

CHAPTER XVII.

AGRICULTURAL PRODUCTION.

NOTE.—Except where otherwise stated, the “ agricultural ” years hereinafter mentioned are taken as ending on the 30th June.

§ 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 8 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 grain 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 3 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, 3,361 acres; maize, 1,527 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, 6,877 acres; maize, 3,389 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.—(i) *General.* The following table shows the area under crop in each of the States and Territories of Australia at decennial intervals since 1860 and during each of the last five seasons. The area under permanent artificially-sown grasses is excluded in all the States, except for the years 1860 to 1879 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, 1860 TO 1921-22.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	Nor. Ter.	Fed. Cap. Ter.	Australia.
	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
1870-1	426,976	692,840	52,210	801,571	54,527	157,410	..	..	2,185,534
1880-1	629,180	1,548,809	113,978	2,087,237	57,707	140,788	..	..	4,577,699
1890-1	852,704	2,031,955	224,993	2,093,515	69,678	157,376	..	..	5,430,221
1900-1	2,445,564	3,114,132	457,397	2,369,680	201,338	224,352	..	..	8,812,463
1910-11	3,388,017	3,952,070	667,113	2,746,334	855,024	286,920	360	..	11,893,838
1917-18	4,461,172	4,110,225	727,958	3,079,778	1,679,772	238,199	134	1,744	14,298,982
1918-19	3,891,823	3,942,899	525,517	3,111,079	1,605,088	254,109	99	1,779	13,332,393
1919-20	3,771,468	4,000,815	563,762	3,058,770	1,628,163	270,955	365	2,109	13,296,407
1920-21	4,465,143	4,489,503	779,497	3,231,083	1,804,987	297,383	296	1,966	15,069,858
1921-22	4,445,828	4,530,312	804,507	3,378,764	1,901,680	293,708	283	1,942	15,357,024

The progress of agriculture was uninterrupted from 1860 onwards, reaching its maximum in 1915-16, when 18,528,234 acres were cultivated. Following that year the decline in wheat growing, and the effects of the drought of 1918-19, reduced the acreage to 13,296,407 acres in 1919-20, a decrease of 5,231,827 acres in the space of four years. In 1920-21 the area under wheat again began to expand, and during the latest two seasons under review the total acreage under cultivation increased by more than 2,000,000 acres. It may be observed that the maximum area cultivated in 1915-16 was the result of a special war effort, and eliminating that year, the 1921-22 season's acreage is practically identical with that of 1914-15. Since the latter year there has been no marked advance, the areas sown being generally dependent on seasonal influences.

(ii) *Relation to Population.* From the following table it will be seen that the decline in the acreage under crop per 1,000 of the population was arrested in 1920-21, and further slightly improved upon in 1921-22. Details for the past five seasons are as follows:—

AREA UNDER CROP PER 1,000 OF POPULATION, 1917-18 TO 1921-22.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Nor. Ter.	Fed. Cap. Ter.	Australia.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1917-18 ..	2,324	2,900	1,059	6,893	5,481	1,203	28	829	2,870
1918-19 ..	1,984	2,743	745	6,797	5,181	1,252	21	797	2,624
1919-20 ..	1,850	2,661	764	6,351	4,973	1,291	80	1,099	2,507
1920-21 ..	2,135	2,938	1,036	6,578	5,456	1,397	74	997	2,784
1921-22 ..	2,089	2,921	1,045	6,723	5,674	1,345	76	941	2,787

(iii) *Relation to Total Area.* The next table furnishes a comparison of the area under crop in the several States and Territories and Australia with the respective total areas. For Australia as a whole, the area under crop in 1921-22 represented only about 1 acre in every 124. In Victoria the proportion was about 1 acre in every 12, in New South Wales 1 in 44, in Tasmania 1 in 57, in South Australia 1 in 72, in Western Australia 1 in 328, in Queensland 1 in 535, in the Federal Territory 1 in 310, and in the Northern Territory about 1 in 1,184,158.

PERCENTAGE OF AREA UNDER CROP ON TOTAL AREA, 1917-18 TO 1921-22.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Nor. Ter.	Fed. Cap. Ter.	Australia.
	%	%	%	%	%	%	%	%	%
1917-18 ..	2.253	7.308	0.170	1.266	0.269	1.420	..	0.290	0.751
1918-19 ..	1.965	7.010	0.122	1.279	0.257	1.515	..	0.296	0.700
1919-20 ..	1.904	7.113	0.131	1.257	0.261	1.615	..	0.351	0.698
1920-21 ..	2.255	7.982	0.182	1.328	0.289	1.772	..	0.327	0.792
1921-22 ..	2.245	8.054	0.187	1.389	0.304	1.751	..	0.323	0.807

3. *Artificially-sown Grasses.*—In all the States considerable areas are devoted to artificially-sown grasses, mainly sown on uncultivated land after burning off the existing vegetation and consequently not included with “area under crops.” Statistics regarding the area under such grasses are as shown hereunder:—

AREA UNDER SOWN GRASSES, 1917-18 TO 1921-22.

Season.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Nor. Ter.	Fed. Cap. Ter.	Australia.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1917-18	1,389,557	1,268,310	406,094	20,155	11,769	679,512	460	83	3,775,940
1918-19	1,438,382	1,269,493	418,467	21,987	14,158	666,954	600	83	3,830,124
1919-20	1,542,446	1,062,244	449,019	18,107	16,672	667,390	500	871	3,757,249
1920-21	1,816,104	1,051,290	450,780	14,805	17,265	660,000	500	71	4,010,815
1921-22	2,005,444	1,032,104	459,914	20,890	18,441	781,000	550	71	4,318,414

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

§ 3. Relative Importance of Crops.

1. *Distribution of Crops.*—The following table gives the areas in the several States under each of the principal crops for the season 1921–22 :—

DISTRIBUTION OF CROPS, 1921–22.

Crop.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Nor. Ter.	Fed. Cap. Ter.	Australia.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Wheat	3,194,408	2,611,193	164,670	2,384,012	1,336,228	27,985	..	541	9,719,042
Oats	69,619	318,681	2,274	125,148	162,866	54,642	..	176	733,406
Maize	146,687	23,227	135,034	186	43	..	9	..	305,186
Barley—									
Malting ..	3,569	47,686	5,558	151,257	4,120	6,472	..	..	218,662
Other ..	1,462	52,441	2,172	19,620	3,774	769	..	..	80,248
Beans and Peas	269	9,423	89	6,021	725	20,989	..	..	37,516
Rye	1,152	1,320	5	312	331	830	..	..	3,950
Other Cereals	..	..	8	..	35	..	..	..	43
Hay	749,738	1,159,135	98,155	559,285	335,561	91,443	12	1,190	2,994,519
Green Forage ..	128,965	89,410	147,135	50,121	27,396	9,481	..	..	452,508
Grass Seed ..	..	1,953	639	38	..	964	..	..	3,594
Orchards and other Fruit Gardens	75,746	89,491	28,035	32,295	19,012	36,565	..	5	281,149
Vines—									
Productive ..	7,744	24,627	1,042	30,625	2,751	..	..	..	66,789
Unproductive ..	4,839	8,548	239	10,799	1,200	..	..	..	25,625
Market Gardens ..	8,217	14,304	1,965	1,486	2,274	681	..	27	28,954
Sugar-cane—									
Productive ..	5,400	..	122,956	..	..	..	..	..	128,356
Unproductive ..	7,380	..	61,557	..	..	..	..	..	68,937
Potatoes	29,491	63,895	9,553	5,795	3,612	36,795	..	3	149,144
Onions	140	6,158	266	369	96	34	..	..	7,063
Other root crops	1,151	2,561	3,219	371	313	3,359	45	..	11,019
Tobacco	1,164	604	198	1	..	..	..	..	1,967
Broom Millet ..	1,230	801	195	..	..	..	4	..	2,230
Pumpkins and Melons	2,926	1,514	10,199	276	643	..	98	..	15,656
Hops .. ..	..	104	..	3	..	1,455	..	..	1,562
Cotton .. ..	..	..	(a)2,802	3	..	..	..	..	2,805
All other crops ..	4,531	3,231	6,542	731	700	1,244	115	..	17,094
Total Area ..	4,445,828	4,530,312	804,507	3,378,764	1,901,680	293,708	283	1,942	15,357,024

(a) 858 unproductive acres.

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 Australia, the proportion of each in the various States and Territories to the total area under crop for the season 1921–22 is shown 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 the same States the hay crop is second in importance. In Victoria and Western Australia, the oat crop occupies third position, while maize ranks third in New South Wales and barley in South Australia. In Queensland, the principal crops in the order of importance are sugar-cane, wheat, green forage and maize, while in Tasmania hay, oats, potatoes, and orchards and fruit gardens occupy the leading positions. For Australia as a whole, the wheat, hay, and oat crops represent nearly 88 per cent. of the total area under crop.

RELATIVE AREAS UNDER CROP, 1921-22.

Crop.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Nor. Ter.	Fed. Cap. Ter.	Australia.
	%	%	%	%	%	%	%	%	%
Wheat ..	71.85	57.64	20.47	70.56	70.27	9.53	..	27.86	63.29
Hay ..	16.86	25.59	12.20	16.55	17.65	31.13	4.24	61.28	19.50
Oats ..	1.57	7.03	0.28	3.70	8.56	18.60	..	9.06	4.77
Green Forage ..	2.90	1.97	18.29	1.48	1.44	3.23	..	..	2.95
Maize ..	3.30	0.51	16.79	0.01	0.00	..	3.18	..	1.99
Barley ..	0.11	2.21	0.96	5.06	0.41	2.47	..	..	1.95
Orchards and Fruit Gardens	1.71	1.98	3.48	0.96	1.00	12.45	..	0.26	1.83
Sugar-cane	0.29	..	22.93	..	..	..	..	..	1.28
Potatoes ..	0.66	1.41	1.19	0.17	0.19	12.53	..	0.15	0.97
Vineyards	0.28	0.73	0.16	1.23	0.21	..	..	..	0.60
All other ..	0.47	0.93	3.25	0.28	0.27	10.06	92.58	1.39	0.87
Total ..	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

3. Area of Chief Crops, Australia, 1917-18 to 1921-22.—The acreage devoted to each of the principal crops in Australia during the last five seasons is shown below :—

AREA OF CHIEF CROPS.—AUSTRALIA, 1917-18 TO 1921-22.

Crop.	1917-18.	1918-19.	1919-20.	1920-21.	1921-22.
	Acres.	Acres.	Acres.	Acres.	Acres.
Wheat	9,774,658	7,990,165	6,419,160	9,072,167	9,719,042
Hay	2,212,914	2,692,904	3,125,653	3,233,189	2,994,519
Oats	615,800	768,152	1,068,296	936,996	733,406
Green Forage ..	373,976	586,440	1,401,209	406,954	452,508
Maize	332,057	286,812	265,469	284,283	305,186
Orchards and Fruit Gardens ..	262,134	264,751	271,894	278,551	281,149
Barley	204,870	254,869	267,309	334,747	298,910
Sugar-cane ..	186,358	171,024	159,037	174,001	197,293
Potatoes ..	136,241	111,169	113,900	140,195	149,144
Vineyards ..	67,862	70,058	73,326	81,165	92,414
All other Crops ..	132,112	136,049	131,154	127,610	133,453
Total ..	14,298,982	13,332,393	13,296,407	15,069,858	15,357,024

During the period under review the area of the several crops has fluctuated considerably, the principal variation occurring in wheat, caused by disorganized markets and dry seasons. Most of the other crops also reflect economic and seasonal influences. Orchards and fruit gardens and vineyards are the only items which have consistently progressed each year, though with the exception of wheat all the remaining crops have extended their areas since 1917-18.

§ 4. Wheat.

1. Progress of Wheat-Growing.—(i) *Area and Production.* The area and yield of wheat for grain are given below for each State for the last five years, and are shown from the year 1860 onwards in the graphs hereinafter :—

WHEAT.—AREA AND PRODUCTION, 1917-18 TO 1922-23.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	Fed. Cap. Ter.	Australia.
AREA.								
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1917-18 ..	3,328,856	2,690,218	127,815	2,355,682	1,249,782	21,812	515	9,774,658
1918-19 ..	2,409,633	2,214,490	21,637	2,186,349	1,146,103	11,917	36	7,990,165
1919-20 ..	1,474,935	1,918,269	46,478	1,926,915	1,041,827	11,497	139	6,419,160
1920-21 ..	3,126,775	2,295,865	177,320	2,167,646	1,275,675	28,284	602	9,072,167
1921-22 ..	3,194,408	2,611,198	164,670	2,384,012	1,336,228	27,985	541	9,719,042
1922-23a ..	2,962,140	2,644,314	145,492	2,453,086	1,550,778	22,800	..	9,778,610
YIELD.								
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bush.	Bushels.
1917-18 ..	37,704,626	37,737,552	1,035,268	28,692,594	9,303,787	252,383	7,374	114,733,584
1918-19 ..	18,324,640	25,239,871	104,509	22,936,925	8,945,367	186,570	360	75,638,262
1919-20 ..	4,387,209	14,658,380	311,638	14,980,413	11,222,950	213,589	813	45,974,992
1920-21 ..	55,810,993	39,468,625	3,707,357	34,258,914	12,248,080	563,874	14,007	145,873,850
1921-22 ..	42,759,389	43,867,596	3,025,786	24,946,525	13,904,721	577,178	7,611	129,088,806
1922-23a ..	28,594,000	35,697,220	1,877,836	28,784,767	14,042,726	450,000	..	109,449,549

(a) Final figures for Victoria and Queensland, those for remaining States approximate.

The area devoted to the production of wheat for grain reached its maximum in 1915-16, when, in response to the appeal by the Government for an increased supply of wheat for Imperial purposes, the farmers of Australia sowed 12,484,512 acres. After that year, however, there was a serious decline, brought about largely by war conditions and unfavourable seasons, and the area in 1919-20 fell to 6,419,160 acres, or only half that of 1915-16. To arrest this decline an endeavour was made throughout the wheat-growing States to increase the acreage during 1920-21, and the promise of remunerative Government guarantees, coupled with the prospects of high prices, proved sufficient inducement for growers to sow 9,072,167 acres, an increase of 2,653,007 acres on the 1919-20 area. The area was further extended in 1921-22, when 646,875 additional acres were sown, making the total acreage 9,719,042.

Although final figures for 1922-23 for all the States are not yet available, the data to hand indicate the total area under wheat for grain in Australia at about 9,778,610 acres, representing an increase of nearly 60,000 acres on the 1921-22 figures. This increase was occasioned by considerable additions to the wheat areas of Western Australia and South Australia.

The harvest of 179,065,703 bushels reaped in 1915-16 represents the maximum production of wheat in Australia. Yields exceeding 100,000,000 bushels have only been garnered on seven occasions, all of which have occurred since 1913-14. The annual production of wheat during the seasons 1912-13 to 1921-22 averaged 106,301,380 bushels, and the amount by which this average may be exceeded depends mainly on seasonal conditions. Though increased areas were placed under wheat in 1921-22, conditions were not so propitious as in 1920-21, with the result that nearly 17,000,000 less bushels were harvested in 1921-22 than in 1920-21.

(ii) *Average Yields.* In the next table will be found the average yield of wheat per acre in each of the last five seasons, and for the decennium 1912-22 :—

WHEAT.—YIELD PER ACRE, 1917-18 TO 1921-22.

Season.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Cap. Ter.	Australia.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1917-18 ..	11.33	14.03	8.10	12.18	7.44	11.57	14.32	11.74
1918-19 ..	7.60	11.40	4.83	10.49	7.72	15.66	10.00	9.47
1919-20 ..	2.98	7.75	6.71	7.77	10.77	18.58	5.85	7.16
1920-21 ..	17.79	17.19	20.91	15.80	9.60	20.01	23.27	16.08
1921-22 ..	13.39	16.80	18.37	10.46	10.41	20.62	14.07	13.28
Average 10 seasons, 1912-22	11.62	12.82	13.18	10.59	9.11	18.34	14.96	11.40

As the above figures show, there were considerable variations in the average yields, chiefly due to the vagaries of the seasons. The magnificence of the 1920-21 season is clearly reflected in the exceptional average of 16.08 bushels obtained in that year, an average which has only once been exceeded, and that by the 16.35 bushels reaped as far back as 1866, when less than 1,000,000 acres were sown in relatively fertile areas.

The extension of the practice of fallowing, and improved cultural methods have increased the ten yearly average yield from 10.48 bushels in the previous decade to 11.40 bushels during the past decennium, or by nearly 1 bushel to the acre.

(iii) *Relation to Population.* During the seasons embraced in the following table, the Australian production of wheat per head of population has varied between 8½ bushels in 1919-20 and 27 bushels in 1920-21. The State in which wheat-growing generally occupies the most important position relatively to population is South Australia which in 1921-22 had a yield averaging nearly 50 bushels per head. Queensland and Tasmania are the States in which the average production of wheat per head is least, the quantity raised being generally below that required for local consumption. Particulars for the past five seasons are as follows :—

WHEAT.—YIELD PER 1,000 OF POPULATION, 1917-18 TO 1921-22.

Season.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Cap. Ter.	Australia.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1917-18 ..	19,642	26,628	1,506	64,214	30,356	1,274	3,505	23,026
1918-19 ..	9,342	17,559	148	50,115	28,554	919	161	14,885
1919-20 ..	2,153	9,884	423	31,105	34,278	1,017	424	8,667
1920-21 ..	26,594	25,828	4,928	69,749	37,024	2,659	7,103	26,952
1921-22 ..	20,101	28,284	3,930	49,635	41,485	2,643	3,688	23,427

The normal annual consumption of wheat in Australia, exclusive of the requirements for seed, poultry and other live stock, is 320 lbs. (5.33 bushels) per head of population.

2. *Australian and Foreign Wheat Yields.*—(i) *Average Yield.* 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 Denmark with a maximum of 51 bushels per acre to Russia in Asia with a minimum of 7 bushels per acre. Australia, with approximately 13.3, occupies a relatively subordinate position.

WHEAT.—YIELD PER ACRE, VARIOUS COUNTRIES, 1921.

Country.	Average Yield in bushels per acre.	Country.	Average Yield in bushels per acre.
Denmark	51.0	Uruguay	16.4
Netherlands	49.2	Spain	14.0
Belgium	42.2	Jugo-Slavia	13.6
United Kingdom	35.4	Australia (a)	13.3
Sweden	34.9	Canada	13.0
Switzerland	32.4	United States	12.7
Germany	30.3	Rumania	12.3
New Zealand	29.9	Algeria	12.0
Egypt	25.4	French Morocco	11.9
France	24.6	Greece	11.3
Czecho-Slovakia	24.1	Argentine Republic	11.1
Japan	21.3	Russia in Europe (1916)	10.4
Bulgaria	18.0	Union of South Africa	10.4
Chile	18.0	India	9.7
Austria	17.1	Portugal	7.9
Poland	17.1	Tunis	7.1
Hungary	17.0	Russia in Asia (1915)	7.0
Italy	16.4		

(a) Average yield per acre for 10 years, 11.40.

(ii) *Total Production.* The latest available official statistics of the production of wheat in various countries are given in the following table :—

WHEAT.—YIELD IN VARIOUS COUNTRIES, 1921.

Country.	Yield in bushels.	Country.	Yield in bushels.
United States	794,906,147	Poland	35,576,062
Russia in Europe (1917)	377,900,393	Turkey in Asia (1915)	33,929,000
France	322,770,513	Algeria	33,763,786
Canada	300,863,074	Chile	23,660,532
India	250,469,284	French Morocco	17,466,144
Russia in Asia (1917)	230,406,000	Persia (1915)	15,510,400
Italy	192,838,286	Mexico (1920)	14,950,953
Argentine Republic	154,874,696	Belgium	14,495,294
Spain	145,151,302	Sweden	12,577,111
Australia (a)	129,088,806	Uruguay	12,125,421
Germany	107,799,402	Denmark	11,206,829
Rumania	75,591,668	Greece	11,170,085
United Kingdom	73,792,000	Tunis	10,622,604
Jugo-Slavia	51,700,833	New Zealand	10,565,275
Hungary	47,087,819	Union of South Africa	8,688,617
Bulgaria	42,509,790	Netherlands	8,685,748
Japan	37,625,523	Portugal	8,612,602
Egypt	37,010,764	Austria	6,451,988
Czecho-Slovakia	36,999,333	Switzerland	3,799,556

(a) Average yield for 10 years, 106,301,380.

Various estimates of the total quantity of wheat produced in the world have been made. That furnished by the International Institute of Agriculture, Rome, gives the following figures for the ten years 1909 to 1918 :—

WHEAT.—WORLD'S PRODUCTION, 1909 TO 1918.

Year.	1,000,000 bushels.	Year.	1,000,000 bushels.	Year.	1,000,000 bushels.
1909	3,575	1913.. .. .	4,035	1917.. .. .	3,243
1910	3,532	1914.. .. .	3,579	1918.. .. .	3,675
1911	3,525	1915.. .. .	4,270	Average for 10 years	3,655
1912	3,810	1916.. .. .	3,301		

The compilation of the world's production of wheat during the past few years has not been possible owing to the failure of certain countries, particularly Russia, to report their harvests. The Institute of Agriculture, Rome, has, however, obtained figures for all the producing countries, except Russia, and compared the average computed for the past three years with pre-war and war-time averages with the following results:—

WHEAT.—WORLD'S PRODUCTION, 1909-13 TO 1919-21.

Years.	Area.	Yield.	Yield per acre.
	Acres.	Bushels.	Bushels.
Average, 1909-1913	192,244,000	2,935,822,000	15.27
Average, 1914-1918	205,340,000	2,905,692,000	14.15
Average, 1919-1921	210,282,000	2,908,264,000	13.83

The most striking feature of the world's wheat position has been the expansion of the area cultivated followed by a decreased production, consequent upon the reduced yields obtained per acre. The decrease in the yields per acre was due to the fall in the European averages, and to the greater development of the extensive type of cereal cultivation in newer countries. The Australian contributions to the world's production during the past three years amount to $3\frac{1}{2}$ per cent.

3. 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 realized for British-grown wheat.—

BRITISH WHEAT.—PRICES PER QUARTER, 1861 TO 1922.

Year.	Average for Year.	Highest Weekly Average.	Lowest Weekly Average.	Year.	Average for Year.	Highest Weekly Average.	Lowest Weekly Average.
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>		<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
1861 ..	55 4	61 6	50 0	1916 ..	58 5	75 10	46 3
1871 ..	56 8	60 0	52 6	1917 ..	75 9	83 10	70 3
1881 ..	45 4	55 2	40 9	1918 ..	72 10	74 5	71 2
1891 ..	37 0	41 8	32 3	1919 ..	72 11	73 4	72 5
1901 ..	26 9	27 8	25 8	1920 ..	80 10	90 11	72 6
1911 ..	31 8	33 4	30 0	1921 ..	71 6	89 10	44 0
1915 ..	52 10	62 0	42 9	1922 ..	47 10	56 3	37 5

(ii) *Australian Export Values.* In the next table will be found a statement of the export values of Australian wheat during each of the last five years:—

AUSTRALIAN WHEAT.—EXPORT VALUES, 1917-18 TO 1921-22.

Heading.	1917-18.	1918-19.	1919-20.	1920-21.	1921-22.
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
Price per bushel	5 3	5 1	5 6	9 0	5 9

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

4. Imports and Exports of Wheat and Flour.—(i) *Quantities.* The table hereunder shows the imports, exports, and net exports of wheat and flour from 1917-18 to 1921-22. For the sake of convenience, flour has been expressed at its equivalent in wheat, 1 ton of flour being taken as equal to 50 bushels of grain. In ordinary seasons the Australian imports of wheat and flour are negligible. During the past five years the export ranged between 41,684,852 bushels in 1917-18 and 117,931,876 bushels in 1921-22, the net exports for the period averaging 84,995,232 bushels.

WHEAT AND FLOUR.—IMPORTS AND EXPORTS, AUSTRALIA, 1917-18 TO 1921-22.

Year.	Imports.			Exports.			Net Exports.
	Wheat.	Flour.	Total.	Wheat.	Flour.	Total.	
	Bushels.	Eq. Bushels. ^a	Bushels.	Bushels.	Eq. Bushels. ^a	Bushels.	
1917-18	20	1,050	1,070	22,981,772	18,704,150	41,685,922	41,684,852
1918-19	50	2,750	2,800	44,563,597	24,169,750	68,733,347	68,730,547
1919-20	285	4,300	4,585	82,470,658	25,889,700	108,360,358	108,355,773
1920-21	1,170	3,850	5,020	76,791,883	11,486,250	88,278,133	88,273,113
1921-22	247	1,800	2,047	99,947,223	17,986,700	117,933,923	117,931,876

(a) Equivalent in bushels of wheat.

(ii) *Destination of Exported Breadstuffs.* In the next two tables will be found a list of the principal countries to which Australia exported wheat and flour during each year of the period 1917-18 to 1921-22. The countries are as shown in the Australian Customs returns, but owing to the fact that in normal times 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.

WHEAT.—EXPORTS, AUSTRALIA, 1917-18 TO 1921-22.

Country to which Exported.	1917-18.	1918-19.	1919-20.	1920-21.	1921-22.	Total for Five Years.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
United Kingdom	5,309,162	9,104,560	50,074,725	38,709,680	40,914,035	144,112,162
France ..	5,074,098	674,363	13,010,455	8,921,645	3,341,835	31,022,396
Egypt ..	..	11,741,477	2,265,283	10,477,463	3,286,433	27,770,656
Italy ..	517,962	2,950,015	1,397,738	2,219,143	18,447,762	25,532,620
India ..	225,820	4,306,312	1,522,593	25,623	15,035,429	21,115,777
Japan ..	702,958	1,407,775	6,381,738	7,332	7,497,943	15,997,746
United States ..	6,593,878	3,510,762	73,293	112	..	10,178,045
Belgium ..	..	..	..	5,754,723	1,312,480	7,067,203
New Zealand ..	1,295,448	1,452,625	2,393,667	602,843	73,539	5,818,122
Germany ..	..	..	..	2,504,690	2,996,292	5,500,982
Union of South Africa	1,216,172	541,778	1,220,147	1,157,778	1,331,417	5,467,292
Canary Islands ^(a)	..	..	624,425	3,532,793	236,807	4,394,025
Norway ..	..	1,369,105	1,645,125	342,510	960,855	4,317,595
Netherlands ..	..	..	..	2,202,653	1,192,977	3,395,630
Sweden ..	..	2,134,500	523,065	..	..	2,657,565
Ceylon ..	392	2,142,212	52,645	303	257,098	2,452,650
Peru ..	340,965	660,318	131,023	..	697,205	1,829,511
Other Countries	1,704,917	2,567,795	1,154,736	332,592	2,365,116	8,125,156
Total ..	22,981,772	44,563,597	82,470,658	76,791,883	99,947,223	326,755,133

(a) For orders.

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

FLOUR.—EXPORTS, AUSTRALIA, 1917-18 TO 1921-22.

Country to which Exported.	1917-18.	1918-19.	1919-20.	1920-21.	1921-22.	Total for Five Years.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
United Kingdom ..	145,914	136,254	72,828	81,952	103,634	540,582
Egypt ..	13,994	129,992	92,537	61,502	108,550	406,575
Netherlands East Indies ..	20,017	34,929	42,070	15,388	41,826	154,230
Straits Settlements ..	23,609	24,386	63,508	8,264	20,471	140,238
Union of South Africa ..	7,330	12,892	39,513	41,458	24,947	126,140
Philippine Islands ..	35,158	27,180	39,942	3,040	10,749	116,069
Hong Kong ..	3,604	17,898	36,506	368	10,003	68,379
France ..	32,597	..	33,407	..	..	66,004
United States ..	54,889	3,865	..	..	..	58,754
Italy ..	6,099	35,804	..	..	..	41,903
Japan ..	3,702	1,258	24,876	480	6,555	36,871
India ..	..	23,629	486	4	657	24,776
New Caledonia ..	3,314	3,804	3,999	3,202	3,532	17,851
Mauritius ..	..	1,968	4,532	3,320	5,639	15,459
Ceylon ..	..	47	8,191	755	6,282	15,275
Fiji ..	2,280	2,212	2,257	1,362	2,484	10,595
China ..	923	880	1,199	77	4,391	7,470
New Zealand ..	5,736	511	256	137	95	6,735
Portuguese East Africa ..	..	..	632	2,477	3,542	6,651
Papua ..	350	429	879	636	322	2,616
Other Countries ..	14,567	25,457	50,176	5,303	6,055	101,558
Total ..	374,083	483,395	517,794	229,725	359,734	1,964,731

For the five years under review the export of wheat to the United Kingdom amounted to 144,112,162 bushels, or 44 per cent. of the total export for the period, while the export of flour to the United Kingdom aggregated 540,582 tons, or 27½ per cent. of the total export. During the quinquennium the heaviest exports of flour have been to the United Kingdom, Egypt, Netherlands East Indies, Straits Settlements, South Africa, the Philippine Islands, and France.

(iii) *Exports of Wheat and Flour.* From the foregoing returns it will be seen that the quantity of wheat exported in the form of flour during the past five years represents, on the average, about 23 per cent. of the total equivalent in wheat exported as wheat or flour from Australia.

A point of some interest in connexion with the export of wheat, and one which bears also on the proportion 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 Australia, 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., &c.), 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 last ten years the net exports from Australia of wheat and its milled products have amounted to 483,133,225 bushels of wheat, 2,844,610 tons of flour, and 3,072,295 bushels of bran, pollard, and sharps. On the basis of the figures quoted above this export would contain no less than 252,505,842 lbs. of phosphoric acid, the value of which as a fertilizer would amount to more than one million pounds sterling.

5. **Local Consumption of Wheat.**—The estimated consumption of wheat for food and for seed purposes in Australia during the past ten years is given in the following tables:—

WHEAT.—HUMAN CONSUMPTION, AUSTRALIA, 1913 TO 1921-22.

Year.	Flour Milled.	Net Exports of Flour.		Net Quantity Available for Home Consumption.		Net Quantity Available per Head of Population.	
		Flour.	Flour in Biscuits Exported.	Flour.	Equivalent in Terms of Wheat.	Flour.	Equivalent in Terms of Wheat.
	Tons.	Tons.	Tons.	Tons.	Bushels.	Tons.	Bushels.
1913 ..	760,613	221,605	2,600	536,408	26,820,400	.1096	5.480
1914 ..	713,845	174,180	2,400	537,265	26,863,250	.1081	5.405
1915 ..	541,810	7,633	2,160	532,017	26,600,850	.1070	5.350
1915-16 ..	577,038	146,618	2,650	427,770	21,388,500	.0861	4.305
1916-17 ..	869,975	290,572	2,885	576,518	28,825,900	.1172	5.860
1917-18 ..	985,761	374,062	9,810	601,889	30,094,450	.1208	6.040
1918-19 ..	1,046,268	483,340	6,437	556,491	27,824,550	.1095	5.475
1919-20 ..	1,050,228	517,708	4,590	527,930	26,396,500	.0995	4.975
1920-21 ..	801,511	229,648	3,375	568,488	28,424,400	.1050	5.250
1921-22 ..	911,452	359,698	2,284	549,470	27,473,500	.0997	4.986
Aggregate 10 years	8,258,501	2,805,064	39,191	5,414,246	270,712,300	.1066	5.330

WHEAT USED FOR SEED.—AUSTRALIA, 1912 TO 1921.

Year.	Area for Grain and Hay.	Wheat for Seed Purposes.		
		Quantity.	Per Acre.	Per Head of Population.
	Acres.	Bushels.	Bushels.	Bushels.
1912 ..	9,112,676	8,484,000	.931	1.787
1913 ..	10,661,430	9,747,000	.914	1.992
1914 ..	11,012,679	10,059,000	.913	2.023
1915 ..	14,414,024	13,041,000	.905	2.624
1916 ..	12,894,917	11,523,000	.894	2.343
1917 ..	10,910,669	9,713,000	.890	1.949
1918 ..	9,428,398	9,054,000	.960	1.782
1919 ..	8,250,572	7,774,000	.942	1.466
1920 ..	10,271,055	9,471,000	.922	1.750
1921 ..	10,878,401	10,077,000	.926	1.847
Aggregate for 10 years ..	107,834,821	98,943,000	.918	1.966

In addition to the above, the quantity of grain fed to poultry and other live stock must be taken into consideration. This varies from year to year according to the price of wheat and from other causes, and data are not 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. In some years the flour available per head of population, after deducting net exports from quantity milled, shows a substantial increase over the average for the previous year, this, however, being counter-balanced by a decline in the following year. The average quantity of flour consumed

per annum for the ten years under consideration was 0.1066 tons per head of population, which, when expressed in equivalent terms in wheat, represents 5.330 bushels. The estimates of quantity of grain used for seed purposes are based on data supplied by the Agricultural and Statistical Departments of the several States giving average quantities of seed used per acre for wheat sown either for grain or hay. The average annual quantity thus used during the ten years was 1.966 bushels per head of population, and 0.918 bushels or 55 lbs. per acre sown.

6. **Value of the Wheat Crop.**—The estimated value of the wheat crop in each State and in Australia during the season 1921–22 is shown below :—

WHEAT.—VALUE OF CROP, (a) 1921–22.

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Cap. Ter.	Australia.
	£	£	£	£	£	£	£	£
Aggregate value ..	11,758,830	12,337,761	857,306	6,288,520	3,765,862	144,295	2,090	35,154,664
Value per acre ..	£3/13/7	£4/14/6	£5/4/1	£2/12/9	£2/16/4	£5/3/1	£3/17/3	£3/12/4

(a) Exclusive of the value of straw.

7. **Voluntary Wheat Pools.**—Reference to the operations of the Voluntary Wheat Pools in the various States during 1922–23 will be found in the Appendix at the end of this volume.

§ 5. Oats.

1. **Progress of Cultivation.**—(i) *Area and Yield.* Oats came next in importance to wheat amongst the grain crops cultivated last season, but while wheat grown for grain accounted for 63.29 per cent., oats represented only 4.77 per cent. of the area under crop in Australia. The progress of cultivation of oats for the last five years is shown in the table hereunder, and more fully in the graphs hereinafter :—

OATS.—AREA AND YIELD, 1917–18 TO 1921–22.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	Fed. Cap. Ter.	Australia.
AREA.								
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1917–18	82,512	293,214	3,002	106,556	95,666	34,771	79	615,800
1918–19	86,421	342,867	298	160,823	141,459	36,231	53	768,152
1919–20	75,893	559,547	363	192,153	191,931	48,185	224	1,068,296
1920–21	77,537	443,636	4,690	167,001	193,486	50,474	172	936,996
1921–22	69,619	318,681	2,274	125,148	162,866	54,642	176	733,406
YIELD.								
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1917–18	1,452,144	6,141,287	44,688	1,248,529	908,592	589,224	2,967	10,387,431
1918–19	1,272,411	5,274,984	3,632	1,540,603	1,499,689	848,420	1,341	10,441,080
1919–20	583,503	6,603,067	2,871	1,634,239	2,486,918	1,242,258	3,255	12,556,111
1920–21	1,640,552	10,907,191	103,933	2,331,067	2,022,031	1,514,155	2,148	18,521,077
1921–22	1,168,406	6,082,258	34,409	1,297,646	2,019,603	1,543,617	1,494	12,147,433

The principal oat-growing State is Victoria, which during the past five seasons produced 55 per cent. of the total quantity of oats grown in Australia; Western Australia, South Australia, New South Wales and Tasmania came 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 its maximum yield in 1903-4, South Australia in 1920-21, Queensland in 1916-17, and Western Australia in 1919-20. For Australia as a whole, the record yield was that of 18,521,077 bushels in the season 1920-21, while the yields of 17,541,210 and 16,538,979 for 1903-4 and 1915-16 respectively rank second and third.

(ii) *Average Yield.* The average yield per acre of oats varies considerably in the different States, being highest in Tasmania and lowest in South Australia. Particulars as to average yield in each of the last five seasons, and for the decennium 1912-22 are given in the succeeding table :—

OATS.—AVERAGE YIELD PER ACRE, 1917-18 TO 1921-22.

Season.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Cap. Ter.	Australia.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1917-18	17.60	20.94	14.89	11.72	9.50	16.95	37.56	16.87
1918-19	14.72	15.38	12.19	9.58	10.60	23.42	25.30	13.59
1919-20	7.71	11.80	7.91	8.50	12.96	25.78	14.53	11.75
1920-21	21.16	24.59	22.16	13.96	10.45	30.00	12.49	19.77
1921-22	16.78	19.09	15.13	10.37	12.40	28.25	8.49	16.56
Average for 10 seasons 1912-22	16.76	17.56	16.90	10.58	11.97	26.36	16.88	15.90

The smallest average yield per acre ever recorded for Australia was that experienced in the abnormally dry season 1914-15, viz., 5.60 bushels, while the largest in the past ten years was that of the season 1915-16, amounting to 22.92 bushels per acre.

(iii) *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 about 5.45 bushels per head during the last five years under review, as compared with 2.43 bushels per head for Australia as a whole. Particulars for the seasons 1917-18 to 1921-22 are furnished in the succeeding table :—

OATS.—YIELD PER 1,000 OF POPULATION, 1917-18 TO 1921-22.

Season.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Cap. Ter.	Australia.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1917-18	756	4,333	64	2,794	2,964	2,975	1,410	2,085
1918-19	649	3,670	5	3,366	4,841	4,181	601	2,035
1919-20	286	4,393	4	3,393	7,595	5,917	1,696	2,367
1920-21	785	7,138	138	4,746	6,112	7,114	1,089	3,422
1921-22	549	3,922	45	2,582	6,026	7,067	724	2,205

2. *Comparison with Other Countries.*—(i) *Total Production.* 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 :—

OATS.—PRODUCTION IN VARIOUS COUNTRIES, 1921.

Country.	Quantity of Oats Produced.	Country.	Quantity of Oats Produced.	Country.	Quantity of Oats Produced.
	Bushels.		Bushels.		Bushels.
United States..	848,592,715	Czecho-Slova-	57,881,720	Austria ..	15,020,445
Russia in Europe		kia ..	49,667,351	Jugo-Slavia	14,727,660
(1916) ..	674,593,686	Rumania ..	41,612,278	Latvia ..	13,474,111
Canada ..	362,294,800	Denmark ..	30,219,883	Australia ..	12,147,433
Germany ..	275,852,641	Italy ..	28,492,941	Norway ..	10,370,083
France ..	196,166,892	Spain ..	28,180,132	Japan ..	9,668,671
United Kingdom	160,547,008	Belgium ..	26,372,815	Bulgaria ..	9,017,298
Poland ..	119,831,709	Argentine Rep.	22,423,176	Algeria ..	8,267,340
Russia in Asia		Finland ..	17,030,908	New Zealand	6,752,663
(1915) ..	91,585,207	Netherlands	16,112,120	Union of South	
Sweden ..	61,279,067	Hungary ..		Africa	6,482,267

(ii) *Yield per Acre.* The average yield per acre of oats is very low in Australia compared with other countries, where its cultivation is more extensive. Arranging the countries contained in the foregoing table according to the magnitude of average yield for the years specified, the results are as follows :—

OATS.—YIELD PER ACRE, VARIOUS COUNTRIES, 1921.

Country.	Average per Acre.	Country.	Average per Acre.	Country.	Average per Acre.
	Bushels.		Bushels.		Bushels.
Belgium ..	46.7	Czecho-Slovakia	28.9	Spain ..	18.1
Netherlands ..	45.1	Italy ..	25.2	Australia ..	16.6
New Zealand ..	39.6	Poland ..	25.0	Rumania ..	16.2
Denmark ..	37.4	France ..	23.6	Algeria ..	14.8
United Kingdom..	36.4	Austria ..	22.6	Jugo-Slavia ..	14.4
Germany ..	35.3	Bulgaria ..	22.1	Russia in Asia	
Sweden ..	34.9	Finland ..	21.6	(1915) ..	13.9
Russia in Europe		Latvia ..	21.6	Argentine Rep.	12.5
(1916) ..	32.1	Canada ..	21.4	Union of South	
Japan ..	31.7	Hungary ..	20.0	Africa ..	12.2
Norway ..	30.33	United States ..	18.9		

3. *Price of Oats.*—The average wholesale prices of oats in the markets of the several capitals for the year 1921 are given in the following table :—

OATS.—AVERAGE WHOLESALE PRICES, 1921.

Particulars.	Sydney.(a)	Melbourne.	Brisbane.	Adelaide.	Perth.	Hobart.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Average price per bushel ..	3 9	2 7	2 8	2 2	3 4	3 0

(a) Year ended 30th June, 1922.

4. **Imports and Exports.**—The production of oats in Australia has not yet reached sufficient proportions to admit of a regular export trade; in fact in certain years the imports have exceeded the exports, notably in 1903, 1906, 1908, 1910, and in each of the four years prior to 1916–17. The quantities and values of oats imported into and exported from Australia during the years 1917–18 to 1921–22 are given hereunder:—

OATS.—IMPORTS AND EXPORTS, AUSTRALIA, 1917–18 TO 1921–22.

Year.	Imports.		Exports.		Net Exports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Bushels.	£	Bushels.	£	Bushels.	£
1917–18 ..	838	219	368,113	53,809	367,275	53,590
1918–19 ..	41,728	9,713	149,413	35,326	107,685	25,613
1919–20 ..	146,700	41,759	290,323	83,175	143,623	41,416
1920–21 ..	139,728	30,057	865,588	143,874	725,860	113,817
1921–22 ..	14,880	2,569	325,792	49,980	310,912	47,411

The principal country from which imports of oats have been obtained is New Zealand, while the principal countries to which oats were exported during the period under review were New Zealand, Java, and the United Kingdom.

5. **Oatmeal, etc.**—Oatmeal, etc., is imported into Australia principally from the United Kingdom, the United States of America, and New Zealand. The total importations of oatmeal, wheatmeal, and rolled oats during 1921–22 amounted to 108,357 lbs., and represented a value of £2,393, while the exports amounted to 383,171 lbs., valued at £5,589, and were shipped mainly to Papua, New Zealand, India, and Netherlands East Indies.

6. **Value of Oat Crop.**—The estimated value of the oat crop of the several States of Australia for the season 1921–22 is as follows:—

OATS.—VALUE OF CROP, (a) 1921–22.

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Cap. Ter.	Australia.
	£	£	£	£	£	£	£	£
Aggregate value..	238,350	1,013,710	4,444	189,236	323,978	237,974	300	2,007,992
Value per acre ..	£3/8/6	£3/3/7	£1/19/1	£1/10/3	£1/19/9	£4/7/1	£1/14/1	£2/14/9

(a) Exclusive of the value of straw.

§ 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 1921–22 being 281,721 acres, or 92 per cent. of the total for Australia. Of the balance, Victoria contributed 23,227 acres, South Australia 186 acres, Western Australia 43 acres, and the Northern Territory 9 acres. The climate of Tasmania prevents the growing of maize for grain. 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 connexion with the dairying industry.

2. **Progress of Maize-growing.**—(i) *Area and Yield.* The area and yield of maize for grain in each State are given in the following table for the last five years. The fluctuations from year to year are shown more fully on the graph hereinafter.

The total area under maize in Australia exceeded 400,000 acres on only one occasion, and that as far back as 1910-11. From that year to 1917-18 the acreage remained practically constant at about 335,000 acres, from which it receded to 265,469 acres in 1919-20. Increases during the past two years raised the total acreage to 305,186 in 1921-22.

MAIZE.—AREA AND YIELD, 1917-18 TO 1921-22.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Nor. Ter.	Fed. Cap. Ter.	Australia.
AREA.								
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1917-18	145,733	20,987	165,124	70	97	25	21	332,057
1918-19	114,582	22,559	149,505	112	39	15	..	286,812
1919-20	136,509	23,474	105,260	165	11	50	..	265,469
1920-21	144,105	24,149	115,805	199	19	6	..	284,283
1921-22	146,687	23,227	135,034	186	43	9	..	305,186
YIELD.								
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1917-18	3,499,531	1,152,787	4,188,586	796	701	432	429	8,843,262
1918-19	2,091,921	711,679	4,105,974	1,756	623	200	..	6,912,153
1919-20	4,052,025	878,922	1,830,664	1,810	84	500	..	6,764,005
1920-21	4,176,000	1,065,880	2,012,864	3,738	240	60	..	7,258,782
1921-22	3,976,300	951,960	2,907,754	3,792	540	92	..	7,840,438

The maximum production of maize in Australia was recorded in 1910-11, when the harvest exceeded 13,000,000 bushels. This figure has not been approached in recent years, the average for the past decade amounting to only 8,000,000 bushels.

(ii) *Average Yield.* The following table gives particulars of the average yield per acre of the maize crops of the States for the seasons 1917-18 to 1921-22, and also for the decennium 1912-22 :—

MAIZE.—AVERAGE YIELD PER ACRE, 1917-18 TO 1921-22.

Season.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	N. Ter.	Fed. Cap. Ter.	Australia.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1917-18 ..	24.01	54.93	25.37	11.37	7.23	17.28	20.43	26.63
1918-19 ..	18.26	31.55	27.46	15.68	15.97	13.33	..	24.10
1919-20 ..	29.68	37.44	17.39	10.97	7.64	10.00	..	25.48
1920-21 ..	28.98	44.14	17.38	18.78	12.63	10.00	..	25.53
1921-22 ..	27.11	40.99	21.53	20.39	12.56	10.22	..	25.69
Average for 10 seasons 1912-22	26.22	43.61	21.22	15.71	12.50	16.59	16.07	25.10

The very high average yield 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 peculiarly suited to its growth. The average yield in New South Wales is appreciably higher than that obtained in Queensland.

(iii) *Relation to Population.* During the past five seasons the Australian production of maize has averaged $1\frac{1}{2}$ bushels per head of population, while the average for Queensland, the State in which the production per head is highest, amounted to $4\frac{1}{2}$ bushels. Details for the several States during the past five seasons are as follows:—

MAIZE.—YIELD PER 1,000 OF POPULATION, 1917-18 TO 1921-22.

Season.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	N. Ter.	Fed. Cap. Ter.	Australia.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1917-18 ..	1,823	813	6,091	2	2	90	204	1,775
1918-19 ..	1,067	495	5,820	4	2	43	..	1,360
1919-20 ..	1,988	585	2,482	4	..	110	..	1,275
1920-21 ..	1,997	697	2,676	8	1	15	..	1,341
1921-22 ..	1,869	614	3,776	8	2	25	..	1,423

3. *Australian and Foreign Maize Production.*—(i) *Total Yield.* The United States of America is the most important maize-producing country of the world. About 100,000,000 acres are planted each year, and the yield represents about 74 per cent. of the world's production. Of the huge quantities raised in that country, more than 85 per cent. is fed to live stock on farms, while 10 per cent. is used for human food, and only a very small fraction, about $1\frac{1}{2}$ per cent., enters into international trade. The yields of the various countries are as follow:—

MAIZE.—PRODUCTION IN VARIOUS COUNTRIES, 1921.

Country.	Production of Maize.	Country.	Production of Maize.
	Bushels.		Bushels.
United States ..	3,081,233,095	Philippine Islands ..	18,107,741
Argentine Republic ..	230,422,660	Russia in Asia (1917) ..	17,428,279
Rumania ..	107,694,618	Canada ..	14,903,913
Italy ..	94,483,920	France ..	12,202,598
India (British) (1920) ..	78,840,084	Portugal ..	11,720,695
Mexico (1918) ..	75,985,594	Czecho-Slovakia ..	10,500,888
Yugo-Slavia ..	74,521,578	Greece ..	7,873,660
Egypt ..	70,568,749	Australia ..	7,840,438
Russia in Europe (1917) ..	67,136,860	Uruguay (1920) ..	4,721,917
Union of South Africa ..	43,103,387	Guatemala ..	4,344,056
Bulgaria ..	34,385,883	Japan (1919) ..	4,033,676
Hungary ..	27,142,297	French Morocco ..	3,725,470
Spain ..	24,897,584	Austria ..	2,455,716

(ii) *Yield per Acre.* The average yield per acre of maize in Australia during 1921 was 25.7 bushels, which may be regarded as satisfactory when compared with those of other maize-producing countries, the yields per acre for which are shown in the following table:—

MAIZE.—YIELD PER ACRE IN VARIOUS COUNTRIES, 1921.

Country.	Average Yield per Acre.	Country.	Average Yield per Acre.
	Bushels.		Bushels.
Canada	50.2	Spain	21.1
Egypt	36.4	Mexico (1918)	19.1
Russia in Asia (1917)	30.0	Greece	16.0
United States of America	29.7	Portugal	16.0
Japan (1919)	29.1	Jugo-Slavia	15.8
Czecho-Slovakia	29.0	France	15.1
Argentine Republic	28.5	Philippine Islands	13.6
Russia in Europe (1917)	28.3	Hungary	13.5
Australia (a)	25.7	Rumania	12.7
Italy	25.5	Union of South Africa	12.3
Bulgaria	24.3	India (1920)	10.9
Austria	21.9	French Morocco	9.9

(a) Average yield for 10 years, 25.1 bushels.

4. Price of Maize.—The average wholesale price of maize in the Sydney market for each of the last five years is given in the following table :—

MAIZE.—AVERAGE PRICE, SYDNEY, 1917-18 TO 1921-22.

Particulars.	1917-18.	1918-19.	1919-20.	1920-21.	1921-22.
	s. d.	s. d.	s. d.	s. d.	s. d.
Average price per bushel ..	4 8½	6 11½	8 11	6 6	5 2

5. Oversea Imports and Exports.—The Australian oversea trade in maize is practically insignificant, any importation or exportation depending solely on the success or failure of the local crop. During the past five years, owing to droughty conditions, the average annual import amounted to 112,000 bushels. Details of imports and exports for the years 1917-18 to 1921-22 are as follow :—

MAIZE.—IMPORTS AND EXPORTS, AUSTRALIA, 1917-18 TO 1921-22.

Year.	Imports.		Exports.		Net Imports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Bushels.	£	Bushels.	£	Bushels.	£
1917-18	3,227	770	128,988	29,069	- 125,761	- 28,299
1918-19	255,605	73,774	84,119	20,804	171,486	52,970
1919-20	494,278	158,361	6,632	3,001	487,646	155,360
1920-21	96,536	40,097	77,489	27,162	19,047	12,935
1921-22	45,066	9,791	36,320	9,023	8,746	768

NOTE.—The minus sign — signifies net exports.

The principal countries to which maize is exported from Australia are New Zealand and the Pacific Islands, while the principal countries from which imports arrive are South Africa, Java, and the Pacific Islands.

6. **Prepared Maize.**—A small quantity of corn-flour is imported annually into Australia, the principal countries of supply being the United Kingdom and the United States of America. During the year 1921-22 the imports amounted to 783,382 lbs., and represented a value of £9,375. The exports from Australia are small, and reached only 61,661 lbs., valued at £1,390 in 1921-22.

7. **Value of Maize Crop.**—The value of the Australian maize crop for the season 1921-22 has been estimated at £1,977,986, made up as follows :—

MAIZE.—VALUE OF CROP, 1921-22.

Particulars.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	N. Ter.	Australia.
	£	£	£	£	£	£	£
Aggregate value ..	1,060,480	261,789	654,245	1,232	207	33	1,977,986
Value per acre ..	£7/4/7	£11/5/5	£4/16/11	£6/12/6	£4/16/3	£3/13/4	£6/9/7

§ 7. Barley.

1. **Progress of Cultivation.**—(i) *Area and Yield.* The area under barley in Australia has fluctuated very considerably, but results for the past ten years show a marked rise. The average annual area sown for the quinquennium 1917 to 1921 amounted to 272,141 acres, which was more than double the acreage from 1906 to 1911, i.e., 127,849 acres. Victoria was originally the principal barley-growing State, but the rapid expansion of the cultivation of this crop in South Australia during recent years brought the latter State into the lead in 1913-14, and, though a decline occurred in 1921-22, the area under barley in South Australia accounted for 57 per cent. of the Australian acreage; Victoria was next in importance with 33 per cent., leaving a small margin of about 9 per cent. to be distributed among the other States. 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 and yield of barley for grain in the several States are shown in the following table for the last five years, while the progress since 1860 is illustrated in the graphs hereinafter :—

BARLEY.—AREA AND YIELD, 1917-18 TO 1921-22.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	Australia.
AREA.							
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1917-18 ..	6,370	84,931	7,702	95,654	5,028	5,185	204,870
1918-19 ..	7,980	100,198	1,316	130,357	7,982	7,036	254,869
1919-20 ..	5,354	85,323	3,275	157,897	9,167	6,293	267,309
1920-21 ..	5,969	93,954	15,908	202,079	10,686	6,151	334,747
1921-22 ..	5,031	100,127	7,730	170,887	7,894	7,241	298,910
YIELD.							
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1917-18 ..	97,824	1,970,650	143,574	1,651,036	35,761	98,013	3,996,858
1918-19 ..	86,313	2,028,635	8,824	2,417,349	81,451	141,149	4,763,721
1919-20 ..	38,892	1,528,654	34,892	2,448,936	116,037	120,516	4,287,927
1920-21 ..	123,290	2,495,762	317,511	3,946,062	111,405	161,346	7,155,376
1921-22 ..	83,950	2,336,246	133,885	3,278,787	85,857	166,960	6,085,685

The only States where the annual production of barley averaged over 1,000,000 bushels for the past decade were South Australia and Victoria, the yields being respectively 2,027,302 and 1,805,226 bushels, the higher return in the latter State tending to diminish the advantage held by South Australia in regard to acreage.

(ii) *Malting and other Barley.* (a) *Year 1921-22.* In recent years the statistics of all the States have distinguished between "malting" and "other" barley. Particulars for the season 1921-22 are as follows:—

BARLEY, MALTING AND OTHER.—AREA AND YIELD, 1921-22.

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	Australia.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Malting barley ..	3,569	47,686	5,558	151,257	4,120	6,472	218,662
Other barley ..	1,462	52,441	2,172	19,630	3,774	769	80,248
Total ..	5,031	100,127	7,730	170,887	7,894	7,241	298,910
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
Malting barley ..	57,030	1,103,039	93,567	2,981,004	48,219	147,740	4,430,599
Other barley ..	26,920	1,233,207	40,318	297,783	37,638	19,220	1,655,086
Total ..	83,950	2,336,246	133,885	3,278,787	85,857	166,960	6,085,685

The cultivation of malting barley is a special industry due to the demands of the local brewing trade. Its expansion, however, appears to be restricted to home requirements, although of late years the exports have increased. Taking Australia as a whole, more than 73 per cent. of the area under barley in 1921-22 was sown with the malting variety. The proportion varies considerably in the several States.

(b) *Progress of Cultivation.* The following table sets out the acreage and yield of malting and other barley in Australia as a whole during the past five seasons:—

BARLEY, MALTING AND OTHER.—AREA AND YIELD, AUSTRALIA, 1917-18 TO 1921-22.

Season.	Acres.			Bushels.			Average Bushels per Acre.		
	Malting.	Other.	Total.	Malting.	Other.	Total.	Malting.	Other.	Total.
1917-18 ..	136,785	68,085	204,870	2,602,449	1,394,409	3,996,858	19.03	20.48	19.51
1918-19 ..	179,186	75,683	254,869	3,419,863	1,343,858	4,763,721	19.09	17.76	18.69
1919-20 ..	204,752	62,557	267,309	3,352,027	935,900	4,287,927	16.37	14.96	16.04
1920-21 ..	249,908	84,839	334,747	5,248,861	1,906,515	7,155,376	21.00	22.47	21.38
1921-22 ..	218,662	80,248	298,910	4,430,599	1,655,086	6,085,685	20.26	20.62	20.36
Average 10 seasons 1912-22	162,711	69,097	231,808	3,046,573	1,281,433	4,328,006	18.72	18.55	18.67

During the past ten seasons the area and production of malting barley have represented more than twice the corresponding figures for other barley. The average yield per acre differs very little in respect of the two classes of barley, malting obtaining a slight average advantage of 0.17 bushels per acre during the last ten years.

(iii) *Average Yield.* The average yield of barley per acre varies considerably in the different States, being as a rule highest in Tasmania and Victoria, and lowest in Western Australia. Details for each State during the past five seasons, and for the decennium 1912-22, are given in the following table :—

BARLEY.—YIELD PER ACRE, 1917-18 TO 1921-22.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Australia.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1917-18	15.36	23.20	18.64	17.26	7.11	18.90	19.51
1918-19	10.82	20.25	6.71	18.54	10.20	20.06	18.69
1919-20	7.26	17.92	10.65	15.51	12.66	19.15	16.04
1920-21	20.66	26.56	19.96	19.53	10.43	26.23	21.38
1921-22	16.69	23.32	17.32	19.19	10.88	23.06	20.36
Average for 10 seasons 1912-22	14.86	21.58	16.78	17.31	11.40	22.55	18.67

(iv) *Relation to Population.* During the last five seasons the quantity of barley produced in Australia averaged nearly 1 bushel per head of population. For the season 1921-22 the production ranged from $6\frac{1}{2}$ bushels per head in South Australia to 3 lbs. per head in New South Wales. Details for the years 1917-18 to 1921-22 are as follows :—

BARLEY.—PRODUCTION PER 1,000 OF POPULATION, 1917-18 TO 1921-22.

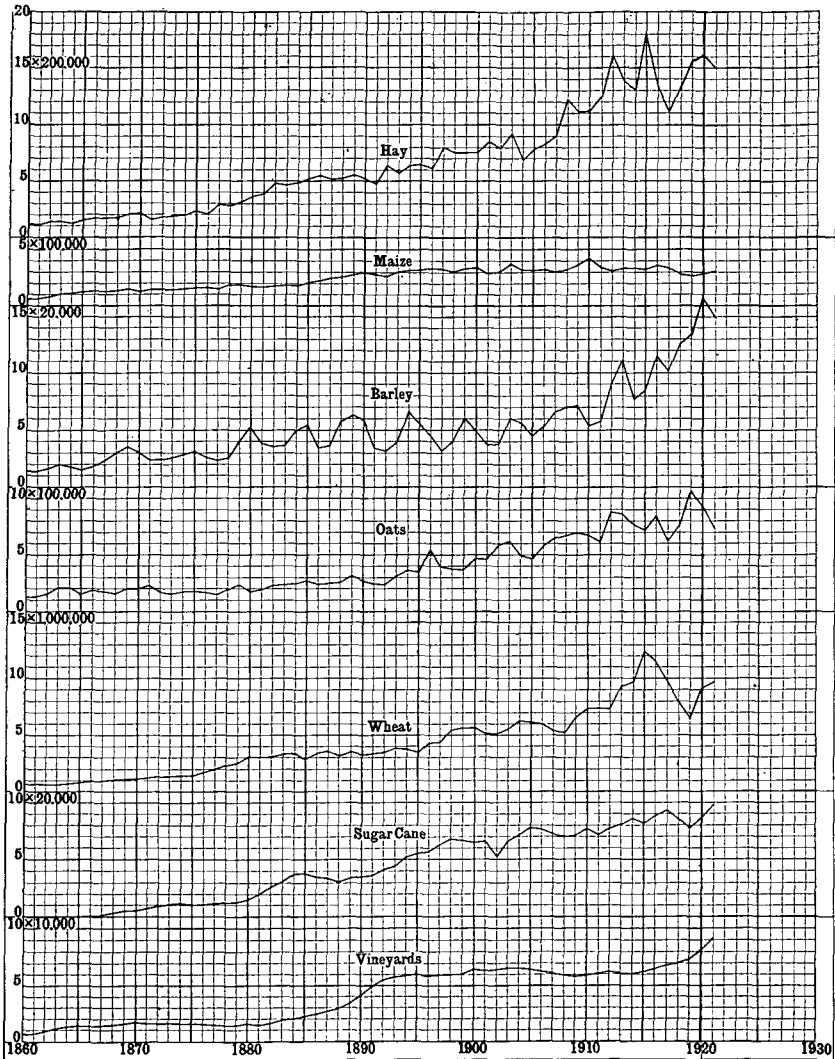
Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	Australia.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1917-18	51	1,390	209	3,695	117	495	802
1918-19	44	1,411	13	5,282	263	696	937
1919-20	19	1,017	47	5,085	354	574	808
1920-21	59	1,633	422	8,034	337	758	1,322
1921-22	39	1,506	174	6,524	256	764	1,104

2. *Comparison with Other Countries.*—(i) *Total Yield.* In comparison with the barley production of other countries, that of Australia appears extremely small. Particulars for some of the leading countries for the year 1921 are as follows, the Australian figure being added for the purpose of comparison :—

BARLEY.—PRODUCTION IN VARIOUS COUNTRIES, 1921.

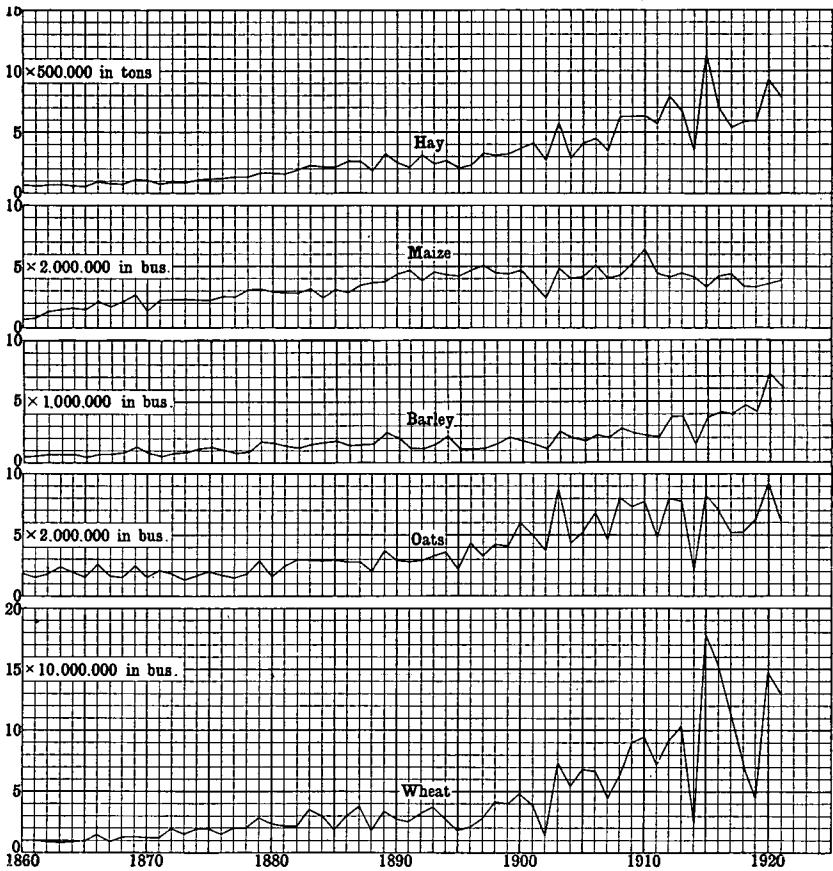
Country.	Production of Barley.	Country.	Production of Barley.
	Bushels.		Bushels.
Russia in Europe (1916) ..	336,213,042	Jugo-Slavia	12,742,765
United States	145,130,695	Bulgaria	12,711,129
British India	112,358,278	Sweden	11,832,681
Spain	85,747,623	Egypt	11,463,636
Germany	85,494,943	Tunis	11,023,100
Japan	84,367,765	Argentina	10,714,453
Canada	57,319,525	Italy	9,947,245
United Kingdom	54,097,411	Greece	6,172,936
Poland	51,173,569	Australia	6,035,635
Rumania	47,427,827	Austria	4,992,732
Algeria	46,297,020	Belgium	4,912,572
Czecho-Slovakia	45,470,067	Finland	4,741,520
France	36,291,969	Chile	4,328,599
Russia in Asia (1915) ..	35,451,753	Norway	4,107,974
French Morocco	28,329,680	Netherlands	3,504,799
Denmark	26,234,978	Union of South Africa ..	1,230,385
Hungary	19,768,193	New Zealand	1,151,313

AREA UNDER PRINCIPAL CROPS—AUSTRALIA, 1860 TO 1921-22.



EXPLANATION.—The base of each small square represents an interval of one year, while the vertical height represents a number of acres, varying with the nature of the crop in accordance with the scale given on the left of the graph. The height of each curve above its base line denotes, for the crop to which it relates, the total area under cultivation in Australia during the successive seasons.

PRODUCTION OF PRINCIPAL CROPS—AUSTRALIA, 1860 TO 1921-22.



EXPLANATION.—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 wheat, 10,000,000 bushels; oats, 2,000,000 bushels; barley, 1,000,000 bushels; maize, 2,000,000 bushels; and hay, 500,000 tons. The height of each curve above its base line denotes the aggregate yield in Australia of the particular crop during the successive seasons.

(ii) *Yield per Acre.* The following table shows the average yield of barley per acre in various countries of the world, the return ranging from 56½ bushels in Netherlands to 9 bushels in Tunis :—

BARLEY.—AVERAGE YIELD PER ACRE IN VARIOUS COUNTRIES, 1921.

Country.	Average yield per Acre.	Country.	Average yield per Acre.
	Bushels.		Bushels.
Netherlands	56.8	United States	20.0
Belgium	51.3	Spain	19.8
Denmark	41.2	Austria	18.7
New Zealand	34.8	Algeria	18.5
Chile	33.9	Italy	18.4
Germany	30.4	Russia in Asia (1916) ..	16.9
United Kingdom	30.4	Hungary	16.7
Sweden	29.6	Argentine Republic ..	16.1
Egypt	29.1	Finland	16.0
Japan	28.8	India	15.6
Czecho Slovakia	28.7	Russia in Europe (1916) ..	15.3
Norway	26.4	French Morocco	14.9
Bulgaria	23.1	Union of South Africa ..	14.1
Poland	21.1	Jugo-Savia	13.8
France	21.0	Rumania	12.2
Canada	20.5	Greece	10.6
Australia	20.4	Tunis	9.0

3. *Price of Barley.*—The average price of barley in the Melbourne market during each of the past five years is given in the following table :—

BARLEY.—AVERAGE MELBOURNE PRICE PER BUSHEL, 1917 TO 1921.

Particulars.	1917.	1918.	1919.	1920.	1921.
	s. d.	s. d.	s. d.	s. d.	s. d.
Malting barley	4 4½	5 9	5 9½	7 3	4 5
Cape barley	3 1½	4 0	4 6½	6 3	3 5

4. *Imports and Exports.*—Although the Australian oversea trade in barley is not large, a substantial rise in the volume of exports has taken place during the past three years. Occasionally the occurrence of drought renders a fairly large importation necessary, but during the past five years the average annual exports exceeded the imports by 1,334,348 bushels. Particulars of the Australian overseas imports and exports for the years 1917–18 to 1921–22 are contained in the following table :—

BARLEY.—IMPORTS AND EXPORTS, AUSTRALIA, 1917-18 TO 1921-22.

Year.	Imports.		Exports.		Net Exports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Bushels.	£	Bushels.	£	Bushels.	£
1917–18	34	8	282,252	64,703	282,218	64,695
1918–19	456	203	176,478	49,573	176,022	49,370
1919–20	438	236	1,075,446	364,809	1,075,008	364,573
1920–21	20	45	3,209,734	778,615	3,209,714	778,570
1921–22	7,052	1,891	1,935,830	396,883	1,928,778	394,992

During some years there is an export of Australian pearl and Scotch barley, the total for 1921-22 reaching 311,261 lbs., valued at £3,128. The trade for the year was mainly with the South African Union and India.

5. Imports and Exports of Malt.—In pre-war times the imports of malt into Australia were fairly extensive, the supply being obtained principally from the United Kingdom. Since the outbreak of the war in 1914, however, imports have continuously declined, and in 1917-18 and 1920-21 large quantities were exported to South Africa and Japan. Details of imports and exports for the years 1917-18 to 1921-22 are given hereunder :—

MALT.—IMPORTS AND EXPORTS, AUSTRALIA, 1917-18 TO 1921-22.

Year.	Imports.		Exports.		Net Exports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Bushels.	£	Bushels.	£	Bushels.	£
1917-18	35	106	117,075	47,626	117,040	47,520
1918-19 .. ..	..	1	..	..	..	—
1919-20 .. ..	..	..	..	..	..	..
1920-21	5	8	139,908	80,575	139,903	80,567
1921-22	40	43	7,553	3,238	7,513	3,195

NOTE.—The minus sign — signifies net imports.

6. Value of Barley Crop.—The estimated value of the barley crop of Australia for the seasons 1917-18 to 1921-22 was £834,075, £1,221,863, £1,360,411, £1,522,915, and £1,139,736. The extent to which the several States have contributed to the total in 1921-22 is shown in the following table :—

BARLEY.—VALUE OF CROP (a), 1921-22.

Particulars.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	Australia.
Total value ..	£19,160	£434,792	£20,245	£613,455	£18,692	£33,392	£1,139,736
Value per acre ..	£3/16/2	£4/6/10	£2/12/5	£3/11/10	£2/7/4	£4/12/3	£3/16/3

(a) Exclusive of the value of straw.

§ 8. Other Grain and Pulse Crops.

In addition to the grain crops already specified, the only other grain and pulse crops extensively grown in Australia are beans, peas, and rye. The total area under the two former crops for the season 1921-22 was 37,516 acres, giving a yield of 688,302 bushels, or an average of 18.35 bushels per acre, being greater than the average yield for the decennium ended 1921-22, which was 16.08 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 Australia during the season 1921-22 was 3,950 acres, yielding 47,023 bushels, and giving an average of 11.90 bushels per acre. This was higher than the average for the past ten seasons, which was 11.17 bushels per acre. Over 32 per cent. of the rye grown during the season was produced in New South Wales, and 31 per cent. in Victoria. 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 Queensland and Western Australia, and in the Northern Territory, will be found well suited to its cultivation.

§ 9. Potatoes.

1. *Progress of Cultivation.*—(i) *Area and Yield.* The principal potato-growing State is Victoria, which possesses peculiar advantages for the growth of the tuber. The rainfall is generally satisfactory, while the atmosphere is sufficiently dry to be unfavourable to the spread of Irish blight, consequently potatoes are grown in nearly every district except in the wheat belt. Tasmania comes next in order of importance, followed by New South Wales.

The area and production of potatoes in each State during the last five years are given hereunder :—

POTATOES—AREA AND YIELD, 1917-18 TO 1921-22.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Cap. Ter.	Australia.
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AREA.

	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1917-18 ..	22,558	66,966	10,738	4,164	4,484	27,309	22	136,241
1918-19 ..	20,877	51,620	6,434	3,275	3,936	25,023	2	111,169
1919-20 ..	20,036	53,918	4,432	3,411	3,585	28,511	7	113,900
1920-21 ..	27,667	62,687	8,770	4,811	4,254	32,000	6	140,195
1921-22 ..	29,491	63,895	9,553	5,795	3,612	36,795	3	149,144

YIELD.

	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1917-18 ..	49,934	182,195	22,139	11,315	11,320	70,442	50	347,395
1918-19 ..	30,353	137,533	11,083	13,19	11,697	56,528	3	260,416
1919-20 ..	49,962	145,888	7,844	11,020	13,240	66,225	24	294,203
1920-21 ..	63,234	171,628	19,068	17,057	13,368	88,679	22	373,056
1921-22 ..	57,825	173,660	16,794	18,573	13,605	107,624	10	388,091

(a) Includes 2 acres in Northern Territory.

The production of potatoes in Australia decreased by about 40,000 tons during the past decade, the decline being confined to New South Wales. The average yield during the last ten years amounted to 355,996 tons, which is considerably below the maximum production of 507,153 tons obtained in 1906-7.

(ii) *Average Yield.* The suitability of the soil, climate, and general conditions for potato growing is evidenced by the satisfactory yields per acre which are generally obtained in Australia, despite the little attention paid to this crop, the average yield during the past ten seasons being 2.60 tons per acre. The lowest average yield is that obtained in Queensland with an average of 1.86 tons for the same period.

Particulars for each State for the seasons 1917-18 to 1921-22, and also for the past decennium, are given hereunder :—

POTATOES.—YIELD PER ACRE, 1917-18 TO 1921-22.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Cap. Ter.	Australia.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1917-18 ..	2.21	2.72	2.06	2.72	2.52	2.58	2.27	2.55
1918-19 ..	1.45	2.66	1.72	4.04	2.97	2.26	1.50	2.34
1919-20 ..	2.49	2.71	1.77	3.23	3.69	2.32	3.43	2.58
1920-21 ..	2.29	2.74	2.17	3.55	3.14	2.77	3.67	2.66
1921-22 ..	1.96	2.72	1.76	3.21	3.77	2.92	3.33	2.60
Average for 10 seasons 1917-22	2.18	2.80	1.86	3.28	3.07	2.56	2.11	2.60

(iii) *Relation to Population.* The average production of potatoes per annum per head of the population of Australia for the past five seasons was approximately 141 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, while for the past five seasons it has averaged about 7½ cwt. Details for the seasons 1917-18 to 1921-22 are as follows :—

POTATOES.—PRODUCTION PER 1,000 OF POPULATION, 1917-18 TO 1921-22.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Cap. Ter.	Australia.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1917-18 ..	26	129	32	25	37	356	24	70
1918-19 ..	15	96	16	29	38	279	1	51
1919-20 ..	25	97	11	23	40	315	12	55
1920-21 ..	30	112	25	35	40	417	11	69
1921-22 ..	27	112	22	37	41	493	5	70

2. *Imports and Exports.*—Under normal conditions there is a moderate export trade in potatoes carried on by Australia principally with New Zealand, the Pacific Islands and the Philippine Islands. On the other hand, when the recurrence of droughts causes

a shortage in some of the States, importations are usually made from New Zealand. The quantities and values of the Australian oversea imports and exports of potatoes during the past five years are shown in the following table :—

POTATOES.—IMPORTS AND EXPORTS, AUSTRALIA, 1917-18 TO 1921-22.

Year.	Imports.		Exports.		Net Exports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Tons.	£	Tons.	£	Tons.	£
1917-18	38	367	3,348	23,203	3,310	22,836
1918-19	308	3,570	6,742	50,308	6,434	46,738
1919-20	2,614	41,391	1,455	22,954	1,159	18,437
1920-21	56	746	1,130	13,222	1,074	12,476
1921-22	59	499	2,540	21,611	2,481	21,112

NOTE.—The minus sign — signifies net imports.

3. Value of Potato Crop.—The estimated value of the potato crop of each State for the season 1921-22 is given in the following table, together with the value per acre :—

POTATOES.—VALUE OF CROP, 1921-22.

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Cap. Ter.	Australia.
Total value ..	£327,690	£772,787	£119,237	£119,642	£119,611	£645,744	£60	£2,104,771
Value per acre	£11/2/3	£12/1/11	£12/9/8	£20/12/11	£33/2/4	£17/11/0	£20/0/0	£14/2/3

§ 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 1921-22 being only 18,082 acres. The principal of these crops are onions, mangolds, sugar beet, turnips, and "sweet potatoes." Of these, onions and sugar beet are most largely grown in Victoria, turnips and mangolds in Tasmania, and sweet potatoes in Queensland. The total area under onions in Australia during the season 1921-22 was 7,063 acres, giving a yield of 36,235 tons, and averaging 5.13 tons per acre. The area devoted in 1921-22 to root crops other than potatoes and onions, viz., 11,019 acres, yielded 81,190 tons, and gave an average of 7.37 tons per acre. The areas and yields here given are exclusive of the production of "market gardens," reference to which is made further on.

2. Imports and Exports.—The only root crop, other than potatoes, in which any considerable oversea trade is carried on by Australia is that of onions. During the past five years 3,549 tons, valued at £54,046, were imported, principally from New Zealand, Japan, and the United States, while during the same period, the exports totalled 20,304 tons, valued at £233,683; and were shipped mainly to New Zealand, the Pacific Islands, the Philippines, and the United States of America.

§ 11. Hay.

1. *Nature and Extent.*—(i) *Area and Yield.* As already stated, the most important crop of Australia is that of wheat grown for grain. Next to this in importance is the hay crop, which for the five seasons ended 1921-22 averaged nearly 20 per cent. of the area under crop in Australia, and for 1921-22, 19.50 per cent. 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 during the last five years is given hereunder. The progress from 1860 onwards may be traced from the graph accompanying this chapter.

HAY.—AREA AND YIELD, 1917-18 TO 1921-22.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	N. Ter.	Fed. Cap. Ter.	Aus-tralia.
AREA.									
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1917-18	619,614	748,808	96,431	407,011	265,899	74,107	14	1,030	2,212,914
1918-19	813,379	984,479	54,772	501,731	249,796	87,136	30	1,581	2,692,904
1919-20	936,800	1,116,998	48,843	590,835	327,498	102,908	100	1,671	3,125,653
1920-21	853,109	1,333,397	94,212	570,865	266,824	113,618	10	1,154	3,233,189
1921-22	749,738	1,159,135	98,155	559,285	335,561	91,443	12	1,190	2,994,519
YIELD.									
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1917-18	781,972	949,545	153,895	488,693	267,163	80,405	14	2,234	2,723,921
1918-19	751,247	1,113,861	92,230	567,941	250,014	115,896	30	2,383	2,893,602
1919-20	578,605	1,242,489	41,804	598,954	379,025	143,053	500	2,354	2,986,784
1920-21	1,372,836	1,984,854	116,709	769,050	264,244	176,798	20	1,855	4,686,366
1921-22	1,027,833	1,548,453	138,675	680,201	368,720	136,991	25	1,291	3,902,189

In all the States marked fluctuations occur yearly in the area under hay. 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 grain-yield is not satisfactory. 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 Australia during the season 1915-16, *i.e.*, 3,597,771 acres, was the highest on record, whilst the average yield during the past decennium amounted to 2,912,914 tons.

(ii) *Average Yield.* The States in which the highest average yields per acre have been obtained during the last 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 Australia as a whole was that of 13 cwt. per acre in 1914-15; while the highest was that of 31½ cwt. in 1915-16, followed closely by 29 cwt. obtained

in 1920-21. The average for the decennium was 24½ cwt. Particulars for the several States for the seasons 1917-18 to 1921-22, and the average for the last ten years, are given hereunder :—

HAY.—YIELD PER ACRE, 1917-18 TO 1921-22.

Season.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	N. Ter.	Fed. Cap. Ter.	Australia.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1917-18	1.26	1.27	1.60	1.20	1.00	1.08	1.00	2.17	1.23
1918-19	0.92	1.13	1.68	1.13	1.00	1.33	1.00	1.51	1.07
1919-20	0.62	1.11	0.86	1.01	1.16	1.39	5.00	1.41	0.96
1920-21	1.61	1.49	1.24	1.35	0.99	1.56	2.00	1.61	1.45
1921-22	1.37	1.34	1.41	1.22	1.10	1.50	2.08	1.08	1.30
Average for 10 seasons									
1912-22	1.17	1.31	1.33	1.15	1.02	1.41	2.51	1.40	1.22

(iii) *Relation to Population.* During the past five seasons the Australian hay production per head of population has varied between 11 cwt. in 1917-18 and 17½ cwt. in 1920-21; averaging about 13 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 1917-18 to 1921-22 are given hereunder :—

HAY.—YIELD PER 1,000 OF POPULATION, 1917-18 TO 1921-22.

Season.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	N. Ter.	Fed. Cap. Ter.	Australia.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1917-18	407	670	224	1,094	872	406	3	1,062	547
1918-19	383	775	131	1,241	807	571	6	1,068	569
1919-20	284	827	57	1,244	1,158	681	110	1,227	563
1920-21	657	873	155	1,566	799	831	5	941	866
1921-22	483	998	180	1,353	1,100	627	7	625	708

(iv) *Varieties Grown.* Particulars concerning the kinds 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 :—

HAY.—VARIETIES GROWN, 1917-18 TO 1921-22.

Varieties.	1917-18.	1918-19.	1919-20.	1920-21.	1921-22.
	Acres.	Acres.	Acres.	Acres.	Acres.
NEW SOUTH WALES—					
Wheaten	434,908	612,771	716,770	520,417	467,068
Oaten	118,209	152,057	172,310	259,022	203,074
Barley	843	1,238	1,750	1,832	899
Lucerne	64,668	46,336	46,555	70,995	77,527
Other	986	977	1,086	843	1,170
Total	619,614	813,379	938,471	853,109	749,738

HAY.—VARIETIES GROWN, 1917-18 TO 1921-22—*continued.*

Varieties.	1917-18.	1918-19.	1919-20.	1920-21.	1921-22.
	Acres.	Acres.	Acres.	Acres.	Acres.
VICTORIA—					
Wheaten	192,478	274,320	417,221	165,502	130,181
Oaten	532,634	691,808	681,179	1,140,578	1,001,256
Lucerne, etc.	23,696	18,351	18,598	27,317	27,698
Total	748,808	984,479	1,116,998	1,333,397	1,159,135
QUEENSLAND—					
Wheaten	7,247	1, 02	11,710	14,024	13,837
Oaten	10,901	1,803	2,488	19,229	12,480
Lucerne	73,347	48,264	29,348	53,059	67,183
Other	4,936	2,803	5,297	7,900	4,655
Total	96,431	54,772	48,843	94,212	98,155
SOUTH AUSTRALIA—					
Wheaten	292,803	358,068	450,371	329,543	325,769
Oaten	107,284	138,507	134,775	231,446	225,878
Lucerne	2,123	2,106	2,167	3,938	4,145
Other	4,801	3,050	3,522	5,938	3,493
Total	407,011	501,731	590,835	570,865	559,285
WESTERN AUSTRALIA—					
Wheaten	208,303	190,399	234,772	169,264	222,209
Oaten	56,002	58,551	91,152	96,228	111,386
Lucerne	352	137	206	146	125
Other	1,242	709	1,368	1,186	1,841
Total	265,899	249,796	327,498	266,824	335,561

Wheaten hay is the principal hay crop in New South Wales, South Australia, and Western Australia, oaten hay in Victoria and Tasmania, and lucerne in Queensland.

2. *Comparison with 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, consequently any attempt to furnish extensive comparisons would be misleading. It may be noted, however, that in Great Britain the production of hay from clover, sainfoin, etc., for the year 1922 amounted to 2,410,000 tons from 1,959,247 acres, while from permanent grasses a yield of 4,281,000 tons of hay was obtained from 4,557,922 acres, giving a total of 6,691,000 tons from 6,517,169 acres, or about 20½ cwt. per acre.

3. *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 Australia. During 1921-22, 66 tons were imported, while the exports amounted to 3,491 tons, valued at £21,354, the principal purchases being made by the Philippine Islands, the Straits Settlements, Netherlands East Indies and India.

4. Value of Hay Crop.—The following table shows the value and the value per acre of the hay crop of the several States for the season 1921-22 :—

HAY.—VALUE OF CROP, 1921-22.

Particulars.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	Nor. Ter.	Fed. Cap. Ter.	Australia.
	£	£	£	£	£	£	£	£	£
Total Value ..	8,904,820	5,884,121	822,578	2,244,664	1,785,965	431,522	32	8,760	18,172,462
Value per acre	£9/6/7	£5/1/6	£8/7/7	£4/0/9	£5/6/5	£4/14/5	£2/13/4	£7/7/3	£6/1/4

§ 12. Green Forage.

1. Nature and Extent.—(i) *Area*. In all the States a considerable area is devoted to the production of green forage, mainly in connexion with the dairying industry. The total area so cropped during the season 1921-22 was 452,508 acres. The Queensland area represented about 33 per cent., that of New South Wales 28½ per cent., while that of Victoria amounted to 19½ per cent. Under normal conditions 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 during each of the last five years are given in the following table :—

GREEN FORAGE.—AREA, 1917-18 TO 1921-22.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Nor. Ter.	Fed. Cap. Ter.	Australia.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1917-18	152,500	55,903	87,909	41,869	29,856	5,676	47	19	373,779
1918-19	331,079	73,641	90,635	56,067	28,141	6,827	..	50	586,440
1919-20	1,007,407	89,802	157,568	114,126	27,007	5,271	..	28	1,401,209
1920-21	112,003	79,524	142,554	40,678	26,620	5,575	..	..	406,954
1921-22	128,965	89,410	147,135	50,121	27,396	9,481	..	..	452,508

(ii) *Relation to Population*. Particulars of the area under green forage per 1,000 of the population of Australia and of the several States for the seasons 1917-18 to 1921-22 are given hereunder :—

GREEN FORAGE.—AREA PER 1,000 OF POPULATION, 1917-18 TO 1921-22.

Season.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	Nor. Ter.	Fed. Cap. Ter.	Australia.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1917-18 ..	79	39	128	94	97	29	10	9	75
1918-19 ..	169	51	128	113	91	34	..	22	115
1919-20 ..	494	60	214	237	82	25	..	15	264
1920-21 ..	54	52	190	83	80	26	..	..	75
1921-22 ..	61	58	191	100	82	43	..	..	82

2. Value of Green Forage Crops.—The value of these crops is variously estimated in the several States, and the Australian total for the season 1921-22 may be taken approximately as £1,885,036, or about £4 3s. 4d. per acre.

§ 13. Sugar-cane and Sugar-beet.

1. *Sugar-cane.*—(i) *Area.* Sugar-cane is grown for sugar-making purposes in only two of the States of Australia, viz., Queensland and New South Wales, and much more extensively in the former than in the latter. Thus, of a total area of 197,293 acres under sugar-cane in Australia for the season 1921–22, there were 184,513 acres, or about 93½ per cent., in Queensland. Sugar-cane growing appears to have been started in Australia in or about 1862, as the earliest statistical record of sugar-cane as a crop is that which credits Queensland with an area of 20 acres for the season 1862–3. In the following season the New South Wales records show an area of 2 acres under this crop. The area under cane in New South Wales reached its maximum in 1895–6 with a total of 32,927 acres. Thence onwards with slight variations it gradually fell to 12,780 acres in 1921–22. 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 1921–22 being the highest on record. The area under sugar-cane in Australia from 1917–18 is given in the following table, and particulars for earlier years may be seen from the graphs hereinbefore :—

SUGAR-CANE.—AREA, 1917-18 TO 1921-22.

Season.	New South Wales.		Queensland.		Australia.		Total.
	Productive.	Unproductive.	Productive.	Unproductive.	Productive.	Unproductive.	
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	
1917–18 ..	5,588	5,008	108,707	67,055	114,295	72,063	186,358
1918–19 ..	4,566	5,924	111,572	48,962	116,138	54,886	171,024
1919–20 ..	4,827	5,741	84,877	63,592	89,704	69,333	159,037
1920–21 ..	5,519	5,863	89,142	73,477	94,661	79,340	174,001
1921–22 ..	5,400	7,380	122,956	61,557	128,356	68,937	197,293

(ii) *Productive and Unproductive Cane.* The areas given in the preceding table represent sugar-cane grown during the seasons specified for purposes other than green forage. The whole area was not in any case cut for crushing during that season, there being always a considerable amount of young and “stand over” cane, as well as a small quantity required for plants. The season in which the highest acreage under sugar cane is recorded may not necessarily show the greatest area of productive cane cut for crushing, but both records were obtained in the latest season under review, i.e., 1921–22.

(iii) *Yield of Cane and Sugar.* 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 Australia was 1,073,883 tons, as against the maximum production of 2,879,092 tons in 1917–18. The second highest yield was in the season 1921–22, with a total of 2,436,890 tons. The average production of cane during the decennium ended 1921–22 was 1,846,117 tons. The three highest yields of sugar were in 1917–18, 1921–22, and 1913–14, the quantities

being 327,589 tons, 300,004 tons, and 265,029 tons respectively. The decennial average was 217,827 tons of sugar. Particulars relative to the total yields of cane and sugar for the past five years are as follows:—

SUGAR-CANE.—YIELD OF CANE AND SUGAR, 1917-18 TO 1921-22.

Season.	New South Wales.		Queensland.		Australia.	
	Cane.	Sugar.	Cane.	Sugar.	Cane.	Sugar.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1917-18 ..	174,881	19,875	2,704,211	307,714	2,879,092	327,589
1918-19 ..	105,234	12,278	1,674,829	189,978	1,780,063	202,256
1919-20 ..	91,321	10,837	1,258,760	162,136	1,350,081	172,973
1920-21 ..	131,313	15,124	1,339,455	167,401	1,470,768	182,525
1921-22 ..	149,474	17,806	2,287,416	282,198	2,436,890	300,004

The cane cut in 1922 was approximately 2,311,000 tons. This yield is under that for 1921, but the higher sugar content produced about 306,000 tons of sugar, a larger return than that obtained in the previous year. In accordance with the agreement made by the Commonwealth Government respecting the yields for the three years 1920, 1921, and 1922, the sugar industry rapidly progressed. The effect of the guaranteed price was to induce mill-owners to make considerable additions to their plants and so increase the efficiency of their mills, while farmers in nearly every district put new areas under cane, using in many cases land that had lain unproductive for years.

A preliminary estimate of the production of sugar in 1923 places the amount at 256,000 tons.

Large quantities of molasses are produced as a by-product in the sugar mills; details for a series of years of the quantity produced and proportions used for distilling, fuel, manure and other purposes will be found in Chapter XXII.—“Manufacturing.”

(iv) *Average Yield of Cane and Sugar.* 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 26.34 tons for the former and 17.41 for the latter State. For some years prior to 1910-11, the yield remained practically constant in New South Wales at about 21 tons per acre. Since that year, the average yield per acre has shown an upward tendency, reaching 30 tons or over during 1913-14, 1914-15, and 1917-18. The climatic conditions affecting the tremendous length of coastline embracing this industry in Queensland are largely responsible for the great variations in the yields of sugar for that State, the figures ranging during the past decennium from 12.20 tons per acre in 1915-16 to 24.88 tons in 1917-18.

The greatest production of sugar per acre crushed in Australia during the past quinquennium occurred in 1917-18, when 2.87 tons were obtained, the respective crushings for New South Wales and Queensland averaging 3.56 and 2.83 tons. The average yield per acre for the past ten years was 3.07 tons in New South Wales, and 2.06 tons in Queensland.

(v) *Quality of Cane.* The quantity of cane required to produce a ton of sugar varies not only with the district in which the cane is grown, but also with the season, and for the decennium ended 1921-22 averaged 8.47 tons, the average production of sugar being approximately 11.8 per cent. of the weight of cane crushed. The systematic study of

beet culture in European countries has shown that by suitable methods the sugar contents of the root can be greatly increased, and it is believed that a similar improvement can be effected in the yield from sugar-cane.

SUGAR-CANE AND SUGAR.—YIELD PER ACRE, 1917-18 TO 1921-22.

Season.	New South Wales.			Queensland.			Australia.		
	Cane per acre Crushed.	Sugar per acre Crushed.	Cane to each ton of Sugar.	Cane per acre Crushed.	Sugar per acre Crushed.	Cane to each ton of Sugar.	Cane per acre Crushed.	Sugar per acre Crushed.	Cane to each ton of Sugar.
1917-18	Tons. 31.30	Tons. 3.56	Tons. 8.80	Tons. 24.88	Tons. 2.83	Tons. 8.79	Tons. 25.19	Tons. 2.87	Tons. 8.79
1918-19	23.05	2.69	8.57	15.01	1.70	8.82	15.33	1.74	8.80
1919-20	18.92	2.25	8.43	14.83	1.91	7.76	15.05	1.93	7.81
1920-21	23.79	2.74	8.68	15.03	1.88	8.00	15.54	1.93	8.06
1921-22	27.68	3.30	8.40	18.60	2.30	8.11	18.99	2.34	8.12
Average 10 seasons 1912-22 ..	26.34	3.07	8.59	17.41	2.06	8.46	17.89	2.11	8.47

(vi) *Relation to Population.* The production of sugar in Australia during the five years 1917-18 to 1921-22 was not sufficient to supply local requirements, the average production during the period amounting to 101½ lbs. per head of population, while the consumption was estimated to average 117 lbs. per head. In 1917-18 and 1921-22, and, according to the preliminary figures in 1922-23 also, the production of sugar exceeded the consumption. Details for the period 1917-18 to 1921-22 are as follows:—

SUGAR.—PRODUCTION PER HEAD OF POPULATION, 1917-18 TO 1921-22.

State.	1917-18.	1918-19.	1919-20.	1920-21.	1921-22.
	lbs.	lbs.	lbs.	lbs.	lbs.
New South Wales	23	14	12	16	19
Queensland	1,002	603	492	498	821
Australia	147	89	73	76	122

2. *Sugar-beet.*—(i) *Area and Yield.* The following table shows the acreage under sugar-beet, and the production in Victoria during the past five seasons:—

SUGAR-BEET.—AREA AND PRODUCTION IN VICTORIA, 1917-18 TO 1921-22.

Particulars.	1917-18.	1918-19.	1919-20.	1920-21.	1921-22.
Area harvested .. acres	1,200	1,009	1,090	1,180	1,600
Production .. tons	14,487	12,290	13,195	7,147	16,577
Average per acre .. "	12.07	12.18	12.11	6.06	10.36
Sugar produced .. "	1,650	1,263	1,551	833	1,872

The production of sugar-beet in 1922-23 was approximately 20,444 tons, which yielded 2,770 tons of sugar.

(ii) *Encouragement of Beet-growing.* During recent years an effort has been made to revive the sugar-beet industry in Victoria. The State Government is proceeding with a comprehensive irrigation scheme at Maffra, where the sugar-beet factory is situated.

When completed, this scheme will make available for beet-growing large areas of land hitherto unsuitable. In view of the prospective expansion of the area under beet the Government is contemplating the expenditure of £100,000 in modernizing and enlarging the factory plant. A fine grade of white sugar is manufactured, and considerable quantities of beet pulp and molasses are distributed for stock feed.

3. Sugar Bounties.—The provision of bounties or similar aids to the sugar-growers of Australia 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 connexion therewith. An account of the various Acts in connexion with sugar bounties and sugar excise tariffs will be found on pages 394 to 396 of 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 connexion 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.

4. Sugar Purchase by Commonwealth Government.—Particulars of the purchase by the Commonwealth Government of the Australian sugar output from 1915 onwards, together with the agreement made between the Commonwealth and Queensland Governments covering the three seasons ended 1922, will be found on page 277 in the previous issue of the Year Book.

On the termination of the 1922 sugar season in June, 1923, the Commonwealth Government announced that the agreement fixing the price of raw sugar at £30 6s. 8d. per ton would not be renewed. The embargo against the importation of black-grown sugar would be continued for a further period of two years from date, on condition that a pool, free from Commonwealth Government control, would be formed to buy raw sugar for the ensuing season at not more than £27 per ton, and to arrange with the Colonial Sugar Refining Company and the Millaquin Company for refining and distribution. Allowing three months for the disposal of the 57,500 tons of carry-over sugar, the retail price was to be reduced in October, 1923, to 4½d. per lb., while special concessions were to be made to manufacturers using sugar in goods for export.

The price of raw sugar in the 1924–25 season was to be fixed by a competent tribunal after investigation, such price not to exceed £27 per ton. The embargo was to be definitely withdrawn on 30th June, 1925, and after that date the sugar industry was to be protected from unfair competition by means of the Customs Tariff.

5. Imports and Exports of Sugar.—The production of sugar in Australia during the past five years has not been sufficient to supply the growing requirements of Australian consumption. It has been found necessary to import on the average some 58,262 tons, valued at £2,592,540, the principal countries engaged in supplying this commodity being Java and Fiji. Particulars concerning the imports and exports of cane-sugar for the past five years are as follows :—

CANE SUGAR.—IMPORTS AND EXPORTS, AUSTRALIA, 1917-18 TO 1921-22.

Year.	Oversea Imports.		Oversea Exports.		Net Imports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Tons.	£	Tons.	£	Tons.	£
1917-18	15,805	278,985	2,070	45,860	13,735	233,125
1918-19	52,569	1,052,124	2,029	52,136	50,540	999,988
1919-20	112,805	4,359,203	2,825	83,729	109,980	4,275,474
1920-21	116,274	6,560,373	4,190	220,965	112,084	6,339,408
1921-22	6,888	174,850	1,918	60,145	4,970	114,705

§ 14. Vineyards.

1. *Progress of Cultivation.*—(i) *Area of Vineyards.* The date of introduction of the vine into Australia has been variously set down by different investigators, the years 1815 and 1828 being principally favoured. It would seem, however, that plants were brought out with the first fleet which initiated the colonization of Australia in 1788, consequently the Australian vine is as old as Australian settlement. As already mentioned, a report by Governor Hunter gives the area under vines in 1797 as 8 acres. From New South Wales the cultivation spread to Victoria and South Australia, and these States have now far outstripped the mother State in the area under its cultivation. In Queensland and Western Australia also, vine-growing has been carried on for many years, but the progress of the industry in these States has been negligible. 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, and (iii) for drying. The total area under vines in the several States during each of the last five years is given in the following table, while particulars from 1860 onwards may be gathered from the graph accompanying this chapter :—

VINEYARDS.—AREA, 1917-18 TO 1921-22.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Australia.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1917-18 ..	8,594	25,236	1,274	29,762	2,996	There are no vineyards in Tasmania.	67,862
1918-19 ..	8,749	26,472	1,287	31,023	2,936		70,058
1919-20 ..	8,923	27,411	1,203	32,784	2,975		73,326
1920-21 ..	10,783	29,255	1,256	36,661	3,210		81,165
1921-22 ..	12,583	33,175	1,281	41,424	3,951		92,414

The area under vines in Australia amounted to 65,673 acres in 1904-5. From that year onwards a gradual decline set in, and at the end of 1914-15 the acreage had decreased to 60,985. Since that date, however, as the result of satisfactory annual increases, the 1904-5 figure was soon exceeded, and the total for 1921-22 was the highest recorded.

The wine-growing industry in Australia, especially in Victoria and New South Wales, received a severe check by various outbreaks of phylloxera. With a view to the eradication of this disease extensive uprooting of vineyards in the infested areas was undertaken, while further planting within such areas, except with phylloxera-resistant stocks, was prohibited.

(ii) *Wine Production.* The production of wine has not increased as rapidly as the suitability of soil and climate would appear to warrant. The cause is probably twofold, being due in the first place to the fact that Australians are not a wine-drinking people, and consequently do not provide a local market for the 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

recognized the wine production of Australia will increase. Particulars of the quantity of wine produced in the several States during the past five seasons are given in the table hereunder:—

WINE.—PRODUCTION, 1917-18 TO 1921-22.

Season.	New South Wales.	Victoria.	Queens-land.	South Australia.	Western Australia.	Tasmania.	Australia.
	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.	No produc- tion of wine in Tasmania.	Gallons.
1917-18 ..	538,210	800,068	39,125	5,331,166	156,532		6,865,101
1918-19 ..	555,770	1,349,309	44,491	6,544,125	199,142		8,692,837
1919-20 ..	717,893	1,634,680	48,495	5,085,939	162,397		7,649,404
1920-21 ..	674,188	2,222,305	71,403	7,893,345	152,979		11,014,220
1921-22 ..	627,105	1,355,066	57,793	6,370,310	152,299		8,562,573

(iii) *Relation to Population.* In relation to population the areas of the vineyards of the several States show an upward tendency during the last four years, the Australian total increasing from 14 to 17 acres per 1,000 of the population during the period. Details for the seasons 1917-18 to 1921-22 are given in the succeeding table:—

VINEYARDS.—AREA PER 1,000 OF POPULATION, 1917-18 TO 1921-22.

Season.	New South Wales.	Victoria.	Queens-land.	South Australia.	Western Australia.	Tasmania.	Australia.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1917-18 ..	4	18	2	67	10	..	14
1918-19 ..	4	18	2	68	9	..	14
1919-20 ..	4	18	2	68	9	..	14
1920-21 ..	5	19	2	75	10	..	15
1921-22 ..	6	21	2	82	12	..	17

2. Imports and Exports of Wine.—(i) Imports. The principal countries of origin of wine imported into Australia are France, Spain, Portugal, and Italy, the greater portion of the sparkling wines coming from France. Particulars relative to the importations of wine into Australia during the past five years are given hereunder:—

WINE.—IMPORTS, AUSTRALIA, 1917-18 TO 1921-22.

Year.	Quantity.			Value.		
	Sparkling.	Other.	Total.	Sparkling.	Other.	Total.
	Gallons.	Gallons.	Gallons.	£	£	£
1917-18 ..	9,274	31,808	41,082	20,569	20,635	41,204
1918-19 ..	7,551	30,464	38,015	16,226	21,121	37,347
1919-20 ..	34,383	57,211	91,594	118,164	50,112	168,276
1920-21 ..	39,665	63,824	103,489	135,169	58,248	193,417
1921-22 ..	7,398	37,814	45,212	20,781	35,830	56,611

(ii) *Exports.* 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, and the Pacific Islands. Details concerning the exports of wine from Australia during the past five years are given in the following table :—

WINE.—EXPORTS, AUSTRALIA, 1917-18 TO 1921-22.

Year.	Quantity.			Value.		
	Sparkling.	Other.	Total.	Sparkling.	Other.	Total.
	Gallons.	Gallons.	Gallons.	£	£	£
1917-18 ..	4,976	367,738	372,714	8,269	93,618	101,887
1918-19 ..	7,970	695,536	703,506	16,883	184,285	201,168
1919-20 ..	6,112	795,049	801,161	12,482	221,741	234,223
1920-21 ..	9,669	1,098,678	1,108,347	19,105	291,856	310,961
1921-22 ..	2,177	602,853	605,030	5,451	155,487	160,938

3. *Other Viticultural Products.*—(i) *Table Grapes.* 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 the past five seasons are as follows :—

TABLE GRAPES.—PRODUCTION, 1917-18 TO 1921-22.

Season.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Australia.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1917-18 ..	1,710	1,127	696	984	1,570	..	6,087
1918-19 ..	2,415	2,052	614	1,745	1,892	..	8,718
1919-20 ..	2,678	3,502	613	1,129	2,161	..	10,083
1920-21 ..	2,660	2,471	649	955	2,088	..	8,823
1921-22 ..	2,914	3,075	602	1,027	1,894	..	9,512

(ii) *Raisins and Currants.* Statistics of the quantities of raisins and currants dried during each of the past five seasons are given in the following table :—

RAISINS AND CURRANTS.—QUANTITIES DRIED, 1917-18 TO 1921-22.

Season.	N.S. Wales.		Victoria.		South Aust.		Western Aust.		Australia.	
	Raisins.	Currants.	Raisins.	Currants.	Raisins.	Currants.	Raisins.	Currants.	Raisins.	Currants.
	cwt.	cwt.	cwt.	cwt.	cwt.	cwt.	cwt.	cwt.	cwt.	cwt.
1917-18 ..	3,508	1,904	104,911	53,799	42,192	51,924	703	1,948	151,314	109,576
1918-19 ..	3,496	2,450	135,060	68,234	29,662	59,834	2,163	2,157	170,381	132,675
1919-20 ..	7,084	2,465	211,307	55,661	58,502	80,400	3,559	4,307	280,452	142,833
1920-21 ..	4,448	2,469	116,887	62,919	39,534	65,307	7,308	5,786	168,177	136,481
1921-22 ..	6,696	4,189	190,451	75,042	66,083	76,534	6,790	6,371	270,020	162,136
Average 10 seasons 1912-22	6,631		142,268	59,162	43,763	57,682	2,625	2,613	314,744	

4. Imports and Exports of Raisins and Currants.—The following table gives the oversea imports and exports of raisins and currants during each of the past five years:—

**RAISINS AND CURRANTS.—IMPORTS AND EXPORTS, AUSTRALIA,
1917-18 TO 1921-22.**

Year.	Oversea Imports.		Oversea Exports.		Net Exports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
RAISINS.						
	lbs.	£	lbs.	£	lbs.	£
1917-18..	164,699	4,791	3,957,863	114,510	3,793,164	109,719
1918-19..	28,818	927	3,111,055	95,523	3,082,237	94,596
1919-20..	42,169	2,201	8,839,839	359,561	8,797,670	357,360
1920-21..	14,997	1,366	11,816,126	520,293	11,801,129	518,927
1921-22..	219,499	12,021	13,206,052	550,838	12,986,553	538,817
CURRANTS.						
1917-18..	201	5	4,934,822	134,654	4,934,621	134,649
1918-19..	19,909	505	3,470,803	100,326	3,450,894	99,821
1919-20..	2,877	120	7,947,811	246,382	7,944,934	246,262
1920-21..	3,573	300	5,994,580	208,743	5,991,007	208,443
1921-22..	3,577	102	10,941,175	344,238	10,937,598	344,136

The quantities of raisins and currants imported into Australia were generally greater than the exports for all years prior to 1912, when the increased production in Australia left a surplus available for export. During the last five years the value of the exports exceeded that of the imports by £2,652,630, the average annual excess for the quinquennium being £530,526.

§ 15. Orchards and Fruit Gardens.

1. Progress of Cultivation.—(i) *Area.* Fruit-growing has made rapid progress in Australia during recent years, the area devoted thereto having increased in the past ten years by no less than 85,455 acres. The States in which the increase is most marked are:—Victoria, 29,506 acres; New South Wales, 27,361 acres; Queensland, 11,218 acres; and South Australia, 9,081 acres. During the same period the Tasmanian fruit-growing area increased by 7,526 acres, while that in Western Australia exhibited an increase of 819 acres. The total area under orchards and fruit gardens in the several States is given in the following table:—

ORCHARDS AND FRUIT GARDENS.—AREA, 1917-18 TO 1921-22.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Cap. Ter.	Australia.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1917-18 ..	64,116	83,818	26,001	29,020	21,137	38,024	18	262,134
1918-19 ..	67,432	85,130	24,250	30,085	20,412	37,424	18	264,751
1919-20 ..	72,802	86,336	24,636	30,617	19,815	37,687	1	271,894
1920-21 ..	75,904	87,768	26,927	31,364	19,570	37,013	5	278,551
1921-22 ..	75,746	89,491	28,035	32,295	19,012	36,565	5	281,149

(ii) *Varieties and Yield.* The varieties grown differ in various parts of the States, ranging from such fruits as the pineapple, paw-paw, mango, and guava of the tropics, to the strawberry, the raspberry, and the currant of the colder parts of the temperate zone. The principal varieties grown in Victoria are the apple, pear, peach, apricot, and plum. In New South Wales, citrus fruits (orange, lemon, etc.), occupy the leading position, although peaches, bananas, apples, pears, and plums are also extensively grown. In Queensland, the banana, the pineapple, the orange, the apple, the peach, and the coconut are the varieties most largely grown. In South Australia, in addition to the apple, orange, apricot, peach, pear, and plum, 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. In Tasmania, the apple occupies over four-fifths of the fruit-growing area, but small fruits, such as the currant, raspberry, and gooseberry are extensively grown, while the balance of the area is taken up with the pear, apricot, plum, and cherry. The following table gives the acreage under the principal kinds of fruit, and the quantity and value of fruit produced. The acreages are exclusive of young trees not yet bearing. Although annual statistics of area are not collected in Victoria, an effort is made to estimate the acreage under each class of fruit in that State from data based on the triennial collection of the number of trees, subject to annual variations in the total area under orchards and fruit gardens:—

ORCHARDS AND FRUIT GARDENS.—VARIETIES AND YIELD, 1921-22.

Fruit.		N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	Fed. Cap. Ter.	Australia.
Apples	.. acres	9,377	25,763	2,203	9,025	7,819	26,760	4	80,951
	bushels	528,202	1,768,800	117,223	602,674	538,175	2,990,550	510	6,546,134
	£	162,590	508,530	64,473	190,079	304,405	768,000	160	1,998,237
Apricots	.. acres	1,285	4,392	110	2,535	514	1,450	..	10,286
	bushels	112,866	208,215	4,073	170,455	29,801	129,619	..	655,029
	£	43,790	83,286	2,919	91,187	23,096	24,843	..	269,121
Bananas	.. acres	4,570	..	9,873	..	7	..	..	14,450
	bushels	650,300	..	1,307,090	..	785	..	..	1,958,175
	£	368,500	..	363,080	..	1,178	..	..	732,758
Lemons	.. acres	2,506	1,255	367	407	330	..	..	4,865
	bushels	303,356	103,127	21,514	51,847	36,320	..	..	516,164
	£	63,820	42,540	8,964	15,554	14,150	..	..	145,028
Nectarines and	acres	8,651	10,550	2,204	2,619	1,004	72	..	25,100
	bshls.	742,676	925,524	112,125	185,582	46,896	6,123	23	2,018,949
Peaches	£	289,068	304,067	50,534	74,183	43,812	1,148	12	762,824
Oranges	.. acres	19,466	3,965	2,828	3,197	2,349	..	..	31,805
	bushels	1,821,629	237,949	255,818	355,111	193,107	..	..	2,863,614
	£	671,570	118,975	118,316	133,167	122,548	..	..	1,164,576
Pineapples	acres	26	..	3,956	..	..	..	..	3,982
	dozen	4,818	..	876,101	..	..	..	..	880,919
	£	2,290	..	162,521	..	..	..	..	164,811
Pears	.. acres	2,959	8,559	292	1,766	992	2,000	..	16,568
	bushels	204,933	681,024	9,463	158,536	57,626	207,175	2	1,318,759
	£	77,029	161,743	6,151	40,848	24,971	76,000	1	386,743
Plums	.. acres	2,811	4,235	907	1,716	686	500	1	10,856
	bushels	218,170	207,432	29,696	110,554	41,937	58,921	20	666,730
	£	60,435	39,758	18,065	29,490	27,434	10,311	5	135,498
Other fruits	acres	2,877	7,315	2,517	3,520	740	2,160	..	19,129
	£	127,398	161,575	88,667	84,349	29,726	156,766	12	648,493
Total	.. acres	54,528	66,034	25,257	24,785	14,441	32,942	5	217,992
	£	1,866,490	1,420,474	883,690	658,857	591,320	1,037,068	190	6,458,089

(iii) *Relation to Population.* The acreage of the orchards and fruit gardens of Australia in relation to population has shown a tendency to decrease slightly during the past five years. The Australian figure for 1921-22 amounted to .05 acres per head,

whilst the range amongst the States extended from .036 in New South Wales to .167 acres in Tasmania. Details for orchards and fruit gardens for the years 1917-18 to 1921-22 are as follows :—

**ORCHARDS AND FRUIT GARDENS.—AREA PER 1,000 OF POPULATION,
1917-18 TO 1921-22.**

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	N. Ter.	Fed. Cap. Ter.	Aus- tralia.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1917-18 ..	33	59	38	65	69	192	..	9	53
1918-19 ..	34	59	34	66	66	184	..	8	52
1919-20 ..	36	57	33	64	61	180	..	0.5	51
1920-21 ..	36	57	36	64	59	174	..	3	51
1921-22 ..	36	58	36	64	57	167	..	2	51

2. Imports and Exports of Fruit.—(i) *General.* A considerable fruit trade, both import and export, is carried on by Australia with overseas countries, the major portion of the importations consisting of bananas and dates, while apples and dried fruits, principally raisins and currants, bulk largely in the exports. The annual importation of bananas into Australia from Fiji was fairly considerable until the year 1921-22, when the imposition of a Customs duty of 1d. per lb. reduced the value from an average of £100,000 to £20,797. Dates are imported from Mesopotamia and Asia Minor. The exports of apples were mainly consigned to the United Kingdom. Many varieties of dried fruits have been imported into Australia since 1917-18, but the bulk of those exported consisted of currants and raisins, which were shipped mainly to the United Kingdom, New Zealand, Canada, and the United States of America.

(ii) *Fresh Fruits.* Information with regard to the Australian overseas trade in fresh fruits is given hereunder :—

FRESH FRUITS.—IMPORTS AND EXPORTS, AUSTRALIA, 1917-18 TO 1921-22.

Year.	Oversea Imports.		Oversea Exports.		Net Exports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	lbs.	£	lbs.	£	lbs.	£
1917-18..	25,635,100	160,999	4,648,900	46,481	-20,986,200	-114,418
1918-19..	13,656,500	90,034	20,809,100	188,381	7,152,600	98,347
1919-20..	8,330,500	95,560	42,722,200	466,910	34,391,700	371,350
1920-21..	11,555,200	130,471	51,686,200	535,525	40,131,000	405,054
1921-22..	2,385,800	29,907	97,343,800	973,726	94,958,000	943,819

NOTE.—The minus sign — signifies net imports.

The export trade in fresh fruits consists mainly of apples, the value of the shipments, which have increased rapidly during the past five years, amounting in 1921-22 to £803,286.

(iii) *Dried Fruits.* Particulars of oversea imports and exports of dried fruits for the last five years are as follows :—

DRIED FRUITS (a).—IMPORTS AND EXPORTS, AUSTRALIA, 1917-18 TO 1921-22.

Year.	Oversea Imports.		Oversea Exports.		Net Exports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	lbs.	£	lbs.	£	lbs.	£
1917-18..	1,587,451	42,856	9,427,669	266,297	7,840,218	223,441
1918-19..	1,806,333	53,594	8,524,587	253,040	6,718,254	199,446
1919-20..	9,444,713	234,811	18,034,391	643,670	8,589,678	408,859
1920-21..	7,362,341	168,076	19,598,672	806,134	12,236,331	638,058
1921-22..	6,036,379	132,392	25,555,733	969,457	19,919,354	837,065

(a) Including raisins and currants referred to under Vineyards, § 14, 4.

(iv) *Jams and Jellies.* The oversea trade in jams and jellies expanded considerably during the war years, and in 1918-19 the record shipment of 79,277,560 lbs., valued at £1,847,970, was despatched from Australia. Since that year, however, there has been a heavy decline, and the value of the exports contracted to £164,046 in 1921-22. Particulars relative to imports and exports during each of the last five years are as follows :—

JAMS AND JELLIES.—IMPORTS AND EXPORTS, AUSTRALIA, 1917-18 TO 1921-22.

Year.	Oversea Imports.		Oversea Exports.		Net Exports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	lbs.	£	lbs.	£	lbs.	£
1917-18..	16,658	521	64,891,116	1,410,548	64,874,458	1,410,027
1918-19..	78,329	2,294	79,277,560	1,847,970	79,199,231	1,845,676
1919-20..	179,480	9,913	44,793,409	1,218,997	44,613,929	1,209,084
1920-21..	379,401	14,543	16,535,335	550,403	16,155,934	535,860
1921-22..	184,993	8,437	5,640,579	164,046	5,455,586	155,609

(v) *Preserved Fruit.* Details concerning the quantities and values of preserved fruit imported into and exported from Australia 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, preserved or partly preserved in liquid, or pulped, imported into Australia during 1921-22 was £47,998, and the corresponding value of exports was £1,024,957.

§ 16. Minor Crops.

1. *General.*—In addition to the leading crops previously 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 included under the headings—Market Gardens, Pumpkins and Melons, Nurseries, Grass Seed, Tobacco, Flax, Hops, and Millet. Cotton-growing has recently received considerable attention in the tropical portions of Australia, and the prospects of establishing this industry on a large scale are very favourable. The total area in Australia during the season 1921-22, devoted to crops not dealt with in previous sections, was 73,862 acres, of which market gardens accounted for 28,954 acres, or more than 39 per cent.

2. *Market Gardens.*—Under this head are included all areas on which mixed vegetables are grown. Where considerable areas are devoted to the production of one vegetable, such for instance as the potato, the onion, the melon, the tomato, etc., the

figures are usually not included with market gardens, but are shown either under some specific head, or under some general head as "Other Root Crops," or "All Other Crops." The area under market gardens in the several States of Australia during each of the last five seasons is given hereunder:—

MARKET GARDENS.—AREA, 1917-18 TO 1921-22.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	N. Ter.	Fed. Cap. Ter.	Australia.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1917-18 ..	10,100	11,362	1,991	1,502	2,334	447	..	39	27,775
1918-19 ..	10,004	11,594	1,814	1,405	2,237	389	..	39	27,482
1919-20 ..	9,833	12,633	1,752	1,343	2,410	367	..	39	28,377
1920-21 ..	9,888	12,201	2,018	1,471	2,269	386	..	27	28,260
1921-22 ..	8,217	14,304	1,965	1,486	2,274	681	..	27	28,954

3. **Grass Seed.**—The total area under this crop during 1921-22, exclusive of New South Wales, for which State no figures as to area are available, was 3,594 acres, of which 1,953 acres were in Victoria, 639 acres in Queensland, and 964 acres in Tasmania. The total yield for 1921-22, including New South Wales, was 39,152 bushels, valued at £27,682.

4. **Tobacco.**—Tobacco-growing has experienced marked fluctuations, although at one time it promised to occupy an important place amongst the agricultural industries of Australia. Thus, as early as the season 1888-89 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 importance was, however, not fulfilled, and after numerous fluctuations, in the course of which the Victorian area rose in 1895 to over 2,000 acres, and that in Queensland to over 1,000 acres, the total area for the season 1921-22 had declined to 1,967 acres, distributed as follows:—New South Wales, 1,164 acres; Victoria, 604 acres; Queensland, 198 acres; and South Australia, 1 acre. 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 Australia furnish an indication of the extensive local market which exists for an article grown and prepared to meet the requirements of consumers. The value of the net importations of tobacco into Australia during the year 1921-22 amounted to £1,953,728, comprising unmanufactured tobacco £2,178,765, cigars £53,901, cigarettes £47,997, and snuff £448, while manufactured tobacco showed a balance in favour of exports amounting to £327,383.

5. **Pumpkins and Melons.**—The total area under this crop in Australia during 1921-22 was 15,656 acres, of which 2,926 acres were in New South Wales, 1,514 acres in Victoria, 10,199 acres in Queensland, 643 acres in Western Australia, 276 acres in South Australia, and 98 acres in the Northern Territory. The production in all the States amounted to 58,273 tons.

6. **Hops.**—Hop-growing in Australia is practically confined to Tasmania and some of the cooler districts of Victoria, the total area for the season 1921-22 being 1,562 acres, of which 1,455 acres were in Tasmania, 104 acres in Victoria, and 3 acres in South Australia. The Tasmanian area, though still small, has increased considerably during the past twenty 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, had diminished to 104 acres in 1921-22. The cultivation of hops was much more extensive in Victoria some 40 years ago than at present, the area in 1883-84 being no less than 1,758 acres. During the year 1921-22 the imports of hops exceeded the exports by 744,236 lbs., the excess value being £77,824.

7. **Flax.**—For the past twenty years flax has been grown intermittently in the Gippsland district of Victoria, and attempts have been made to introduce its cultivation into Tasmania and New South Wales, but without success. In order to foster the

industry, the Commonwealth Government in 1907 provided for the payment of a bounty of 10 per cent. of the market value of all flax products, but the low returns for fibre—about £45 per ton—prevented the extension of flax-growing to any appreciable degree, and on 1st July, 1917, the bounty provisions expired. At the end of that year, however, the shortage of flax fibre in the world had become acute and the Commonwealth Government formulated a scheme to encourage the cultivation of flax. A Flax Industry Committee, consisting of representatives of the Department of Agriculture in Victoria, the flax-growers, and the cordage manufacturers, was appointed with executive powers under War Precautions Regulations. At the same time, a guarantee was given by the Commonwealth Government of £5 per ton for flax of specified standard grown in 1918. Further guarantees of £6 for 1919, 1920 and 1921, and £5 for 1922 were later given by the Commonwealth Government. The whole of the commercial flax crop is grown in Victoria, but a grant of £1,000 has been provided by the Commonwealth for experimental work, and in most of the States experiments are being carried out to determine the suitability of the soil and climate for the cultivation of this crop. Particulars of the crop in Victoria for the past five years are as follows :—

FLAX.—AREA AND YIELD, VICTORIA, 1917-18 TO 1921-22.

Year.	Area.	Seed Produced.	Fibre Produced.	Tow Produced.	Value of Crop.	Straw awaiting Treatment.
	Acres.	cwt.	cwt.	cwt.	£	tons.
1917-18 ..	419	1,337	925	463	(a)	..
1918-19 ..	1,420	5,200	1,800	2,000	24,400	..
1919-20 ..	1,611	4,970	1,053	394	16,708	1,653
1920-21 ..	993	3,658	938	99	10,100	662
1921-22 ..	918	4,687	440	20	(a)	960

(a) Not available.

Australia imports flax products to the annual value of £1,800,009, and, as it has been demonstrated that flax can be grown to perfection here, there is a good prospect of successfully establishing a local industry.

8. *Millet*.—Millet figures in the statistical records of four of the States. The total area devoted thereto in 1921-22 was 2,230 acres, of which 1,230 acres were in New South Wales, 801 in Victoria, 195 in Queensland, and 4 in the Northern Territory. The particulars here given relate to millet grown for grain and fibre, the quantity for green forage being dealt with in the section relating thereto.

9. *Nurseries*.—In all the States fairly large areas are occupied as nurseries for raising plants, trees, etc. Statistics of the area under flowers, fruit trees, etc., are available for New South Wales, Victoria, South Australia, and Western Australia. During 1921-22 the areas in those States were 747, 1,064, 182, and 150 acres respectively.

10. *Cotton*.—The cultivation of cotton commenced in Queensland in 1860, and ten years later the area cropped had increased from fourteen to upwards of fourteen thousand acres. The re-appearance of American cotton in the European market on the conclusion of the Civil War gave a severe set-back to the new industry, and the area continuously declined till 1888, when only 37 acres were planted. The industry was resuscitated soon after and manufacturing was undertaken on two separate occasions at Ipswich, but operations were not at any time very extensive, and low prices over a term of years checked development. Added interest was shown in the crop in 1903, and in 1913 the Queensland Government made an advance of 1½d. per lb. on seed cotton, and ginned it on owner's account, the final return being equal to about 1½d. per lb.

Considerable interest has recently been manifested in cotton-growing, mainly as a result of the encouragement of the industry by the fixed advance of 5½d. per lb. for seed cotton of good quality for the three years ended 31st July, 1923. The Australian Cotton-Growing Association by establishing modern ginning-plants at convenient centres has also contributed to the flourishing condition of the industry.

The Department of Agriculture has introduced improved long-staple upland varieties, with a view to the production of cotton which will return a good aggregate yield and command also the highest price, while the Queensland Government, acting on expert advice, is contemplating the prohibition of ratoon cotton, and the destruction of the old shrubs and debris in the fields.

The cotton plant requires sufficient moisture and warmth for germination, and sowings in the latter part of September or in October are mostly favoured by Queensland growers. Cotton planted in such months should, in normal seasons, commence opening up during the latter part of March and continue on until the end of June. Particulars of the cotton crop in Queensland during the last five years are as follows :—

COTTON.—AREA AND YIELD, QUEENSLAND, 1919 TO 1923.

Year.					Area.	Yield of Unginned Cotton.
					Acres.	lbs.
1919	..	..	..	..	72	27,470
1920	..	..	..	..	166	57,065
1921	..	..	..	..	1,944(a)	940,126
1922	..	..	..	..	6,641	3,878,673
1923 (b)	..	..	..	..	35,000(c)	12,000,000

(a) 858 acres not bearing. (b) Estimated. (c) Area harvested.

The figures given above show rapid expansion during the past three years, and present indications point to the ultimate establishment of cotton-growing on a large scale in Australia.

The guarantee for the 1923–24 season has been fixed at 5d. per lb. for cotton of good quality, irrespective of length. The guaranteed prices for the 1924–25 and 1925–26 seasons have not yet been announced.

11. **Coffee.**—Queensland is the only State in which coffee-growing has been extensively tried, but the results have not been satisfactory. The area under crop reached its highest point in the season 1901–2 with 547 acres. In subsequent seasons the area fluctuated somewhat, but on the whole with a downward tendency, and in 1921–22 only 19 acres were recorded, with a yield of 15,034 lbs.

12. **Other Crops.**—Amongst miscellaneous small crops grown in the several States may be mentioned tomatoes, rhubarb, artichokes, arrowroot, chicory, and flowers.

§ 17. Bounties on Agricultural Products.

1. **General.**—The Bounties Acts of 1907 and 1912, passed by the Federal Parliament with the object of encouraging the manufacture and production of certain articles in Australia, included among the items on which bonuses were payable the following agricultural products :—Cotton, fibres, rice, coffee, tobacco, and dried fruits, except currants and raisins. The rates and dates of expiry of the bounties were shown in previous issues of the Year Book, the only one in force at present being that relating to dates. Though the bonuses were fairly liberal, they were not availed of to any great extent.

§ 18. Fertilizers.

1. **General.**—In the early days of settlement in Australia, scientific cultivation was practically neglected. Farmers were neither under the necessity nor were they aware of the necessity of supplying the proper constituents to the soil for each class of crop. The widely divergent character of the soils, their degeneration by repeated cropping, the limitations of climatic conditions, and 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 fertilizer-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 in the future.

2. **Fertilizers 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 fertilizers. A list of these Acts and their main features will be found in Year Book No. 12 (page 378).

3. **Imports.**—The local production of artificial manures has greatly increased during the last few years, but considerable quantities are still imported. Imports of fertilizers have increased over 100 per cent. since 1901. The chief items, as regards both quantity and value, are phosphates, a fertilizer which has proved itself very suitable for the growing of cereals in Australian soils. During 1921-22 the values of rock phosphates imported represented over 79 per cent. of the total importation of fertilizers. Nauru, with 63 per cent., was the largest contributor, Gilbert and Ellice Islands Colony coming next with 18 per cent., while the remainder was supplied by Christmas Island. Practically all of the soda nitrate came from Chile.

The imports of artificial manures during the last five years are given in the following table. Apart from a small parcel in 1921-22 no importations of manufactured superphosphates were made during the last five years, although considerable quantities were annually imported up till 1914-15.

FERTILIZERS.—IMPORTS, AUSTRALIA, 1917-18 TO 1921-22.

Fertilizer.			1917-18.	1918-19.	1919-20.	1920-21.	1921-22.
Bonedust	..	.. cwt.	..	2,004	1,508	1,260	910
"	..	.. £	..	785	1,420	652	556
Guano	..	.. cwt.	..	137,008	535,688	1,129,240	704,039
"	..	.. £	..	17,304	61,021	124,193	72,892
Superphosphates	..	.. cwt.	..	..	..	..	1,034
"	..	.. £	..	..	..	..	1,145
Rock Phosphates	..	.. cwt.	3,643,038	2,811,812	2,585,163	4,756,140	3,255,808
"	..	.. £	433,940	334,036	330,544	721,608	553,109
Soda Nitrate	..	.. cwt.	53,800	38,483	130,914	99,660	50,214
"	..	.. £	43,264	30,767	84,398	84,532	38,409
Other	..	.. cwt.	397	520	61,454	169	42,063
"	..	.. £	909	488	75,116	1,792	33,561
Total			3,697,235	2,989,827	3,314,727	5,986,469	4,054,068
			£ 478,113	383,380	552,499	932,777	699,672

4. Exports.—The subjoined table shows the exports of artificial manures for the years 1917-18 to 1921-22. Practically the whole of these fertilizers are manufactured locally, and are shipped mainly to New Zealand, Japan, Java, and the Pacific Islands:—

FERTILIZERS.—EXPORTS, AUSTRALIA, 1917-18 TO 1921-22.

Fertilizer.	1917-18.	1918-19.	1919-20.	1920-21.	1921-22.
Bonedust cwt.	17,252	34,722	131,710	59,680	33,311
" £	7,221	18,516	74,036	40,926	18,517
Guano cwt.	840	8,669	601	..	..
" £	234	2,775	181	..	..
Superphosphates .. cwt.	699,784	345,493	264,174	472,860	26,727
" £	179,691	95,623	67,288	153,060	6,284
Rock phosphates .. cwt.	70,004	44,032	72,462	186,260	12,900
" £	9,810	6,773	11,775	25,763	1,960
Soda nitrate cwt.	18,888	60	28,223	2,720	5,790
" £	16,741	84	28,673	3,640	5,717
Ammonia sulphate .. cwt.	118,147	196,954	167,420	123,720	155,414
" £	211,322	350,098	226,289	160,017	105,472
Other cwt.	30,037	21,486	158,661	41,320	24,525
" £	14,532	11,008	108,926	25,190	11,956
Total cwt.	954,952	651,416	823,251	886,560	258,667
£	439,551	484,877	517,168	408,596	149,906

5. Statistics of Use of Fertilizers.—Statistics regarding the use of manures are collected in all the States, and the particulars for 1921-22 are as follow:—

FERTILIZERS USED IN EACH STATE, 1921-22.

State.	Total Area of Crops.	Area Manured.		Manure Used.	
		Aggregate.	Percentage of Total Area of Crops.	Natural (Stable Yard, etc.).	Artificial.
	Acres.	Acres.	%	Loads.	Tons.
New South Wales ..	4,445,828	2,103,729	47.32	176,327	52,677
Victoria	4,530,312	3,848,184	84.94	161,683	150,012
Queensland	804,507	32,163	4.00	49,737	8,189
South Australia ..	3,378,764	2,969,546	87.89	114,955	109,254
Western Australia ..	1,901,680	1,857,676	97.68	56,240	73,029
Tasmania	293,708	187,306	63.77	23,603	15,569
Northern Territory ..	283	55	19.43	180	3
Fed. Cap. Territory ..	1,942	600	30.90	..	9
Total	15,357,024	10,999,259	71.62	582,725	408,742

Similar particulars in respect to Australia as a whole during the past five years are as shown below :—

FERTILIZERS USED IN AUSTRALIA, 1917-18 TO 1921-22.

Year.	Total Area of Crops.	Area Manured.		Manure Used.	
		Aggregate.	Percentage of Total Area of Crops.	Natural (Stable Yard, etc.).	Artificial.
	Acres.	Acres.	%	Loads.	Tons.
1917-18	14,298,982	9,589,908	67.07	556,079	317,095
1918-19	13,332,393	9,292,358	69.70	555,222	313,444
1919-20	13,296,407	9,278,296	69.78	562,545	329,489
1920-21	15,069,858	10,290,633	68.29	556,514	375,600
1921-22	15,357,024	10,999,259	71.62	582,725	408,742

The percentage of the area manured on the total area cultivated has advanced from 67.07 to 71.62 during the past four years, while the use of artificial manures has increased by nearly 100,000 tons during the same period.

6. Local Production of Fertilizers.—Statistics relative to the local production of fertilizers are incomplete, and detailed returns for fertilizer factories other than bone mills are not available. The number of firms engaged in the manufacture of artificial manures in Australia at latest available date was 104, made up as follows :—New South Wales, 20; Victoria, 30; Queensland, 24; South Australia, 11; Western Australia, 11; and Tasmania, 8.

§ 19. Ensilage.

1. Government Assistance in Production.—The Government of Victoria, recognizing that defective methods of making ensilage were often adopted, has for some years been making special efforts to educate the farming community by lectures, the issue of bulletins, etc. The Government also undertakes the erection of different types of silos on very liberal terms, repayment extending over a series of years. Experts erect the silos and give practical lessons in regard to cutting and packing the silage. The New South Wales Government also gives advice in the "Agricultural Gazette," and issues special bulletins dealing with the subject, while silos have been erected at the various experimental farms.

2. Quantity Made.—Particulars concerning the number of silos and the quantity of ensilage made in the several States of Australia in the seasons 1917-18 to 1921-22 are given in the following table :—

ENSILAGE MADE, 1917-18 TO 1921-22.

State or Territory.	1917-18.		1918-19.		1919-20.		1920-21.		1921-22.	
	Holdings.	Ensilage Made.	Holdings.	Ensilage Made.	Holdings.	Ensilage Made.	Holdings.	Ensilage Made.	Holdings.	Ensilage Made.
	(a)		(a)		(a)		(a)		(a)	
	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.
New South Wales ..	116	14,789	60	6,292	112	13,328	118	15,633	166	24,174
Victoria	117	9,852	95	8,249	74	6,072	99	9,702	107	5,873
Queensland	60	4,556	45	3,541	72	4,318	164	7,600	96	6,575
South Australia ..	13	921	16	1,083	15	1,435	25	1,616	26	1,849
Western Australia ..	11	325	11	441	5	211	12	390	7	381
Tasmania	38	518	7	180	7	275	11	490	10	544
Northern Territory ..	1	50	1	50	..	..	..	..	..	..
Total	356	31,011	235	19,836	285	25,639	429	35,431	412	39,396

(a) No. of holdings on which ensilage was made.

Following the drought of 1902-3 greater attention was paid to the making of ensilage, and during the four seasons ended 1909-10 there was an increase both in the number of holdings on which ensilage was made and in the quantity produced. The following five seasons, however, showed a falling-off, but the reduction was due to the fact that stocks had not been drawn upon to any great extent during the previous seasons. The accumulated stocks proved of great value during the 1914 drought, though far below what would have been the case if more attention had been paid to ensilage-making during the previous years when there was a surplus of green forage. A substantial increase took place in 1915-16, both in the holdings on which ensilage was made and in the quantity produced, but during the next four years the production declined, particularly in Victoria. The figures for the past two years, however, show a satisfactory increase in all the States with the exception of Victoria.

§ 20. Agricultural Colleges and Experimental Farms.

1. **General.**—In most of the States agricultural colleges and experimental farms have been established with a view to the promotion of more scientific methods in agriculture, stock-breeding and dairying. In the 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 fertilizers are made, manures are tested, and elementary veterinary science, etc., are taught, while general experimental work is carried on with cereal and other crops, not merely for the purpose of showing that it is practicable to produce certain crops in a given place, but also to show how it is possible to make farming pay best in the 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 carpentering, blacksmithing, and other trades.

Travelling expert lecturers visit the various agricultural and dairying centres, and there is a wide distribution of periodical agricultural gazettes and bulletins.

2. **Particulars of Agricultural Colleges and Experimental Farms.**—In previous issues of this volume detailed information was given regarding agricultural colleges, experimental farms, and agricultural education generally. See Year Book No. 11, pp. 393-5.

3. **Particulars respecting Agricultural and Stock Departments.**—A synopsis of the activities and operations of the Agricultural and Stock Departments of the several States as on 30th June, 1920, will be found in Year Book No. 14, pages 1180 to 1191. The main features of organization are set out under their respective headings as regards staff, expenditure, work undertaken in agricultural colleges, technical 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 such matters as the distribution of plants, and the special steps taken to disseminate information amongst agriculturists, and to facilitate the marketing of products.