

## AGRICULTURE.

TAKEN as a whole, Australasia may be said to be in the first phase of agricultural settlement; indeed, several colonies have not yet emerged from the pastoral stage. Nevertheless the value of agricultural produce, estimated at farm prices, is considerable, and amounts to nearly 35 per cent. of the value of the pastoral and dairy produce. The return from agriculture in each colony for the season 1894-95 was approximately as shown below. It must be noted, however, that all the figures given for South Australia in this chapter, with the exception of those referring to wheat, are for the year 1893-94, no agricultural statistics having been collected in that colony for the following year:—

Colony.	Total value of Crops.	Average Value of Produce per acre under Crop.	Proportion of Total Value of Australasia.
	£	£ s. d.	per cent.
New South Wales .....	3,248,796	2 9 0	20·4
Victoria .....	4,233,986	1 15 0	26·5
Queensland .....	1,404,585	5 2 2	8·8
South Australia .....	1,888,552	0 18 6	11·8
Western Australia.....	254,864	3 2 8	1·6
Tasmania.....	819,104	3 16 3	5·1
New Zealand .....	4,124,640	3 6 2	25·8
Australasia .....	15,974,527	2 2 0	100·0

From this estimate it would seem that the value of crops per acre cultivated is much larger in Queensland than in the other colonies, a fact which is due to the proportionately large area under sugar-cane. In Tasmania the area devoted to fruit and hops, and the higher returns of cereals, account for the high average per acre which that province shows. In point of gross value Victoria occupies the first position among the members of the group, the produce of that province having a value considerably in excess of one-fourth of that of all Australasia. New Zealand also produces over one-fourth of the total, and New South Wales over one-fifth. The value of the principal crops, and the

percentage of each to the total production, are given in the following statement :—

Name of Crop.	Value.	Proportion to Total.
	£	per cent.
Wheat .....	3,021,225	18·9
Maize .....	674,583	4·2
Barley .....	378,285	2·4
Oats .....	1,193,267	7·5
Other grain crops .....	18,569	0·1
Pease, beans, etc. ....	154,897	1·0
Hay .....	3,410,343	21·3
Potatoes .....	1,182,067	7·4
Other root-crops .....	1,044,469	6·5
Sugar-cane .....	769,967	4·8
Tobacco .....	40,915	0·3
Grapes .....	572,539	3·6
Green forage .....	473,817	3·0
Grass seed .....	152,609	0·9
Hops .....	59,167	0·4
Orchards and market-gardens .....	2,590,455	16·2
Other crops .....	237,353	1·5
Total .....	15,974,527	100·0

The average value of agricultural produce per head of population in each of the Australasian colonies during the season 1894-95 is represented by the figures below. It will be seen that in the colonies of New Zealand, South Australia, Tasmania, and Victoria the development of agricultural resources is attracting the attention of the colonists to a greater extent than is the case in the other provinces of Australasia :—

Colony.	Average value per head.
	£ s. d.
New South Wales .....	2 12 6
Victoria .....	3 12 0
Queensland .....	3 4 0
South Australia .....	5 8 0
Western Australia .....	3 9 3
Tasmania .....	5 5 1
New Zealand .....	6 1 5
Australasia .....	3 17 9

Below will be found the value of the agricultural production of the colonies in the years 1871, 1881, and 1891. Comparing these figures with those for 1894-95 given above, it will be seen that while the total production of Australasia is now one-half higher than it was twenty-four years ago, the average value per head of population is much lower. As subsequent tables will show, the lower total and average values in

1894-95 as compared with 1881 and 1891 are not due to a decline in the area under crop or in the quantity of produce harvested, but to the rapid fall in the prices of cereals. The rise in prices which has taken place in the past year will probably be found to have more than compensated for the ruin of many crops by drought, and the value of agricultural produce in 1895-96 may be expected to show an increase on the figures for the previous year :—

Colony.	1871.	1881.	1891.
	£	£	£
New South Wales.....	2,220,000	3,830,000	3,584,500
Victoria .....	3,300,000	5,894,000	7,009,100
Queensland .....	650,000	1,283,000	1,414,000
South Australia .....	1,789,000	3,283,000	3,045,000
Western Australia.....	258,000	248,000	380,900
Tasmania .....	724,000	981,000	1,046,500
New Zealand .....	1,955,000	4,650,000	5,518,000
Australasia {	Total.....	10,896,000	20,169,000
	Per head ...	£ s. d.	£ s. d.
		5 12 8	7 5 3
		5 14 6	

Compared with the principal countries of the world, Australasia does not take a high position in regard to the gross value of the produce of its tillage, but in value per inhabitant it compares fairly well; indeed, some of the colonies, such as New Zealand and South Australia, show averages which compare well with those of many of the leading agricultural countries. This may be partly seen from the following table, the figures in which are taken from Mulhall's *Dictionary of Statistics*. It is important to remember, however, that since the latest edition of this work was compiled the prices of agricultural produce have greatly fallen :—

Countries.	Value in millions.	Per head.	Countries.	Value in millions.	Per head.
	£	£		£	£
United Kingdom .....	141	3·3	Holland ... ..	20	4·3
France .....	322	8·3	Belgium .....	41	6·7
Germany .....	262	5·4	Switzerland .....	9	3·0
Russia .....	373	4·0	United States .....	467	7·5
Austria .....	225	5·6	Canada .....	35	7·0
Italy .....	153	5·0	Cape Colony .....	2	1·3
Spain .....	126	7·1	Argentina .....	18	5·8
Portugal.....	23	4·9	Uruguay .....	2	3·3
Sweden .....	31	6·5			
Norway .....	9	4·5			
Denmark ... ..	20	9·5	Australasia (1894) ...	16	3·9

The following figures, giving the areas under the principal grain and other crops and the total extent of land under cultivation in each of the colonies at different periods since the year 1861, will serve to illustrate the progress which agriculture has made. In this table, as well as throughout the whole of the chapter, the years 1861, 1871, 1881, 1891, and 1894 embrace the periods from 1st April in each of those years to the 31st March in the following year :—

Year.	New South Wales.	Victoria.	Queens- land.	South Australia.	Western Australia.	Tasmania.	New Zealand.	Austral- asia.
	acres.	acres.	acres.	acres.	acres.	acres.	acres.	acres.

## WHEAT (for Grain).

1861	123,403	196,922	392	310,636	13,584	53,823	29,531	733,356
1871	154,030	334,609	3,024	692,508	25,697	63,332	108,720	1,381,920
1881	221,888	926,729	10,958	1,768,781	21,951	51,757	365,715	3,367,779
1891	356,666	1,332,633	19,306	1,552,423	26,866	47,584	402,273	3,737,801
1894	647,483	1,372,819	28,997	1,576,950	21,433	52,028	148,575	3,848,235

## OATS (for Grain).

1861	7,224	91,061	69	1,638	507	29,022	15,872	145,393
1871	13,795	175,944	131	3,586	1,474	29,631	139,185	363,746
1881	16,348	146,995	88	3,023	827	27,535	243,387	438,203
1891	12,958	190,157	715	12,637	1,301	28,360	323,508	560,636
1894	30,636	265,115	1,477	13,619	1,635	34,385	351,852	698,719

## MAIZE (for Grain).

1861	57,959	1,714	1,914	18	73	.....	770	62,448
1871	119,956	1,709	20,329	.....	113	.....	.....	142,107
1881	117,478	1,733	46,480	.....	36	.....	3,177	168,954
1891	174,577	8,230	101,598	.....	23	.....	5,447	239,875
1894	208,308	5,671	103,671	.....	54	.....	5,525	323,229

## BARLEY (for Grain).

1861	2,924	3,419	13	10,637	2,412	7,279	3,457	30,141
1871	3,461	16,772	971	17,225	5,033	4,275	13,305	61,092
1881	6,427	43,652	256	11,953	3,679	4,597	29,803	105,372
1891	4,459	45,021	739	11,461	3,738	2,650	24,268	92,336
1894	10,396	96,594	1,413	13,072	1,940	8,167	36,519	163,115

Year.	New South Wales.	Victoria.	Queens- land.	South Australia.	Western Australia.	Tasmania.	New Zealand.	Austral- asia.
	acres.	acres.	acres.	acres.	acres.	acres.	acres.	acres.

## POTATOES.

1861	10,040	27,174	512	2,612	277	9,349	7,292	57,256
1871	14,770	39,064	3,121	3,156	494	8,154	11,933	80,692
1881	15,943	39,129	5,086	6,136	278	9,670	22,540	98,782
1891	22,560	57,334	9,173	6,892	532	16,393	27,266	140,150
1894	30,089	54,570	13,298	6,510	703	23,415	25,339	153,924

## VINES.

1861	1,692	1,464	40	3,918	457	.....	.....	7,571
1871	6,618	5,523	568	5,455	692	.....	.....	18,856
1881	6,624	4,923	1,212	4,202	527	.....	.....	17,488
1891	8,281	24,483	1,988	12,314	1,004	.....	.....	48,070
1894	7,577	30,307	1,987	17,418	1,862	.....	.....	59,151

## HAY.

1861	45,175	74,681	260	62,874	6,676	31,803	.....	221,489
1871	51,805	103,206	3,828	97,812	.....	31,578	30,717	318,946
1881	146,610	212,150	16,926	333,467	24,445	34,790	68,423	836,811
1891	163,893	369,498	30,655	304,171	28,534	45,445	46,652	988,818
1894	245,243	486,562	28,028	361,145	49,896	61,373	194,765	1,427,012

## OTHER CROPS.

1861	47,435	13,971	1,220	8,384	719	27,109	11,584	110,422
1871	28,978	174,527	27,997	17,988	18,171	18,076	33,422	319,159
1881	37,925	55,085	30,658	28,845	1,610	20,145	337,856	518,124
1891	103,019	89,248	78,455	27,791	2,211	27,689	595,363	923,776
1894	146,232	108,218	96,106	50,458	3,794	35,489	483,568	923,865

## TOTAL AREA UNDER CROPS.

1861	295,917	410,406	4,440	400,717	24,705	163,385	68,506	1,368,076
1871	193,413	851,354	9,969	837,730	51,724	155,046	337,282	2,686,518
1881	569,243	1,435,446	17,664	2,156,407	53,353	148,494	1,070,906	5,551,513
1891	846,383	2,116,054	242,629	1,927,689	64,209	168,121	1,424,777	6,790,462
1894	1,325,964	2,419,856	274,982	2,039,172	81,326	214,857	1,246,143	7,602,300

## LAND UNDER PERMANENT ARTIFICIALLY-SOWN GRASSES.

1861	1,658	12,654	.....	838	.....	.....	157,994	173,144
1871	24,388	6,282	838	5,213	.....	90,247	792,529	919,497
1881	75,825	241,947	8,565	16,438	.....	136,321	3,869,646	4,348,742
1891	333,238	174,982	20,921	17,519	.....	208,596	7,357,229	8,112,485
1894	362,578	199,161	17,312	.....	.....	221,470	8,773,103	9,573,624

The following table shows the increase in area and the proportional yearly increase in cultivation in each colony during the period of 33 years under review :—

Colony.	Increase in area from 1861 to 1894.	Increase in acreage per annum.
	acres.	per cent.
New South Wales .....	1,030,047	4·6
Victoria .....	2,009,450	5·5
Queensland .....	270,542	13·2
South Australia .....	1,638,455	5·0
Western Australia .....	56,621	3·6
Tasmania .....	51,472	0·8
New Zealand .....	1,177,637	9·1
Australasia .....	6,234,224	5·3

Thus, although the provinces of Victoria, South Australia, New Zealand, and New South Wales have during this period provided the largest increase in the area of land cultivated, Queensland shows a much greater proportional increase, whilst agriculture in Tasmania has relatively to population remained almost stationary. Taking Australasia as a whole, it will be seen that the area under crop is now more than five and a half times as large as it was in 1861. If, however, the land artificially grassed be included, the total will come to 17,175,924 acres, or more than eleven times the area under cultivation in 1861. A comparison of the acreage under crop on the basis of population, which is afforded by the table given below, may perhaps best serve to give an idea of the progress of agriculture :—

Colony.	1861.	1871.	1881.	1891.	1894.
	acres.	acres.	acres.	acres.	acres.
New South Wales.....	0·8	0·8	0·7	0·7	1·1
Victoria .....	0·8	1·1	1·7	1·8	2·1
Queensland.....	0·1	0·5	0·5	0·6	0·6
South Australia.....	3·2	4·5	7·5	5·9	5·8
Western Australia .....	1·6	2·0	1·8	1·2	1·1
Tasmania ..	1·8	1·5	1·2	1·1	1·4
New Zealand .....	0·7	1·3	2·1	2·2	1·8
Australasia.....	1·1	1·4	2·0	1·7	1·8

For the whole of Australasia the increase of agriculture as compared with population will be clearly seen in the following table :—

Increase of—	1861-71.	1871-81.	1881-91.	1891-94.	Whole period 1861-1894.
	per cent.	per cent.	per cent.	per cent.	per cent.
Acreage under crop.....	96·4	106·6	22·3	12·0	455·7
Population .....	55·6	43·2	38·1	6·5	228·1

Although during the period covered by the table the population of Australasia was more than trebled, the area of land devoted to agriculture increased more than fivefold, and the rate of increase of agriculture was exactly twice that of the population. This improvement took place entirely during the period from 1861 to 1881, and chiefly during the latter portion of that time; while in the years from 1881 to 1891 the rate of increase in the acreage under crops fell far short of the increase of the population, although from 1891 to 1894 the opposite occurred. This is what naturally might be expected, as the gold fever had altogether subsided about the end of the first period, 1861-71, and a large portion of the population was seeking employment of a more settled nature than was afforded by the gold-fields. The comparative decrease noticeable in the latter period, 1881-91, is owing to various causes, such as the general tendency, elsewhere alluded to, of the population to congregate in the several metropolitan centres; the difficulty of taking up good land within easy access to markets; and also to the fact that there have been large accessions to the numbers of those engaged in other callings without a corresponding increase in the agricultural classes. Under any circumstances, the area of land devoted to agriculture cannot be increased illimitably, and although enormous tracts adapted for tillage still remain untouched by the plough, it is not likely that their cultivation will be attempted until a more certain market is assured for the produce.

As will be seen on reference to a subsequent chapter dealing with "Employment and Production," the total number of persons engaged in agricultural pursuits in the Australasian colonies at the time of the census of 1891 was 310,642, of whom 286,272 were males, and 24,370 females.

In the following table will be found the proportion of land under crop to the total area of each colony, and the same with regard to Australasia as a whole. In instituting comparisons between the several colonies, however, it must be borne in mind that other circumstances than the mere area under cultivation require to be taken into consideration. It would not be fair, for instance, to compare Tasmania, which has 6·0 persons per square mile, with Western Australia, which has only 0·08 inhabitant to the square mile. The table has a value chiefly

because it shows how each province has progressed in regard to cultivation during the periods named :—

Colony.	1861.	1871.	1881.	1891.	1894.
	per cent.	per cent.	per cent.	per cent.	per cent.
New South Wales .....	0·15	0·20	0·29	0·44	0·67
Victoria .....	0·73	1·51	2·55	3·76	4·30
Queensland .....	0·001	0·01	0·03	0·06	0·06
South Australia .....	0·07	0·15	0·37	0·33	0·35
Western Australia .....	0·006	0·008	0·009	0·01	0·01
Tasmania .....	0·97	0·92	0·88	0·99	1·28
New Zealand .....	0·10	0·50	1·60	2·13	1·86
Australasia .....	0·07	0·14	0·28	0·34	0·39

The subjoined table shows the proportion of cultivated area devoted to the principal crops in each province. It will be seen that with two exceptions wheat and hay form the greatest proportions of the total tillage. This is especially the case in South Australia, where little else is grown; and in Victoria, where the proportion of wheat amounts to 57 per cent. of the total area cultivated, while there is 20 per cent. under hay crops :—

Crops.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	New Zealand.	Australasia.
	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.
Wheat .....	48·8	56·7	10·6	77·3	26·3	24·2	11·9	50·6
Oats .....	2·3	11·0	0·6	0·7	2·0	16·0	28·3	9·2
Maize .....	15·7	0·2	37·7	....	0·1	....	0·4	4·2
Barley .....	0·8	4·0	0·5	0·6	2·4	3·8	2·9	2·2
Potatoes .....	2·3	2·3	4·8	0·3	0·9	10·9	2·0	2·0
Hay .....	18·5	20·1	10·2	17·7	61·3	28·6	15·6	18·8
Vines .....	0·6	1·2	0·7	0·9	2·3	....	....	0·8
Sugar-cane .....	2·5	....	26·1	....	....	....	....	1·4
Other crops .....	8·5	4·5	8·8	2·5	4·7	16·5	38·9	10·8
Total .....	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0

The position in which each of the principal agricultural products stood in relation to the total area under crop in Australasia at various periods since the year 1861 may be ascertained from the following table. The figures should, however, be taken in conjunction with those to be found in the table on page 229, giving the actual areas operated upon, since a decline in the proportion of land under any particular crop does not necessarily mean a falling-off in the area devoted to that product; on the contrary, in few instances has there been any actual retrogression. It is satisfactory to observe that the proportion of cultivation of the



more valuable crops is gradually increasing. Thus, in 1894 the percentage devoted to vines, sugar-cane, and "other crops," in which are included gardens and orchards, was 13·0, as compared with 12·9 in 1891, 9·6 in 1881, and 8·6 in 1861 :—

Product.	1861.	1871.	1881.	1891.	1894.
	per cent.	per cent.	per cent.	per cent.	per cent.
Wheat .....	53·6	51·4	60·7	55·0	50·6
Oats .....	10·6	13·5	7·9	8·4	9·2
Maize .....	4·6	5·3	3·0	4·3	4·2
Barley .....	2·2	2·3	1·9	1·4	2·2
Potatoes .....	4·2	3·0	1·8	2·0	2·0
Hay .....	16·2	11·9	15·1	16·0	18·8
Vines.....	0·5	0·7	0·3	0·7	0·8
Sugar-cane .....	.....	0·5	0·7	1·1	1·4
Other crops .....	8·1	11·4	8·6	11·1	10·8
Total .....	100·0	100·0	100·0	100·0	100·0

## WHEAT.

Only three of the seven colonies—Victoria, South Australia, and New Zealand—produce sufficient wheat for their own requirements ; but after the deficiencies of the rest of Australasia are supplied by them there is in most seasons a large balance for export, which finds a ready market in Great Britain, where Australian wheat is well and favourably known. During the year 1894 the exports of wheat and flour to countries outside of Australasia represented 12,092,425 bushels of grain, and were valued at £1,440,000. Of this quantity, 8,523,141 bushels, or almost 71 per cent., were shipped to the United Kingdom.

The subjoined table shows the progress of wheat-growing during the period of the last thirty-three years :—

Colony.	1861.	1871.	1881.	1891.	1894.
	acres.	acres.	acres.	acres.	acres.
New South Wales .....	123,468	154,030	221,888	356,666	647,483
Victoria .....	196,922	334,609	926,729	1,332,683	1,372,819
Queensland .....	392	3,024	10,958	19,306	28,997
South Australia .....	310,636	692,508	1,768,781	1,552,423	1,576,950
Western Australia .....	13,584	25,697	21,951	26,866	21,433
Tasmania .....	58,823	63,332	51,757	47,584	52,028
New Zealand .....	29,531	108,720	365,715	402,273	148,575
Australasia .....	733,356	1,381,920	3,367,779	3,737,801	3,848,285

It will be seen that during the twenty years extending from 1861 to 1881 all the colonies, with the exception of Tasmania, made considerable additions to the area under wheat, the increase in area for Australasia during the whole period being 2,634,423 acres, or an advance of 359 per cent. From 1881 to 1894, however, the extension of this form of cultivation has by no means been general. In New Zealand and South Australia the area under wheat has largely decreased, in consequence of the unsatisfactory prices received by the farmers, and taking Australasia as a whole the area in 1894 was only 480,506 acres larger than in 1881, notwithstanding the fact that in Victoria and New South Wales 871,685 acres were added to the area under this crop during the thirteen years. At present, however, half of the land in cultivation is devoted to wheat-growing, and in an ordinary season the produce of 900,000 acres is available for export to Europe. Whether an extension of the cultivation of the cereal for export will be profitable is a question to be determined by the prices to be obtained in the London market; but, as far as can be judged from present indications, it is hardly possible to expect any large expansion of the industry, unless it be in New South Wales—the only one of the colonies which, although adapted to wheat-growing, produces less than the requirements of its population.

The production of wheat during the period covered by the preceding table was as follows :—

Colony.	1861.	1871.	1881.	1891.	1894.
	bushels.	bushels.	bushels.	bushels.	bushels.
New South Wales .....	1,606,034	2,229,642	3,405,966	3,963,668	7,041,378
Victoria .....	3,607,727	4,500,795	8,714,377	13,629,370	11,436,483
Queensland .....	5,880	36,288	39,612	392,309	545,185
South Australia .....	3,410,756	3,967,079	8,087,032	6,436,488	7,781,223
Western Australia .....	160,155	345,368	153,657	288,810	170,390
Tasmania .....	1,380,913	847,962	977,365	930,841	872,000
New Zealand.....	772,531	2,448,203	8,297,890	10,257,738	3,613,037
Australasia .....	10,943,996	14,375,337	29,675,899	35,899,224	31,459,696

In the production of wheat Victoria takes the lead, having to its credit 36·4 per cent. of the total yield. South Australia comes next with 24·7 per cent. of the total production; while New Zealand, though in 1881 it provided 28 per cent. of the wheat grown in Australasia, and

28·6 per cent. in 1891, shows a decline in 1894 to 11·5 per cent. The percentage now contributed by New South Wales is 22·4—double the proportion of that colony in 1891. In 1881 Tasmania produced 3·3 per cent. of the wheat production of Australasia, and was able to export a trifling quantity, but in 1894 that colony only produced 2·8 per cent., and had to import wheat and flour equal to 109,091 bushels of grain. Below will be found the proportion of each colony to the total production of Australasia in 1881, 1891, and 1894 :—

Colony.	1881.	1891.	1894.
	per cent.	per cent.	per cent.
New South Wales .....	11·5	11·0	22·4
Victoria .....	29·4	38·0	36·4
Queensland .....	0·1	1·1	1·7
South Australia .....	27·2	17·9	24·7
Western Australia .....	0·5	0·8	0·5
Tasmania.....	3·3	2·6	2·8
New Zealand .....	28·0	28·6	11·5
Australasia.....	100·0	100·0	100·0

The production of wheat in the Australasian colonies during the year ended March, 1896, is shown by the following figures :—

Colony.	Production.
	bushels.
New South Wales .....	5,195,312
Victoria.....	5,669,174
Queensland .....	123,630
South Australia .....	5,929,300
Western Australia .....	188,076
Tasmania .....	1,164,855
New Zealand .....	6,843,768
Australasia .....	25,114,115

The importance of Australasia as a producer of wheat is but little in comparison with the great wheat-producing countries of the world. It is estimated by the *Bulletin des Halles* that the production of wheat in Europe, America, Asia, and Africa in 1894 was 2,323,475,000 bushels, which, with the 31,460,000 bushels yielded by Australasia, gives the world's production at 2,354,935,000 bushels, and the seven colonies, therefore, only produce 1·34 per cent. of the total crop. The figures for

each country are appended, the production being represented in Imperial bushels :—

Countries.	Bushels.	Countries.	Bushels.
Europe—		Africa—	
France.....	344,025,000	Algeria .....	30,250,000
Russia.....	297,000,000	Egypt .....	11,275,000
Hungary.....	136,125,000	Tunis.....	6,325,000
Germany.....	116,875,000	Cape Colony.....	3,300,000
Italy .....	116,600,000		
Spain .....	93,225,000	Total .....	51,150,000
United Kingdom .....	57,750,000		
Austria .....	45,375,000	America—	
Roumania .....	42,075,000	United States .....	453,750,000
Bulgaria .....	30,250,000	Argentine Republic..	57,750,000
Turkey .....	23,050,000	Chili .....	43,450,000
Belgium .....	21,450,000	Canada .....	33,000,000
Roumelia .....	10,725,000		
Portugal .....	9,075,000	Total .....	587,950,000
Netherlands .....	8,525,000		
Servia .....	6,325,000	Australasia—	
Greece.....	6,050,000	Victoria .....	11,437,000
Denmark.....	4,125,000	South Australia .....	7,781,000
Sweden .....	3,850,000	New South Wales ...	7,041,000
Switzerland .....	3,575,000	New Zealand .....	3,613,000
Other countries .....	2,475,000	Tasmania .....	872,000
		Queensland .....	545,000
Total .....	1,383,525,000	Western Australia ...	171,000
Asia—		Total .....	31,460,000
India .....	237,875,000		
Asia Minor.....	33,000,000	Grand Total.....	2,354,935,000
Persia .....	19,250,000		
Syria .....	10,725,000		
Total .....	300,850,000		

The yield of wheat per acre in Australasia during the year 1894-5 ranged from 4·9 bushels in South Australia to 24·3 in New Zealand, the average for the whole of the colonies being 8·2 bushels. The average yield in each province during the ten years ended 1894 is given below :—

Colony.	Average yield, 1885-94. bushels.
New South Wales .....	12·0
Victoria.....	9·9
Queensland .....	14·9
South Australia .....	6·8
Western Australia .....	11·7
Tasmania .....	17·4
New Zealand .....	23·7
Australasia .....	9·9

A yield of 9·9 bushels per acre is certainly a small one when compared with the following results obtained in other countries :—

Country.	Average Yield.	Country.	Average Yield.
	bushels.		bushels.
Denmark .....	31·1	Ontario .....	14·1
United Kingdom .....	26·9	France .....	13·6
Norway .....	25·1	Italy .....	12·1
Belgium .....	21·5	United States .....	11·7
Holland .....	21·5	Quebec .....	9·9
Manitoba .....	20·3	Nova Scotia .....	9·9
Germany .....	16·9	New Brunswick .....	9·9
Austria .....	16·4	Russia .....	4·4
British Columbia .....	15·0		

A bare statement of averages, however, is somewhat misleading. Thus in South Australia it is found that owing to favourable conditions of culture a yield of 7 bushels is financially as satisfactory a crop as one of 15 bushels in New South Wales or of 20 bushels in New Zealand. The yield in the colonies could be greatly increased if cultivation of a more scientific character were adopted. As a rule, the seed is simply put into the ground, and little is done to assist the natural growth of the crops.

Below will be found a statement showing the average annual yield and consumption of wheat in each colony for the period of ten years ended 1894, with the surplus or deficiency in each case :—

Colony.	Yield, less require- ments for Seed.	Consumption.	Surplus available for Export.	Deficiency Imported.
	bushels.	bushels.	bushels.	bushels.
New South Wales .....	4,023,000	6,972,000	.....	2,944,000
Victoria .....	10,683,000	6,157,000	4,526,000	.....
Queensland .....	215,000	2,195,000	.....	1,980,000
South Australia .....	10,431,000	2,735,000	7,696,000	.....
Western Australia .....	320,000	507,000	.....	187,000
Tasmania .....	713,000	932,000	.....	219,000
New Zealand .....	6,633,000	4,518,000	2,120,000	.....
Australasia .....	33,023,000	24,016,000	9,012,000	.....

The exporting colonies are South Australia, Victoria, and New Zealand ; the others import, the deficiency in New South Wales being nearly 3,000,000 bushels, and in Queensland nearly 2,000,000 bushels.

The average consumption per head of population in each of the seven colonies for the last decade was as follows :—

	Bushels.
New South Wales .....	6.0
Victoria .....	5.6
Queensland .....	5.8
South Australia .....	6.3
Western Australia .....	6.3
Tasmania .....	6.6
New Zealand .....	7.6

For the whole of Australasia the average consumption is 6.3 bushels per head, which is larger than the quantity consumed in any other part of the world for which records are available, with the exception of France, Spain and Portugal, and Canada. This will be evident from the following figures :—

	Bushels.
United Kingdom .....	5.9
France .....	8.1
Germany .....	3.0
Russia .....	2.1
Austria .....	2.9
Italy .....	5.4
Spain and Portugal .....	6.4
Belgium and Holland .....	5.0
Scandinavia .....	1.4
Turkey .....	6.1
United States .....	5.0
Canada .....	6.5

The following table shows the net imports or exports of wheat and flour of each of the colonies during the year 1894, 1 ton of flour being taken as equal to 48 bushels of grain :—

Colony.	Net Imports.	Net Exports.
	bushels.	bushels.
New South Wales .....	1,761,593	.....
Victoria .....	.....	7,312,306
Queensland .....	2,041,874	.....
South Australia .....	.....	8,854,540
Western Australia .....	375,619	.....
Tasmania .....	109,091	.....
New Zealand .....	.....	213,756
Australasia .....	.....	12,092,425

According to the following statement of the imports and exports of wheat for the season 1894-5, published in the *Bulletin des Halles*, Australasia ranks sixth amongst the wheat-exporting countries. Still, its present contribution to the world's markets does not amount to

more than one-thirtieth of the demand, and it cannot therefore be said to form a factor of any consequence in the trade :—

Importing Countries.	Net Imports.	Exporting Countries.	Net Exports.
	bushels.		bushels.
United Kingdom.....	173,250,000	United States.....	159,500,000
Austria .....	35,750,000	Russia .....	94,875,000
Germany .....	31,625,000	Argentine Republic .....	45,375,000
Italy .....	26,125,000	Hungary .....	42,625,000
Belgium.....	22,550,000	Roumania .....	15,125,000
France .....	17,875,000	Australasia .....	12,092,500
China, &c.....	16,500,000	India .....	8,250,000
Brazil, &c.....	13,750,000	Algeria .....	6,325,000
Netherlands .....	9,625,000	Canada .....	6,325,000
Switzerland .....	9,625,000	Bulgaria .....	5,500,000
Spain .....	6,325,000	Chili.....	4,950,000
Greece .....	4,675,000	Asia Minor.....	4,675,000
Cape Colony.....	3,575,000	Turkey in Europe.....	4,400,000
Sweden .....	3,575,000	Syria .....	4,125,000
Denmark .....	2,200,000	Roumelia.....	3,300,000
Portugal .....	1,650,000	Servia .....	3,025,000
Other Countries ...	1,375,000	Persia .....	2,475,000
		Tunis .....	2,062,500
		Egypt .....	1,375,000
Total .....	380,050,000	Total .....	426,380,000

The United Kingdom is the largest importer of wheat, and the British demand largely influences the price throughout the world. The average rate per bushel in London for the season extending from September 1, 1892, to August 31, 1893, was 3s. 4d. In the latter months of 1893 the price of wheat ranged from 3s. 2d. to 3s. 6d. per bushel. The prices in 1894 and 1895 showed a further downward tendency, the averages for the two years being 3s. 0½d. and 2s. 6d. respectively; but early in 1896 a rise took place, and prices in February and March ranged from 3s. 1½d. to 3s. 3¾d. per bushel.

The average London prices per quarter of 8 bushels during the last decennial period were as follow :—

Year.	Price per quarter.	Year.	Price per quarter.
	s. d.		s. d.
1885	32 10	1890	31 11
1886	31 0	1891	37 0
1887	32 6	1892	30 3
1888	31 10	1893	26 4
1889	29 9	1894	22 11

In the subjoined table is given the value of the yield per acre for three of the colonies, estimated on the basis of the market rates ruling in February and March of each year. It will be seen that a considerable decline has taken place since 1886, due for the most part to the fall in prices rather than to any decrease of production :—

Year. ending March.	Average Yield per acre.			Value of Average Yield per acre.					
	New South Wales.	Victoria.	South Australia.	New South Wales.	Victoria.	South Australia.			
	bushels.	bushels.	bushels.	£ s. d.	£ s. d.	£ s. d.			
1886	10·4	9·0	*	2 5 1	1 14 6	*			
1887	17·4	11·5	*	3 8 2	2 3 2	*			
1888	12·1	10·8	*	2 2 10	1 16 0	*			
1889	4·8	7·1	*	1 2 10	1 12 6	*			
1890	15·6	9·7	7·8	2 14 7	1 15 7	1 8 0			
1891	10·9	11·1	5·6	2 0 10	1 19 9	0 19 7			
1892	11·1	10·3	4·3	2 2 6	2 2 3	0 17 11			
1893	15·1	11·0	6·1	2 5 2	1 14 0	0 19 3			
1894	11·0	10·4	7·9	1 10 1	1 0 1	0 18 4			
1895	10·9	8·3	4·9	1 4 6	0 13 6	0 8 0			

\* No returns.

The rates just given, as well as elsewhere in this chapter, represent farm prices, and not values at the point of consumption.

### OATS.

The cultivation of oats, which come next to wheat in importance as a grain crop, is increasing in Australasia, as the following figures show :—

Colony.	1861.	1871.	1881.	1891.	1894.
	acres.	acres.	acres.	acres.	acres.
New South Wales.....	7,224	13,795	16,348	12,958	30,636
Victoria .....	91,061	175,944	146,995	190,157	265,115
Queensland .....	69	131	88	715	1,477
South Australia .....	1,638	3,586	3,023	12,637	13,619
Western Australia .....	507	1,474	827	1,301	1,635
Tasmania .....	29,022	29,631	27,535	28,360	34,385
New Zealand.....	15,872	139,185	243,387	323,508	351,852
Australasia.....	145,393	363,746	438,203	569,636	698,719

The colony of New Zealand furnishes considerably more than one-half of the production of oats. In New South Wales the cultivation of the cereal has been comparatively neglected ; in Victoria, however, it is next to wheat in importance ; whilst in Queensland, South Australia, and Western Australia the climate is ill-adapted to the



cultivation of oats, and the yield is small and counts for very little in the total production of the grain. The total yield in each colony for the period covered by the preceding table was as follows :—

Colony.	1861.	1871.	1881.	1891.	1894.
	bushels.	bushels.	bushels.	bushels.	bushels.
New South Wales ...	152,426	280,887	356,566	276,259	562,725
Victoria .....	2,136,430	3,299,889	3,612,111	4,412,730	5,602,210
Queensland .....	.....	.....	1,121	16,669	30,463
South Australia .....	33,160	38,894	32,219	80,876	172,605
Western Australia...	8,162	28,330	8,270	18,539	20,366
Tasmania .....	751,475	593,477	783,129	873,173	927,875
New Zealand .....	512,665	3,726,810	6,924,848	11,009,020	10,221,393
Australasia .....	3,594,318	7,968,237	11,718,264	16,687,266	17,537,637

The average yield per acre in each colony for the ten years ended 1894 was as follows :—

	Bushels.
New South Wales .....	20·9
Victoria.....	22·0
Queensland .....	18·9
South Australia .....	11·1
Western Australia .....	17·4
Tasmania .....	26·6
New Zealand .....	30·5

The average yield of Australasia is 26·8 bushels, exceeding France with 26·7 bushels; United States, 24·3 bushels; Hungary, 23·6 bushels; Austria, 22·7 bushels; and Russia in Europe, 14·5 bushels. New Zealand has a higher average yield than the United Kingdom and Germany, the rates for which are 29·7 and 27·7 bushels respectively; and that colony is only exceeded by two of the Canadian provinces, namely, Manitoba with 41·1 bushels, and Ontario with 34·5 bushels.

The total value of the oats crop and the return per acre in each of the Australasian colonies for the season 1894-5 will be found below :—

Colony.	Value.	Value per acre.
	£	£ s. d.
New South Wales .....	56,272	1 16 9
Victoria .....	297,617	1 2 5
Queensland .....	3,046	2 1 3
South Australia .....	9,190	0 13 6
Western Australia .....	2,546	1 11 2
Tasmania .....	57,992	1 13 9
New Zealand .....	766,604	2 3 7
Australasia .....	1,193,267	1 14 2

The net import or export of oats for each of the colonies is given in the following table. New Zealand was the only province which exported this cereal to any considerable extent, 927,195 bushels, or nearly one-half of its export, being forwarded to the United Kingdom :—

Colony.	Net Imports.	Net Exports.
	bushels.	bushels.
New South Wales .....	686,275	.....
Victoria .....	.....	217,678
Queensland .....	88,480	.....
South Australia .....	5,112	.....
Western Australia .....	448,969	.....
Tasmania .....	.....	121,332
New Zealand .....	.....	1,963,178
Australasia .....	.....	1,073,352

According to a carefully-compiled estimate of the average production of oats throughout the world, issued by the United States Agricultural Department, the commercial supply of this grain is represented by the following condensed results :—

	Bushels.
Europe (official estimates) .....	1,592,114,138
(unofficial estimates) .....	34,050,000
United States .....	594,961,401
Australasia .....	17,537,637
Canada .....	117,772,147
Total .....	2,356,435,323

#### MAIZE.

Maize is the principal crop grown in Queensland, and one of the most important products of New South Wales; in the other colonies the climate is not suited to its growth, and the cultivation of the cereal extends to little more than 11,000 acres. The following figures show that fair progress has been made since 1861 in the area devoted to this crop :—

Colony.	1861.	1871.	1881.	1891.	1894.
	acres.	acres.	acres.	acres.	acres.
New South Wales	57,959	119,956	117,478	174,577	208,308
Victoria .....	1,714	1,709	1,783	8,230	5,671
Queensland .....	1,914	20,329	46,480	101,598	103,671
New Zealand .....	770	.....	3,177	5,447	5,525
Other Colonies ...	91	113	36	23	54
Australasia ...	62,448	142,107	168,954	289,875	323,229

The production in the same years was as follows :—

Colony.	1861.	1871.	1881.	1891.	1894.
	bushels.	bushels.	bushels.	bushels.	bushels.
New South Wales	1,727,434	4,015,973	4,330,956	5,721,706	5,625,533
Victoria .....	20,788	30,833	81,007	461,447	294,405
Queensland .....	42,100	508,000	1,313,655	3,077,915	2,684,925
New Zealand .....	31,570	.....	127,257	238,746	232,890
Other Colonies ...	367	2,000	648	483	1,295
Australasia ...	1,822,259	4,556,806	5,853,523	9,500,297	8,839,048

The following table shows the average yield of each colony and of Australasia for the ten years ended 1894 :—

Colony.	Bushels.
New South Wales.....	30·2
Victoria .....	48·3
Queensland .....	23·6
Western Australia .....	18·5
New Zealand .....	41·9
Australasia.....	28·7

The averages for Victoria and New Zealand are worth little, as the area under maize in those colonies is small and very favourably situated ; while Western Australia had but 54 acres under cultivation, producing 1,295 bushels. The average yield of maize in the United States is 23·7 bushels ; while for Austria the average is 20·3 bushels ; for Hungary, 22·9 bushels ; for France, 18·2 bushels ; for Italy, 14·3 bushels ; and for Roumania, 13·8 bushels. Nothing is to be gained, however, by comparing these figures with the Australasian averages, as the acreage devoted to maize in these colonies is too small to make such a comparison of value.

The total value of the crop of 1894-5 and the average return per acre will be found below :—

Colony.	Total value of crop.	Average value per acre.
	£	£ s. d.
New South Wales .....	421,915	2 0 6
Victoria .....	24,840	4 7 7
Queensland .....	201,369	1 18 10
New Zealand .....	26,200	4 14 10
Other Colonies.....	259	4 15 11
Australasia .....	674,583	2 1 9

The high average value per acre of production of maize in Victoria and New Zealand is due to the fact that the area operated upon is small, and the local average prices are relatively higher than in New South Wales and Queensland, where large areas are devoted to the cultivation of this cereal.

The net import or export of maize by each colony during 1894 was as follows :—

Colony.	Net Imports.	Net Exports.
	bushels.	bushels.
New South Wales .....	46,294	.....
Victoria .....	.....	4,843
Queensland .....	.. ..	6,472
South Australia .....	4,053	.....
Western Australia.....	4,744	.....
Tasmania .....	1,171	.....
New Zealand .....	.....	13,846
Australasia .....	31,101	.....

New South Wales is the only colony which imports maize to any extent from abroad, chiefly from the United States and New Caledonia. Australasia practically consumes the whole of its production of this cereal, and an excess of imports or exports in any individual year is of little importance. In this part of the world corn does not enter into consumption as an article of food, as it does in other countries, and particularly in America, which produces and consumes nearly 80 per cent. of the whole maize crop of the world, as the following figures—compiled on the authority of the Department of Agriculture in the United States—will show :—

	bushels.
Europe (official) .....	311,820,759
„ (unofficial) .....	54,196,250
Asia (official) .....	823,868
Africa „ .....	2,904,979
„ (unofficial) .....	13,620,000
United States (official) .....	1,680,696,600
America (unofficial) .....	229,109,606
Australasia .....	8,839,048
Various Islands (unofficial) .....	30,147
Tota .....	2,302,041,257

## BARLEY.

Of the cereal productions of Australasia, barley is grown on the smallest acreage. The area under this crop at different periods was as follows :—

Colony.	1861.	1871.	1881.	1891.	1894.
	acres.	acres.	acres.	acres.	acres.
New South Wales.....	2,924	3,461	6,427	4,459	10,396
Victoria .....	3,419	16,772	48,652	45,021	96,594
Queensland.....	13	971	256	739	1,418
South Australia.....	10,637	17,225	11,953	11,461	13,072
Western Australia .....	2,412	5,083	3,679	3,738	1,949
Tasmania .....	7,279	4,275	4,597	2,644	8,167
New Zealand .....	3,457	13,305	29,808	24,268	36,519
Australasia.....	30,141	61,092	105,372	92,330	168,115

For the same years the production was as stated below :—

Colony.	1861.	1871.	1881.	1891.	1894.
	bushels.	bushels.	bushels.	bushels.	bushels.
New South Wales.....	41,054	55,284	135,218	93,446	179,348
Victoria .....	68,118	335,506	927,566	830,741	1,572,199
Queensland.....	158	11,836	3,207	21,302	37,824
South Australia.....	168,137	164,161	137,165	107,183	205,577
Western Australia .....	2,412	5,083	36,790	48,594	14,672
Tasmania .....	169,381	76,812	102,475	71,400	202,625
New Zealand .....	96,658	287,646	664,093	688,683	1,000,612
Australasia.....	545,918	936,328	2,006,514	1,861,349	3,212,857

The average yield of barley per acre in each colony is given in the following table for the ten years ended 1894 :—

Colony.	Bushels.
New South Wales .....	18·4
Victoria .....	18·5
Queensland .....	24·0
South Australia .....	13·3
Western Australia .....	14·4
Tasmania.....	23·0
New Zealand .....	27·6
Australasia .....	20·2

The trade in barley and malt of each colony in 1894 was as follows:—

Colony.	Barley.		Malt.	
	Net Imports.	Net Exports.	Net Imports.	Net Exports.
	bushels.	bushels.	bushels.	bushels.
New South Wales .....	34,223	.....	302,915	.....
Victoria .....	2,128	.....	.....	67,310
Queensland .....	4,718	.....	127,029	.....
South Australia .....	1,921	.....	51,784	.....
Western Australia .....	6,952	.....	18,501	.....
Tasmania .....	.....	486	83	.....
New Zealand .....	.....	16,044	.....	45,224
Australasia .....	33,412	.....	387,778	.....

Barley is not cultivated in these colonies to the extent it deserves. In fruitful seasons Australasia produces sufficient barley, exclusive of that required for malt, for home requirements, and a small surplus for export; but if the combined trade in barley and malt be considered, all the colonies, with the exception of Victoria, Tasmania, and New Zealand, are dependent upon external sources. The high import duties in Victoria on both these articles practically prohibit importations.

The total value of the barley crop and the average return of this cereal per acre during the season 1894-5 will be found below:—

Colony.	Total value of barley crop.	Average value per acre.
	£	£ s. d.
New South Wales .....	19,430	1 17 5
Victoria .....	199,381	2 1 3
Queensland .....	4,096	2 17 9
South Australia .....	15,632	1 3 11
Western Australia .....	1,712	0 17 7
Tasmania .....	32,927	4 0 4
New Zealand .....	105,107	2 5 7
Australasia .....	378,285	2 5 0

#### POTATOES.

The cultivation of the potato is not confined to any particular colony, but Victoria and New South Wales have the largest area under this crop, although the latter colony is exceeded by both New Zealand and

Tasmania in production. The following table shows the acreage under potatoes in each colony :—

Colony.	1861.	1871.	1881.	1891.	1894.
	acres.	acres.	acres.	acres.	acres.
New South Wales .....	10,040	14,770	15,943	22,560	30,089
Victoria .....	27,174	39,064	39,129	57,334	54,570
Queensland .....	512	3,121	5,086	9,173	13,298
South Australia .....	2,612	3,156	6,136	6,892	6,510
Western Australia .....	277	494	278	532	703
Tasmania .....	9,349	8,154	9,670	16,368	23,415
New Zealand .....	7,292	11,933	22,540	27,266	25,339
Australasia .....	57,256	80,692	98,782	140,125	153,924

The production for the same periods was as follows :—

Colony.	1861.	1871.	1881.	1891.	1894.
	tons.	tons.	tons.	tons.	tons.
New South Wales .....	30,942	44,758	44,323	62,233	86,170
Victoria .....	59,364	125,841	134,290	109,786	188,147
Queensland .....	1,080	6,585	11,984	25,018	42,388
South Australia .....	7,726	10,989	18,154	27,824	22,958
Western Australia .....	817	1,457	556	1,596	2,546
Tasmania .....	47,428	22,608	33,565	62,995	90,810
New Zealand .....	37,554	42,130	121,890	162,046	139,869
Australasia .....	184,911	254,368	364,762	451,548	572,888

The average production of potatoes per acre is next given for the ten years ended 1894. New Zealand, it will be seen, shows a considerably larger return than any of the other provinces :—

	tons.
New South Wales .....	2·8
Victoria .....	3·6
Queensland .....	3·2
South Australia .....	3·8
Western Australia .....	3·2
Tasmania .....	4·0
New Zealand .....	5·4
Australasia .....	3·8

Only three of the colonies are in a position to export potatoes in any quantity—Tasmania, New Zealand, and Victoria. The surplus in Victoria, though at one time considerable, has now very much decreased. The following were the imports and exports of potatoes for each colony in 1894 :—

Colony.	Net Imports.	Net Exports.
	tons.	tons.
New South Wales .....	30,389	.....
Victoria .....	.....	7,603
Queensland .....	10,322	.....
South Australia .....	579	.....
Western Australia .....	3,209	.....
Tasmania .....	.....	39,513
New Zealand .....	.....	1,871
Australasia.....	.....	4,488

The total value of the potato crop and the average return per acre for 1894-5 will be found below :—

Colony.	Value of crop.	Average value per acre.
	£	£ s. d.
New South Wales .....	183,111	6 1 9
Victoria .....	357,479	6 11 0
Queensland .....	90,075	6 15 6
South Australia .....	43,620	6 14 0
Western Australia .....	11,457	16 5 11
Tasmania .....	181,620	7 15 2
New Zealand .....	314,705	12 8 5
Australasia .....	1,182,067	7 13 7



## HAY.

Considerable quantities of wheat, oats, and barley are grown for the purpose of being converted into hay, and this crop in point of value comes first amongst agricultural products. The area under crop for hay has since 1881 largely increased, as will be seen from the table appended :—

Colony.	1861.	1871.	1881.	1891.	1894.
	acres.	acres.	acres.	acres.	acres.
New South Wales .....	45,175	51,805	146,610	163,863	245,243
Victoria .....	74,681	103,206	212,150	369,498	486,562
Queensland .....	280	3,828	16,926	30,655	28,028
South Australia .....	62,874	97,812	333,467	304,171	361,145
Western Australia .....	6,676	*14,342	24,445	28,534	49,896
Tasmania .....	31,803	31,578	34,790	45,445	61,373
New Zealand .....	†27,160	30,717	68,423	46,652	194,765
Australasia.....	248,649	333,288	836,811	988,818	1,427,012

\* In 1869.

† In 1867.

The production for the same periods was as follows :—

Colony.	1861.	1871.	1881.	1891.	1894.
	tons.	tons.	tons.	tons.	tons.
New South Wales.....	57,363	77,460	198,532	209,417	306,345
Victoria .....	92,497	144,637	238,793	505,246	611,798
Queensland .....	459	6,278	19,640	58,842	55,696
South Australia.....	78,886	98,266	240,827	193,317	334,769
Western Australia .....	6,609	14,288	24,445	28,534	38,420
Tasmania .....	59,851	30,891	44,957	66,996	80,227
New Zealand .....	36,666	35,674	89,081	67,361	270,828
Australasia.....	332,331	407,494	856,275	1,129,713	1,698,083

The average yield of hay per acre will be found in the next table, the period covered being the ten years which closed with 1894 :—

	tons.
New South Wales.....	1·2
Victoria .....	1·3
Queensland.....	1·8
South Australia.....	0·9
Western Australia .....	1·0
Tasmania .....	1·2
New Zealand .....	1·4
Australasia .....	1·2

The greater portion of the hay is made from wheat, though large quantities of oaten and lucerne hay are produced in Victoria, New South Wales, and New Zealand. Hay is, for the most part, grown in each province in quantities sufficient for its own requirements, New South Wales being the only one which imports to any extent.

The net import or export of hay and chaff for each colony for the year 1894 was as follows :—

Colony.	Net Imports.	Net Exports.
	tons.	tons.
New South Wales .....	37,654	.....
Victoria .....	.....	32,064
Queensland .....	3,248	.....
South Australia .....	.....	13,938
Western Australia .....	7,929	.....
Tasmania .....	.....	2,006
New Zealand .....	.....	116
Australasia .....	707	.....

The total value of the hay crop and the average return per acre for the season 1894-5 will be found below :—

Colony.	Total Value of Hay Crop.	Average Value per Acre.
	£	£ s. d.
New South Wales .....	752,228	3 1 4
Victoria .....	1,085,941	2 4 8
Queensland .....	141,379	5 0 11
South Australia .....	594,215	1 12 11
Western Australia .....	134,470	2 13 11
Tasmania .....	160,454	2 12 3
New Zealand .....	541,656	2 15 7
Australasia .....	3,410,343	2 7 10

#### GREEN FORAGE AND SOWN GRASSES.

The cultivation of maize, sorghum, barley, oats, and other cereals for the purpose of green food, and the laying-down of lands under lucerne and grass, engage attention in the districts where dairy-farming is carried on. The agricultural returns of some of the colonies do not admit of a distribution being made between these forms of cultivation prior to 1887. The following table shows the area under such green food in 1887, 1891, and 1894, and it will be seen that there have been large developments in most of the colonies, especially in New Zealand. After a consideration of the figures relating to the last-mentioned pro-

vince, little difficulty will be experienced in accounting for its superiority in the dairy-farming industry :—

Colony.	Green Food.			Sown Grasses.		
	1887.	1891.	1894.	1887.	1891.	1894.
	acres.	acres.	acres.	acres.	acres.	acres.
New South Wales..	20,403	32,138	53,029	192,678	333,238	362,578
Victoria .....	6,036	9,202	16,648	154,612	174,982	199,161
Queensland .....	9,582	10,727	12,029	13,619	20,921	17,312
South Australia ..	10,079	6,416	26,904	23,217	17,519	.....
Western Australia..	.....	238	254	.....	.....	.....
Tasmania .....	1,246	1,101	1,647	184,653	203,596	221,470
New Zealand.....	98,029	118,484	29,009	5,869,247	7,357,229	8,773,103
Australasia ...	145,375	178,306	139,520	6,438,026	8,112,485	9,573,624

In Victoria, Tasmania, and New Zealand large quantities of grass-seeds, chiefly rye-grass and cocksfoot, are produced, the quantities in 1894 being given as 22,466 bushels, 45,915 bushels, and 870,752 bushels respectively, valued at £3,651 in Victoria, £7,461 in Tasmania, and £141,497 in New Zealand, or a total of £152,609. The acreage on which this grass-seed was produced in New Zealand is included in the total given for sown grasses, while for Victoria and Tasmania it is not so included, and was 2,188 and 3,837 acres respectively.

#### THE VINE.

The history of the vine in Australia dates from the year 1828, when cuttings from the celebrated vineyards of France, Spain, and the Rhine Valley were planted in the Hunter River District of New South Wales, forming the nursery for the principal vineyards of that colony. Years afterwards the vine was planted in the Murray River District and other parts of New South Wales, and was afterwards introduced into Victoria and South Australia, and is now cultivated in all the provinces of the Australian continent. In South Australia a large proportion of Germans are employed in the industry of wine-making.

The climate and soil of Australia are peculiarly adapted to the successful cultivation of the vine, and with an increasing local demand, and the opening up of a market in England, where Australian wines have obtained due appreciation, the future expansion of wine-growing appears fairly assured. The depreciation which French and other foreign wines have suffered, both in quantity and quality, owing to the devastation of the vineyards by phylloxera, is an additional reason for the vine-growers of this continent looking forward to largely-increased operations for their industry.

The progress of vine cultivation since the year 1861 is illustrated by the table subjoined. The areas given include the vines producing table-fruit, as well as those cultivated for wine-making, also the young vines not yet in bearing :—

Colony.	1861.	1871.	1881.	1891.	1894.
	acres.	acres.	acres.	acres.	acres.
New South Wales .....	1,692	6,618	6,624	8,281	7,577
Victoria .....	1,464	5,523	4,923	24,483	30,307
Queensland .....	40	568	1,212	1,988	1,987
South Australia.....	3,918	5,455	4,202	12,314	17,418
Western Australia .....	457	692	527	1,004	1,862
Australia .....	7,571	18,856	17,488	48,070	59,151

Until the year 1881 New South Wales contained the principal wine-growing districts, but at present the area devoted to vines is much larger in Victoria and South Australia. Of recent years great attention has been paid to the industry in Victoria, and that province now produces nearly half the wine made in Australia. The following tables show the progress made in wine-growing during the last thirty-four years :—

Colony.	1861.	1871.	1881.	1891.	1894.
	gallons.	gallons.	gallons.	gallons.	gallons.
New South Wales.....	85,328	413,321	513,688	913,107	731,683
Victoria .....	47,568	713,589	539,191	1,554,130	1,909,972
Queensland.....	.....	.....	72,121	168,526	176,497
South Australia.....	312,021	852,315	313,060	801,835	712,845
Western Australia .....	.....	.....	99,600	166,664	75,844
Australia .....	444,917	1,979,225	1,537,660	3,604,262	3,606,841

The production of table-grapes during the same period is shown below :—

Colony.	1861.	1871.	1881.	1891.	1894.
	tons.	tons.	tons.	tons.	tons.
New South Wales.....	224	508	1,103	3,694	4,617
Victoria .....	849	1,545	740	2,791	4,470
Queensland.....	.....	.....	255	1,169	1,411
South Australia.....	1,161	1,692	1,498	4,590	4,620
Australia.....	2,234	3,745	3,596	12,244	15,118

Among other produce of the vineyards may be mentioned 6,356 gallons of brandy in New South Wales, and 9,229 cwt. of raisins and 27 cwt. of currants in Victoria.

It is impossible to tabulate the averages of all the colonies, as in many instances the acreage under cultivation for wine-making purposes cannot be separated from young unproductive vineyards or areas cultivated for table varieties of the grape only. Making due allowance for this fact, it would appear that the average production for the season 1894-5 was about 136 gallons in Western Australia, 126 gallons in Victoria, 164 gallons in New South Wales, and 292 gallons in Queensland. Taking an average year, the production for Australia may be set down at 190 gallons. The average production in gallons per acre for other countries is shown by the following figures, which are for the latest available periods:—

Country.	Gallons per acre.	Country.	Gallons per acre.
Algeria .....	300	Spain .....	130
Cape Colony .....	220	Russia .....	130
Switzerland .....	210	Austria .....	129
Roumania .....	194	Chili .....	100
Portugal .....	175	Argentine Republic ...	100
Servia .....	150	Italy .....	87
France .....	143	Hungary .....	51
United States .....	140		
Germany .....	134	Australia .....	190

Compared with the wine production of other countries, as given hereunder, that of Australia is certainly trifling, but the prospects of the industry are sufficiently promising to encourage a hope that the coming years will witness important developments. The figures are from the *Moniteur Vinicole*, and refer to the vintage of 1895:—

Country.	Production in million gallons.	Country.	Production in million gallons.
France .....	587	Bulgaria .....	26
Italy .....	469	United States .....	19
Spain .....	379	Servia .....	18
Algeria .....	83	Russia .....	16
Germany .....	80	Brazil .....	8
Roumania .....	69	Azores, Canaries, and	
Austria .....	66	Madeira .....	5
Hungary .....	63	Tunis .....	4
Turkey and Cyprus .....	53	Cape Colony .....	2
Portugal .....	44	Mexico .....	2
Greece .....	35	Persia .....	1
Chili .....	33	Australia .....	4
Argentine Republic .....	30		
Switzerland .....	27	Total .....	2,123

The following table illustrates the progress of the Australian wine trade with Europe since 1881. The total value of this trade in 1894, it will be noticed, had grown to eleven times what it was in 1881, while the number of gallons exported to Europe had increased twenty-fold. The 1894 figures are exclusive of Queensland, 989 gallons, valued at £314; and Western Australia, 60 gallons, valued at £15:—

Colony.	1881.		1891.		1894.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	gallons.	£	gallons.	£	gallons.	£
New South Wales..	13,271	3,520	9,451	2,255	18,405	3,600
Victoria .....	5,588	2,341	136,213	24,727	215,912	34,787
South Australia .....	2,859	580	226,587	38,630	205,578	33,109
Australia ...	21,718	6,441	372,251	65,612	439,895	71,496

Including the trade of one province with another, as well as the foreign trade, the exports of each during the same years are shown below. The 1894 figures are exclusive of Queensland, 1,499 gallons, valued at £536; and Western Australia, 60 gallons, valued at £15:—

Colony.	1881.		1891.		1894.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	gallons.	£	gallons.	£	gallons.	£
New South Wales..	22,377	7,233	54,143	11,644	30,386	6,307
Victoria .....	12,544	5,388	160,982	32,516	230,319	39,546
South Australia.....	57,812	12,879	286,188	58,684	255,171	49,091
Australia ...	92,733	25,500	501,313	102,844	515,876	94,944

The total value of the grape crop and the average return per acre in the Australian colonies for the year 1894 will be found below :—

Colony.	Total value of crop.	Average value per acre—	
		Of Total Area under Vines.	Of Productive Vines.
	£	£ s. d.	£ s. d.
New South Wales .....	139,077	18 7 2	20 7 1
Victoria .....	256,835	8 9 6	11 7 2
Queensland .....	37,404	18 16 6	22 8 9
South Australia .....	108,246	6 4 4	.....
Western Australia .....	30,977	16 12 9	24 3 3
Australia .....	572,539	9 13 7	14 6 9

## SUGAR-CANE.

The growth of the cane and the manufacture of sugar are important industries in Queensland and New South Wales; but whilst the climate of the former colony renders the employment of white labour in the field almost impossible, the plantations of the latter are worked, as a rule, without the assistance of coloured labour. The Queensland planters usually combine the functions of cane-growers and sugar-manufacturers; but in New South Wales, where the numerous holdings are, as a rule, small in area, the cane is purchased from the planters, principally by the Colonial Sugar Refining Company, whose various crushing-mills and refinery are fitted with machinery of the most modern character. The importation of coloured labour into Queensland has been renewed under stringent regulations to protect the Kanakas. The attempt made in 1891 by the planters to solve the difficult problem as to whether successful sugar-growing is compatible with the employment of white labour, by the introduction of Italian farm-labourers under contract to work in the sugar-plantations for a number of years, was a failure. Japanese immigrants have also been introduced.

The area under cane for the years specified was as follows :—

Colony.	1864.	1871.	1881.	1891.	1894.
	acres.	acres.	acres.	acres.	acres.
New South Wales.....	22	4,394	12,167	22,262	32,909
Queensland.....	94	9,581	28,026	50,948	71,818
Total .....	116	13,975	40,193	73,210	104,727

The progress of the industry has been very rapid, especially in Queensland, the area of suitable land being very large in that colony. Some years ago sugar-growing was started on the Daly River, in the Northern Territory of South Australia, but no statistics are available regarding acreage or production. The area given above includes all the cane planted, whether cut during the year or not. The following table shows the acreage actually cut during the last five years :—

Colony.	1890.	1891.	1892.	1893.	1894.
	acres.	acres.	acres.	acres.	acres.
New South Wales.....	8,344	8,623	11,560	11,755	14,204
Queensland.....	40,208	36,821	40,572	43,670	49,839
Total .....	48,522	45,444	52,132	55,425	64,043

From returns published by some of the Queensland mills it has been estimated that the total production of cane in 1894 was about 757,000 tons. This would give an average yield of 10·54 tons per acre for that colony, as compared with 8·03 tons per acre in New South Wales. These figures show that during the 1894 season the yield of sugar in New South Wales was 8·5 per cent., and in Queensland 9·5 per cent., taking the production as given in the next table. The yield of sugar per ton of cane varies, of course, with the density of the juice, but in ordinary seasons it may be set down at something over 9 per cent.

The production of sugar from cane crushed during the last five years was as given below. The figures are compiled from the returns made by the mill-owners, and in the case of Queensland it is possible that they show something less than the actual production :—

Colony.	1890.	1891.	1892.	1893.	1894.
	tons.	tons.	tons.	tons.	tons.
New South Wales.....	26,533	25,245	24,289	23,930	22,638
Queensland.....	68,924	51,219	61,368	76,147	91,712
Total .....	95,457	76,464	85,657	100,077	114,350

The net imports of sugar by each colony in 1894 are given in the subjoined table. Queensland was the only province that was able to



fill its own requirements and spare a quantity of sugar for export. The surplus amounted to 64,860 tons, valued at £885,733, and was mostly exported to the other colonies, only 520 tons being shipped to other countries. The following figures, which include the 64,340 tons from Queensland, represent the quantity and value of sugar imported :—

Colony.	Quantity.	Value.
	tons.	£
New South Wales .....	39,145	522,472
Victoria .....	51,376	611,689
South Australia .....	13,217	176,826
Western Australia .....	3,352	55,178
Tasmania .....	5,214	86,580
New Zealand .....	43,950	447,465
Australasia .....	156,254	1,900,210

Deducting the exports of Queensland, the imports from countries outside of Australasia amounted to 91,394 tons, of which only 74,863 tons, of the value of £986,147, can be traced to the original country of shipment, namely :—

Country.	Quantity.	Value.
	tons.	£
Mauritius .....	16,120	262,399
Fiji .....	24,264	245,801
Java .....	32,470	445,855
Hongkong .....	1,504	24,577
Other sugar-producing countries.....	505	7,515
Total .....	74,863	986,147

The total value of the sugar crop and the average return per acre in the sugar-growing colonies of Australia will be found below for the year 1894 :—

Colony.	Value of Cane grown.	Average value per acre.
	£	£ s. d.
New South Wales .....	158,552	4 16 4
Queensland .....	611,415	6 13 4

## SUGAR-BEET.

The question of cultivating the beet-root for the production of sugar, which is now receiving a good deal of attention in Victoria, is not altogether a new one in the history of that colony, for as far back as thirty years ago experiments in this direction were made both on the Government farms and by private growers, and the results obtained were deemed to be so satisfactory that it was confidently predicted by the Melbourne press at the time that in a few years the industry would be established on a permanent basis. But the great hopes which were then entertained were not fulfilled, and in 1874 the Secretary for Agriculture reported that the sugar extracted from roots grown experimentally amounted to 7.09 per cent.—a yield which he considered too low to permit of the establishment of a profitable industry. The history of the cultivation of the beet for sugar, however, has been one of steady progress since the discovery of the saccharine properties of the root in 1747. In Germany, for example, the percentage of sugar extracted from the beets grown in that country averaged but 5.50 per cent. in 1836, while at the present time the yield is nearly 14 per cent., the increase having been most regular. To the great improvements in the machinery employed in the mills where the beets are treated this notable advance has been most largely due, but to a not inconsiderable extent it is also attributable to the application of science to the cultivation of the root. Under such circumstances as these, the opinion promulgated in the report of the Secretary for Agriculture could not be taken as unfavourable to the prosecution of experiments in Victoria, and a continuation of the efforts of the Department of Agriculture has led to the excellent result of an average yield of 18.10 per cent. of sugar obtained from sixty-four samples of beets grown on the Government experimental farms during the year 1893-4, while roots privately grown have been declared by the Agricultural Chemist to contain  $22\frac{1}{2}$  per cent. of sugar.

Such high yields as these have forced the conclusion that these colonies are fitted by nature to become the home of the sugar-beet. Indeed, in New South Wales, analyses made by the Chemist to the Colonial Sugar Refining Company of roots grown in the New England district, where experiments are also being conducted, disclosed yields ranging from 15.66 to 24.75 per cent. of sugar. There is little fear, therefore, that with proper care and attention, the cultivation of the beet will not produce good results; also, unlike the sugar-cane, the beet is a true agricultural product, and not only does not exclude other crops from the land but on the contrary invites them, and, as general experience has proved, leads to their greater production by vastly increasing the fertility of the soil. The one thing necessary to ensure success is the establishment of large mills for the production of beet

sugar, according to the most modern principles. To attempt to start the industry on a small scale is to invite failure, for the cost of production would be too high. The Victorian Minister of Agriculture, in a report on the prospects of establishing the beet-sugar industry, issued at the end of 1894, makes this clear, and estimates that with a 300 day-ton factory the financial results would be satisfactory, while with one of greater capacity the cost would be correspondingly reduced. The question is not only one of importance to Victoria, which now imports all its sugar, and, be it remembered, imports it most largely from countries outside Australasia, but to the other colonies as well. At the present time, when the growing of sugar-cane in New South Wales and Queensland is an important industry, the production is by no means equal to the wants of the people of Australasia, and there is therefore sufficient scope for the immediate cultivation of the beet-root for the extraction of sugar.

On the 6th March, 1896, the Victorian Parliament passed an Act empowering the Government to assist in the establishment of the sugar-beet industry by granting loans to duly registered public companies which might be formed for the purpose of erecting mills and equipping them with the necessary machinery and plant for the extraction of sugar from the roots. The company applying for aid must satisfy the Treasurer of the colony that there is an area of not less than 10,000 acres which is suited to the growth of sugar-beet situated within a radius of 10 miles of the site of the proposed factory; that it has contracted with the owners or occupiers of this land that an aggregate area of not less than 2,000 acres shall be devoted to the growth of beets for a period of three years; that the proposed works will be of a capacity sufficient to allow of the treatment of not less than an average of 300 tons of roots per day; that for a period of three years from the date of commencing manufacturing operations it will keep its works going to the full extent of their average capacity; and that it will not employ Asiatic labour nor other coloured labourers born outside of Australasia. If the Treasurer is satisfied that these conditions are likely to be fulfilled, and that the company has a paid-up capital of not less than £20,000, he is authorised to advance to the company a sum not exceeding twice the amount raised by its shareholders. This advance is to be made in instalments, and one instalment must be properly expended before another is paid over. Repayment of the loan must be made to the State in forty-six half-yearly instalments, commencing two years after the first part of the loan has been received; and of each half-yearly instalment paid to the State, part must be applied to meet interest-charge at the rate of 4 per cent. per annum on the outstanding loan, and the balance placed to a sinking fund, and held towards the redemption of the principal sum. The company is also required to pay the expenses incurred by the Treasurer in administering the Act so far as this relates to its own advance.

## TOBACCO.

The cultivation of the tobacco-plant has received attention in the three eastern colonies. The following table shows the area and production of tobacco at various periods :—

Year.	New South Wales.		Victoria.		Queensland.		Australasia.	
	Area.	Production.	Area.	Production.	Area.	Production.	Area.	Production.
	acres.	cwt.	acres.	cwt.	acres.	cwt.	acres.	cwt.
1861	224	2,647	220	2,552	..	.....	444	5,199
1871	567	4,475	290	2,307	44	.....	910	6,782
1881	1,625	18,311	1,461	12,876	68	521	3,154	31,708
1888	4,833	55,478	1,685	13,355	123	1,418	6,641	70,251
1891	886	9,314	545	2,579	790	7,704	2,221	19,597
1892	848	8,344	477	658	318	3,808	1,643	12,810
1893	854	10,858	1,057	8,952	475	4,577	2,386	24,387
1894	716	8,132	1,412	7,155	915	9,571	3,043	24,858

The figures for 1894 are exclusive of 5 acres in New Zealand and of a small area in the Northern Territory in South Australia, for which returns are not available.

Owing to over-production and the want of a foreign market, the area devoted to tobacco-culture has greatly declined since 1888, although during the last two years the industry has again evinced an upward tendency. The Australasian tobacco-leaf has not yet been prepared in such a way as to find acceptance abroad, and until such is accomplished it will be useless to expect the cultivation of the plant to become a settled industry. The soil and climate of Australia appear to be suitable for the growth of the plant, but sufficient care and skill have not been expended upon the preparation of the leaf. The quantity of 70,251 cwt. of leaf produced in 1888 was so greatly in excess of local requirements that very low prices only could be obtained, and a large portion of the crop was left upon the growers' hands. The result was that many farmers abandoned the cultivation of tobacco, so that the area under this crop during 1889 was only 3,239 acres in New South Wales, and 955 acres in Victoria, producing respectively 27,724 cwt. and 4,123 cwt. of leaf—less than half the crop of the previous year. In 1891 the area showed a further decline to 886 acres in New South Wales and 545 acres in Victoria, with a yield of 9,314 cwt. and 2,579 cwt. respectively. In Queensland, on the other hand, the area increased from 123 acres in 1888 to 540 acres in 1890 and 790 in 1891. In 1892 the area decreased in New South Wales to 848 acres, in Victoria to 477 acres, and in Queensland to 318 acres; and the production to 8,344 cwt., 658 cwt., and 3,808 cwt. respectively. In Victoria the crop on two-thirds of the acreage was destroyed by a fungoid disease. In 1893 the area increased to 854 acres in New

South Wales, 1,057 acres in Victoria, and 475 acres in Queensland ; and the production to 10,858 cwt., 8,952 cwt., and 4,577 cwt. respectively. In 1894 there was a further increase to 1,412 acres in Victoria and 915 acres in Queensland, while the acreage in New South Wales declined to 716. The production in New South Wales declined to 8,132 cwt., and in Victoria to 7,155 cwt., while in Queensland it increased to 9,571 cwt.

The average production of tobacco per acre for the ten years ended 31st December, 1894, was as follows :—

	Cwt.
New South Wales .....	11·0
Victoria .....	5·0
Queensland .....	9·1
<b>Australasia .....</b>	<b>8·9</b>

The following table shows the production per acre in foreign countries for the latest available period ; but the comparison with Australia, the figures for which refer to the ten years ended 1894, is not of much value, as the acreage under tobacco in these colonies is but small :—

Country.	Cwt. per acre.	Country.	Cwt. per acre.
Holland .....	16·1	Japan .....	8·0
Germany .....	15·8	Turkey .....	7·8
Russia .....	13·6	Manilla, etc. ....	7·4
Austria ..	12·5	Brazil .....	7·0
France .....	11·5	United States .....	6·3
Hungary .....	10·4	India ..	5·9
Italy .....	9·5	Roumania .....	5·0
West Indies .....	8·8		
Java.....	8·4	Australia .....	8·9

The Agricultural Department of Queensland is endeavouring to assist the tobacco-growers by the importation of American seed of first quality, suited to the Queensland climate. New Zealand also has commenced the cultivation of tobacco, but it is only so far in the nature of an experiment ; and a small area has been planted in the Northern Territory of South Australia. During the year 1896 the Government of New South Wales took action towards assisting tobacco-growers in the colony by introducing a tobacco expert. The Government of Victoria has already such an officer in its employ, and it is intended that the services of the two experts shall be available for both colonies, so that the special knowledge of each may be fully taken advantage of both in New South Wales and in Victoria.

The following table shows the imports of tobacco, cigars, and cigarettes for home consumption during 1894 :—

Colony.	Quantity. lb.
New South Wales .....	1,684,998
Victoria .....	1,955,909
Queensland .....	790,294
South Australia .....	660,451
Western Australia .....	330,757
Tasmania .....	251,125
New Zealand .....	1,371,694
<b>Australasia .....</b>	<b>7,045,228</b>

The total value of the tobacco crop and the average gross return per acre in the Australasian colonies during the year 1894 are given below :—

Colony.	Total value of crop.	Average value per acre.
	£	£ s. d.
New South Wales .....	12,198	17 0 9
Victoria .....	14,310	10 2 8
Queensland .....	14,357	15 13 10
New Zealand .....	50	10 0 0
<b>Australasia .....</b>	<b>40,915</b>	<b>13 8 6</b>

It will be seen that in New South Wales the average return per acre is £1 6s. 11d. higher than in Queensland and £6 18s. 1d. higher than in Victoria. The experimental stage of the industry in New Zealand robs the figures of that colony of any significance.

#### GARDENS AND ORCHARDS.

The cultivation of fruit in Australasia does not attract anything like the attention it deserves, although the soil and climate of large areas in all the provinces are well adapted to fruit-growing. Still, some progress has been made, especially of recent years. In 1894 the proportion of the total cultivation allotted to fruit was 2·2 per cent., and in 1891, 2·1 per cent., while in 1881 the proportion was 1·5 per cent. The area per 1,000 persons in 1894 was 39·7 acres; in 1891, 36 acres; and in 1881, 29·4 acres. Grapes, oranges, apples, pears, and peaches are the principal fruits grown; but with an unlimited area suitable for fruit-cultivation, and the climatic conditions so varied, ranging from comparative cold in New Zealand and on the high lands of New South Wales and Victoria to tropical heat in Queensland, a large variety of fruits could be cultivated. The industry, however, languishes partly on

account of the lack of skill and care on the part of the grower, good fruits commanding high prices, while those placed within the reach of the multitude are generally of but poor quality; and partly owing to the lack of means of rapid transit to market at reasonable rates. The area under orchards and gardens in 1881, 1891, and 1894 was as follow :—

Colony.	1881.		1891.		1894.	
	Acres.	Percentage to total area under Crops.	Acres.	Percentage to total area under Crops.	Acres.	Percentage to total area under Crops.
New South Wales .....	24,565	4·3	40,116	4·7	52,713	4·0
Victoria .....	20,630	1·4	37,435	1·8	42,521	1·8
Queensland .....	3,262	2·8	9,758	4·0	8,595	3·1
South Australia .....	9,864	0·4	14,422	0·7	15,185	0·7
Western Australia .....	.....	...	.....	...	3,008	3·7
Tasmania .....	6,717	4·5	10,696	6·4	11,068	5·1
New Zealand .....	16,360	1·5	29,235	2·0	31,664	2·5
Australasia .....	81,398	1·5	141,662	2·1	164,754	2·2

With the extension of artificial irrigation and the increased facilities for export afforded by the adoption of cool chambers for the preservation of fruit during long voyages, the orchardists of Australasia are now enabled to compete with foreign States in the fruit supply for the English market, which averages about £8,000,000 in value annually. The Tasmanian fruit trade with England has passed the experimental stage, and every season large steamers visit Hobart to receive fruit for the home market.

The following table shows the import and export trade of each colony in green fruit and pulp for 1894, from which it will be seen that with the exception of Tasmania all the colonies import considerably more than is exported :—

Colony.	Imports.	Exports of Domestic Produce.
	£	£
New South Wales .....	161,053	103,070
Victoria .....	70,634	14,507
Queensland .....	63,915	32,687
South Australia .....	18,974	16,822
Western Australia .....	5,431	13
Tasmania .....	6,749	191,098
New Zealand .....	94,060	1,072
Australasia.....	420,816	359,274

## PRODUCTION FROM GARDENS AND ORCHARDS. 265

The total value of the produce of gardens and orchards and the average return per acre in 1894 were as given below :—

Colony.	Total Value of Crop.	Average value per acre.
	£	£ s. d.
New South Wales .....	479,756	9 2 0
Victoria .....	816,415	19 4 0
Queensland .....	161,645	18 13 10
South Australia ..	324,610	21 7 6
Western Australia .....	48,128	16 0 0
Tasmania .....	143,884	13 0 0
New Zealand .....	616,017	19 10 0
<b>Australasia .....</b>	<b>2,590,455</b>	<b>15 14 6</b>

The average returns per acre have but little value for purposes of comparison, as much depends on the proportion of the areas under certain kinds of fruit and under vegetable gardens, which tends to increase or decrease, as the case may be, the general average of a colony. In New South Wales the smallness of the average is explained by the fact that in a great number of instances, owing to a lack of facilities for disposing of the fruit crops, the produce of the orchards did not reach the markets, and in some cases was not even gathered. In Tasmania stone fruits are principally grown, and the gross returns from these are much smaller than the returns obtained from the cultivation of sub-tropical fruits such as the orange and citron, which tend to increase the average returns in the continental and northern provinces.

### MINOR CROPS.

Besides the crops already specifically noticed, there are small areas on which are grown a variety of products, chiefly rye, bere, onions, beans, peas, turnips, rape, mangold wurzel, and hops ; but they are not sufficiently important to warrant special mention, except turnips and rape in New Zealand, where no less an area than 385,788 acres was planted with these crops. The area under minor crops in each province in 1894 was as follows :—

Colony.	Acres.
New South Wales .....	6,865
Victoria .....	45,439
Queensland .....	2,749
South Australia .....	8,369
Western Australia .....	532
Tasmania .....	18,937
New Zealand .....	422,890
<b>Australasia .....</b>	<b>505,781</b>



Although considerable progress has of late years been made in some directions, it must be admitted generally that agriculture in the Australasian colonies has scarcely passed the tentative stage. The typical Australian agriculturist, relying largely on a bountiful Nature, does not exercise upon crops anything approaching the same patience, care, and labour that are bestowed by the European cultivator, nor as a rule does he avail himself of the benefits of scientific farming and improved implements to the extent that prevails in America and Europe. It may be expected that improvements will take place in this respect, and that the efforts made by the Governments of New South Wales, Victoria, and South Australia for the promotion of scientific farming will bear good fruit. Agricultural colleges and model farms have been established in the three colonies, and travelling lecturers are sent to agricultural centres. At present New South Wales possesses the Hawkesbury Agricultural College and experimental farm, and the experimental farms at Booral, Bomen, and Wollongbar. Victoria has the two agricultural colleges of Dookie and Longerenong, with experimental farms attached to them, and another farm at Framlingham; while South Australia has an agricultural college and experimental farm at Roseworthy. In New South Wales experimental cultivation by means of irrigation with artesian and catchment water has been successfully conducted at some of the tanks and bores owned by the State, notably at the Pera Bore; and in South Australia a central agricultural bureau in Adelaide, with about eighty branch bureaus in the country, assists the farmers by disseminating valuable information, publishing papers, introducing new economic plants, and improving the breed of dairy cattle. In July, 1896, the Queensland Government accepted a tender for the erection of an Agricultural College at Tatton at a cost of £5,079.

#### AGRICULTURAL BONUSES.

Although the Government of Queensland encourages the shipment of dairy produce by granting a bonus not exceeding 2d. per lb. on butter and 1d. per lb. on cheese exported to markets outside of Australasia, and although South Australia granted a similar bonus on the exportation of butter from October, 1893, to February, 1895, Victoria is the only colony which has endeavoured to stimulate the agricultural industry during the past few years by the introduction of the bonus system on an extensive scale. In that colony Parliament authorised the expenditure of no less a sum than £233,000 in encouraging the cultivation of various crops, the manufacture of the raw material, and the exportation of certain of the products to foreign markets; and it is estimated that of this sum over £190,000 had been paid away at the end of June, 1896. The results, of course, have not been uniformly successful; the production and exportation of some articles, such as butter, have greatly increased; but in the case of other products, some of which were entirely new to the country, the progress made has been but small.

To growers of grapes, fruits, and general vegetable products the sum of £55,000 was authorised to be given as bonuses. The grants for vine and fruit cultivation, amounting to £30,000, were allotted before the period fixed by Parliament expired, the applications approved numbering 1,549 for planting an area of 12,500 acres of vines, and 1,588 for planting 8,308 acres of fruit-trees. For the cultivation of general vegetable products, to be used for the manufacture of fibre, oil, paper, syrup, sugar, tannin, drugs, dyes, scents, and insecticides, the balance of £25,000 was available. The bonus payable was not to exceed the sum of £2 for each acre sown or planted, and no payment was to be made for less than 1 acre of sugar plants, half-an-acre of fibre plants, and a quarter of an acre of the other plants named.

A grant of £37,000 was made to factories engaged in fruit-canning, fruit-drying, dairying, raisin and currant making, and in the preparation of flax, hemp, silk, and other products for the manufacturer. To factories for the preservation of fruit a bonus of £100 was allowed for canning, drying, or bottling 20 tons of fruit, and £3 for each additional ton, but the total payment to any person or company was not to exceed £300. The grants to butter factories and creameries were, it is stated by the Department of Agriculture, in every way an unqualified success. While the system was in operation £10,730 was paid as bonuses to 42 butter factories, and £19,535 to 124 creameries. To raisin, currant, fig, and prune factories a bonus was granted of £5 per ton of dried fruit up to 20 tons. The payments to raisin and currant factories have amounted to £645. The quantity of raisins prepared for market last season was 460 tons, and the colony is now independent of importations of this fruit; there is, however, still room for the extension of the cultivation of currant vines. To vegetable oil factories, a bonus of 1s. per gallon was payable on almond, castor, colza, earth-nut, linseed, olive, sesame, and sunflower oils; but the maximum amount which might be granted to one person or company on account of the production of any vegetable oil was not to exceed £500. A bonus of £5 per ton was payable on fibre manufactured from flax or hemp, the largest sum given to one person or company being £100; to sugar factories, a bonus of £100 for 20 tons of sugar or syrup made from sorghum or beet, with £5 for every additional ton up to a total of £500; to insecticide factories, a bonus of £40 for not less than 1 ton of insect-destroying powder manufactured from artemisia, pyrethrum, or schkuhria, and £20 for each additional ton up to a maximum of £100; and to tobacco factories, a bonus of £50 for 2,000 lb. weight of tobacco, with £5 for each additional 200 lb., but the total amount payable to one person or company was limited to £500.

A grant of £79,000 was originally made for payment in bonuses for the export of dairy produce, fruits, and honey to foreign markets, and for the development of the wine industry. The bonus on the export of butter has now been discontinued, the industry being well established.

For the year ended June, 1895, the amount appropriated by Parliament was £10,000, and out of this vote it was decided to defray all expenses incurred in receiving and storing butter for shipment, and in working the refrigerating machinery ; to pay a bonus at the rate of £3 per ton on the export of cheese to ports outside the Australasian colonies, provided the price realised when marketed should not be less than £2 10s. per cwt. ; on green fruit exported to foreign ports approved by the Minister for Agriculture, a bonus not exceeding 25 per cent. of the price realised by the fruit, and not in any circumstances to be in excess of 2s. per case ; and on honey exported to approved ports outside of Australasia, 1d. per lb., provided it arrived at the port of consignment in a good and marketable condition. A bonus of 3d. per gallon is now payable on the export of wine, and 1s. per gallon on the export of brandy.

Towards the purchase and importation by the Department of Agriculture of new varieties of seeds and plants for distribution to farmers, a sum of £3,000 was granted. It was also decided that out of this sum the Minister might give a bonus not exceeding £200 to any person who had introduced into the colony a new and approved variety of plant, always provided that the person who introduced it had been able to supply the Department, if required, with 1,000 scions or plants of the new variety at a price not exceeding 6d. each. A few hundred pounds of this grant have been expended, and the system of seed distribution is declared to be in every way satisfactory. Seeds of the best-known varieties of sugar-beet grown in France, Germany, and Sweden have been purchased and distributed amongst the farmers ; and in consequence of the discovery of phylloxera in the colony a large supply of seed of American phylloxera-resistant vines has been obtained, and some of it is now being raised with a view to distribution amongst the vignerons.

Approval was also given to the expenditure of a sum of £43,000 in establishing a system of technical education in the colony, by the employment of experts to impart instruction in connection with the introduction of new vegetable products and the improvement of existing agricultural methods. It was decided to engage experts in the culture of grape-vines ; in wine-making ; in the culture of fruit-trees ; in the processes of drying, bottling, and canning fruits ; and in the culture of plants producing fibre, paper, oils, tannin, drugs, dyes, scents, and insecticide. A grant of £4,000 was also made for the introduction of new machinery and appliances to perfect the treatment of new agricultural products and to improve existing agricultural methods, and for prizes for new inventions in general agricultural appliances. During the last season attention was mainly directed to the improvement of mechanical potato-diggers, for which a prize of £120 was awarded. A sum of £11,000 was likewise granted for the publication of agricultural reports ; and another of £1,000 to be paid in bonuses for the encourage-

ment of planting and cultivating forest trees of an economic character, such as blackwood, maple, birch, hickory, cedar, camphor-tree, cypress, pine, gum and ironbark, beech, ash, silky-oak, walnut, juniper, plane, poplar, oak, willow, redwood, and elm. Young trees are supplied gratis by the Forest Division of the Lands Department, and a bonus not exceeding £2 per acre is granted for planting and maintaining them in a vigorous and healthy condition. So far, however, the results have been disappointing. In June, 1896, the bonus vote had all been allotted with the exception of a small amount of the grant towards the planting of forest trees.

#### IRRIGATION.

Originally cultivation in Australia was confined to the banks of the coastal rivers and the country near the sea, and within the influence of regular rainfall; but now that it has spread from the coastal districts and the adjacent table-lands to the interior of the continent, where the irregular character of the rainfall makes harvesting uncertain, irrigation has become necessary to ensure successful husbandry. For some years past small areas have been irrigated by private enterprise; about 40,000 acres are irrigated in New South Wales and 7,500 acres in Queensland. In New South Wales the greater part of the irrigated area is situated in the Riverina district, where the free irrigation trusts of Hay and Balranald have been formed under the control of the municipal councils. The Hay trust comprises 19,847 acres, of which 778 acres have been irrigated; and the Balranald trust comprises 1,000 acres, of which a small area only has so far been irrigated. There was also a similar trust at Wentworth, having a jurisdiction over 10,600 acres, but it has now been dissolved and its powers assumed by the Government, who will carry out the undertaking. In Victoria there existed in 1893 thirty irrigation and water supply trusts, with jurisdiction over 2,743,449 acres, of which 1,843,304 acres were said to be irrigable, and 353,662 acres were capable of being irrigated from works either constructed or in course of construction. About 30,000 acres were actually irrigated. The works constructed are in various districts, chiefly on the Goulburn, Loddon, Wimmera, and Avoca Rivers.

A few years ago a special Act was passed by the Victorian Legislature, enabling the Government to hand over to the firm of Chaffey Brothers an area of 250,000 acres of mallee scrub, situated at Mildura, in the Swan Hill district, about 340 miles north-west of Melbourne. The land was then uninhabited and practically valueless; but now it has grown into a colony with about 4,000 inhabitants. The Act obliged the promoters to spend £35,000 on the land within the first five years, but they actually expended £275,000 within less than four years, and thus became entitled to the freehold of 50,000 acres, holding the balance of the 250,000 acres on lease. In addition to the sum mentioned, the

settlers have spent large sums in improving the land. The raisin industry is so far the leading one at Mildura, but all kinds of fruit grow to perfection, and out of 7,650 acres cultivated in 477 holdings in 1894, 4,170 acres were orchards and gardens, and 2,880 acres were vineyards.

In October, 1888, the firm of Chaffey Brothers commenced operations in South Australia, at a place called Renmark, situated on the river Murray, close to the boundary of New South Wales, and about 70 miles below Mildura, where an area of 250,000 acres has been set apart for irrigation purposes, and although Renmark has not progressed so rapidly as Mildura, it promises in time to become an important settlement. Unfortunately the company has had to go into liquidation, but an arrangement has been arrived at by the mortgagees and the settlers.

In New South Wales matters are in a more backward state. The Water Conservation Branch attached to the Department of Mines is at present engaged in obtaining sufficient hydrographical data to form the basis of a scheme of irrigation for vast areas in the vicinity of the Murray, Murrumbidgee, Lachlan, Macquarie, and Darling Rivers. The basin of the Gwydir River, the region between the Macquarie and the Bogan, and the country between the Paroo and Darling Rivers have been completed, the lineal measurements over which levels were taken extending to no less than 17,180 miles. In June, 1896, the Government secured for one year the services of the eminent authority on irrigation, Colonel Home, C.S.I., who will submit a complete scheme for the irrigation of the waterless wastes of the colony.

A public company commenced operations a few years ago with what appeared to be great promise of success, and secured an area of about 20,000 acres in the Mulgoa district, within a distance of 30 miles of the metropolitan market. The soil consists chiefly of a rich friable loam, but the district suffers from an unequal rainfall. An Act which was passed by the New South Wales Legislature in 1890 gives the right to tap the Nepean and, if necessary, the Warragamba River, for the purpose of irrigating this area, and it is proposed to devote the land chiefly to the cultivation of vines and fruit-trees. A certain amount of work has been done, but from various reasons no great progress has been made. The company has lately been endeavouring to induce the Government to take the works over.

#### ARTESIAN WELLS.

The necessity of providing water for stock in the dry portions of the interior of the Australian continent induced the Governments of the colonies to devote certain funds to the purpose of sinking for water, and bringing to the surface such supplies as might be obtained from the underground sources which geologists stated to exist in the tertiary

drifts and the cretaceous beds which extend under an immense portion of the area of Central Australia, from the western districts of New South Wales to a yet unknown limit into Western Australia.

In New South Wales the question of the existence of underground water had long been a subject of earnest discussion, but doubts were set at rest in 1879 by the discovery on the Kallara Run, at a depth of 140 feet, of an artesian supply of water, which, when tapped, rose 26 feet above the surface. The Government then undertook the work of searching for water, and since the year 1884 the sinking of artesian wells has proceeded in a scientific and systematic manner, under the direction of specially-trained officers. Private enterprise, which had shown the way, has also followed up its first successes.

It has been ascertained from official sources that contracts have already been let by the Government of New South Wales for the sinking of eighty-one wells; of these, forty-eight have been completed, fourteen are in progress, and others will be commenced at an early date. Of the completed wells, twenty-nine are flowing, thirteen sub-artesian, yielding pumping supplies, and six have been failures; these wells represent 70,856 feet of boring. The total depth bored to the 31st July, 1896, was 85,806 feet. From the completed wells about 24,000,000 gallons of water flow every day to the surface. The deepest bore completed is that at the Gil Gil crossing, on the new road from Moree to Boggabilla, where boring has been carried to a depth of 3,093 feet; this well yields a supply of approximately 2,000,000 gallons per diem. The largest flow obtained in the colony is from the Euroka Bore, about 12 miles from Walgett, on the Coonamble road; the depth of this well is 1,543 feet, and the estimated flow about 4,000,000 gallons per diem. Another important bore is that at Pera, 8 miles from Bourke, on the Wanaaring road, where at a depth of 1,154 feet a flow of 610,000 gallons per diem was struck. At this bore the most extensive system of irrigation by artesian water as yet undertaken in the colony is being carried out; the land has been surveyed into 20-acre blocks, which are offered for lease under the Homestead Settlement provisions of the Crown Lands Act, with a water right equivalent to 35 inches of rain per annum. An area of 57 acres has been set apart for experimental cultivation by the Government, and certain fruits and other products indigenous to the temperate and torrid zones are being grown with success. Equally good results are being obtained at Native Dog, Barrington, Enngonia, and Belalie bores, on the road from Bourke to Barrington. Lucerne, maize, wheat, tobacco, millet, planter's friend, sugar-cane, date palms, pineapples, bananas, and many other fruits and vegetables of tropical and sub-tropical character have been found to thrive there exceedingly well.

On the road from Wanaaring to Milparinka, once a waterless track, successful boring operations have been carried on. Of seven bores undertaken, five have been completed, and two are in progress. Three

bores give a pumping supply, and three are now flowing, yielding an aggregate supply of 3,000,000 gallons daily. Boring operations are being extended farther to the north-west, and a contract has lately been entered into for the sinking of four bores on the road from Wilcannia to Wompah (on the Queensland border), one of which is being sunk at a place 12 miles north of Tibooburra. A remarkable flow has also been obtained at the Moree bore, amounting to 2,907,000 gallons daily. This bore has been carried to a depth of 2,792 feet, through formations of the same age as the Ipswich coal measures (*Trias Jura*), thus demonstrating the fact that water can be obtained in other than the lower cretaceous formation. It is interesting to note that at Tineroo bore, on the Milparinka-Wanaaring Road, a similar formation is thought to have been met with at 1,703 feet (flow, 500,000 gallons); thus, if further investigation bears out the surmise, its discovery in this locality will tend to confirm the opinion of the Government Geologist, that the Triassic may extend across the colony and as far as the Leigh Creek coal-beds in South Australia, underlying the cretaceous beds in which so much water has been obtained.

Much has been done in the way of artesian boring by private enterprise. As far as can be ascertained, early in 1896 there were altogether 106 private bores in New South Wales, with an approximate flow of 38,000,000 gallons daily. Amongst the most important are two wells on Lissington Holding, with flows of 3,000,000 and 4,000,000 gallons per diem; and one at Lila Springs with a daily flow of 4,000,000 gallons.

A better idea of the value of artesian wells to the community will be obtained when it is known that the aggregate daily flow of underground water in New South Wales is now approximately 63,000,000 gallons, and that, in addition, large supplies can be pumped from sub-artesian wells. The average depth of forty-eight wells completed by Government to the 31st July, 1896, was 1,476 feet 2 inches, with a range from 120 to 3,093 feet, and with temperatures varying from 80 to 139 degrees Fahrenheit. The total cost of the wells (including actual boring, casing, carriage, and incidental expenses) was £130,193 12s. 9d., or an average of £2,712 7s. 4d. per bore, or £1 16s. 8d. per foot.

The Queensland Hydraulic Engineer reports that at the end of 1895 fifteen bores (including two giving a sub-artesian supply) had been successfully completed by private contractors on Government account, while one was in progress and six had been abandoned; the most remarkable being that at Charleville, where a daily supply of 3,000,000 gallons was struck at a depth of 1,371 feet. The total daily flow of these bores is given as 5,572,000 gallons. From information prepared in the middle of the year 1896, it would appear that apart from twenty-seven deep bores east of the coast range, some 412 bores in search of artesian water have been sunk in western Queensland, the total number of feet bored being 488,430, or an average depth of 1,185 feet per bore. Of these wells, 293 are flowing, giving a daily output of 215,727,500 gallons

of water exclusive of pumping supplies. The largest daily supply was yielded by the well at Burranbilla, where a flow of 4,000,000 gallons was struck at a depth of 1,811 feet; on the Noorama Run there are three wells—one yielding 3,456,000 gallons, and two, 1,500,000 gallons each. Several other wells yield over 1,000,000 gallons of water per diem. The total cost of these bores, exclusive of casing, was about £730,000, and of casing, £150,000, or altogether £880,000.

In South Australia a number of bores have been put down with success in widely distant parts of the territory, and an essay was made on the Great Australian Bight, which resulted in a supply being struck on the Nullarbor Plain, at a depth of 777 feet, yielding 68,000 gallons per diem; the supply is, however, sub-artesian. Other wells have been sunk since with better results, the water rising to the surface in several instances. The most successful wells, however, are situated in the central portion of the territory; those at Hergott Springs, Coward, Strangways, Oodnadatta, and Lake Harry giving supplies of 50,000 to 1,200,000 gallons per diem. A bore has been completed at Tintinarra, in the south-eastern portion of the colony, thus showing that the marine tertiary area is water-bearing. Other bores are in progress. The total amount spent in artesian boring in South Australia to June, 1895, is stated to be £495,086.

The Government of Western Australia, following the example set by those of the eastern colonies, proposes to sink a line of wells in the direction of the Coolgardie gold-field, and of the South Australian border.

In the province of Victoria the Government have since the year 1886 executed several experimental borings, but so far the results have not been encouraging. Artesian water was, however, struck at Sale, in Gippsland, as early as the year 1880, but the bore is not now used.

The fears so long entertained that the search for underground water might prove unsuccessful have now been dissipated by the results already attained, and both private firms and the State are emulating each other in extending their operations throughout the arid portions of the continent, meeting generally with the most pronounced success.