	158	20,477	144	18,509	129	18,358
Victoria	518	27,280	460	25,969	371	20,888	287	17,877	270	19,505
Queensland	79	4,517	97	5,804	61	4,379	58	4,155	75	4,273
South Australia	81	2,244	68	1,530	39	1,250	28	2,200	16	778
Western Australia	28	770	14	414	9	307	23	479	22	658
Tasmania	13	686	21	1,073	34	280	20	424	17	662
Federal Territory	...	...	...	...	...	...	1	10	1	8
Commonwealth	1,083	70,344	918	64,406	672	47,581	561	43,655	530	44,242

* No. of holdings on which ensilage was made.

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 following three seasons shew a falling-off in all the States. The reduction 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 seasons. The accumulated stocks proved of very great value during the recent 1914 drought, though far below what would have been the case if more attention had been paid to ensilage-making during the previous years of surplus growth of green food.

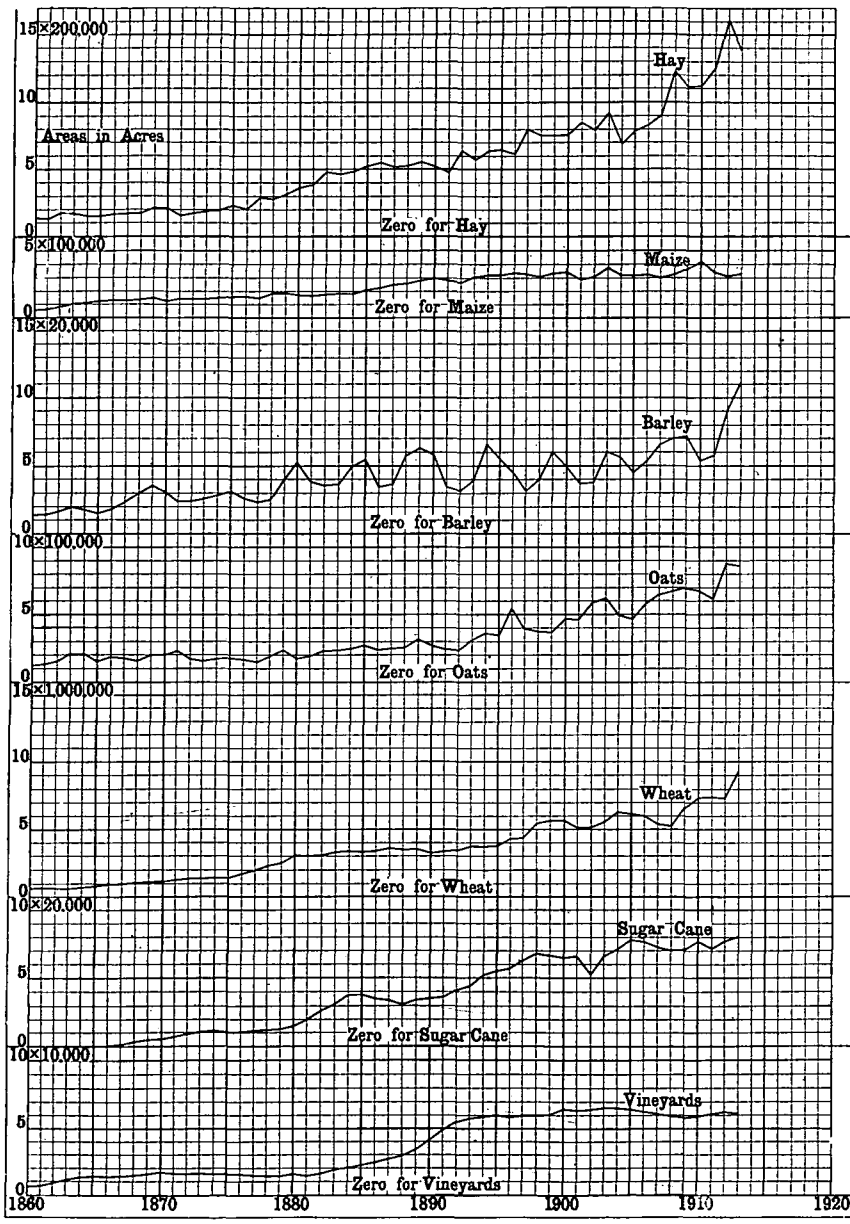
§ 20. Agricultural Colleges and Experimental Farms.

1. **Introduction.**—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 on 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.

2. **Particulars of Agricultural Colleges and Experimental Farms.**—In the tables given below particulars of agricultural colleges and experimental farms in the several States of the Commonwealth in 1913-14 are shewn. Tasmania is the only State in which such colleges or farms are not established.

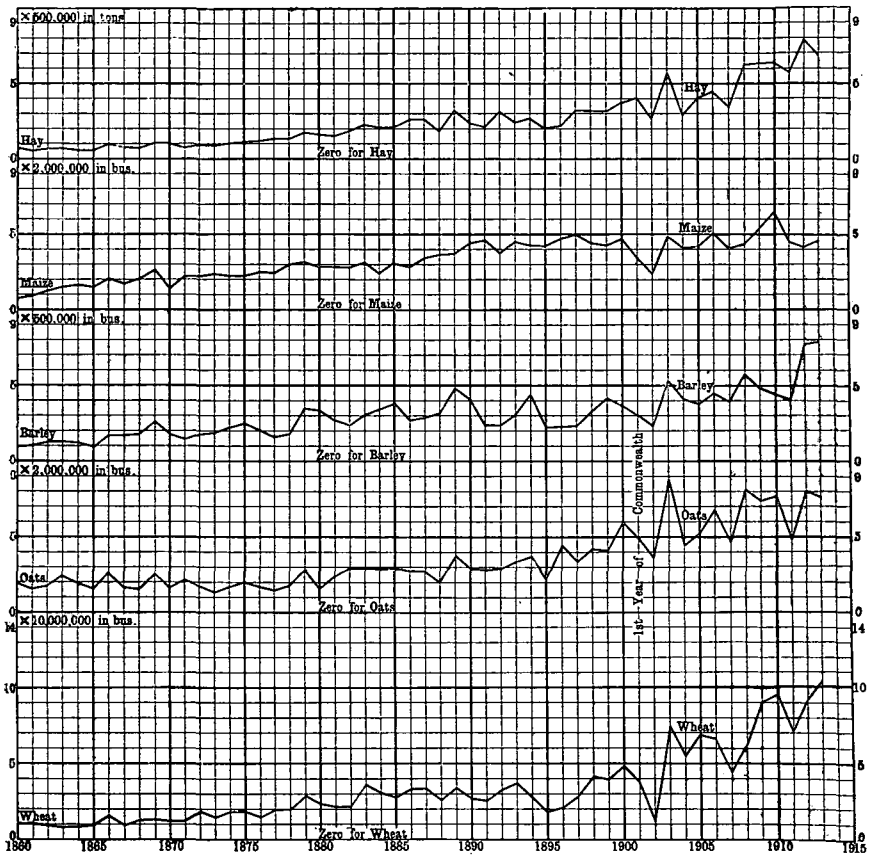
GRAPHS SHEWING THE AREA UNDER THE PRINCIPAL CROPS IN THE COMMONWEALTH FROM 1860-1 TO 1913-14.



(See pages—for wheat, 310; oats, 318; maize, 321; barley, 325; hay 332; sugar-cane, 337; and vineyards, 341.).

EXPLANATION OF GRAPHS.—The of base 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 COMMONWEALTH FROM 1860-1 TO 1913-14.



(See pages—for wheat, 311; oats, 318; maize, 322; barley, 325; and hay, 334.)

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.

PARTICULARS OF AGRICULTURAL COLLEGES AND EXPERIMENTAL FARMS IN THE SEVERAL STATES OF THE COMMONWEALTH DURING THE SEASON 1913-14.

Particulars.	Unit of Quantity.	New South Wales.	Vic.	Q'land.	South Aust.	West. Aust.	Tasmania. (b)	Northern Terr. (c)	C'wlth.
No. of agricultural colleges	No.	1	2	1	1	...	...	...	5
„ experimental farms ...	„	17	5	6	6	5	...	2	41
„ students	„	443	180	43	49	4	...	...	719
„ hands employed ...	„	305	152	71	59	32	...	33	652
Value of plant & machinery	£	64,274	11,465	7,944	8,068	3,014	...	8,000	102,765
„ produce for year ...	„	31,038	15,343	4,902	6,535	2,995	...	...	60,813
Receipts—									
Government grant	„	54,099	25,053	15,098	12,930	3,469	...	...	124,799
Fees	„	6,413	11,196	4,702	1,761	40	...	50	56,118
Sales of produce, &c. ...	„	22,760			5,793	3,403	...	...	
Other	„	1,346	162	...	2,603	100	...	...	4,211
Total receipts ...	„	84,618	36,411	19,800	23,087	7,012	...	50	185,128
Expenditure—									
Salaries, professional ...	„	10,824	5,709	3,761	3,676	...	...	700	24,670
„ general	„	27,608	7,621	5,513	6,473	3,407	...	4,000	54,622
Buildings & maintenance	„	10,604	23,081	10,526	8,486	3,605	...	2,500	105,836
Other	„	35,582			4,452		...	7,000	
Total expenditure ...	„	84,618	36,411	19,800	23,087	7,012	...	14,200	185,128
Agriculture, &c.—									
Area under cereals for grain	Acre	1,376	1,480	234	2,037	862	...	18	6,007
„ hay	„	1,132	699	386	809	279	...	17	3,322
„ fruit trees, &c.	„	265	175	115	53	51	...	...	874
„ vines	„	142		11	62		...	...	
„ green fodder ...	„	1,353	437	158	446	508	...	74	2,976
„ root crops ...	„	47	61	10	2	1	...	5	126
„ other crops ...	„	50	210	47	64	6	...	20	397
Total under crop ...	„	4,365	3,062	961	3,473	1,707	...	134	13,702
Area of land in fallow ...	„	345	1,210	389	2,255	976	...	45	5,220
„ under artificially-sown grasses ...	„	1,203	54	288	14	10	...	...	1,569
New ground broken up during season	„	544	145	146	479	103	...	147	1,564
Previously cropped land lying idle	„	807	1,133	141	868	1,627	...	...	4,576
Total area of arable land	„	7,264	5,604	1,925	7,089	4,423	...	326	26,631
Balance of area	„	19,032	5,516	14,511	4,449	2,646	...	4,794	50,948
Total area	„	26,296	11,120	16,436	11,538	7,069	...	5,120	77,579
Live stock—									
Horses	No.	456	225	207	214	81	...	49	1,232
Dairy cows	„	575	165	147	97	111	...	11	1,106
All other cattle	„	519	211	776	83	109	...	10	1,708
Sheep	„	5,491	2,742	1,616	2,686	1,080	...	42	13,657
Pigs	„	757	196	226	305	148	...	26	1,658
Capacity of tanks or dams ...	Gal.	17,286,000	16250000	239,000	187,800	a20,000	...	8,000	34,990,800

(a) Incomplete. (b) There are no Agricultural Colleges or Experimental Farms in Tasmania. (c) For year 1912.

3. **New South Wales.**—In order to meet the demand for agricultural training, and for the purpose of conducting experiments in various branches of agriculture and of disseminating agricultural knowledge, an agricultural college and farm and seventeen experimental farms have been established by the New South Wales Government. Theoretical instruction in agriculture, with practical illustrations, forms part of the

curriculum of the Sydney Technical College. The School of Agriculture in the Sydney University, which has been established for four years, is doing very satisfactory work. 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, lecturing on the value, necessity, and advantages of agricultural knowledge, and giving practical demonstrations wherever practicable.

4. **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 four experimental farms, orchards and vineyards were in existence in different parts of the State during 1913-14. 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.

5. **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.

6. **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.

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

8. **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 pages 244 *et seq.*)

2. **Aggregate of Transactions in each State, 1910 to 1914.**—The subjoined table gives aggregate of transactions in reference to advances to farmers in each State during the past five years.

STATE GOVERNMENT ADVANCES DEPARTMENTS—AGGREGATE OF LOANS TO FARMERS, 1909-10 to 1913-14 (*a*).

State.	Total Advanced to 30th June.					Balance Due at 30th June.				
	1910.	1911.	1912.	1913.	1914.	1910.	1911.	1912.	1913.	1914.
	£	£	£	£	£	£	£	£	£	£
N.S.W.(*b*)...	1,362,853	1,617,192	1,948,885	2,423,955	3,531,263	795,113*c*	928,086	1,074,358	1,396,336	2,297,981
Victoria ...	2,657,713	2,797,323	2,954,618	3,208,903	3,491,008	1,308,425*c*	1,306,657	1,343,834	1,511,798	1,676,432
Q'nsland ...	235,793	306,944	430,403	623,498	851,600	163,640	206,997	305,652	470,795	636,790
S. Aust.(*d*)	1,544,946	1,786,762	2,064,583	2,370,076	2,601,450	710,316	819,818	966,670	1,150,020	1,264,417
W. Aust. ...	1,257,082	1,540,241	1,946,184	2,582,937	3,089,575	935,960	976,811	1,280,732	1,883,957	2,331,959
Tasmania	9,187	14,610	18,636	23,915	41,004	8,521	13,561	16,592	21,089	36,965
C'wealth ...	7,067,574	8,063,072	9,363,309	11,233,284	13 605,900	3,921,975	4,251,930	4,987,838	6,433,995	8,244,544
	Profits for Year ended 30th June.					Accumulated Profits at 30th June.				
	£	£	£	£	£	£	£	£	£	£
N.S.W.(*b*)...	5,390	8,200	9,543	10,335	(*h*)20,946	8,039	15,606	25,349	35,684	56,630
Victoria ...	5,926	3,022	3,069	5,203	9,100	81,913	84,936*e*	88,006*e*	93,209*e*	102,309*e*
Q'nsland ...	1,974	2,548	3,318	3,354	2,983	6,003	8,551	11,869	15,223	18,206
S. Aust.(*d*)	4,587	6,662	6,289	8,218	9,376	38.186	44,848	51,137	59,355	68,731
W. Aust. ...	6,823	6,753	8,060	10,031	(*f*)	31,078	37,831	45,892	55,923	(*f*)
Tasmania	(—) 98	48	81	472	295	(—) 98	(—) 50	31	503	798
C'wealth ...	24,602	27,233	30,360	37,613	42,700*g*	165,121	191,722	222,284	259,897	246,674*g*

(*a*) Compiled from figures furnished by the Government Savings Bank of Victoria. (*b*) For years ended 31st December prior, except for 1914, which ended 30th June. (*c*) Balance after deduction of special principal payments in advances. (*d*) Includes loans to farmers and other producers and to local bodies on the security of their own rates. (*e*) Including profits in connection with House and Shop loans. (*f*) Not available. (*g*) Exclusive of Western Australia. (*h*) For 18 months ended 30th June, 1914.

3. **Particulars of Transactions in each State.**—An account of the initial legislation in each State in reference to advances to settlers; subsequent legislation; security on which, and objects for which, advances were made; amount of advances and repayments up to the end of 1911-12, etc., will be found in previous issues of the Year Book (see No. 6, pages 417-25).

4. **Transactions in each State, 1913-14.**—The following table gives particulars of applications received and granted, and amounts advanced and repaid during 1913-14:—

STATE GOVERNMENT ADVANCES TO FARMERS DURING THE YEAR 1913-14.

Particulars.		New South Wales. (*a*)	Victoria.	Queensland.	South Australia.		Western Australia.	Tasmania. (*c*)
					State Bank (*b*).	Settlers' Board (*c*).		
Applications received ...	No.	1,534	726	(*d*)	291	643	2,874	204
" " ...	£	847,180	479,685	(*d*)	247,570	151,892	563,200	22,697
" granted ...	No.	1,607	424	(*d*)	235	471	2,601	159
" " ...	£	844,655	282,680	(*d*)	126,770	123,007	415,511	19,183
Amounts advanced ...	£	600,650	282,105	228,102	106,377	111,426	506,638	17,089
" repaid ...	£	161,654	117,471	62,107	53,786	3,182	58,636	1,203

(*a*) Including Irrigation Farms Department. (*b*) Year ended 31st March, 1914. (*c*) Year ended 30th June, 1914. (*d*) Not available.

(i.) *New South Wales Closer Settlement Promotion Act 1910.* In 1910 an Act was passed in New South Wales 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, provided that such does not exceed the bank's valuation of the properties. A considerable amount of business has been done under this Act which has materially expanded the operations of advances to farmers in this State. The following table will shew the business transacted up to the end of 1913 :—

TRANSACTIONS UNDER THE CLOSER SETTLEMENT PROMOTION ACT IN NEW SOUTH WALES.

Applications.	Estates.	Farms.	Prices agreed upon by Vendors and Purchasers.
			£
Cases settled and surrender arranged since inception of Act	80	610	1,264,264
„ reported on but not yet settled	45	251	550,299
„ awaiting inspection and report	4	36	90,717
„ refused since inception of Act	87	454	886,741
Total cases submitted up to end of 1913	216	1,351	2,792,021

The number of estates submitted during the year to bank by the Lands Department was 49, comprising 389 farms, the purchase price asked being £892,980.

(ii.) *Particulars of Transactions of Agricultural Bank of Western Australia, 1909 to 1912.* The following table gives particulars of transactions of the Agricultural Bank for each year from 1909 to 1912 inclusive :—

AGRICULTURAL BANK, WESTERN AUSTRALIA, 1909 to 1912. (*a*)

AMOUNTS ADVANCED FOR WHICH IMPROVEMENTS HAVE BEEN EFFECTED.

Year ended the 30th June.	Amounts Advanced to Date.	Improvements Effected to Date.							
		Clearing.	Cultivating.	Ring-barking.	Fencing.	Draining.	Wells and Reservoirs.	Buildings.	Total.
	£	£	£	£	£	£	£	£	£
1909	1,004,675	780,907	124,338 *b*	62,711	177,410	4,675	48,543	83,708	1,282,292
1910	1,257,082	899,712 *c*	124,782 *b*	81,042	240,729	5,043	61,387	83,868	1,496,563
1911	1,540,241	1,031,891 *c*	124,812 *b*	107,676	297,077	5,386	78,581	83,868	1,729,291
1912	1,946,184	1,194,750 *c*	124,782 *b*	149,043	361,637	5,660	103,519	83,868	2,023,259

(*a*) For figures relating to the year 1913 see Appendix. (*b*) Including £4321 for orchards.
(*c*) Including £6300 in 1910, £8611 in 1911, and £12,180 in 1912 for poison and blackboy grubbing.

5. **Particulars Respecting Agricultural and Stock Departments.**—In Year Book No. 7, 1901-1913, on pages 364 to 369, will be found particulars respecting agricultural and stock departments of the several States of the Commonwealth as on 30th June, 1913. The main features of organisations are set out under their respective headings, and will be found to embrace such items as the number on staffs, expenditure, facilities for agricultural education and work undertaken in agricultural colleges, technica schools, experimental farms and orchards and vineyards. The nature of lectures and other forms of agricultural instruction by experts is dealt with, as well as the extent

of distribution of plants, and the special steps taken by the departments to disseminate information amongst agriculturists, and also to facilitate placing the products of the State on the market.

§ 22. Graphical Representation of Crops.

1. **Areas of Principal Crops.**—A graphical representation of the areas devoted to each of the principal crops in the Commonwealth for the period 1860-1914 will be found on page 357. The crops so represented are as follows :—Wheat, hay, oats, maize, sugar-cane, barley, and vines.

2. **Production.**—On page 358 will be found a graphical representation of the aggregate yields in the Commonwealth since 1860 of wheat, oats, barley, maize, and hay.