CHAPTER XVII.

AGRICULTURAL PRODUCTION.

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

§ 1. Introductory.

Preceding issues of the Official Year Book contain a brief reference to the attempts at cultivation by the first settlers in New South Wales, and to the discovery of suitable agricultural land on the Parramatta and Hawkesbury Rivers prior to the year 1813, and west of the Blue Mountains thereafter. (See No. 22, p. 670.)

§ 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, 6,874 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, 37 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:—

AREA UNDER CROP, 1860 TO 1928-29.

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	246,143	387,283	3,353	359,284	24,705	152,860	..	..	1,173,628
1870-1	385,151	692,840	52,210	801,571	54,527	157,410	..	..	2,143,709
1880-1	606,277	1,548,809	113,978	2,087,237	63,902	140,788	..	..	4,560,991
1890-1	852,704	2,031,955	224,993	2,093,515	69,678	157,376	..	..	5,430,221
1900-1	2,446,767	3,114,132	457,397	2,369,680	201,338	224,352	..	..	8,813,666
1910-11	3,386,017	3,952,070	667,113	2,746,334	855,024	286,920	360	..	11,893,838
1920-21	4,465,143	4,489,503	779,497	3,231,083	1,804,987	297,383	296	1,966	15,069,858
1924-25	4,912,124	4,761,394	1,069,837	3,557,405	2,710,856	263,872	342	2,361	17,278,191
1925-26	4,541,360	4,433,492	1,033,765	3,583,867	2,932,110	266,412	391	2,181	16,793,578
1926-27	4,593,847	4,735,173	941,783	3,883,920	3,324,523	289,364	440	3,449	17,772,499
1927-28	4,998,272	4,942,258	1,066,013	4,192,167	3,720,100	296,875	570	2,539	19,219,394
1928-29	5,442,982	5,505,651	1,044,632	4,660,003	4,259,269	273,152	392	3,476	21,189,557

The progress of agriculture was uninterrupted from 1860 until 1915–16, when, as the result of a special war effort, Australia cultivated 18,528,234 acres. 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. With the removal of the obstacles to the disposal of the wheat crop, the area began to expand in 1920–21, and despite occasional adverse seasons, the area planted in 1928–29 amounted to more than 21 million acres. This area is the largest yet cultivated and exceeds the previous record of 1927–28 by 1,970,163 acres. Wheat continues to be the most extensively-grown crop in Australia, the area thereunder for both grain and hay during 1928–29 amounting to almost 75 per cent. of the total acreage under cultivation. The extension of the wheat area since 1919–20, despite intermittent adverse climatic and market conditions, is a happy augury for the continuance of agricultural development in Australia.

(ii) *Relation to Population.* The total area under cultivation per head of population reached its lowest point in recent years during 1919–20, but since that year the position has considerably improved. The rate of progress during the past decennium has more than kept pace with the gain in population. Details for the past five seasons are as follows :—

AREA UNDER CROP PER 1,000 OF POPULATION, 1924–25 TO 1928–29.

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.
1924–25 ..	2,179	2,873	1,281	6,606	7,444	1,211	95	788	2,942
1925–26 ..	1,976	2,633	1,200	6,497	7,878	1,228	107	553	2,803
1926–27 ..	1,957	2,766	1,068	6,857	8,777	1,347	113	701	2,908
1927–28 ..	2,082	2,838	1,186	7,281	9,483	1,375	131	443	3,083
1928–29 ..	2,226	3,126	1,140	8,044	10,494	1,261	98	430	3,344

(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 1928–29 represented only about 1 acre in every 90. In Victoria the proportion was about 1 acre in every 10, in New South Wales 1 in 36, in South Australia 1 in 52, in Tasmania 1 in 61, in Western Australia 1 in 147, in Queensland 1 in 411, and in the Federal Territory 1 in 173.

PERCENTAGE OF AREA UNDER CROP ON TOTAL AREA, 1924–25 TO 1928–29.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Nor. Ter.	Fed. Cap. Ter.	Australia.
	%	%	%	%	%	%	%	%	%
1924–25 ..	2.480	8.465	0.249	1.462	0.434	1.573	..	0.392	0.908
1925–26 ..	2.293	7.882	0.241	1.473	0.469	1.587	..	0.362	0.882
1926–27 ..	2.320	8.418	0.219	1.597	0.532	1.725	..	0.573	0.934
1927–28 ..	2.524	8.787	0.249	1.723	0.596	1.769	..	0.422	1.009
1928–29 ..	2.748	9.789	0.243	1.916	0.682	1.628	..	0.578	1.113

In the Northern Territory the proportion which the area under crop bears to the total area is, at present, practically negligible.

3. Artificially-sown Grasses.—In all the States there are considerable areas under artificially-sown grasses mainly sown on uncultivated land after burning off the existing vegetation, and not included in "area under crops." Statistics regarding the areas under such grasses are as shown hereunder :—

AREA UNDER SOWN GRASSES, 1924-25 TO 1928-29.

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.
1924-25	1,993,694	944,339	538,165	64,212	60,257	866,331	500	24	4,467,522
1925-26	2,017,831	933,271	532,052	60,453	89,170	821,807	500	18	4,455,102
1926-27	2,036,873	952,239	543,528	74,484	128,751	791,210	500	18	4,527,603
1927-28	2,180,852	887,052	546,575	76,912	169,105	782,136	500	18	4,043,150
1928-29	2,201,091	1,154,718	587,434	78,686	243,560	766,741	500	552	5,033,282

The increase in the area of the grass lands of Australia during recent years is due in large measure to the development of the dairying industry referred to in the next 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 1928-29 :—

DISTRIBUTION OF CROPS, 1928-29.

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 ..	4,090,083	3,718,904	218,069	3,445,563	3,343,530	22,570	..	1,394	14,840,113
Oats	126,743	347,021	916	207,266	325,827	37,602	..	295	1,045,670
Maize ..	106,835	16,077	192,173	..	55	..	..	..	315,140
Barley—									
Malting ..	2,612	49,345	5,188	234,958	10,889	4,162	..	..	307,154
Other ..	2,412	26,106	2,466	12,390	3,540	451	..	20	47,385
Beans and Peas	31	8,038	40	14,244	2,141	23,740	..	..	48,234
Rye ..	3,005	711	70	688	355	..	..	70	4,899
Other Cereals	14,027	..	3	..	84	..	20	..	14,134
Hay ..	684,730	1,005,063	55,498	497,538	414,866	80,190	..	788	2,738,673
Green Forage	264,699	107,351	180,524	155,460	125,311	25,402	..	837	859,584
Grass and other Seeds ..	..	1,856	1,647	1,300	..	310	..	..	5,113
Orchards and other Fruit Gardens ..	76,009	79,322	38,452	30,836	18,735	34,087	..	35	277,476
Vines—									
Productive ..	13,078	38,689	1,627	48,209	4,571	..	..	..	106,174
Unproductive	2,122	2,876	160	3,593	372	..	..	..	9,123
Market Gardens	7,709	18,630	918	1,408	2,924	546	..	11	32,146
Sugar Cane—									
Productive ..	6,783	..	215,674	..	..	..	..	..	222,457
Unproductive	9,055	..	67,802	..	..	..	..	..	76,857
Potatoes ..	14,830	68,412	8,154	4,518	4,819	37,299	20	16	138,068
Onions ..	131	7,673	277	406	62	..	..	1	8,550
Other Root Crops	1,660	2,802	2,610	562	86	4,956	..	3	12,679
Tobacco ..	762	1,317	138	14	7	..	..	..	2,238
Broom Millet ..	2,018	1,337	307	..	..	..	2	..	3,664
Pumpkins and Melons ..	2,345	1,204	8,746	338	484	..	..	4	13,121
Hops ..	..	281	..	1	..	1,203	..	..	1,485
Cotton—									
Productive ..	..	..	20,316	..	..	..	..	..	20,316
Unproductive	..	..	5,806	..	..	..	..	..	5,806
All other Crops	11,303	2,636	17,051	711	611	634	350	2	33,298
Total Area ..	5,442,982	5,505,651	1,044,632	4,660,003	4,259,269	273,152	392	3,476	21,189,557

2. **Relative Areas of Crops in States and Territories.**—Taking the principal crops, i.e., those in the case of which the cultivation in Australia amounts to more than 100,000 acres, the proportion of each in the various States and Territories on the total area under crop for the season 1928-29 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, whilst hay is second in importance.

In Victoria and Western Australia the oat crop occupies third position, while green forage 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, maize, and green forage, while in Tasmania, hay, oats, potatoes, and orchards and fruit gardens occupy the leading positions.

As pointed out previously, wheat is the main crop in Australia, the area thereunder for grain and hay representing in 1928–29 nearly 75 per cent. of the total area under cultivation.

RELATIVE AREAS UNDER CROP, 1928–29.

Crop.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Nor. Ter.	Fed. Cap. Ter.	Australia
	%	%	%	%	%	%	%	%	%
Wheat ..	75.14	67.55	20.88	73.94	78.50	8.26	..	40.10	70.04
Hay ..	12.58	18.26	5.31	10.68	9.74	29.36	..	22.67	12.92
Oats ..	2.32	6.30	0.08	4.45	7.65	13.77	..	8.49	4.93
Green Forage ..	4.86	1.95	17.28	3.34	2.94	9.30	..	24.08	4.06
Maize ..	1.96	0.29	18.40	..	0.00	..	..	..	1.49
Barley ..	0.09	1.37	0.73	5.31	0.34	1.69	..	0.60	1.67
Orchards and Fruit Gardens	1.39	1.44	3.68	0.66	0.44	12.48	..	1.00	1.31
Sugar-cane	0.29	..	27.13	..	..	..	..	..	1.41
Potatoes ..	0.29	1.24	0.96	0.10	0.11	13.66	5.10	0.46	0.66
Vineyards	0.28	0.75	0.17	1.11	0.12	..	..	..	0.54
All other ..	0.80	0.85	5.38	0.41	0.16	11.48	94.90	2.60	0.97
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, 1924–25 to 1928–29.**—The acreage under each of the principal crops in Australia during the last five seasons is shown below :—

AREA OF CHIEF CROPS.—AUSTRALIA, 1924–25 TO 1928–29.

Crop.	1924–25.	1925–26.	1926–27.	1927–28.	1928–29.
	Acres.	Acres.	Acres.	Acres.	Acres.
Wheat	10,824,966	10,201,276	11,687,919	12,279,088	14,840,113
Hay	3,026,405	2,832,003	2,699,631	2,632,219	2,738,673
Oats	1,165,127	1,013,233	844,114	1,122,303	1,045,670
Green Forage ..	564,924	1,055,210	880,957	1,389,220	859,584
Maize	398,949	297,140	286,178	400,544	315,140
Barley	260,248	374,876	370,943	322,318	354,539
Orchards and Fruit Gardens	276,904	275,245	276,451	277,826	277,476
Sugar-cane ..	273,512	288,872	284,828	291,299	299,314
Potatoes	138,776	136,925	139,445	163,231	138,068
Vineyards	114,394	111,697	112,120	113,252	115,297
All other crops ..	233,986	207,101	189,913	228,094	205,683
Total ..	17,278,191	16,793,578	17,772,499	19,219,394	21,189,557

Seasonal and economic influences are reflected in the areas of the principal crops grown in Australia during the past five years. Since 1924–25 the areas devoted to the various crops have increased in several instances, the greatest being that for wheat, followed by green forage and barley, while decreases occurred principally in the areas under hay, oats, and maize.

§ 4. Wheat.

1. Progress of Wheat-Growing.—(i) *Area and Production.* Wheat is the principal crop raised in Australia, and its development during the past 30 years constitutes the most interesting feature of Australian agriculture. Since 1895, when the area under wheat amounted to 3½ million acres, an average of 343,000 acres has been added annually, until in 1928–29 more than 14 8 million acres were cut for grain. The area and yield of wheat for grain are given below for each State for the five years ended 1928–29, and are shown from the year 1860 onwards in the graphs hereinafter. An estimate is also appended for the 1929–30 crop :—

WHEAT.—AREA AND PRODUCTION, 1924–25 TO 1929–30.

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.
1924–25 ..	3,549,367	2,705,323	189,145	2,499,852	1,867,614	12,954	711	10,824,966
1925–26 ..	2,924,745	2,513,494	165,999	2,465,648	2,112,032	19,091	267	10,201,276
1926–27 ..	3,352,298	2,915,315	57,084	2,768,403	2,571,187	23,194	438	11,687,919
1927–28 ..	3,029,950	3,064,172	215,073	2,941,360	2,998,523	29,448	562	12,279,088
1928–29 ..	4,090,083	3,718,904	218,069	3,445,563	3,343,530	22,570	1,394	14,840,113
1929–30(*a*) ..	3,902,200	3,566,135	204,116	3,645,764	3,568,225	17,200	1,250	14,904,890
YIELD.								
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bush.	Bushels.
1924–25 ..	59,752,435	47,364,495	2,779,829	30,528,625	23,887,397	231,388	14,565	164,558,734
1925–26 ..	33,800,619	29,255,534	1,973,477	28,603,101	20,471,177	395,603	4,881	114,504,392
1926–27 ..	47,373,713	46,886,020	379,339	35,558,711	30,021,616	537,000	5,487	160,761,886
1927–28 ..	27,042,000	26,160,814	3,783,584	24,066,012	36,370,219	773,142	4,004	118,199,775
1928–29 ..	49,257,000	46,818,833	2,515,561	26,826,094	33,790,040	455,336	16,557	159,679,421
1929–30(*a*) ..	33,948,000	25,412,587	4,235,172	23,345,093	39,081,183	430,000	10,000	126,462,035

(*a*) Final estimate.

The area devoted to the production of wheat for grain increased steadily until 1915–16, when 12,484,512 acres were sown, largely as the result of a special war effort. After that year, however, there was a serious decline, brought about 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. The promise of remunerative Government guarantees, coupled with the prospects of high prices, was responsible for a marked advance in 1920–21, and the area has been extended during each of the subsequent years, the total gain for Australia since 1919–20 amounting to more than 8 million acres.

Although final figures for 1929–30 for all the States are not yet available, the data to hand indicate the total area under wheat for grain in Australia at about 14,904,890 acres, an increase of 64,777 acres on the previous year's record figure, and the greatest area yet devoted to the cultivation of this cereal. The season throughout was unfavourable, except in Western Australia, where a record yield was obtained. Drought conditions prevailed over the wheat belts of the rest of Australia, and resulted in a harvest of only 126,462,035 bushels, or an average of 8.47 bushels per acre. This figure is about 3.73 bushels below the average for the decennium ending 1928–29, and is the lowest obtained since 1919–20.

The harvest of 179,065,703 bushels reaped in 1915–16 represents the maximum production of wheat in Australia. The annual production during the seasons 1919–20 to 1928–29 averaged 127,308,997 bushels, and the extent to which this average may be exceeded during any year depends in a great measure on seasonal conditions. For the last ten seasons the yield has exceeded 100 million bushels, the average for the period being 135,357,701 bushels. This is the first occasion on which such a succession of good harvests has occurred, despite some unfavourable seasons, and the result exemplifies the value of bare fallowing, seed selection, and the application of manures. It is the considered opinion of agricultural experts that the improved cultural methods practised by modern wheat-growers preclude the possibility of absolute failure of this crop.

(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 1919–29:—

WHEAT.—YIELD PER ACRE, 1924–25 TO 1928–29.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	Fed. Cap. Ter.	Australia.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1924–25 ..	16.83	17.51	14.70	12.21	12.79	17.86	20.49	15.20
1925–26 ..	11.56	11.64	11.89	11.60	9.69	20.72	18.28	11.22
1926–27 ..	14.13	16.08	6.65	12.84	11.68	23.15	12.53	13.75
1927–28 ..	8.92	8.54	17.59	8.16	12.12	26.25	7.12	9.63
1928–29 ..	12.04	12.59	11.54	7.79	10.10	20.17	11.88	10.76
Average 10 seasons, 1919–29	12.47	13.72	14.40	11.11	10.87	21.53	14.61	12.20

As the above figures show, there were considerable variations in the average yields, chiefly due to the vagaries of the seasons. Considerable improvement has been shown in the average yields for the past three decades, the figures being 9.09, 11.17, and 12.20 bushels per acre respectively. The increased yields of the later years are principally due to the better cultural methods employed in wheat farming. The excellence of the 1924–25 season is reflected in the splendid average of 15.20 bushels obtained in that year, which has been exceeded on two occasions only, viz., 16.08 bushels in 1920–21 and 16.35 bushels in 1866, when less than 1,000,000 acres were sown in relatively fertile areas.

(iii) *Relation to Population.* During the seasons embraced in the following table, the Australian production of wheat per head of population has varied between 18 bushels in 1927–28 and 28 bushels in 1924–25. The State in which wheat growing occupies the most important position relatively to population is Western Australia, which in 1928–29 had a yield averaging 83 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, 1924–25 TO 1928–29.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	Fed. Cap. Ter.	Australia.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1924–25 ..	26,504	28,583	3,329	56,691	65,602	1,062	4,858	28,107
1925–26 ..	14,706	17,372	2,292	51,852	55,003	1,823	1,240	19,019
1926–27 ..	20,178	27,389	430	62,781	79,266	2,501	1,115	26,309
1927–28 ..	11,266	15,023	4,208	41,798	92,712	3,582	698	18,958
1928–29 ..	20,146	26,602	2,746	46,332	83,227	2,098	2,069	25,198

The normal annual consumption of wheat in Australia, exclusive of the requirements for seed, poultry and other live stock, is 276 lb. (4.59 bushels) per head of population.

2. Australian and Foreign Wheat Yields.—(i) *Average Yield.* The next table gives the average return per acre in the principal wheat-growing countries of the world, ranging from a maximum in Netherlands of 41 bushels per acre to a minimum in the Union of South Africa of 8 bushels per acre. Australia, with approximately 14, occupies a relatively subordinate position, but in comparison with the yields obtained in those countries where wheat is extensively grown the results obtained in Australia are very satisfactory. Germany, with 27.59 bushels; France, 21.02 bushels; Canada, 19.39 bushels; Italy, 18.20 bushels; and United States, 14.36 bushels, exceed the Australian average, but the latter is in excess of the yields obtained in the Soviet Republics, India, Argentine, and Rumania.

WHEAT.—YIELD PER ACRE, VARIOUS COUNTRIES, 1925 TO 1928.

Country.	Average Yield in Bushels per acre.		Country.	Average Yield in Bushels per acre.	
	Average, 1925–1927.	1928.		Average, 1925–1927.	1928.
Netherlands ..	41.32	49.52	Chile	17.46	18.34
Belgium ..	39.23	42.29	Lithuania ..	16.83	16.08
Denmark ..	38.59	33.42	Jugo-Slavia ..	15.80	17.49
New Zealand ..	33.87	32.94	United States of America ..	14.36	15.64
United Kingdom ..	32.51	34.12	Spain	14.05	14.40
Switzerland ..	32.45	33.40	**Australia** ..	**13.97**	**10.76**
Sweden	32.16	34.09	Rumania ..	12.99	14.58
Germany ..	27.59	33.17	Peru	12.33	*a*12.28
Egypt	25.80	23.47	Soviet Republics	12.20	10.31
Japan	25.23	25.66	Argentine Republic	11.62	15.31
Czecho-Slovakia ..	24.55	27.59	Uruguay ..	11.22	12.11
Norway	24.51	28.14	Korea	11.22	9.60
Brazil	22.82	*a*12.76	Portugal ..	11.02	6.85
Austria	21.53	25.13	India	10.53	8.97
France	21.02	21.71	Cyprus	10.23	9.25
Hungary	20.68	23.94	Greece	9.99	9.84
Canada	19.39	22.12	French Morocco ..	9.09	8.84
Italy	18.20	18.64	Union of South Africa ..	8.30	7.04
Poland	18.09	18.68			
Bulgaria	17.71	18.24			

(*a*) Year 1927.

(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, 1925 TO 1928.

Country.	Yield in Bushels (,000 omitted).		Country.	Yield in Bushels (,000 omitted).	
	Average, 1925–1927.	1928.		Average, 1925–1927.	1928.
United States of America ..	792,401	902,784	French Morocco ..	22,672	24,747
Soviet Republics ..	784,801	783,232	Belgium ..	14,521	17,987
Canada	435,731	533,581	Sweden ..	13,996	19,156
India	328,272	288,811	Syria	13,060	6,490
France	279,583	281,288	Greece	11,771	13,086
Italy	219,101	228,600	Uruguay ..	11,744	15,215
Argentine Republic	217,046	307,365	Portugal ..	11,708	7,546
Spain	151,340	119,886	Tunis	11,024	12,125
Australia ..	**131,155**	**159,679**	Austria	10,690	12,917
Germany ..	111,389	141,594	Mexico	10,238	11,031
Rumania ..	104,121	115,546	Korea	10,023	8,595
Hungary ..	74,506	99,212	Denmark ..	9,308	12,215
Jugo-Slavia ..	68,882	103,295	Union of South Africa ..	7,503	6,930
Poland	59,154	59,219	New Zealand ..	7,214	8,400
United Kingdom ..	53,227	49,762	Netherlands ..	5,740	7,335
Bulgaria	46,019	50,692	Brazil	4,945	(*a*) 4,203
Czecho-Slovakia ..	40,215	51,500	Lithuania ..	4,913	6,327
Egypt	39,267	37,311	Switzerland ..	3,888	4,248
Japan	29,065	30,812	Peru	3,002	(*a*) 3,149
Algeria	28,182	30,302	Cyprus	1,859	1,557
Chile	26,394	(*a*)28,307			

(*a*) Year 1927.

NOTE.—*The harvests reported above for 1928 relate to the year 1928 for the Northern, and 1928–29 for the Southern Hemisphere.*

The complete compilation of the world's production of wheat is not possible owing to the failure of certain countries to report their harvests. The International Institute of Agriculture, Rome, has, however, compiled figures obtained from all the producing countries reporting, with the following results :—

WHEAT.—WORLD'S PRODUCTION(a), 1909-13 TO 1928.

Years.	Area.	Yield.	Yield per acre.
	Acres.	Bushels.	Bushels.
Average, 1909-1913 ..	270,266,000	3,779,479,000	13.98
1925	280,549,927	4,082,405,114	14.57
1926	299,260,339	4,250,239,313	14.27
1927	308,944,188	4,304,550,176	13.98
1928	306,606,622	4,612,153,735	15.02
Average, 1925-1928 ..	298,840,269	4,312,337,084	14.43

(a) From countries reporting.

It is stated in the Report of the Institute that if all countries for which progress data are lacking were taken into account, the world's total production of wheat may be approximately estimated at 4,500 million bushels.

The total area harvested in 1928 shows a slight decrease on the figures for the previous year, the Soviet Union being chiefly responsible for the decline recorded. The other great divisions of the world showed little change in the area harvested, which exceeded the pre-war average by more than 36,000,000 acres. In comparison with the pre-war period, areas sown to wheat are still 2 per cent. lower in European Countries, exclusive of the Soviet Union, though considerably more in other continents, especially in North America, Argentina and Australia.

Although the area sown was below that of the previous year, favourable weather conditions resulted in an increased yield for the Northern Hemisphere of approximately 200 million bushels. In the Southern Hemisphere similar conditions prevailed and consequently the world's total output was the greatest since the war, exceeding the 1909-13 average by 833,000,000 bushels.

The Australian contribution to the world's average production shown above during the past four years amounted to almost 3¼ 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 1929.

Year.	Average for Year.	Highest Weekly Average.	Lowest Weekly Average.	Year.	Average for Year.	Highest Weekly Average.	Lowest Weekly Average.
	s. d.	s. d.	s. d.		s. d.	s. d.	s. d.
1861 ..	55 4	61 6	50 0	1921 ..	71 6	89 10	44 0
1871 ..	56 8	60 0	52 6	1923 ..	42 2	49 3	37 6
1881 ..	45 4	55 2	40 9	1924 ..	49 3	56 1	41 5
1891 ..	37 0	41 8	32 3	1925 ..	52 2	59 3	43 11
1901 ..	26 9	27 8	25 8	1926 ..	53 3	62 2	47 6
1911 ..	31 8	33 4	30 0	1927 ..	49 3	54 8	42 2
1919 ..	72 11	73 4	72 5	1928 ..	42 10	48 3	38 11
1920 ..	80 10	90 11	72 6	1929 ..	(a)	(a)	(a)

(a) See Appendix.

(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, 1925–26 TO 1929–30.

Item.	1925–26.	1926–27.	1927–28.	1928–29.	1929–30.
	s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*
Price per bushel	6 4	5 7	5 6	4 10	5 0

The export values here shown are the values for the successive years in the principal markets of 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 1924–25 to 1928–29. For the sake of convenience, flour has been expressed at its equivalent in wheat, 1 ton of flour being taken as equal to 48 bushels of grain. In ordinary seasons the Australian imports of wheat and flour are negligible. During the past five years the exports ranged between 73,864,517 bushels in 1927–28 and 125,044,344 bushels in 1924–25, the net exports for the period averaging 96,748,259 bushels.

WHEAT AND FLOUR.—IMPORTS AND EXPORTS, AUSTRALIA, 1924–25 TO 1928–29.

Year.	Imports.			Exports.			Net Exports.
	Wheat.	Flour.	Total.	Wheat.	Flour.	Total.	
	Bushels.	Eq. Bushels.(a)	Bushels.	Bushels.	Eq. Bushels.(a)	Bushels.	Bushels.
1924–25	42	2,784	2,826	103,538,088	21,506,256	125,044,344	125,041,518
1925–26	13	3,456	3,469	54,227,728	24,049,536	78,277,264	78,273,795
1926–27	257	3,456	3,713	73,925,315	23,686,272	97,611,587	97,607,874
1927–28	133	1,200	1,333	53,042,357	20,822,160	73,864,517	73,863,184
1928–29	25	3,840	3,865	81,896,245	27,062,544	108,958,789	108,954,924

(a) Equivalent in bushels of wheat.

(ii) *Destination of Exported Breadstuffs.* The United Kingdom is generally the largest importer of Australian wheat and during the year 1928–29 imported 20,564,650 bushels, or 25 per cent. of the total quantity exported. India, however, was the greatest purchaser during this year, and the quantity imported amounted to more than 26 million bushels, or 32 per cent. of the total exports. Other countries importing considerable quantities of Australian wheat were Italy, Japan, Egypt, South Africa and France, which together with the United Kingdom and India accounted for 85 per cent. of the total quantity exported.

The export of flour from Australia during 1928–29 amounted to 563,803 tons, and is the greatest quantity yet exported in any year. The largest consignments were taken by Egypt, the Netherlands East Indies, the United Kingdom and Malaya (British), which together accounted for 76.7 per cent. of the total exports.

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, 1919-20 TO 1928-29.

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.
1919-20 ..	1,050,228	517,708	4,590	527,930	25,340,640	.1000	4.801
1920-21 ..	801,511	229,648	3,375	568,488	27,287,420	.1052	5.050
1921-22 ..	911,452	359,698	2,284	549,470	26,374,560	.0999	4.798
1922-23 ..	985,479	394,457	1,831	589,191	28,281,170	.1049	5.034
1923-24 ..	1,092,856	511,151	1,727	579,978	27,838,940	.1011	4.853
1924-25 ..	1,068,698	447,989	1,814	618,895	29,706,960	.1054	5.058
1925-26 ..	1,135,968	500,960	2,473	682,535	32,761,680	.1139	5.467
1926-27 ..	1,141,748	493,392	1,570	646,786	31,045,730	.1058	5.081
1927-28 ..	1,092,632	433,770	1,613	657,249	31,547,950	.1054	5.060
1928-29 ..	1,171,759	563,723	1,512	606,524	29,113,150	.0957	4.594
Aggregate 10 years	10,502,331	4,452,496	22,789	6,027,046	289,298,200	.1036	4.973

WHEAT USED FOR SEED.—AUSTRALIA, 1919 TO 1928.

Year.	Area for Grain and Hay.	Wheat for Seed Purposes.		
		Quantity.	Per Acre.	Per Head of Population.
	Acres.	Bushels.	Bushels.	Bushels.
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
1922	11,253,078	10,456,000	.929	1.878
1923	11,016,608	10,328,000	.937	1.816
1924	11,859,102	10,967,000	.925	1.890
1925	11,405,943	10,627,000	.932	1.774
1926	12,543,025	11,591,000	.924	1.897
1927	13,390,294	12,417,000	.927	1.992
1928	15,882,335	14,651,000	.922	2.312
Aggregate for 10 years ..	116,750,413	108,359,000	.928	1.863

In addition to the above, the quantity of grain fed to poultry and other live stock as well as that used as seed for green forage crops must be taken into consideration. These quantities vary from year to year according to the price of wheat and the nature of the season, and sufficient data are not available on which to base an annual estimate, but, taken over a period, the amount so consumed has been estimated to range from one half to one bushel per head of population per annum. 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 the quantity milled, shows a substantial increase over the average for the previous year, this, however, being counterbalanced by a decline in the following year. The average quantity of

flour consumed per annum for the ten years under consideration was 0.1036 tons per head of population, which, expressed in equivalent terms in wheat, represents 4.973 bushels. The estimates of quantity of grain used for seed purposes are based on data supplied by the Agricultural Departments of the several States giving average quantities of seed used per acre for wheat sown either for grain or hay. The average annual quantity thus used during the ten years was 1.863 bushels per head of population, and 0.928 bushels or 56 lbs. per acre sown. For all purposes the consumption of wheat in Australia during the past four years averaged 45,928,000 bushels, or 7.45 bushels per head of the population.

6. **Value of the Wheat Crop.**—The estimated value of the wheat crop in each State and in Australia during the season 1928–29 is shown below :—

WHEAT.—VALUE OF CROP(*a*), 1928–29.

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Cap. Ter.	Australia.
	£	£	£	£	£	£	£	£
Aggregate value..	11,852,470	11,119,473	639,372	6,343,253	8,236,322	108,140	3,984	38,303,014
Value per acre ..	£2/18/0	£2/19/10	£2/18/8	£1/16/10	£2/9/3	£4/15/10	£2/17/2	£2/11/8

(*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 1929–30 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 70.04 per cent., oats represented only 4.93 per cent. of the area under crop in Australia. The area under cultivation of oats for the last five years is shown in the table hereunder, and more fully in the graphs herein :—

OATS.—AREA AND YIELD, 1924–25 TO 1928–29.

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.
1924–25	122,994	517,229	4,010	155,214	318,982	46,175	523	1,165,127
1925–26	100,652	437,696	1,293	158,062	278,344	36,741	445	1,013,233
1926–27	104,450	303,424	210	152,178	234,826	48,361	665	844,114
1927–28	114,988	529,392	2,272	197,024	235,469	42,950	208	1,122,303
1928–29	126,743	347,021	916	207,266	325,827	37,602	295	1,045,670
				YIELD.				
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1924–25	2,500,951	9,572,003	63,912	1,939,415	4,241,074	1,065,933	10,449	19,393,737
1925–26	1,607,520	4,998,165	14,546	1,808,443	2,939,380	835,473	8,130	12,211,657
1926–27	1,890,746	4,884,006	1,674	1,713,337	2,716,436	1,357,000	8,004	12,571,203
1927–28	1,654,560	4,682,724	43,788	1,378,437	2,922,865	1,399,824	2,067	12,084,265
1928–29	2,183,880	5,602,409	13,737	1,740,515	3,554,609	1,011,367	2,160	14,108,677

The oat crop showed considerable variation during the past decennium, ranging from 12,084,265 bushels in 1927–28 to 19,393,737 bushels in 1924–25, with an average around 14,500,000 bushels. The demand for the grain for oatmeal is limited to about 2,000,000 bushels annually. It is mainly used as feed grain, and its value, particularly in good seasons, is not sufficient to warrant the increase in cultivation which may be expected when oats are more generally marketed through live stock and better prices thereby realized than those now offering on the local market.

The principal oat-growing State is Victoria, which produces on the average more than one-third of the total quantity of oats grown in all States. For Australia as a whole the record yield of oats was obtained during 1924–25, when 19,393,737 bushels were harvested.

(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 1919 to 1929 are given in the succeeding table :—

OATS.—AVERAGE YIELD PER ACRE, 1924–25 TO 1928–29.

Season.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Cap. Ter.	Australia.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1924–25	20.33	18.51	15.94	12.50	13.30	23.08	19.98	16.65
1925–26	15.97	11.42	11.25	11.44	10.56	22.74	18.27	12.05
1926–27	18.10	16.10	7.97	11.26	11.57	28.06	12.04	14.89
1927–28	14.39	8.85	19.27	7.00	12.41	32.59	9.94	10.77
1928–29	17.23	16.14	15.00	8.40	10.91	26.90	7.32	13.49
Average for 10 seasons 1919–29	16.83	15.84	17.23	10.38	11.68	27.35	15.03	14.56

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 1920–21, amounting to 19.77 bushels per acre.

(iii) *Relation to Population.* The State in which oat production occupies the most important position in relation to population is Western Australia, the yield for that State representing about 8 bushels per head during the last five years, as compared with 2.33 bushels per head for Australia as a whole. Particulars for the seasons 1924–25 to 1928–29 are furnished in the succeeding table :—

OATS.—YIELD PER 1,000 OF POPULATION, 1924–25 TO 1928–29.

Season.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Cap. Ter.	Australia.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1924–25	1,109	5,776	76	3,601	11,647	4,893	3,485	3,302
1925–26	699	2,968	17	3,278	7,898	3,850	2,066	2,038
1926–27	805	2,853	2	3,025	7,172	6,319	1,627	2,057
1927–28	689	2,689	49	2,394	7,451	6,485	360	1,938
1928–29	893	3,181	15	3,006	8,755	4,661	270	2,226

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 given in the following table :—

OATS.—PRODUCTION IN VARIOUS COUNTRIES, 1925 TO 1928.

Country.	Yield in Bushels (000 omitted).		Country.	Yield in Bushels (000 omitted).	
	Average, 1925–1927.	1928.		Average, 1925–1927.	1928.
United States of America ..	1,052,863	1,159,629	Jugo-Slavia ..	18,275	20,189
Soviet Republics ..	728,396	873,212	Netherlands ..	17,063	19,841
Canada	378,676	384,327	Lithuania ..	15,562	14,702
Germany	335,393	385,573	Latvia	13,906	8,030
France	275,831	272,204	**Australia** ..	**12,289**	**14,109**
United Kingdom ..	133,305	135,718	Norway ..	10,145	10,144
Poland	113,405	137,662	Algeria	9,351	11,594
Czecho-Slovakia ..	75,555	78,445	Japan	9,035	9,214
Sweden	65,562	66,553	Estonia ..	6,565	5,453
Argentine Republic	53,067	52,138	Bulgaria ..	6,423	5,771
Rumania	50,839	54,037	Union of South Africa ..	4,682	6,079
Denmark ..	49,876	58,368	Portugal ..	4,251	3,101
Belgium ..	37,156	38,820	Greece	4,238	4,197
Irish Free State ..	37,046	35,688	Chile	4,192	4,224
Finland	33,295	31,404	New Zealand ..	4,047	3,417
Spain	32,093	27,825	Korea	3,218	3,249
Italy	31,691	38,730	Switzerland ..	2,315	2,342
Austria	23,186	25,473	Uruguay ..	2,007	3,173
Hungary ..	19,426	22,024	Tunis	1,699	1,791

(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, 1925 TO 1928.

Country.	Yield in Bushels per acre.		Country.	Yield in Bushels per acre.	
	Average, 1925–27.	1928.		Average, 1925–27.	1928.
Irish Free State ..	56.61	55.02	United States of America ..	24.02	27.79
Belgium ..	56.32	58.21	Argentine Republic	22.25	14.65
Denmark ..	47.36	58.40	Poland	20.65	27.33
Switzerland ..	46.25	46.47	Jugo-Slavia ..	20.59	22.10
Netherlands ..	45.95	52.68	Bulgaria ..	19.30	19.67
United Kingdom ..	43.48	46.04	Soviet Republics	19.19	20.81
Norway	42.18	41.24	Rumania ..	18.44	19.59
New Zealand ..	40.04	41.91	Lithuania ..	18.23	20.64
Germany	39.14	44.34	Estonia ..	18.02	17.02
Sweden	36.78	38.79	Latvia	17.67	13.62
Czecho-Slovakia ..	36.43	37.91	Spain	17.29	14.16
Japan	32.40	32.38	Greece	16.31	15.15
France	32.05	31.44	Uruguay ..	15.75	20.40
Finland	30.51	27.56	Algeria ..	15.59	19.30
Chile	30.25	31.73	**Australia** ..	**12.37**	**13.49**
Austria	30.16	34.25	Korea	11.82	12.26
Hungary ..	28.58	33.78	Portugal ..	8.06	*a* 7.67
Canada	27.95	29.26			
Italy	26.16	30.08			

(*a*) 1927 figures.

3. **World's Production.**—The production of oats in the world for the year 1928, as reported by the International Institute of Agriculture, amounted to 4,032 millions of bushels. Compared with 1927 the area in 1928 declined slightly, but a favourable season resulted in an increased yield of 500 million bushels over that for the earlier year. The average yield per acre in 1928 was 27.4 bushels. In the pre-war years 1909 to 1913 the production averaged 3,613 millions of bushels from an average area of 142,870,000

acres. Subsequently the area declined principally in Europe, but a considerable increase was recorded in North America, with the result that the area in 1928 amounted to 147,000,000 acres.

4. **Price of Oats.**—The average wholesale prices of oats in the markets of the several capitals for the year 1928–29 are given in the following table :—

OATS.—AVERAGE WHOLESALE PRICES, 1928-29.

Particulars.	Sydney.	Melbourne.	Brisbane.	Adelaide.	Perth.	Hobart.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Average price per bushel ..	4 7½	3 4½	5 0½	2 11	3 5½	3 6

5. **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 three of the years in the following table imports have exceeded the exports. The quantities and values of oats imported into and exported from Australia during the years 1924–25 to 1928–29 are given hereunder :—

OATS.—IMPORTS AND EXPORTS, AUSTRALIA, 1924-25 TO 1928-29.

Year.	Imports.		Exports.		Net Exports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Bushels.	£	Bushels.	£	Bushels.	£
1924–25 ..	1,723	482	219,278	42,255	217,555	41,773
1925–26 ..	266,103	49,927	76,978	15,844	—189,125	—34,083
1926–27 ..	197,070	40,553	137,768	26,301	— 59,302	—14,252
1927–28 ..	525,568	92,301	64,987	14,172	—460,581	—78,129
1928–29 ..	38,993	8,045	90,463	18,833	51,470	10,788

NOTE.—(—) signifies net import.

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, Malaya (British), Ceylon, and Mauritius.

6. **Oatmeal, etc.**—The production of oatmeal in Australia during 1928–29 amounted to 305,218 cwts., practically the whole of which is consumed locally. Oversea trade in this and similar products is small, the importations of oatmeal, wheatmeal and rolled oats during 1928–29 amounted to 359,363 lb., while the exports totalled 549,806 lb.

7. **Value of Oat Crop.**—The estimated value of the oat crop of the several States of Australia for the season 1928–29 is as follows :—

OATS.—VALUE OF CROP,(a) 1928-29.

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Cap. Ter.	Australia.
	£	£	£	£	£	£	£	£
Aggregate value..	336,750	863,705	3,663	264,703	488,759	179,330	333	2,137,243
Value per acre ..	£2/13/2	£2/9/9	£4/0/0	£1/5/7	£1/10/0	£4/15/5	£1/2/7	£2/0/9

(a) Exclusive of the value of straw.

§ 6. Maize.

1. **States Growing Maize.**—Maize is grown for grain chiefly in New South Wales and Queensland, the area so cropped in these States during the season 1928–29 being 299,008 acres, or nearly 95 per cent. of the total for Australia. Of the balance, Victoria contributed 16,077 acres, and Western Australia 55 acres. The climate of Tasmania is unsuitable for the growing of maize for grain. In the States mentioned the crop is grown to a greater or less extent for green forage, particularly in connexion with the dairying industry.

2. Progress of Maize-growing.—(i) *Area and Yield.* Notwithstanding its valuable properties and its pre-eminence as the world's most extensively grown cereal, the cultivation of maize has decreased in Australia during the past decennium. Compared with the previous year, the area decreased by more than 85,000 acres. The greatest area under this cereal was in 1910–11, when 414,914 acres were sown. The average area under cultivation during the decennium 1919–29 was 318,240 acres. 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 herein.

MAIZE.—AREA AND YIELD, 1924–25 TO 1928–29.

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.
1924–25	146,564	23,126	229,160	7	71	21	..	398,949
1925–26	120,955	21,913	154,252	2	8	10	..	297,140
1926–27	128,512	20,046	137,542	2	32	40	4	286,178
1927–28	148,801	17,645	234,013	..	63	10	12	400,544
1928–29	106,835	16,077	192,173	..	55	..	..	315,140
				YIELD.				
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1924–25	4,208,200	891,987	7,330,821	276	333	420	..	12,432,037
1925–26	3,278,350	768,761	3,384,172	51	227	..	..	7,431,561
1926–27	3,625,410	685,407	2,658,895	99	342	..	120	6,970,273
1927–28	3,930,570	757,780	6,703,518	..	1,098	..	84	11,393,050
1928–29	2,506,470	679,810	5,135,607	..	831	..	..	8,322,718

The maximum production of maize in Australia was recorded in 1910–11, when the harvest amounted to over 13,000,000 bushels. This figure was considerably in excess of the yields during recent years, except that of 1924, when a bountiful harvest in Queensland increased the Australian total to 12,500,000 bushels. The yield for the year under review amounted to 8,322,718 bushels, but the average for the past decennium was only 8,392,000 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 1924–25 to 1928–29, and for the decennium 1919–1929:—

MAIZE.—AVERAGE YIELD PER ACRE, 1924–25 TO 1928–29.

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.
1924–25	28.71	38.57	31.99	39.43	4.70	20.00	..	31.16
1925–26	27.10	35.08	21.94	25.50	28.38	..	..	25.01
1926–27	28.21	34.19	19.33	49.50	10.69	..	30.00	24.36
1927–28	26.42	42.95	28.65	..	17.43	..	7.00	28.45
1928–29	23.46	42.28	26.72	..	15.11	..	..	26.41
Average for 10 seasons 1919–29	27.21	40.18	23.66	17.83	13.22	7.34	22.00	26.37

The average yield of maize per acre in Victoria during the year 1928-29 was the highest in the world. This 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 generally exceeds that obtained in Queensland.

(iii) *Relation to Population.* During the past five seasons the Australian production of maize has averaged just under 1½ bushels per head of population, while the average for Queensland, the State in which the production per head is highest, amounted to approximately 6½ bushels. Details for the several States during the past five seasons are as follow:—

MAIZE.—YIELD PER 1,000 OF POPULATION, 1924-25 TO 1928-29.

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.
1924–25 ..	1,866	538	8,781	1	1	117	..	2,117
1925–26 ..	1,426	457	3,930	..	1	..	..	1,240
1926–27 ..	1,544	400	3,013	..	1	..	24	1,141
1927–28 ..	1,638	435	7,455	..	3	..	15	1,827
1928–29 ..	1,025	489	9,515	..	2	..	..	1,313

3. **Australian and Foreign Maize Production.**—(i) *Total Yield.* The United States of America is the most important maize-producing country of the world. Approximately 100,000,000 acres are planted annually, and nearly 3,000,000,000 bushels are reaped, representing about 75 per cent. of the world's production. Of the huge quantities raised, about 85 per cent. is fed to live stock on farms, 10 per cent. is used for human food, and only a very small fraction, viz., 1½ per cent., is exported. The yields of the various countries are as follows:—

MAIZE.—PRODUCTION IN VARIOUS COUNTRIES, 1925 TO 1928.

Country.	Yield in Bushels (000 omitted).		Country.	Yield in Bushels (000 omitted).	
	Average, 1925-1927.	1928.		Average, 1925-1927.	1928.
United States of America ..	2,771,036	2,839,935	Portugal ..	11,738	*a*12,275
Argentine Republic	301,849	231,704	Czecho-Slovakia ..	10,909	8,763
Rumania ..	181,248	108,513	**Australia** ..	**8,598**	**8,323**
Brazil ..	143,800	*c*158,260	Belgian Congo ..	8,530	*c*8,464
Soviet Republics	143,608	133,023	Canada ..	7,547	5,241
Jugo-Slavia ..	122,163	71,613	Greece ..	7,045	5,072
Italy	105,149	64,990	French Indo-China	6,461	8,248
India	80,627	*a*76,760	French Equatorial and West Africa	6,009	6,247
Egypt	79,893	*a*80,586	Rhodesia ..	5,875	*c*6,820
Mexico	78,980	83,916	Uruguay ..	5,830	2,966
Hungary ..	77,621	49,592	Madagascar ..	4,177	*c*4,166
Dutch East Indies	74,542	*a*78,618	Guatemala ..	4,171	4,195
Union of South Africa ..	59,031	69,400	Austria ..	4,139	4,248
Bulgaria ..	26,044	18,290	Kenya ..	3,964	4,854
Spain	23,833	21,059	Salvador ..	3,543	*b*10,629
Philippine Islands	18,233	16,765	Poland ..	3,406	*c*4,042
France	17,716	12,115	Japan ..	3,286	*a*2,971
			Korea	2,845	3,190
			Paraguay ..	760	*c*2,280

(*a*) Year 1926. (*b*) Year 1924. (*c*) Year 1927.

(ii) *Yield per Acre.* The average yield of maize per acre in Australia during 1928-29 was 26.41 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, 1925 TO 1928.

Country.	Average Yield per acre in Bushels.		Country.	Average Yield per acre in Bushels.	
	Average, 1925-1927.	1928.		Average, 1925-1927.	1928.
Canada	39.03	37.65	French Indo-China	19.48	28.29
Egypt	37.13	*a*37.23	Rhodesia ..	19.12	*a*18.83
Belgian Congo ..	35.71	*a*36.06	Rumania ..	18.02	9.86
Argentine Republic	31.80	*d*34.72	Bulgaria ..	16.68	11.47
Hungary ..	29.44	18.91	Salvador ..	16.67	*c*16.67
Czecho-Slovakia ..	29.27	24.70	Dutch East Indies	16.48	*a*16.46
Austria	27.94	29.75	Portugal ..	16.04	*d*15.77
United States of America ..	27.76	28.19	Poland	15.84	14.95
Italy	27.76	17.52	French Equatorial and West Africa	15.32	*d*10.85
Australia	**26.22**	**26.41**	Philippine Islands	14.35	11.90
Japan	25.16	*a*23.07	India	14.33	*d*13.91
Jugo-Slavia ..	24.02	14.27	Greece	13.55	11.19
Brazil	24.02	*d*20.21	Guatemala ..	13.53	14.04
Spain	21.54	21.95	Union of South Africa ..	12.68	12.43
Kenya	21.07	*d*21.23	Uruguay ..	11.65	5.69
France	20.85	14.26	Korea	11.57	12.52
Madagascar ..	20.55	*d*20.72	Mexico	10.56	11.03
Paraguay ..	19.97	*b*19.97	Basutoland ..	8.34	*a*9.87
Soviet Republics ..	19.95	12.17			

(*a*) Year 1926. (*b*) Year 1925. (*c*) Year 1924. (*d*) Year 1927.

4. **World's Production.**—The maize harvest in 1925, when the production amounted to 4,685 million bushels, was one of the most abundant on record. Since then the total yield has declined although the area showed only a slight falling off, except in 1928 when an increase of approximately 7 million acres was recorded. The average yields per acre since 1926 are 24, 23, and 22 bushels respectively. The total yields from 1909 to 1928 were as follows :—

Average 1909 to 1913, 4,119,000,000 bushels.
1924, 3,855,000,000 bushels.
1925, 4,685,000,000 „
1926, 4,463,700,000 „
1927, 4,391,000,000 „
1928, 4,248,000,000 „

5. **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, 1924-25 TO 1928-29.

Particulars.	1924-25.	1925-26.	1926-27.	1927-28.	1928-29.
	s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*
Average price per bushel ..	3 11	5 8	6 10	4 7	4 11¾

6. **Oversea Imports and Exports.**—The decline in the production of maize in Australia of late years has necessitated an average annual import of more than 1,000,000 bushels during the past quinquennium, the bulk of the supplies being furnished by South Africa. Details of imports and exports for the years 1924–25 to 1928–29 are as follows :—

MAIZE.—IMPORTS AND EXPORTS, AUSTRALIA, 1924–25 TO 1928–29.

Year.	Imports.		Exports.		Net Imports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Bushels.	£	Bushels.	£	Bushels.	£
1924–25 ..	480	242	2,554,052	511,921	−2,553,572	−511,679
1925–26 ..	1,562,453	323,486	54,720	14,734	1,507,734	308,752
1926–27 ..	1,173,514	277,821	2,477	890	1,171,037	276,931
1927–28 ..	115,638	25,443	145,402	24,421	— 29,764	1,022
1928–29 ..	773	539	278,289	50,451	— 277,516	— 49,912

NOTE.—(−) denotes net exports.

7. **Prepared Maize.**—A small quantity of corn-flour is imported annually into Australia, the principal countries of supply being the United Kingdom, South Africa, and the United States of America. During the year 1928–29 the imports amounted to 1,032,463 lb., and represented a value of £10,838. The exports from Australia are small, and in 1928–29 amounted to only 21,505 lb., valued at £517.

8. **Value of Maize Crop.**—The value of the Australian maize crop for the season 1928–29 has been estimated at £1,664,851, made up as follows :—

MAIZE.—VALUE OF CROP, 1928–29.

Particulars.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	F.C.T.	Australia.
	£	£	£	£	£	£	£
Aggregate value	689,280	172,785	802,439	..	347	..	1,664,851
Value per acre	£6/9/0	£10/15/0	£4/3/6	..	£6/6/2	..	£5/5/8

§ 7. Barley.

1. **Progress of Cultivation.**—(i) *Area and Yield.* The area under barley in Australia has fluctuated very considerably, but results for the last ten years show a marked advance. The average annual area sown for the decennium 1919 to 1929 amounted to 318,486 acres, which was nearly double the average of the previous ten-yearly period, i.e., 178,502 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, during 1928–29, the area under barley in South Australia accounted for more than 70 per cent. of the Australian acreage. Victoria was next in importance with 21 per cent., leaving a small balance of about 9 per cent. distributed among the other States. The figures here given relate to

the areas harvested for grain; small areas only are cropped for hay, while more considerable quantities are cut for green forage. These, however, are not included in this subsection. 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 herein :—

BARLEY.—AREA AND YIELD, 1924-25 TO 1928-29.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	Australia.
AREA.							
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1923-24 ..	6,638	63,764	8,798	166,432	11,606	3,010	260,248
1924-25 ..	6,614	103,395	7,001	239,337	13,306	5,223	374,876
1925-26 ..	5,626	88,896	399	256,528	13,826	5,665	a370,943
1926-27 ..	5,600	76,768	3,220	219,491	12,138	5,101	322,318
1928-29 ..	5,024	75,451	7,654	247,348	14,429	4,613	b354,539
YIELD.							
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1924-25 ..	118,300	1,444,823	171,124	3,103,718	177,537	50,729	5,066,231
1925-26 ..	105,150	1,774,963	92,441	4,134,824	158,300	90,619	6,356,297
1926-27 ..	100,221	1,920,722	1,991	4,630,044	128,136	149,800	a6,930,953
1927-28 ..	65,850	1,552,109	72,400	3,001,420	126,835	141,407	4,960,021
1928-29 ..	80,910	1,556,118	107,593	4,583,715	189,560	99,085	b6,617,341

(a) Including Federal Capital Territory, 3 acres, 39 bushels.
(b) Including Federal Capital Territory, 20 acres, 360 bushels.

The States in which the annual production of barley averaged over 1,000,000 bushels for the past decade were South Australia and Victoria, the yields being respectively 3,607,724 and 1,850,687 bushels, the higher return per acre in the latter State tending to diminish the advantage held by South Australia in regard to acreage.

(ii) *Malting and other Barley.* (a) *Year 1928-29.* In recent years the statistics of all the States have distinguished between "malting" and "other" barley. Particulars for the season 1928-29 are as follows :—

BARLEY, MALTING AND OTHER.—AREA AND YIELD, 1928-29.

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	Australia.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Malting barley ..	2,612	49,345	5,188	234,958	10,889	4,162	307,154
Other barley ..	2,412	26,106	2,466	12,390	3,540	451	a47,385
Total ..	5,024	75,451	7,654	247,348	14,429	4,613	a354,539
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
Malting barley ..	41,880	945,865	76,392	4,390,651	149,133	87,752	5,691,673
Other barley ..	39,030	610,253	31,201	193,064	40,427	11,333	a925,668
Total ..	80,910	1,556,118	107,593	4,583,715	189,560	99,085	a6,617,341

(a) Including Federal Capital Territory, 20 acres, 360 bushels.

Taking Australia as a whole, about 87 per cent. of the area under barley in 1928–29 was sown with the malting variety. The proportion varies largely 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, 1924–25 TO 1928–29.

Season.	Acres.			Bushels.			Average Yields per Acre.		
	Malting.	Other.	Total.	Malting.	Other.	Total.	Malting.	Other.	Total.
1924–25 ..	211,761	48,487	260,248	4,163,896	902,335	5,066,231	19.66	18.61	19.47
1925–26 ..	319,441	55,435	374,876	5,401,489	954,808	6,356,297	16.91	17.22	16.96
1926–27 ..	320,846	50,097	370,943	5,872,144	1,058,809	6,930,953	18.30	21.13	18.68
1927–28 ..	276,483	45,835	322,318	4,040,975	919.046	4,960,021	14.62	20.05	15.39
1928–29 ..	307,154	47,385	354,539	5,691,673	925,668	6,617,341	18.53	19.53	18.66
Average 10 seasons 1919–29	260,578	57,908	318,486	4,768,081	1,130,340	5,898,421	18.30	19.52	18.52

During the past ten seasons the area and production of malting barley have represented more than four times the corresponding figures for other barley. The average yield per acre differs very little in respect of the two classes, the results for the past ten-yearly period being slightly in favour of the Cape variety.

(iii) *Average Yield.* The average yield of barley per acre varies considerably in the different States, being as a rule highest in Victoria and Tasmania, and lowest in Western Australia. Details for each State during the past five seasons, and for the decennium 1919–29, are given in the following table :—

BARLEY.—YIELD PER ACRE, 1924–25 TO 1928–29.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Australia.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1924–25	17.82	22.66	19.45	18.65	15.30	16.85	19.47
1925–26	15.90	17.17	13.20	17.28	11.89	17.35	16.96
1926–27	17.81	21.61	4.99	18.05	9.27	26.44	18.68
1927–28	11.76	20.22	22.48	13.67	10.45	27.72	15.39
1928–29	16.10	20.62	14.06	18.53	13.14	21.48	18.66
Average for 10 seasons 1919–29	15.60	21.85	17.17	17.52	11.70	23.05	18.52

(iv) *Relation to Population.* During the last five seasons the quantity of barley produced in Australia has averaged 1 bushel per head of population. For the season 1928–29 the production ranged from 8 bushels per head in South Australia to under 2 lb. per head in New South Wales. Details for the years 1924–25 to 1928–29 are as follows :—

BARLEY.—PRODUCTION PER 1,000 OF POPULATION, 1924–25 TO 1928–29.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Australia.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1924–25	52	872	205	5,764	488	233	863
1925–26	46	1,054	107	7,496	425	418	1,061
1926–27	43	1,122	2	8,175	338	698	1,134
1927–28	27	891	81	5,213	323	655	796
1928–29	33	884	117	8,890	467	457	1,044

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 during recent years are as follows, the Australian figures being added for the purpose of comparison :—

BARLEY.—PRODUCTION IN VARIOUS COUNTRIES, 1925 TO 1928.

Country.	Yield in Bushels (000 omitted).		Country.	Yield in Bushels (000 omitted).	
	Average, 1925–1927.	1928.		Average, 1925–1927.	1928.
Soviet Republics ..	225,754	235,215	Jugo-Slavia ..	15,958	17,381
United States of America ..	213,545	342,586	Sweden ..	13,454	9,354
Germany	117,697	147,574	Bulgaria ..	12,636	15,115
India	116,151	100,424	Italy	10,664	10,583
Canada	98,971	130,933	Egypt	10,625	10,366
Spain	91,979	79,539	Syria	10,353	13,157
Japan	83,849	78,218	Lithuania ..	10,020	6,634
Poland	71,520	67,338	Austria	9,352	12,433
Rumania	58,290	66,625	Greece	7,975	6,956
Czecho-Slovakia ..	53,877	61,821	Latvia	7,297	3,144
United Kingdom ..	46,879	50,352	Finland ..	6,466	5,536
France	45,869	48,822	Tunis	6,350	12,125
Korea	36,474	32,791	Irish Free State ..	6,131	5,900
French Morocco ..	36,441	46,301	**Australia** ..	**6,082**	**6,617**
Denmark ..	33,943	48,520	Chile	5,529	5,536
Algeria	30,356	38,128	Estonia ..	5,012	4,042
Hungary ..	23,880	29,445	Norway ..	4,793	4,928
Argentine Republic	15,996	16,142	Belgium ..	4,011	4,189
			Netherlands ..	3,245	4,314

(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 49.15 bushels in Belgium to 8.91 bushels in Algeria :—

BARLEY.—AVERAGE YIELD PER ACRE IN VARIOUS COUNTRIES, 1925 TO 1928.

Country.	Yield in Bushels per acre.		Country.	Yield in Bushels per acre.	
	Average, 1925–1927.	1928.		Average, 1925–1927.	1928.
Belgium ..	49.15	54.22	Hungary ..	23.32	28.86
Netherlands ..	47.35	61.35	Bulgaria ..	23.08	25.16
Irish Free State ..	45.14	45.71	Spain	20.69	17.65
Denmark ..	43.57	55.32	Lithuania ..	20.09	15.87
New Zealand ..	39.67	34.08	Argentine Republic	19.25	12.22
Chile	38.35	35.50	Italy	18.32	18.89
Egypt	36.43	28.30	Jugo-Slavia ..	17.62	18.43
United Kingdom ..	35.95	38.77	Estonia ..	17.12	15.43
Sweden	34.90	34.39	**Australia** ..	**17.08**	**18.66**
Japan	34.74	34.90	Korea	16.73	14.84
Norway	33.29	33.15	Syria	16.46	14.75
Germany	32.49	42.06	Latvia	16.02	8.70
Czecho-Slovakia ..	31.02	34.83	India	15.26	12.98
France	26.57	27.81	Greece	15.04	13.94
Canada	26.47	26.83	Rumania ..	14.10	15.41
Austria	26.08	32.17	Soviet Republic ..	13.62	13.66
United States of America ..	25.18	24.30	Union of South Africa ..	12.33	11.25
Poland	26.04	23.57	French Morocco ..	12.16	15.94
Finland	23.93	20.35	Algeria ..	8.91	11.18

3. **World's Production.**—The area under barley in 1928 exceeded that of the previous year. Compared with the average pre-war area, i.e., for 1909–13, the total under cultivation in 1928, amounting to nearly 85 million acres, showed an increase of about 100,000 acres. Weather conditions were generally favourable, and the yield of 1,781 million bushels was the greatest recorded since the war. The production of barley in millions of bushels from 1909 onwards was as follows :—

Year.	Production.
Average 1909–1913	1,676 millions of bushels.
1924	1,346 ,,
1925	1,619 ,,
1926	1,531 ,,
1927	1,567 ,,
1928	1,781 ,,

4. **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, 1924 TO 1928-29.

Particulars.	1924.	1925–26.	1926–27.	1927–28.	1928–29.
	s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*
Malting barley	5 8	4 11	4 3	4 7¾	4 7
Cape barley	4 7¾	..	3 11	4 3	3 6

5. **Imports and Exports.**—Australian exports of barley during the last five years averaged 1,354,000 bushels. The grain was consigned mainly to the United Kingdom and Belgium, South Australia being the principal exporting State. Particulars of the Australian overseas imports and exports for the years 1924–25 to 1928–29 are contained in the following table :—

BARLEY.—IMPORTS AND EXPORTS, AUSTRALIA, 1924-25 TO 1928-29.

Year.	Imports.		Exports.		Net Exports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Bushels.	£	Bushels.	£	Bushels.	£
1924–25	67,242	16,926	1,490,416	420,432	1,423,174	403,506
1925–26	32	14	729,528	142,948	729,496	142,934
1926–27	696	285	2,021,480	383,103	2,020,784	382,818
1927–28	262	108	1,251,444	291,636	1,251,182	291,528
1928–29	150	58	1,279,014	228,707	1,278,864	228,649

In some years there is an export of Australian pearl and Scotch barley, the total for 1928–29 reaching 19,660 lb., valued at £155, consigned mainly to the Pacific Islands.

6. **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 practically ceased, and in 1917–18 and 1920–21 fairly large quantities were exported to South Africa and Japan. Details of imports and exports for the years 1924–25 to 1928–29 are given hereunder :—

MALT.—IMPORTS AND EXPORTS, AUSTRALIA, 1924–25 TO 1928–29.

Year.	Imports.		Exports.		Net Exports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Bushels.	£	Bushels.	£	Bushels.	£
1924–25	43	29	3,228	1,698	3,185	1,669
1925–26	325	182	1,830	971	1,505	789
1926–27	688	197	2,285	1,340	1,597	1,143
1927–28	365	119	3,593	1,498	3,228	1,379
1928–29	508	186	4,958	1,897	4,450	1,711

7. **Value of Barley Crop.**—The estimated value of the barley crop for the several States of Australia for the season 1928–29 and the value per acre are shown in the following table :—

BARLEY.—VALUE OF CROP(*a*), 1928–29.

Particulars.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Cap. Ter.	Australia.
Total value..	£15,940	£294,950	£26,645	£855,775	£33,383	£18,900	£59	£1,245,652
Value per acre	£3/6/11	£3/18/2	£3/9/7	£3/9/2	£2/6/3	£4/1/11	£2/19/0	£3/10/3

(*a*) Exclusive of the value of straw.

§ 8. Rice.

The success attending the efforts of rice growers on the Murrumbidgee Irrigation Area has proved that rice can be grown profitably on the settlement. Experimental rice cultivation has been carried on at the Yanco Experimental Farm for some years, but it was not until 1924–25 that an attempt was made to grow the cereal on a commercial basis. In that year 153 acres were cropped for a yield of 16,240 bushels. Consignments of " paddy " rice were forwarded to Sydney and Melbourne for the necessary treatment before marketing, and the results showed that the quality was much superior to the imported article. In 1925–26, 1,556 acres were reaped for 61,098 bushels, or an average yield of 39.27 bushels per acre. In 1926–27 the area was increased to 3,958 acres, from which 214,740 bushels were reaped for an average of 54.25 bushels per acre. Returns for 1927–28 showed that 9,901 acres were harvested for 879,113 bushels, averaging 88.88 bushels per acre, while in 1928–29 14,058 acres yielded 1,307,641 bushels, averaging 93.02 bushels per acre. Queensland returned 3 acres with a production of 121 bushels, Western Australia 8 acres, and the Northern Territory 20 acres. This production represents about 24,518 tons and is more than sufficient to meet local requirements, which during the past five years averaged approximately 17,000 tons per annum. The imports of rice during 1928–29 amounted to 89,062 cwt., as compared with 195,671 cwt. for the previous year, while exports, which commenced with 108 cwt. in 1927–28, increased to 2,719 cwt. during the year under review. It is estimated that the production for the season 1929–30 will amount to 35,600 tons, grown on 19,930 acres. According to the Irrigation Commission there are about 53,000 acres of land on the settlement suitable for rice-growing, and it is estimated that at least 40,000 acres could be so used, of which probably 20,000 acres would be under fallow each year and 20,000 under crop. Over-production should not present undue difficulties, as there is a ready market in the East, as well as in England and Germany. The United States of America first grew rice commercially in 1912, and having met her own requirements is now exporting to European countries and to Japan. The Commonwealth Government has protected the new industry by the imposition of a Customs duty of 8s. 4d. per cental on uncleaned rice and 12s. 6d. per cental on other than uncleaned.

§ 9. Other Grain and Pulse Crops.

In addition to the grain crops already specified, the principal other grain and pulse crops grown in Australia are beans, peas, and rye. The total area under the two former crops for the season 1928–29 was 48,234 acres, giving a yield of 662,937 bushels, or an average of 13.74 bushels per acre, being below the average yield for the decennium ended 1928–29, which was 15.58 bushels per acre. The States in which the greatest area is devoted to beans and peas are Tasmania, South Australia and Victoria. The total area under rye in Australia during the season 1928–29 was 4,899 acres, yielding 73,675 bushels, giving an average of 15.04 bushels per acre. This was higher than the average for the past ten seasons, which was 12.80 bushels per acre. Over 72 per cent. of the rye grown during the season was produced in New South Wales, and 15 per cent. in Victoria.

§ 10. Potatoes.

1. **Progress of Cultivation.**—(i) *Area and Yield.* The principal potato-growing State is Victoria, which possesses peculiar advantages for the growth of this 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, 1924–25 TO 1928–29.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Cap. Ter.	Australia.
				AREA.				
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1924–25 ..	23,384	61,295	9,493	3,292	5,122	36,171	19	138,776
1925–26 ..	22,723	63,369	10,478	2,895	4,262	33,190	8	136,925
1926–27 ..	21,906	66,185	8,642	3,549	5,144	33,984	35	139,445
1927–28 ..	21,578	77,649	10,035	4,309	5,280	44,359	21	163,231
1928–29 ..	14,830	68,412	8,154	4,518	4,819	37,299	16	a138,068
				YIELD.				
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1924–25 ..	57,179	139,043	20,314	12,226	19,891	83,377	95	332,125
1925–26 ..	43,081	160,729	15,386	10,764	16,052	67,341	56	313,409
1926–27 ..	53,223	162,909	9,749	15,375	17,755	114,100	65	373,176
1927–28 ..	47,397	230,348	18,914	17,749	16,746	138,837	50	470,041
1928–29 ..	26,339	140,158	9,687	13,859	18,774	75,222	11	284,050

(a) Includes Northern Territory, 20 acres.

The cultivation of potatoes in Australia during the last five years was fairly uniform, except in 1927–28, when the area was increased by nearly 24,000 acres, chiefly owing to larger planting in Victoria and Tasmania. For the year 1928–29 the yield was the lowest recorded for the quinquennium. The average yield during the last ten years was 360,407 tons, compared with 359,299 tons during the previous decade. The record production of 507,153 tons was 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, the average yield during the past ten seasons being 2.59 tons per acre. The lowest yield was shown by Queensland with an average of 1.65 tons for the same period.

Particulars for each State for the seasons 1924–25 to 1928–29, and for the past decennium, are given hereunder :—

POTATOES.—YIELD PER ACRE, 1924–25 TO 1928–29.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Cap. Ter.	Australia.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1924–25	2.45	2.37	2.14	3.71	3.88	2.31	5.00	2.39
1925–26	1.90	2.54	1.47	3.72	3.77	2.03	7.00	2.29
1926–27	2.43	2.46	1.13	4.33	3.45	3.36	1.86	2.68
1927–28	2.40	2.97	1.88	4.12	3.17	3.13	2.38	2.88
1928–29	1.78	2.05	1.19	3.07	3.90	2.02	0.69	2.06
Averages for 10 seasons 1919–29	2.19	2.68	1.65	3.56	3.65	2.66	3.17	2.59

The comparatively low yield per acre as compared with many European countries where the return is double that of Australia is due in large measure to the neglect of rotation, and the insufficient use of manures.

(iii) *Relation to Population.* The average annual production of potatoes per head of the population of Australia for the past five seasons was approximately 130 lb. 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 almost 9 cwt. Details for all States for the seasons 1924–25 to 1928–29 are as follows :—

POTATOES.—PRODUCTION PER 1,000 OF POPULATION, 1924–25 TO 1928–29.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Cap. Ter.	Australia.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1924–25 ..	25	84	24	23	55	383	32	57
1925–26 ..	19	95	18	20	43	310	14	52
1926–27 ..	23	95	11	27	47	531	13	61
1927–28 ..	20	132	21	31	43	643	9	75
1928–29 ..	11	80	11	24	46	347	1	45

2. **Imports and Exports.**—Under normal conditions there is a moderate export trade in potatoes carried on by Australia principally with the Pacific Islands and Papua. On the other hand, when the recurrence of droughts causes a shortage in any 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, 1924–25 TO 1928–29.

Year.	Imports.		Exports.		Net Exports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Tons.	£	Tons.	£	Tons.	£
1924–25	71	877	5,832	30,283	5,761	29,406
1925–26	8,168	77,056	1,017	16,674	— 7,151	— 60,382
1926–27	14,491	125,188	1,158	14,950	—13,333	—110,238
1927–28	218	1,831	2,132	16,619	1,914	14,788
1928–29	4	82	1,766	19,948	1,762	19,866

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 1928–29 is given in the following table, together with the value per acre :—

POTATOES.—VALUE OF CROP, 1928–29.

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Cap. Ter.	Australia.
	£	£	£	£	£	£	£	£
Total value ..	421,580	1,520,714	106,509	129,582	288,768	1,026,100	158	3,493,471(a)
Value per acre	£28/8/7	£22/4/7	£13/1/3	£28/13/8	£59/9/2	£27/10/2	£9/17/6	£25/6/0

(a) Includes £60, Northern Territory.

§ 11. 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 1928–29 being only 21,229 acres. The principal crops comprised are onions, mangolds, sugar beet, turnips, and "sweet potatoes." Of these, onions, sugar beet and mangolds are most largely grown in Victoria, turnips in Tasmania, and sweet potatoes in Queensland. The total area under onions in Australia during the season 1928–29 was 8,550 acres, giving a yield of 34,484 tons, and averaging 4.03 tons per acre. The area devoted in 1928–29 to root crops other than potatoes and onions, viz., 12,679 acres, yielded 77,343 tons, and gave an average of 6.10 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 9,759 tons, valued at £113,560, were imported, principally from Japan, the United States of America, and New Zealand, while during the same period the exports totalled 15,226 tons, valued at £163,392, and were shipped mainly to New Zealand, the Pacific Islands, the Philippine Islands, and Canada.

§ 12. Hay.

1. Nature and Extent.—(i) *Area and Yield.* As already stated, the chief crop in Australia is wheat grown for grain. Next in importance is hay, which for the season 1928–29 averaged nearly 13 per cent. of the total area cropped. In most European countries the hay consists almost entirely of meadow and other grasses, but in Australia a very large proportion is composed of wheat and oats. Large quantities of lucerne hay are 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, 1924–25 TO 1928–29.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	N. Ter.	Fed. Cap. Ter.	Australia.
				AREA.					
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1924–25	762,242	1,120,312	95,007	562,253	397,591	87,945	10	1,045	3,026,405
1925–26	749,192	1,013,613	66,828	517,220	391,142	92,595	..	1,413	2,832,003
1926–27	623,424	1,080,993	40,141	496,105	358,487	98,289	..	2,192	2,699,631
1927–28	680,919	908,804	65,412	532,568	357,065	85,769	..	1,682	2,632,219
1928–29	684,730	1,005,063	55,498	497,538	414,866	80,190	..	788	2,738,673
				YIELD.					
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1924–25	1,151,238	1,492,588	136,804	716,749	448,525	121,110	30	1,375	4,068,419
1925–26	564,006	929,068	99,742	612,671	355,269	114,920	..	2,269	2,677,945
1926–27	875,227	1,387,971	47,740	598,835	423,839	151,200	..	2,540	3,487,352
1927–28	754,176	1,001,251	94,996	464,905	416,707	124,924	..	2,004	2,858,963
1928–29	793,255	1,267,437	85,651	486,993	421,504	119,427	..	971	3,175,238

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 grain 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 during the past decennium amounted to 3,002,697 acres.

(ii) *Average Yield.* The States in which the highest average yields per acre have been obtained during the last decennium are Tasmania, Queensland and Victoria, in the former two of which States also the smallest areas are devoted to this crop. For the same period the lowest yield for Australia as a whole was that of 19 cwt. per acre in 1925–26, while the highest was that of 29 cwt. in 1920–21, followed closely by 27 cwt.

obtained in 1924–25. The average for the decennium was 24 cwt. Particulars for the several States for the seasons 1924–25 to 1928–29, and the average for the last ten years are given hereunder :—

HAY.—YIELD PER ACRE, 1924–25 TO 1928–29.

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.
1924–25	1.51	1.33	1.44	1.27	1.13	1.38	3.00	1.32	1.34
1925–26	0.75	0.92	1.49	1.18	0.91	1.24	..	1.60	1.05
1926–27	1.40	1.28	1.19	1.21	1.18	1.54	..	1.16	1.29
1927–28	1.11	1.10	1.45	0.87	1.17	1.46	..	1.19	1.09
1928–29	1.16	1.26	1.54	0.98	1.02	1.49	..	1.23	1.16
Average for 10 seasons 1919–1929 ..	1.21	1.25	1.32	1.16	1.08	1.47	3.88	1.32	1.21

(iii) *Relation to Population.* During the past five seasons the Australian hay production per head of population has varied between 9 cwt. in 1927–28 and 14 cwt. in 1924–25, averaging about 11 cwt. per head for the period. Details for the seasons 1924–25 to 1928–29 are given hereunder :—

HAY.—YIELD PER 1,000 OF POPULATION, 1924–25 TO 1928–29.

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.
1924–25 ..	511	901	163	1,331	1,231	556	8	459	693
1925–26 ..	245	552	116	1,111	955	530	..	576	497
1926–27 ..	373	811	54	1,057	1,119	714	..	516	571
1927–28 ..	314	575	102	807	1,062	578	..	349	459
1928–29 ..	324	720	93	841	1,038	550	..	121	501

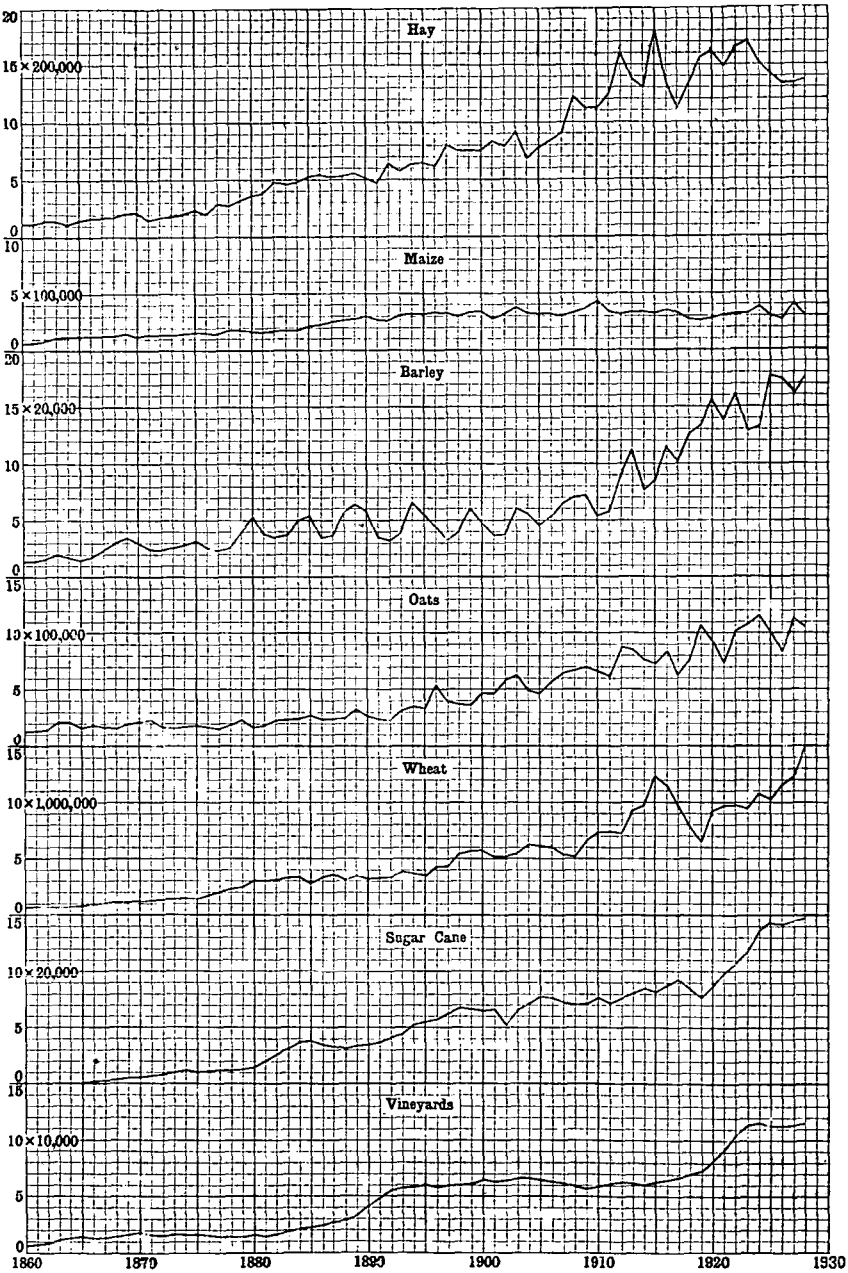
(iv) *Varieties Grown.* Particulars concerning the kinds of crop cut for hay are furnished in the returns prepared by five of the States. In the case of Tasmania the bulk consists of oaten hay; full particulars, however, are not available for that State.

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

HAY.—VARIETIES GROWN, 1924–25 TO 1928–29.

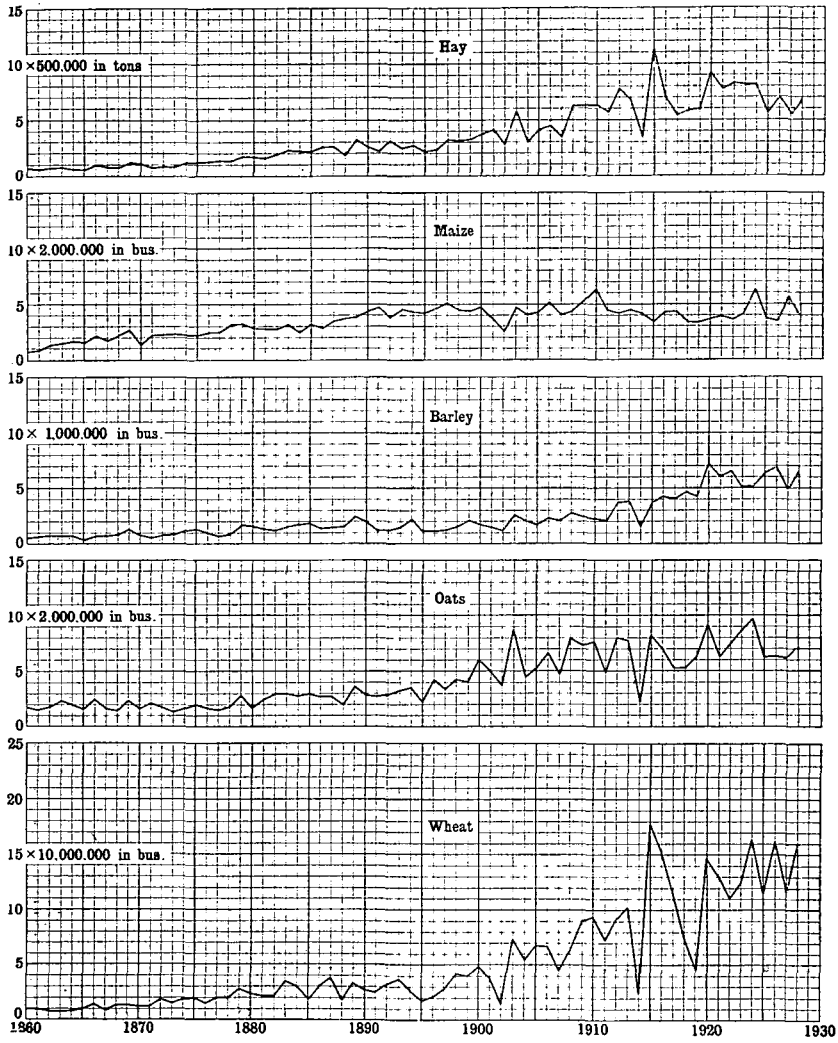
Varieties.	1924–25.	1925–26.	1926–27.	1927–28.	1928–29.
NEW SOUTH WALES—	Acres.	Acres.	Acres.	Acres.	Acres.
Wheaten	388,422	449,653	311,073	369,960	375,270
Oaten	274,408	209,047	216,403	200,872	214,137
Barley	1,150	781	692	615	817
Lucerne	97,994	89,368	95,003	109,194	94,275
Other	268	343	253	278	231
Total	762,242	749,192	623,424	680,919	684,730

AREA UNDER PRINCIPAL CROPS—AUSTRALIA, 1860 TO 1929.



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 1929.



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.

HAY.—VARIETIES GROWN, 1924–25 TO 1928–29.—*continued.*

Varieties.	1924–25.	1925–26.	1926–27.	1927–28.	1928–29.
	Acres.	Acres.	Acres.	Acres.	Acres.
VICTORIA—					
Wheaten	87,312	230,364	101,243	224,454	135,718
Oaten	1,000,382	759,209	959,019	659,983	845,731
Lucerne, etc.	32,618	24,040	20,731	24,367	23,614
Total ..	1,120,312	1,013,613	1,080,993	908,804	1,005,063
QUEENSLAND—					
Wheaten	9,457	10,514	2,798	3,637	4,585
Oaten	8,304	2,214	790	2,468	2,192
Lucerne	61,089	50,526	33,263	48,346	45,476
Other	16,157	3,574	3,290	10,961	3,245
Total	95,007	66,828	40,141	65,412	55,498
SOUTH AUSTRALIA—					
Wheaten	304,183	273,300	230,120	289,219	270,805
Oaten	246,825	234,923	256,417	233,709	218,140
Lucerne	8,344	6,218	5,613	5,649	4,833
Other	2,901	2,779	3,955	3,991	3,760
Total	562,253	517,220	496,105	532,568	497,538
WESTERN AUSTRALIA—					
Wheaten	242,216	238,110	207,841	223,827	250,786
Oaten	153,315	150,534	148,150	130,109	160,675
Lucerne	339	368	340	120	184
Other	1,721	2,130	2,156	3,009	3,221
Total	397,591	391,142	358,487	357,065	414,866

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 1929 amounted to 2,429,000 tons from 1,932,075 acres, while from permanent grasses a yield of 3,857,000 tons of hay was obtained from 4,863,731 acres, giving a total of 6,286,000 tons from 6,795,806 acres, or about 18 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 1928–29, 375 tons were imported, while the exports amounted to 2,758 tons, valued at £19,073, the principal purchases being made by India, the Philippine Islands, Malaya (British), Ceylon, and Hong Kong.

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 1928–29 :—

HAY.—VALUE OF CROP, 1928–29.

Particulars.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Cap. Ter.	Australia.
	£	£	£	£	£	£	£	£
Total Value ..	5,321,810	4,752,888	453,204	2,069,720	1,013,996	519,260	6,553	14,137,431
Value per acre ..	£7/15/5	£4/14/7	£8/3/4	£4/3/2	£2/8/11	£6/9/6	£8/6/4	£5/3/3

§ 13. 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 is considerably swollen in adverse seasons by the inclusion of wheat or other cereal crops deemed unsuitable for the production of either grain or hay. 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, 1924–25 TO 1928–29.

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.
1924–25	166,030	99,531	134,109	73,023	78,586	13,602	..	43	564,924
1925–26	479,434	107,873	247,482	102,732	100,558	17,101	..	30	1,055,210
1926–27	217,385	87,241	342,580	105,170	109,314	19,213	..	54	880,957
1927–28	848,042	94,895	155,843	184,782	82,241	23,409	..	8	1,389,220
1928–29	264,699	107,351	180,524	155,460	125,311	25,402	..	837	859,584

(ii) *Relation to Population.* Particulars of the area under green forage per 1,000 of the population for the seasons 1924–25 to 1928–29 are given hereunder :—

GREEN FORAGE.—AREA PER 1,000 OF POPULATION, 1924–25 TO 1928–29.

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.
1924–25 ..	74	60	161	136	216	62	..	14	96
1925–26 ..	209	64	287	186	270	79	..	8	176
1926–27 ..	93	51	388	186	289	89	..	11	144
1927–28 ..	353	54	173	321	210	108	..	1	223
1928–29 ..	108	61	197	268	309	117	..	104	136

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 1928–29 may be taken approximately as £2,680,230 or about £3 2s. 4d. per acre.

§ 14. Sugar-cane and Sugar-beet.

1. **Sugar-cane.**—(i) *Area.* Sugar-cane for sugar-making purposes is grown only in Queensland and New South Wales, and much more extensively in the former than in the latter State. Thus, of a total area of 299,314 acres under sugar-cane in Australia for the season 1928–29, there were 283,476 acres, or about 94¾ 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 1862–63. In the following season the New South Wales returns show an area of 2 acres under this crop. The area under cane in New South Wales reached its maximum in 1895–96 with a total of 32,927 acres. Thenceforward

with slight variations it gradually fell to 10,490 acres in 1918–19, but from that year it expanded until 1924–25, when about 20,000 acres were planted. Later, however, the area declined, and in 1928–29 only 15,838 acres were under cultivation. In Queensland, although fluctuations in area are manifest, the general trend has been upwards, the acreage under cane for the season 1928–29 being the highest on record. The area under sugar-cane in Australia from 1924–25 is given in the following table, and particulars for earlier years may be seen from the accompanying graphs.

SUGAR-CANE.—AREA, 1924–25 TO 1928–29.

Season.	New South Wales.		Queensland.		Australia.		
	Productive.	Unproductive.	Productive.	Unproductive.	Productive.	Unproductive.	Total.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1924–25 ..	7,761	12,232	167,649	85,870	175,410	98,102	273,512
1925–26 ..	8,688	10,675	189,675	79,834	198,363	90,509	288,872
1926–27 ..	10,128	8,181	189,312	77,207	199,440	85,388	284,828
1927–28 ..	8,556	7,905	203,748	71,090	212,304	78,995	291,299
1928–29 ..	6,783	9,055	215,674	67,802	222,457	76,857	299,314

(ii) *Productive and Unproductive Cane.* The areas given in the preceding table do not include the small acreage cut for green forage. The whole area was not necessarily cut for crushing during any one 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 is recorded may not show the greatest area of productive cane cut for crushing, as was evidenced in 1923–24, when, although the total acreage was greater, the area cut was less than in the previous year.

(iii) *Yield of Cane and Sugar.* Queensland statistics of the production of sugar-cane are not available for dates prior to the season 1897–98. In that season the total for Australia was 1,073,883 tons, as against the maximum production of 3,965,587 tons in 1925–26. The average production of cane during the decennium ended 1928–29 was 2,907,762 tons. The three highest yields of sugar were in 1928–29, 1925–26, and 1927–28, the quantities being 537,574 tons, 517,970 tons, and 509,094 tons respectively. The decennial average was 365,571 tons of sugar. Particulars relative to the total yields of cane sugar for the past five years are as follows :—

SUGAR-CANE.—YIELD OF CANE AND SUGAR, 1924–25 TO 1928–29.

Season.	New South Wales.		Queensland.		Australia.	
	Cane.	Sugar.	Cane.	Sugar.	Cane.	Sugar.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1924–25 ..	228,978	26,682	3,171,341	409,136	3,400,319	435,818
1925–26 ..	297,335	32,385	3,668,252	485,585	3,965,587	517,970
1926–27 ..	230,254	26,604	2,925,662	389,272	3,155,916	415,876
1927–28 ..	208,612	23,349	3,555,827	485,745	3,764,439	509,094
1928–29 ..	147,414	16,954	3,736,311	520,620	3,883,725	537,574

The production of raw sugar in Australia in 1928–29 amounted to 537,574 tons manufactured from 3,883,725 tons of cane. These figures show considerable improvement on the returns for the previous year, while the production for Queensland was the greatest yet recorded for that State. New South Wales, however, shows a fall of over 6,000 tons compared with the previous year. The assistance given by the Commonwealth and State Governments during recent years has greatly benefited the sugar industry. In 1920–21 the area cultivated in Queensland was 162,619 acres and the number of cane farmers was 3,930, whereas in 1928–29, 283,476 acres were under cultivation and the number of growers of 5 acres and over had risen to 6,502, or an increase of 2,572 in the eight years.

Final figures for the 1929–30 season are not yet available, but it is anticipated from the data available that the production of raw sugar will amount to 538,090 tons from 3,755,375 tons of cane crushed.

Early indications pointed to a good crop in 1930–31, but later advices report various climatic drawbacks, and it is now believed that the yield will be slightly below that of the previous year, and will probably not exceed 499,000 tons of raw sugar.

(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 25.56 tons for the former and 17.68 for the latter State. For some years prior to 1910–11, the yield in New South Wales remained practically constant 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, 1917–18, and 1925–26. The climatic conditions affecting the long coastal area where this industry is situated 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 14.75 tons per acre in 1923–24 to 19.34 tons in 1925–26.

The greatest production of sugar per acre crushed during the past decennium occurred in 1925–26, when 2.61 tons were obtained, the respective crushings for New South Wales and Queensland averaging 3.73 and 2.56 tons. The average yield per acre for the past ten years was 2.92 tons in New South Wales, and 2.23 tons in Queensland.

(v) *Quality of Cane.* The quantity of cane required to produce a ton of sugar varies with the variety sown, the district where grown, also with the season, and for the decennium ended 1928–29 averaged 7.96 tons, the average production of sugar being 12.56 per cent. of the weight of cane crushed. As the result of the systematic study of cane culture in Queensland, the sugar contents of the cane have been considerably increased in recent years. During the ten years ended 1918–19 it required on the average 8.68 tons of cane to produce 1 ton of sugar, whereas the average figure for the past decennium was reduced to 7.96 tons.

SUGAR-CANE AND SUGAR.—YIELD PER ACRE, 1924–25 TO 1928–29.

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.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1924–25	29.50	3.44	8.58	18.92	2.44	7.75	19.38	2.48	7.80
1925–26	34.22	3.73	9.18	19.34	2.56	7.55	19.99	2.61	7.66
1926–27	22.73	2.63	8.65	15.45	2.06	7.52	15.82	2.09	7.59
1927–28	24.38	2.73	8.93	17.45	2.38	7.32	17.73	2.40	7.39
1928–29	21.73	2.50	8.69	17.32	2.41	7.18	17.46	2.42	7.22
Average 10 seasons 1919–29 ..	25.56	2 92	8.76	17.68	2.23	7.91	18.03	2.27	7.96

The Bureau of Sugar Experiment Stations established in Queensland is rendering useful service to the sugar industry in that State, by advocating and demonstrating better methods of cultivation, the use of green manures, limes, and fertilizers, together with the introduction and distribution of improved varieties of sugar cane. During the year 1929 a re-organization of the Bureau was effected, and it now comprises four divisions, i.e., Soils and Agriculture, Pathology, Entomology, and Sugar Mill Technology. Further experiments were conducted in connexion with cane cutting by machine, and results are regarded as satisfactory.

(vi) *Relation to Population.* The yield of sugar in Australia during the five years 1924–25 to 1928–29 was more than sufficient to supply local requirements, the average production during the period amounting to 177 lb. per head of population, while the consumption was estimated to average 118 lb. per head. Details for the period 1924–25 to 1928–29 are as follows :—

SUGAR.—PRODUCTION PER HEAD OF POPULATION, 1924–25 TO 1928–29.

State.	1924–25.	1925–26.	1926–27.	1927–28.	1928–29.
	lb.	lb.	lb.	lb.	lb.
New South Wales ..	27	32	25	22	16
Queensland	1,098	1,263	988	1,210	1,272
Australia	166	194	152	183	190

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, 1924-25 TO 1928-29.

Particulars.		1924-25.	1925-26.	1926-27.	1927-28.	1928-29.
Area harvested ..	acres	1,897	1,880	2,024	2,353	2,130
Production ..	tons	24,468	21,194	9,851	25,438	15,237
Average per acre ..	,,	12.90	11.27	4.87	10.81	7.15
Sugar produced ..	,,	3,017	2,315	1,177	2,352	2,096

Seasonal conditions were not so favourable during 1928-29, and the yield declined to 15,000 tons in that year. The sugar content, however, was exceptionally high, and to some extent counterbalanced the reduced yield. The average per acre was 7.15 tons, while the average for the ten years ending 1929 was 10.09 tons.

(ii) *Encouragement of Beet-growing.* During recent years an effort has been made to expand the sugar-beet industry in Victoria. The State Government has advanced its irrigation scheme on the Macalister River to provide water for the district, and it is hoped that the industry will be greatly assisted thereby. A fine grade of white sugar is manufactured at Maffra, 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.**—The steps taken by the Commonwealth Government in connexion with this matter were alluded to in previous issues of the Year Book. (See No. 18, p. 720.)

5. **Sugar Agreement—Embargo on Imports, etc.**—By agreement between the Commonwealth and Queensland Governments in 1925, it was arranged that the embargo on the importation of foreign sugar should be extended for three years from 1st September, 1925. The price payable for the raw sugar needed for home consumption was fixed at £27 per ton, less £1 per ton to defray administrative and general expenses of the Sugar Board, and to provide special concessions to certain consumers of sugar, while for that portion reserved for export, the price was fixed at a much lower figure, the latter of course being subject to realization adjustments. The embargo was later extended for a further period of three years until 1st August, 1931, on practically the same terms as heretofore. In response to representations, the Commonwealth Government appointed a Committee of Inquiry on the 23rd August, 1930, to report on the sugar industry in Australia. The Committee consists of eight members, representing the various interests concerned. The terms of reference are of a comprehensive nature, and include such important items as costs of production, manufacture, and distribution, terms of the existing agreement and any variations thereof considered desirable, efficiency in field and factory, prices at home and abroad, etc.

6. **Net Return for Sugar Crop.**—Final calculations by the Sugar Board showed that 56 per cent. of the total production in 1925-26 was consumed in Australia, while the net value per ton of exported sugar was £11 5s. 9d., making the average price for the whole crop £19 10s. 7d. per ton.

Owing to the reduced production in the 1926-27 season 81⅛ per cent. was delivered for home consumption, and the net value of the surplus exported was £14 18s. 10d. per ton, making an average return of £24 10s. 10d. per ton.

In 1927–28 the percentage of the sugar crop retained for consumption was 68.82, the net value of the exportable surplus was £1,913,280, or £12 2s. 6d. per ton, and the average net return for the whole crop was £22 0s. 4d. per ton.

With the record yield of 1928–29 the quantity required for home consumption was 64.3 per cent. of the total production, which left a greater proportion available for export when compared with the previous year. Consequently the average price returned for the whole crop was lower, realizing £20 17s. 11d. per ton, while the net value of the surplus exported amounted to £10 10s. per ton.

7. **Imports and Exports of Sugar.**—Owing to the embargo and the increased production of sugar in Australia, the imports have dwindled to insignificant proportions. Supplies to make up for local deficiencies are usually drawn from 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, 1924–25 TO 1928–29.

Year.	Oversea Imports.		Oversea Exports.		Net Exports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Tons.	£	Tons.	£	Tons.	£
1924–25	3,046	65,579	82,747	2,162,309	79,701	2,096,730
1925–26	345	9,425	208,805	5,313,135	208,460	5,303,710
1926–27	3,611	47,844	66,523	1,730,095	62,912	1,682,251
1927–28	20	457	154,654	4,020,095	154,634	4,019,638
1928–29	11	241	199,497	5,223,348	199,486	5,223,107

8. **Sugar By-products.**—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 the proportions used for distilling, fuel, manure and other purposes will be found in Chapter XXII. —"Manufacturing." A distillation plant erected at the Plane Creek Central Sugar Mill, Mackay, was opened during 1927 and produces power alcohol of a very fine quality.

Proposals have been under consideration in regard to the establishment of an industry to undertake the manufacture of a building material known as "megass board" from megass or bagasse, i.e., the residium of crushed fibre after the removal of the sugar content from the sugar cane. The possibility of the manufacture of artificial silk from the same material has also been considered.

9. **Sugar Prices.**—The prices of sugar in Australia from 1915 to 1931 are shown in the table below. During recent years the prices were fixed in accordance with the agreement referred to previously.

AUSTRALIAN SUGAR PRICES, 1915 TO 1931.

Date of Determination.	Raw Sugar.			Refined Sugar.			
	Price to Grower and Miller per Ton.			Wholesale Price per Ton.			Retail Price per lb.
	£	s.	d.	£	s.	d.	d.
19.7.15 to 15.1.16	18	0	0	25	10	0	3
16.1.16 to 30.6.17	18	0	0	29	5	0	3½
1.7.17 to 24.3.20	21	0	0	29	5	0	3½
25.3.20 to 30.6.20	21	0	0	49	0	0	6
1.7.20 to 31.10.22	30	6	8	49	0	0	6
1.11.22 to 30.6.23	30	6	8	42	0	0	5
1.7.23 to 21.10.23	27	0	0	42	0	0	5
22.10.23 to 31.8.25	26	0	0	37	11	4	4½
1.9.25 to 31.8.31	(a)26	10	0	37	6	8	4½

(a) The price of raw sugar for the years 1925 to 1931 is estimated at £26 10s. per ton, but, as the result of the values received for the surpluses exported, the actual price obtained in 1925–26 was £19 10s. 7d.; in 1926–27, £24 10s. 10d.; in 1927–28, £22 0s. 4d.; in 1928–29, £20 17s. 11d.; and in 1929–30. £20 8s. 2d.

§ 15. 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 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 this crop. In Queensland and Western Australia also, vine-growing has been carried on for many years, but little progress has been made. 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. :—(*a*) for wine-making, (*b*) for table use, and (*c*) 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, 1924–25 TO 1928–29.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Australia.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1924–25.. ..	14,737	42,467	1,579	50,280	5,331	There are no vineyards in Tasmania.	114,394
1925–26.. ..	14,465	40,712	1,656	50,594	5,270		112,697
1926–27.. ..	14,281	40,612	1,682	50,271	5,274		112,120
1927–28.. ..	14,880	40,988	1,762	50,663	4,959		113,252
1928–29.. ..	15,200	41,565	1,787	51,802	4,943		115,297

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 a result of extensive plantings, particularly of the dried grape varieties, the 1904–5 figure was soon exceeded, and the area for 1928–29 is the highest on record.

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. Continued efforts are made to bring the Australian wines under notice, while the Commonwealth bounty on the export of fortified wine of specified strength has greatly benefited the industry. The bounty was increased to 1s. 9d. per gallon from 13th March, 1930, under the *Wine Export Bounty Act* 1930, which provides that this rate will be paid until the 28th February, 1935.

Particulars of the quantity of wine produced in the several States during the past five seasons are given in the table hereunder :—

WINE.—PRODUCTION, 1924–25 TO 1928–29.

Season.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Australia.
	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.		Gallons.
1924–25 ..	1,171,264	1,368,765	33,119	10,502,381	223,761	No production of wine in Tasmania.	13,299,290
1925–26 ..	1,240,893	1,637,274	39,375	13,074,874	238,726		16,231,142
1926–27 ..	1,625,507	2,346,314	32,974	16,159,595	291,951		20,456,341
1927–28 ..	2,295,030	1,739,560	38,571	12,820,733	408,717		17,302,611
1928–29 ..	1,481,846	1,942,701	37,210	14,828,968	309,524		18,600,249

(iii) *Relation to Population.* In relation to population the areas of the vineyards of the several States have varied little during the last five years, the Australian total declining slightly during the period, as the result of marketing difficulties. Details for the seasons 1924–25 to 1928–29 are given in the succeeding table :—

VINEYARDS.—AREA PER 1,000 OF POPULATION, 1924–25 TO 1928–29.

Season.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Australia.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1924–25 ..	7	26	2	93	15	..	19
1925–26 ..	6	24	2	92	14	..	19
1926–27 ..	6	24	2	89	14	..	18
1927–28 ..	6	24	2	88	13	..	18
1928–29 ..	6	24	2	89	12	..	18

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 bulk 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, 1924–25 TO 1928–29.

Year.	Quantity.			Value.		
	Sparkling.	Other.	Total.	Sparkling.	Other.	Total.
	Gallons.	Gallons.	Gallons.	£	£	£
1924–25 ..	28,324	52,999	81,323	72,042	33,743	105,785
1925–26 ..	25,896	61,511	87,407	65,763	37,432	103,195
1926–27 ..	27,720	61,878	89,598	64,134	37,325	101,459
1927–28 ..	20,737	55,403	76,140	45,703	33,997	79,700
1928–29 ..	20,212	56,171	76,383	50,576	32,948	83,524

(ii) *Exports.* The principal countries to which wine is exported from Australia are the United Kingdom and New Zealand, the bulk of the shipments during the past two years being consigned to the former country. Details concerning the exports of wine from Australia during the past five years are given in the following table :—

WINE.—EXPORTS, AUSTRALIA, 1924–25 TO 1928–29.

Year.	Quantity.			Value.		
	Sparkling.	Other.	Total.	Sparkling.	Other.	Total.
	Gallons.	Gallons.	Gallons.	£	£	£
1924–25 ..	4,003	877,466	881,469	8,304	180,387	188,691
1925–26 ..	3,564	1,719,045	1,722,609	7,156	364,766	371,922
1926–27 ..	2,956	3,078,841	3,081,797	6,075	827,722	833,797
1927–28 ..	2,744	3,770,035	3,772,779	5,577	1,056,831	1,062,408
1928–29 ..	2,932	1,738,047	1,740,979	5,685	495,299	500,984

3. **Other Viticultural Products.**—(i) *Table Grapes.* Large quantities of grapes are grown in all the States for table use, but the greatest development in the industry has taken place in the drying of raisins and currants, particularly in Victoria and South Australia. The quantities of table grapes grown in the several States during the past five seasons are as follows :—

TABLE GRAPES.—PRODUCTION, 1924–25 TO 1928–29.

Season.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Australia.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1924–25 ..	3,590	2,672	961	1,156	2,069	..	10,448
1925–26 ..	3,837	3,616	996	1,063	2,284	..	11,796
1926–27 ..	4,689	4,634	1,410	791	2,195	..	13,719
1927–28 ..	4,250	3,338	1,474	581	2,642	..	12,285
1928–29 ..	4,278	3,909	1,535	899	2,811	..	13,432

(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, 1924–25 TO 1928–29.

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.
1924–25 ..	19,180	5,953	366,999	104,948	139,385	109,446	7,940	12,689	533,504	233,036
1925–26 ..	23,168	6,132	351,506	123,733	111,261	103,910	9,631	10,919	495,566	244,694
1926–27 ..	41,064	9,106	657,714	135,464	162,401	87,662	8,861	22,936	870,040	255,168
1927–28 ..	30,833	4,536	402,321	73,101	55,131	50,424	16,206	24,431	504,491	152,492
1928–29 ..	60,087	9,755	771,119	189,985	210,531	164,145	12,033	26,212	1,053,770	390,097
Average 10 seasons 1919–29	22,078	5,703	379,265	106,980	103,710	96,564	8,904	13,952	513,957	223,199

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, 1924–25 TO 1928–29.

Year.	Oversea Imports.		Oversea Exports.		Net Exports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
			RAISINS.			
	lbs.	£	lbs.	£	lbs.	£
1924–25 ..	193,372	8,682	56,046,855	1,392,566	55,853,483	1,383,884
1925–26 ..	103,094	5,224	35,556,767	1,026,339	35,453,673	1,021,115
1926–27 ..	98,317	5,385	44,078,938	1,265,994	43,980,621	1,260,609
1927–28 ..	108,430	4,388	54,288,593	1,398,595	54,180,163	1,394,207
1928–29 ..	330,694	7,002	75,207,151	1,620,307	74,876,457	1,613,305
			CURRANTS.			
1924–25 ..	7,852	231	21,558,804	509,179	21,550,952	508,948
1925–26 ..	15,147	494	18,844,854	402,283	18,829,707	401,789
1926–27 ..	5,202	173	19,210,967	377,895	19,205,765	377,722
1927–28 ..	209	4	8,213,729	177,605	8,213,520	177,601
1928–29 ..	805	30	29,850,697	597,917	29,849,892	597,887

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 £8,737,067, the average annual excess for the quinquennium being £1,747,413.

§ 16. Orchards and Fruit Gardens.

1. **Progress of Cultivation.**—(i) *Area.* The maximum area under orchards and fruit gardens was recorded in 1921–22, when 281,149 acres were planted. Since that year the industry has declined slightly owing to difficulties experienced in disposing of the surplus production. The total area under orchards and fruit gardens in the several States is given in the following table :—

ORCHARDS AND FRUIT GARDENS.—AREA, 1924–25 TO 1928–29.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Cap. Ter.	Australia.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1924–25 ..	73,972	85,358	31,738	33,319	18,520	33,992	5	276,904
1925–26 ..	74,532	82,665	33,520	32,276	18,355	33,891	6	275,245
1926–27 ..	74,682	83,215	35,145	31,570	18,512	33,322	5	276,451
1927–28 ..	76,999	81,397	36,206	30,983	18,393	33,834	14	277,826
1928–29 ..	76,009	79,322	38,452	30,836	18,735	34,087	35	277,476

(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, peach, pear, orange, plum, and apricot. In New South Wales citrus fruits (oranges, lemons, etc.) occupy the leading position, although apples, peaches, plums, pears, cherries and bananas are extensively grown. In Queensland, the banana, the pineapple, the apple, the orange, the peach, the plum, and the coconut are the varieties most largely cultivated. In South Australia, in addition to the apple, orange, apricot, plum, peach, and pear, the almond and the olive are extensively grown. In Western Australia, the apple, orange, pear, plum, peach, apricot and fig are the chief varieties. In Tasmania the apple occupies nearly 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—bearing and non-bearing—under the principal kinds of fruit, and the quantity and value of fruit produced. Although statistics of area are not collected annually in Victoria, the acreage under each class of fruit is estimated 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, YIELD, AND VALUE, 1928–29.

Fruit.		N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	Fed. Cap. Ter.	Australia.
Apples	.. acres	14,728	31,652	4,133	10,478	10,468	26,856	23	98,338
	bushels	639,720	626,294	183,461	446,878	1,122,713	2,500,000	275	5,519,341
	£	311,400	320,975	64,020	226,532	846,712	937,500	134	2,707,273
Apricots	.. acres	2,075	4,986	93	3,472	704	1,572	2	12,904
	bushels	153,113	468,536	3,911	347,080	33,073	110,000	35	1,115,748
	£	87,990	128,847	3,335	85,208	37,207	22,000	20	364,607
Bananas	.. acres	1,912	..	19,750	..	19	..	..	21,681
	bushels	122,183	..	2,448,870	..	563	..	..	2,571,616
	£	81,460	..	960,000	..	845	..	..	1,042,305
Cherries	.. acres	3,639	1,493	2	693	(*a*)	57	2	5,886
	bushels	111,924	51,765	57	36,077	(*a*)	2,000	3	201,826
	£	145,170	47,883	51	26,607	(*a*)	1,500	4	221,215
Lemons	.. acres	2,879	1,993	187	472	528	..	..	6,059
	bushels	376,577	162,860	20,225	43,089	58,108	..	..	660,859
	£	172,430	73,287	8,287	15,620	34,199	..	..	303,823
Nectarines and Peaches	acres	7,714	11,790	1,840	2,593	985	59	2	24,983
	bshls.	450,930	1,056,291	100,201	177,294	51,894	4,000	..	1,840,610
	£	244 610	382,827	46,683	56,094	50,444	800	..	781,458
Nuts	.. acres	465	528	1	1,455	(*a*)	..	..	2,449
	lbs.	114,620	186,099	160	819,392	(*a*)	..	..	1,120,271
	£	4,382	8,304	4	26,639	(*a*)	..	..	39,329
Oranges	.. acres	29,997	5,926	3,734	5,019	3,116	..	..	47,792
	bushels	2,620,424	378,101	377,177	362,527	243,054	..	..	3,981,283
	£	1,051,390	190,625	155,681	185,189	156,743	..	..	1,739,628
Pineapples	.. acres	96	..	4,734	..	..	..	..	4,830
	dozen	9,744	..	938,335	..	..	..	..	948,079
	£	3,240	..	225,413	..	..	..	..	228,653
Pears	.. acres	4,398	11,002	389	2,238	1,087	2,152	2	21,268
	bushels	286,823	772,216	13,446	158,202	98,544	187,000	22	1,516,253
	£	129,590	247,753	4,496	41,107	55,534	65,450	10	543,940
Plums	.. acres	6,357	5,146	1,306	3,091	952	578	3	17,433
	bushels	231,012	241,895	62,166	147,707	51,694	60,000	14	794,488
	£	111,740	60,473	41,185	31,210	41,624	9,000	8	295,240
Small fruits	.. acres	(*b*)	414	..	56	14	2,764	..	3,248
	cwt.	43	7,710	..	1,762	(*b*)	40,277	..	49,792
	£	240	16,079	..	2,011	218	44,500	..	63,048
Other fruits	.. acres	1,749	4,392	2,283	1,269	862	49	1	10,605
	£	82,928	135,769	96,919	31,360	23,920	105,900	..	476,796
Total acres	..	76,009	79,322	38,452	30,836	18,735	34,087	35	277,476
	£	2,426,570	1,612,822	1,606,074	727,577	1,247,446	1,186,650	176	8,807,315

(*a*) Included with " Other Fruits." (*b*) Not available.

(iii) *Relation to Population.* The acreage of the orchards and fruit gardens of Australia in relation to population declined during the past five years. The Australian

figure for 1928–29 amounted to 0.044 acres per head, whilst the range amongst the States varied from 0.031 in New South Wales to 0.157 acres in Tasmania. Details for orchards and fruit gardens for the years 1924–25 to 1928–29 are as follows :—

ORCHARDS AND FRUIT GARDENS.—AREA PER 1,000 OF POPULATION, 1924–25 TO 1928–29.

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.
1924–25 ..	33	52	38	62	51	156	..	2	47
1925–26 ..	32	49	39	59	49	156	..	2	46
1926–27 ..	32	49	40	56	49	155	..	1	45
1927–28 ..	32	47	40	54	47	157	..	2	45
1928–29 ..	31	45	42	53	46	157	..	4	44

2. **Imports and Exports of Fruit.**—(i) *General.* A considerable export trade in both fresh and dried fruits is carried on by Australia with oversea countries. The import trade in fresh fruits declined heavily during the past five years, owing to the imposition of a Customs duty of 1d. per lb. on imported bananas, which had hitherto been the chief item of fresh fruit imported into Australia. The imports of dried fruits at present consist mainly of dates from Iraq. The export trade in fresh and dried fruits, however, has greatly expanded during the past quinquennium, the value of the shipments during 1928–29 amounting to £3,243,940. Apples constitute the bulk of the fresh fruit exported, although the exports of citrus fruits and pears are fairly considerable, and experiments are being conducted in regard to the dispatch of other fruits. Shipments of raisins and currants have developed into large proportions since 1914–15, and are mainly responsible for the increase in the dried fruits exports. Other fruits in the dried state, notably apricots, are also receiving attention from overseas.

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

FRESH FRUITS.—IMPORTS AND EXPORTS, AUSTRALIA, 1924–25 TO 1928–29.

Year.	Oversea Imports.		Oversea Exports.		Net Exports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	lbs.	£	lbs.	£	lbs.	£
1924–25 ..	3,228,200	32,009	101,348,900	1,089,544	98,120,700	1,057,535
1925–26 ..	3,228,900	35,154	149,673,100	1,553,650	146,444,200	1,518,496
1926–27 ..	5,086,900	56,932	75,776,600	805,573	70,689,700	748,641
1927–28 ..	4,772,200	61,606	186,625,800	1,819,796	181,853,600	1,758,190
1928–29 ..	6,350,000	69,011	82,706,700	942,960	76,356,700	873,949

The value of the exports of apples in 1928–29 amounted to £703,037, and of citrus fruits to £76,839, viz., lemons, £4,183, and oranges, £72,656.

(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, 1924–25 TO 1928–29.

Year.	Oversea Imports.		Oversea Exports.		Net Exports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	lbs.	£	lbs.	£	lbs.	£
1924–25 ..	9,429,764	136,185	78,952,737	1,939,829	69,522,973	1,803,644
1925–26 ..	11,787,309	141,922	55,428,846	1,463,417	43,641,537	1,321,495
1926–27 ..	11,318,200	173,962	63,503,400	1,649,153	52,185,200	1,475,191
1927–28 ..	12,092,100	182,617	63,295,600	1,601,832	51,203,500	1,419,215
1928–29 ..	11,429,700	153,110	107,270,400	2,300,980	95,840,700	2,147,870

(a) Including raisins and currants referred to under Vineyards, § 15, 4.

(iv) *Jams and Jellies.* Jams and jellies were exported in large quantities during the war years, and in 1918–19 the record shipment of 79,277,560 lbs., valued at £1,847,970, was dispatched from Australia. Since that year, however, the trade has dwindled, the value of the exports in 1928–29 amounting to only £58,204. Particulars relative to imports and exports during each of the last five years are as follows :—

JAMS AND JELLIES.—IMPORTS AND EXPORTS, AUSTRALIA, 1924–25 TO 1928–29.

Year.	Oversea Imports.		Oversea Exports.		Net Exports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	lbs.	£	lbs.	£	lbs.	£
1924–25 ..	226,253	10,810	2,470,431	74,464	2,244,178	63,654
1925–26 ..	190,302	8,813	2,665,243	82,447	2,474,941	73,634
1926–27 ..	357,838	15,004	2,422,988	72,354	2,065,150	57,350
1927–28 ..	438,427	18,408	2,298,225	68,949	1,859,798	50,541
1928–29 ..	325,422	13,133	1,947,786	58,204	1,622,364	45,071

(v) *Preserved Fruit.* Details concerning the quantities and values of preserved fruit imported into 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 1928–29 was £218,336. Particulars in respect of exports are available, and the following shipments were sent overseas in 1928–29 :—Apricots, 4,806,646 lbs., £98,446 ; peaches, 11,807,542 lbs., £232,009 ; pears, 2,982,263 lbs., £71,763 ; pineapples, 17,911 lbs., £434 ; and other, 1,282,674 lbs., £31,692, or a total shipment of £446,034.

§ 17. Minor Crops.

1. **General.**—In addition to the crops previously dealt with, 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, and Millet. Cotton-growing has recently received considerable attention in the tropical portions of Australia, and the prospects of establishing this industry are hopeful. The decline in area under cultivation from 82,409 acres in 1924–25 to 26,122 acres in 1928–29 was due to poor seasons and difficulty in marketing the product. The total area in Australia during the season 1928–29 devoted to crops not dealt with in previous sections was 114,991 acres, the major portion of which consisted of cotton and market-garden products.

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 during each of the last five seasons is given hereunder :—

MARKET GARDENS.—AREA, 1924–25 TO 1928–29.

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.
1924–25 ..	8,824	14,620	1,619	1,577	2,913	576	..	13	30,142
1925–26 ..	8,973	16,609	1,017	1,517	2,725	587	..	12	31,440
1926–27 ..	8,184	17,751	1,096	1,320	2,872	599	..	46	31,868
1927–28 ..	7,729	18,984	1,083	1,303	2,647	732	..	32	32,510
1928–29 ..	7,709	18,630	918	1,408	2,924	546	..	11	32,146

3. **Grass Seed.**—The total area under this crop during 1928–29, exclusive of New South Wales and Western Australia, for which States complete figures as to area are not available, was 4,402 acres, of which 1,856 acres were in Victoria, 310 acres in Tasmania, 936 acres in Queensland, and 1,300 acres in South Australia. The total yield for 1928–29, including New South Wales, was 67,718 bushels, valued at £81,724. In addition to the areas planted above, 711 acres were sown to canary seed in Queensland during 1928–29, and furnished a yield of 1,754 bushels, valued at £1,139.

4. **Tobacco.**—Tobacco-growing has undergone 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 1920–21 had declined to 1,345 acres. Since that date the area has again fluctuated, but with an upward tendency, and in 1928–29, 2,238 acres were planted, of which 762 were in New South Wales, 1,317 in Victoria, 138 in Queensland, 14 in South Australia, and 7 in Western Australia. Greater attention is now being paid to the proper treatment of the leaf, and flue-curing is becoming more general. 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 1928–29 amounted to £2,165,948, comprising unmanufactured tobacco £1,903,631, cigars £108,141, cigarettes £488,729, and snuff £1,288, while manufactured tobacco revealed

a balance in favour of exports amounting to £335,841. Important proposals for the development of the tobacco-growing industry in Australia are now being formulated. As a result of a proposal by the British-Australasian Tobacco Co., and later of an agreement between that Company, the Federal and mainland State Governments, investigations into the tobacco industry of Australia have been carried out. The agreement, entered into in 1927, was for a period of three years, and the amount contributed was £30,000, of which the Company contributed £20,000, the Commonwealth Government £5,000, and each of the mainland State Governments £1,000. If at the end of this period the results are sufficiently encouraging a further sum of £60,000 will be provided, of which amount the Tobacco Company will contribute £30,000 and the Governments £30,000. The results of the investigations made have proved satisfactory in the production of a suitable leaf, and the control of the parasitic disease, blue mould, appears at present hopeful of attainment. Further experiments are necessary, however, in order to obtain the desired improvement in the culture of tobacco. The first period of three years in the agreement referred to expired on the 30th June, 1930, and future development will depend upon the results of the report of the Select Committee appointed by the Commonwealth Parliament to inquire into the industry.

5. **Pumpkins and Melons.**—The total area under this crop in Australia during 1928–29 was 13,121 acres, of which 2,345 acres were in New South Wales, 1,204 acres in Victoria, 8,746 acres in Queensland, 484 acres in Western Australia, 338 acres in South Australia, and 4 acres in Federal Capital Territory. The production in all the States amounted to 36,603 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 1928–29 being 1,485 acres, of which 1,203 acres were in Tasmania, 281 acres in Victoria, and 1 acre 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. In Victoria the area, which in 1901–2 was 307 acres, dwindled to 71 acres in 1918–19, then rose to 312 acres in 1925–26 and dropped to 281 in 1928–29. 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 1928–29 the exports of hops exceeded the imports by 397,546 lbs., the excess value being £9,159.

7. **Flax.**—For over 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. About the end of the year 1917 the shortage of flax fibre in the world had become acute, and endeavours were made by the Commonwealth Government to encourage the cultivation of flax. The acreage in Victoria increased from 419 acres in 1917–18 to 1,611 acres in 1919–20, but the area had declined in 1928–29 to 179 acres. Flax products to the value of more than £1,500,000 are annually imported into Australia, and, as it has been demonstrated that flax can be grown to perfection here, good prospects exist for the ultimate establishment of a local industry. In order to assist in this direction the Commonwealth Parliament has granted the payment of a bounty on the production of flax and linseed grown in Australia for a period of five years, commencing 1st March, 1930. The rates of bounty payable are 15 per cent. of the market value of the flax or linseed for the first two years, 10 per cent. for the next two years, and 7½ per cent. for the last year. The total amount paid shall not exceed £20,000 in any one financial year.

8. **Millet.**—Millet figures in the statistical records of three of the States. The total area devoted thereto in 1928–29 was 3,664 acres, of which 2,018 acres were in New South Wales, 1,337 in Victoria, 307 in Queensland, and 2 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 1928–29 the areas in those States were 596, 1,216, 132, and 110 acres respectively.

10. Cotton.—The cultivation of cotton was begun 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 setback to the new industry, and the area declined continuously 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 at no 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 1¾d. per lb.

Rising prices for the staple enabled the Government to offer the substantial guarantee of 5½d. per lb. for seed cotton of good quality for the three years ended 31st July, 1923, and as the result considerable activity was displayed in the industry, the area picked rising from 166 acres in 1920 to 50,186 in 1924. Government guarantees were continued until 1926, when the Commonwealth Government granted a bounty of 1½d. per lb. on the better grades and ¾d. on the lower grades of seed cotton grown in Australia. In addition to this direct assistance to the cotton-growing industry, the Government subsidized the cotton-manufacturing industry by granting a graduated bounty varying from ½d. to 1s. per lb. on all cotton yarn manufactured in Australia which contained 50 per cent. of home-grown cotton. The rates payable under the new Act for seed cotton vary from 1½d. per lb. for the first year for the higher grades and ¾d. per lb. for the lower grades to ½d. and ¼d. per lb. respectively for the year ending 30th September, 1936. The bounty payable on cotton yarn varies according to count, the rate decreasing each year until 1936. The amount of bounty payable in any financial year is limited to £260,000. The object of this policy is to foster and establish the primary and secondary industries concurrently, thus creating a home market for the raw cotton produced.

The area under cultivation and the yield in Queensland since the year 1919 are shown hereunder :—

COTTON.—AREA AND YIELD, QUEENSLAND, 1919 TO 1929.

Year.	Area.(a)	Yield of Unginned Cotton.
	Acres.	lbs.
1919	72	27,470
1920	166	57,065
1921	1,944	940,126
1922	8,716	3,956,635
1923	40,821	12,543,770
1924	50,186	16,416,170
1925	40,062	19,537,274
1926	18,743	9,059,907
1927	14,975	7,060,756
1928	20,316	12,290,910
1929 (b)	25,000	8,000,000

(a) Area harvested. (b) Estimated.

Consequent upon the lapse of the Government guarantees and the change over to the bounty system, a cotton pool was formed in Queensland under the Primary Products Pools Act and a cotton board was elected to control the handling, financing, and marketing of all cotton grown in the State. The whole of the output in 1927 was sold to Australian

spinners on the basis of import parity prices, the net return to growers, including the bounty, being 5d. per lb. for top grade seed cotton. The bulk of this crop was left in the hands of the spinners and a market for the 1928 output was therefore sought overseas. Of the quantity exported, 97 per cent. was shipped to the United Kingdom, and the prices realized, coupled with the Commonwealth bounty, yielded a return sufficiently high to make cultivation profitable on land yielding a fair crop.

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 1928–29 only 7 acres were recorded with a yield of 2,102 lbs.

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

§ 18. Bounties.

With the object of encouraging the manufacture and production of certain articles in Australia, bounties have been granted by the Commonwealth Parliament and during the year ending 30th June, 1930, the sum of £518,641 was paid in connexion therewith. Of this amount, £260,387 was paid under the Iron and Steel Products Bounty Act, £55,018 under the Sulphur Bounty Act, £83,210 under the Wine Export Bounty Act, £118,967 under the Cotton Bounty Act, and £1,059 under the Papua and New Guinea Bounties Act. Fuller details will be found in the Production Bulletin issued by this Bureau.

§ 19. 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 value 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 in recent years, and the home requirements of prepared fertilizers can now be supplied by Australian manufacturers. Imports of fertilizers are also expanding, but the bulk of the inward shipments consists of rock phosphates, which form the raw material for the home manufactured superphosphate, a fertilizer which has proved eminently suitable for the growing of cereals in Australian soils. During 1928–29 the value of rock phosphates imported represented more than 86 per cent. of the total importation of fertilizers. Nauru and Gilbert and Ellice Islands Colony in almost equal proportions supplied practically the whole of the shipments. Sodium nitrate is wholly obtained from Chile.

The imports of artificial manures during the last five years are given in the following table. Although considerable quantities of manufactured superphosphates were annually imported up till 1914–15, the importations of this fertilizer have now practically ceased.

FERTILIZERS.—IMPORTS, AUSTRALIA, 1924–25 TO 1928–29.

Fertilizer.		1924–25.	1925–26.	1926–27.	1927–28.	1928–29.
Bonedust	cwt.	..	..	100	(a)	(a)
"	£	..	..	58	(a)	(a)
Guano	cwt.	893,478	1,829	20,826	500	52,018
"	£	98,515	1,061	1,238	242	6,438
Superphosphates	cwt.	1,200	1,035	1,201	1,400	2,560
"	£	785	517	573	937	1,834
Rock phosphates	cwt.	5,751,583	6,463,733	10,171,652	9,220,120	12,349,710
" "	£	739,588	799,273	1,109,414	915,840	1,291,583
Soda nitrate	cwt.	182,846	187,284	100,567	175,074	152,747
" "	£	104,729	105,384	60,951	91,885	75,888
Other	cwt.	186,209	172,993	187,773	237,354	308,425
"	£	79,616	80,900	87,281	103,634	112,232
Total	cwt.	7,015,316	6,826,874	10,482,119	9,634,448	12,865,460
	£	1,023,233	987,135	1,259,515	1,112,538	1,487,975

(a) Now included with Other Fertilizers.

4. Exports.—The subjoined table shows the exports of artificial manures for the years 1924–25 to 1928–29. 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, 1924–25 TO 1928–29.

Fertilizer.		1924–25.	1925–26.	1926–27.	1927–28.	1928–29.
Bonedust	cwt.	13,942	10,012	2,668	74	39
"	£	6,079	3,664	1,220	46	27
Superphosphates	cwt.	57	149	21	33	316
"	£	18	49	18	14	83
Rock phosphates	cwt.	..	62	200	..	..
" "	£	..	24	58	..	..
Soda nitrate	cwt.	2,529	1,445	398	7	6
" "	£	1,851	1,241	311	7	9
Ammonia sulphate	cwt.	111,594	141,866	99,928	71,911	18,610
" "	£	73,665	88,745	61,478	42,229	11,255
Other	cwt.	45,098	124,263	39,718	29,464	66,429
"	£	13,916	47,011	16,237	12,861	30,097
Total	cwt.	173,220	277,797	142,933	101,489	85,400
	£	95,529	140,734	79,322	55,157	41,471

5. **Statistics of Use of Fertilizers.**—Statistics regarding the use of manures are collected in all the States, and the particulars for 1928–29 are as follows :—

FERTILIZERS USED IN EACH STATE, 1928–29.

State or Territory.	Total Area of Crops.	Area Manured.		Manure Used.	
		Aggregate.	Percentage on Total Area of Crops.	Natural (Stable Yard, etc.).	Artificial.
	Acres.	Acres.	%	Loads.	Tons.
New South Wales ..	5,442,982	3,768,421	69.23	157,686	122,897
Victoria	5,505,651	a5,753,116	b97.17	114,345	a257,498
Queensland	1,044,632	96,037	9.19	67,152	36,644
South Australia ..	4,660,003	4,256,827	91.35	45,647	171,965
Western Australia ..	4,259,269	a4,577,900	c98.64	53,500	a201,022
Tasmania	273,152	245,863	90.00	11,917	23,500
Northern Territory ..	392	50	12.75	..	14
Fed. Cap. Territory ..	3,476	3,175	91.34	227	116
Total	21,189,557	18,701,389	88.26	450,474	813,656

(a) Includes area under sown grasses and manure used. (b) 1926 figure. (c) 1923 figure.

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

FERTILIZERS USED IN AUSTRALIA, 1924–25 TO 1928–29.

Year.	Total Area of Crops.	Area Manured.		Manure Used.	
		Aggregate.	Percentage on Total Area of Crops.	Natural (Stable Yard, etc.).	Artificial.
	Acres.	Acres.	%	Loads.	Tons.
1924–25	17,278,191	13,031,329	75.14	534,702	529,027
1925–26	16,793,578	13,387,111	78.98	625,099	576,786
1926–27	17,772,499	14,770,498	83.11	562,055	642,511
1927–28	19,219,393	16,607,826	86.41	516,241	725,782
1928–29	21,189,557	18,701,389	88.26	450,474	813,656

The percentage of the area manured on the total area cultivated has advanced from 75.14 to 88.26 during the past five years, while the use of artificial manures has increased by more than 284,629 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. The production of superphosphates in Australia during 1928–29 amounted to 899,552 tons, the largest producing States being Victoria and Western Australia.

§ 20. Ensilage.

1. **Government Assistance in Production.**—Efforts have been made for some years by the various State Governments to educate the farming community in regard to the value of ensilage. Monetary aid is afforded in the erection of silos, and expert advice is supplied in connexion with the design of the silos and the cutting and packing of the silage.

2. **Quantity Made.**—Particulars concerning the number of holdings on which ensilage was made, and the quantity made during the seasons 1924–25 to 1928–29, are given in the following table:—

ENSILAGE MADE, 1924-25 TO 1928-29.

State or Territory.	1924–25.		1925–26.		1926–27.		1927–28.		1928–29.	
	Holdings.	Ensilage Made.	Holdings.	Ensilage Made.	Holdings.	Ensilage Made.	Holdings.	Ensilage Made.	Holdings.	Ensilage Made.
	(a) No.	Tons.	(a) No.	Tons.	(a) No.	Tons.	(a) No.	Tons.	(a) No.	Tons.
New South Wales ..	269	35,145	241	30,457	407	48,718	473	50,464	350	27,177
Victoria	106	6,667	113	6,092	94	6,132	75	6,037	89	7,775
Queensland	104	8,195	67	4,654	50	4,728	76	5,420	72	4,037
South Australia ..	20	2,067	28	2,857	23	2,405	17	2,415	12	2,808
Western Australia ..	29	2,287	43	3,325	72	5,642	72	5,147	93	7,022
Tasmania	10	301	3	170	8	488	12	526	5	115
Northern Territory ..	1	5	1	5	..	..	..	..	..	..
Total ..	539	54,667	496	47,560	654	68,113	725	70,009	621	48,934

(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 production during the previous years when there was a surplus of green forage. The quantities made since that date have fluctuated considerably, the output in 1928–29 amounting to 48,934 tons.

§ 21. 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 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 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 subject 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.