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 50 per cent. of the value of the pastoral and dairy produce. The return from agriculture in each colony for the season 1896–7 was approximately as shown below :—

Colony.	Total value of Crops.	Average Value of Produce per acre.	Proportion of Total Value.
	£	£ s. d.	per cent.
New South Wales	5,321,569	3 4 1	23·36
Victoria	6,042,107	2 5 4	26·53
Queensland	1,602,542	5 0 3	7·03
South Australia	1,932,869	0 18 0	8·49
Western Australia	537,978	4 16 11	2·36
Tasmania	1,103,541	4 16 1	4·84
New Zealand	6,237,548	4 0 5	27·39
Australasia	22,778,154	2 12 6	100·00

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; while in Western Australia, where the greater part of the produce consumed is imported, prices are higher than in the eastern colonies, and the small area devoted to the plough returns on an average a better price per acre than in the colonies where agriculture has received greater attention. In point of gross value New Zealand 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. Victoria also produces over one-fourth of the total, and New South Wales nearly one-fourth. 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	6,300,060	27·7
Maize	1,068,850	4·7
Barley	331,739	1·4
Oats	2,227,481	9·8
Other grain crops	50,270	0·2
Pease, beans, etc.	99,750	0·4
Hay	4,641,515	20·4
Potatoes	1,689,762	7·4
Other root-crops	1,199,943	5·3
Sugar-cane	559,341	2·5
Tobacco	74,240	0·3
Grapes	596,801	2·6
Green forage	456,861	2·0
Grass seed	129,020	0·6
Hops	46,052	0·2
Orchards and market-gardens	3,076,105	13·5
Other crops	230,364	1·0
Total	22,778,154	100·0

The average value of agricultural produce per head of population in each of the Australasian colonies during the season 1896–7 is represented by the figures given below. It will be seen that in the colonies of New Zealand, Tasmania, South Australia, and Victoria the development of agricultural resources has attracted the attention of the colonists to a greater extent than in the other provinces. New South Wales, however, has made a considerable advance in agricultural pursuits during the past two years, and from a position of dependence upon outside sources for a large portion of its wheat supply, has become an exporter of this cereal :—

Colony.	Average value per head.		
	£	s.	d.
New South Wales	4	2	0
Victoria	5	2	10
Queensland	3	7	11
South Australia	5	7	4
Western Australia	3	18	0
Tasmania	6	12	10
New Zealand	8	14	8
Australasia	5	5	4

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 1896–7 given above, it will be seen that while the total production of Australasia is now more than double that of twenty-five

years ago, the average value per head of population is lower. As subsequent tables will show, the great lowering of prices is responsible for this decline, and not want of productiveness. The fall in prices was very rapid down to 1895, when the price of wheat became so low as to render cultivation of this cereal unprofitable. Fortunately, the following years witnessed a great improvement in the market quotations, and the result is seen in the larger area sown with wheat in each of the colonies during the last two seasons :—

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	21,998,000
	£ s. d.	£ s. d.	£ s. d.
Australasia — Per head	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, Tasmania, and South Australia, show averages which surpass those of many of the leading agricultural countries. This may be partly seen from the following table, which gives approximately the value of agricultural production in the principal countries of the world, with the average amount per head of population :—

Countries.	Value in millions.	Per head.	Countries.	Value in millions.	Per head.
	£	£		£	£
United Kingdom	126	3·2	Holland	18	4·0
France	284	7·3	Belgium	29	4·6
Germany	262	5·1	Switzerland	9	3·0
Russia	370	3·5	United States	487	7·7
Austria	210	5·7	Canada	33	6·9
Italy	141	4·6	Cape Colony	2	1·3
Spain	94	5·5	Argentina	24	6·0
Portugal	18	4·0	Uruguay	2	2·7
Sweden	20	4·9			
Norway	3	1·7			
Denmark	19	8·6	Australasia (1896-7).	23	5·3

The following figures, giving the areas under the principal grain and other crops and the total extent of land in 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, and in the others which follow, the years 1861, 1871, 1881, 1891, and 1896 embrace the period from the 1st April in each of those years to the 31st March in the following year :—

Year.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	New Zealand.	Australasia.
	acres.	acres.	acres.	acres.	acres.	acres.	acres.	acres.
WHEAT (for Grain).								
1861	123,468	196,922	392	310,636	13,584	58,823	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	1,332,683	19,306	1,552,423	26,866	47,584	402,273	3,737,801
1896	866,112	1,580,613	35,831	1,693,045	31,489	74,516	258,608	4,540,214
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	569,636
1896	39,530	419,460	1,881	40,215	1,753	44,768	372,597	920,204
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	1,783	46,480	.....	36	.....	3,177	168,954
1891	174,577	8,230	101,598	.....	23	.....	5,447	289,875
1896	211,382	9,752	115,715	.....	30	.....	12,534	349,413
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	5,083	4,275	13,305	61,092
1881	6,427	48,652	256	11,953	3,679	4,597	29,808	105,372
1891	4,459	45,021	739	11,461	3,738	2,650	24,208	92,336
1896	6,453	62,373	1,122	14,484	1,903	3,988	29,813	120,136

Year.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	New Zealand.	Australasia.
	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
1896	31,170	43,532	10,803	6,417	720	21,651	29,990	144,283
VINES.								
1861	1,130	1,464	40	3,918	457	.....	.....	7,009
1871	4,152	5,523	568	5,455	692	.....	.....	16,390
1881	4,027	4,923	1,212	4,202	527	.....	.....	14,891
1891	8,281	24,483	1,988	12,314	1,004	.....	.....	48,070
1896	8,061	27,934	2,020	18,333	2,294	.....	.....	58,642
HAY.								
1861	45,175	74,681	280	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	163,863	369,498	30,655	304,171	28,534	45,445	46,652	988,818
1896	327,209	416,667	35,764	339,257	69,436	47,798	297,813	1,533,944
OTHER CROPS.								
1861	17,469	13,971	1,220	8,384	719	27,109	11,584	80,456
1871	28,130	174,527	27,997	17,988	18,171	18,076	33,422	318,311
1881	49,522	55,085	36,658	28,845	1,610	20,145	337,856	529,721
1891	103,019	89,248	78,455	27,791	2,211	27,689	595,363	923,776
1896	169,800	103,466	111,400	33,241	4,113	36,808	549,800	1,008,718
TOTAL AREA UNDER CROPS.								
1861	265,389	410,406	4,440	400,717	24,705	163,385	68,506	1,337,548
1871	490,099	851,354	59,969	837,730	51,724	155,046	337,282	2,683,204
1881	578,243	1,435,446	117,664	2,156,407	53,353	148,494	1,070,906	5,560,513
1891	846,383	2,116,654	242,629	1,927,689	64,209	168,121	1,424,777	6,790,462
1896	1,659,717	2,663,797	314,536	2,144,992	111,738	229,529	1,551,245	8,675,554
LAND UNDER PERMANENT ARTIFICIALLY-SOWN GRASSES.								
1861	32,186	12,654	.....	838	.....	.....	157,994	203,672
1871	27,702	6,282	838	5,213	.....	90,247	792,529	922,811
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
1896	384,016	172,582	20,102	20,027	4,044	253,306	9,935,812	10,789,889

The following table shows the increase in area, and the proportional yearly increase in cultivation, in each colony during the period of 35 years under review :—

Colony.	Increase in area from 1861 to 1896.	Increase in acreage per annum.
	acres.	per cent.
New South Wales	1,394,328	5·4
Victoria	2,253,391	5·5
Queensland	310,096	12·9
South Australia	1,744,275	4·9
Western Australia	87,033	4·4
Tasmania	66,144	1·0
New Zealand	1,482,739	9·3
Australasia	7,338,006	5·5

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 almost six and a half times as large as it was in 1861. If, however, the land artificially grassed be included, the total will come to 19,465,443 acres, or more than twelve times the area in 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; and it will be seen that, on this basis, the greatest advance since 1891 has been made by New South Wales :—

Colony.	1861.	1871.	1881.	1891.	1896.
	acres.	acres.	acres.	acres.	acres.
New South Wales	0·7	0·8	0·8	0·7	1·3
Victoria	0·8	1·1	1·7	1·8	2·3
Queensland	0·1	0·5	0·5	0·6	0·7
South Australia	3·2	4·5	7·5	5·9	5·9
Western Australia	1·6	2·0	1·8	1·2	0·8
Tasmania	1·8	1·5	1·2	1·1	1·4
New Zealand	0·7	1·3	2·1	2·2	2·2
Australasia	1·1	1·4	2·0	1·7	2·0

For the whole of Australasia the increase of agriculture as compared with population is shown in the following table :—

Increase of—	1861-71.	1871-81.	1881-91.	1891-96.	Whole period 1861-1896.
	per cent.	per cent.	per cent.	per cent.	per cent.
Acreage under crop.....	100·6	107·2	22·1	27·8	548·6
Population	55·6	43·2	38·1	10·9	241·5

Although during the period of thirty-five years the population of Australasia was more than trebled, yet the area of land devoted to agriculture increased more than sixfold, and the rate of agricultural progress was more than twice that of the population. This improvement took place entirely during the twenty years from 1861 to 1881, and chiefly during the latter portion of that time; while in the years from 1881 to 1896 the rate of increase was about the same, agriculture gaining during the last few years the ground which it lost between 1881 and 1891. The progress in the seventies is what naturally might be expected, as the gold fever had altogether subsided about the end of the first period, 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 eighties was attributable 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 were large accessions to the numbers of those engaged in other callings without a corresponding increase in the agricultural classes. But the earnest attempts of the State to assist the agriculturist in obtaining land on easy terms, and to benefit him in other ways, coupled with the satisfactory advance in the price of wheat, has enabled the industry to overtake the population.

It was ascertained at the census of 1891 that the number of persons engaged in agricultural pursuits in the Australasian colonies was 310,642, of whom 286,272 were males, and 24,370 females. There is every reason to suppose that the number now is not less than 400,000.

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 in cultivation require to be taken into consideration. It would not be fair, for instance, to compare Tasmania, which has 6·33 persons per square mile, with Western Australia, which has only 0·14 inhabitant to the square mile. The table has a value chiefly

because it shows how each province has progressed in cultivation of the soil during the periods quoted :—

Colony.	1861.	1871.	1881.	1891.	1896.
	per cent.	per cent.	per cent.	per cent.	per cent.
New South Wales	0·15	0·20	0·29	0·44	0·84
Victoria	0·73	1·51	2·55	3·76	4·73
Queensland	0·001	0·01	0·03	0·06	0·07
South Australia.....	0·07	0·15	0·37	0·33	0·37
Western Australia	0·006	0·008	0·009	0·01	0·02
Tasmania	0·97	0·92	0·88	0·99	1·36
New Zealand.....	0·10	0·50	1·60	2·13	2·32
Australasia.....	0·07	0·14	0·28	0·34	0·44

The subjoined table shows the proportion of cultivated area devoted to the principal crops in each province. It will be seen that wheat forms the greatest percentage of the total tillage in Australasia as a whole, and in New South Wales, Victoria, and South Australia. Maize and sugar-cane are the principal crops in Queensland; hay crops, in Western Australia; and oats, in New Zealand. In Tasmania only 32·5 per cent. of the cultivated area is under wheat, which, however, is still the principal crop of the colony :—

Crop.	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	52·2	59·3	11·4	78·9	28·2	32·5	16·7	52·3
Oats.....	2·4	15·8	0·6	1·9	1·6	19·5	24·0	10·6
Maize	12·7	0·4	36·8	....	0·0	....	0·8	4·0
Barley	0·4	2·4	0·4	0·7	1·7	1·8	1·9	1·4
Potatoes	1·9	1·6	3·4	0·3	0·6	9·4	1·9	1·7
Hay	19·7	15·6	11·4	15·8	62·1	20·8	19·2	17·7
Vines	0·5	1·0	0·6	0·9	2·1	....	....	0·7
Sugar-cane	1·1	....	26·4	....	....	....	....	1·3
Other crops	9·1	3·9	9·0	1·5	3·7	16·0	35·5	10·3
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 253, giving the actual areas cultivated, for 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 there is a greater proportionate increase in the cultivation of the more valuable crops, and that, despite a check in 1896 from causes due to unfavourable seasons, the area devoted to vines, sugar-cane, and "other crops" formed 12·3 per cent. of the whole in that year, as compared with 8·6 per cent. in 1861 :—

Product.	1861.	1871.	1881.	1891.	1896.
	per cent.	per cent.	per cent.	per cent.	per cent.
Wheat	53·6	51·4	60·7	55·0	52·3
Oats	10·6	13·5	7·9	8·4	10·6
Maize	4·6	5·3	3·0	4·3	4·0
Barley	2·2	2·3	1·9	1·4	1·4
Potatoes	4·2	3·0	1·8	2·0	1·7
Hay	16·2	11·9	15·1	16·0	17·7
Vines.....	0·5	0·7	0·3	0·7	0·7
Sugar-cane	.....	0·5	0·7	1·1	1·3
Other crops	8·1	11·4	8·6	11·1	10·3
Total	100·0	100·0	100·0	100·0	100·0

WHEAT.

Only four of the seven colonies—New South Wales, 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. For the season 1896–7 a much larger area was sown with wheat in New South Wales, and the production of 8,853,445 bushels was the highest yield in the seven colonies. In Victoria and South Australia, however, protracted drought, coupled with unseasonable rainfall, had the effect of greatly curtailing the production; and, taking Australasia as a whole, in 1896 there was a net import of wheat and flour equal to 3,559,883 bushels of grain, valued at £682,000, as compared with an export of breadstuffs equivalent to 12,092,425 bushels of grain, valued at £1,440,000, in 1894.

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

Colony.	1861.	1871.	1881.	1891.	1896.
	acres.	acres.	acres.	acres.	acres.
New South Wales	123,468	154,030	221,888	356,666	866,112
Victoria	196,922	334,609	926,729	1,332,683	1,580,613
Queensland	392	3,024	10,958	19,306	35,831
South Australia	310,636	692,508	1,768,781	1,552,423	1,693,045
Western Australia	13,584	25,697	21,951	26,866	31,489
Tasmania	58,823	63,332	51,757	47,584	74,516
New Zealand	29,531	108,720	365,715	402,273	258,608
Australasia	733,356	1,381,920	3,367,779	3,737,801	4,540,214

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 for the whole of Australasia being 2,634,423 acres, or an advance of 359 per cent. From 1881 to 1896, however, the extension of this form of cultivation was by no means general. In New Zealand and South Australia the area largely decreased, in consequence of the low point to which prices fell a few years ago; but in Australasia as a whole the area in 1896 was 1,172,435 acres larger than in 1881—1,298,108 acres having been added in Victoria and New South Wales during the fifteen years. At present more than one-half of the land in cultivation is devoted to wheat-growing, and in an ordinary season the produce of 750,000 acres is available for export to Europe. The rise in prices during the past two years has been taken advantage of by the agriculturists of all the colonies. In New South Wales, especially, rapid advance has been made, and, as already stated, instead of occupying a dependent position the colony has now become an exporter of wheat; while in South Australia and New Zealand part of the areas which were abandoned as wheat lands has again been placed under this cereal.

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

Colony.	1861.	1871.	1881.	1891.	1896.
	bushels.	bushels.	bushels.	bushels.	bushels.
New South Wales	1,606,034	2,229,642	3,405,966	3,963,668	8,853,445
Victoria	3,607,727	4,500,795	8,714,377	13,629,370	7,091,029
Queensland	5,880	36,288	39,612	392,309	601,254
South Australia	3,410,756	3,967,079	8,087,032	6,436,488	2,804,493
Western Australia	160,155	345,368	153,657	288,810	243,928
Tasmania	1,380,913	847,962	977,365	930,841	1,286,330
New Zealand.....	772,531	2,448,203	8,297,890	10,257,738	5,926,523
Australasia	10,943,996	14,375,337	29,675,899	35,899,224	26,807,002

In production of wheat in 1896, due to the failure of the crops in the colonies where this cereal is principally grown, New South Wales took the lead, having to its credit 33 per cent. of the total yield. Victoria came next with 26·5 per cent.; and New Zealand produced 22·1 per cent. of the total production. The percentage contributed by New South Wales was exactly treble the proportion of that colony in 1891 :—

Colony.	1881.	1891.	1896.
	per cent.	per cent.	per cent.
New South Wales	11·5	11·0	33·0
Victoria	29·4	38·0	26·5
Queensland	0·1	1·1	2·2
South Australia	27·2	17·9	10·5
Western Australia	0·5	0·8	0·9
Tasmania	3·3	2·6	4·8
New Zealand	28·0	28·6	22·1
Australasia	100·0	100·0	100·0

The production of wheat in the Australasian colonies during the year ended March, 1898, is shown below :—

Colony.	Production.
	bushels.
New South Wales	10,560,111
Victoria	10,580,217
Queensland	1,009,293
South Australia	4,014,852
Western Australia	408,595
Tasmania	1,668,341
New Zealand	5,670,017
Australasia	33,911,426

As a producer of wheat, Australasia is of little account when viewed in comparison with the great wheat-producing countries of the world. It is estimated by the *Miller* that the production of wheat in Europe, America, Asia, and Africa in 1896 was 2,210,800,000 bushels, which, with the 26,800,000 bushels yielded by Australasia, gives the world's production as 2,237,600,000 bushels; and the seven colonies, therefore, only produced 1·2 per cent. of the total crop. The figures for

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

Country.	Bushels.	Country.	Bushels.
Europe—		Africa—	
Russia	292,000,000	Algeria	16,000,000
France	248,000,000	Egypt	8,000,000
Hungary	102,000,000	Cape Colony	4,800,000
Germany	100,000,000	Tunis	4,800,000
Italy	96,000,000		
Spain	96,000,000	Total	33,600,000
United Kingdom	54,000,000		
Roumania	40,000,000		
Austria	34,000,000	America—	
Bulgaria	32,000,000	United States	560,000,000
Caucasus	28,000,000	Canada	56,000,000
Turkey	28,000,000	Argentine Republic	48,000,000
Belgium	20,000,000	Chili	16,000,000
Servia	6,800,000	Mexico	12,000,000
Portugal	6,000,000	Uruguay	8,000,000
Greece	5,200,000		
Holland	5,200,000	Total	700,000,000
Denmark	4,000,000		
Sweden	4,000,000		
Switzerland	4,000,000	Australasia—	
		New South Wales	8,850,000
Total	1,205,200,000	Victoria	7,090,000
		New Zealand	5,926,000
		South Australia	2,804,000
Asia—		Tasmania	1,286,000
India	192,000,000	Queensland	600,000
Asia Minor	48,000,000	Western Australia	244,000
Persia	20,000,000		
Syria	12,000,000	Total	26,800,000
Total	272,000,000	Grand Total	2,237,600,000

The yield of wheat per acre in Australasia during the year 1896–7 ranged from 1·7 bushels in South Australia, where the crop was a complete failure, to 22·9 in New Zealand, the average for the whole of the colonies being 5·9 bushels. The average yield in each province during the ten years ended 1896 is given below :—

Colony.	Average yield, 1887-96. bushels.
New South Wales	11·0
Victoria	8·6
Queensland	14·7
South Australia	5·9
Western Australia	10·9
Tasmania	17·4
New Zealand	23·8
Australasia	9·1

A yield of 9·1 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	32·3	France	17·9
Germany	29·5	Austria	16·1
United Kingdom	26·9	British Columbia	16·1
Holland	26·6	United States	12·7
Belgium	25·2	Italy	10·7
Norway and Sweden	23·0	Quebec	9·0
Ontario	19·9	Nova Scotia	9·0
Manitoba	18·6	Russia	9·0

A bare statement of averages, however, is somewhat misleading. In South Australia, for example, 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. In the Australasian colonies the yield 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 1896, with the surplus or deficiency in each case:—

Colony.	Yield, less requirements for Seed.	Consumption.	Surplus available for Export.	Deficiency Imported.
	bushels.	bushels.	bushels.	bushels.
New South Wales	4,551,000	7,277,000	.....	2,726,000
Victoria	9,723,000	5,526,000	4,197,000	.....
Queensland	274,000	2,366,000	.....	2,092,000
South Australia	10,431,000	2,735,000	7,696,000	.....
Western Australia	299,000	625,000	.....	326,000
Tasmania	834,000	1,014,000	.....	180,000
New Zealand	6,549,000	4,656,000	1,893,000	.....
Australasia	32,661,000	24,199,000	8,462,000	.....

The exporting colonies shown in the table are South Australia, Victoria, and New Zealand, to which must now be added New South Wales; the others import, the deficiency in Queensland being over 2,000,000 bushels; while over the period of ten years covered by the table New South Wales found it necessary to import nearly $2\frac{3}{4}$ million bushels annually. The average consumption per head of population in each of the seven colonies for the last decade was as stated below.

The large proportion of adult male population in Western Australia accounts for the high figures for that province :—

	Bushels.
New South Wales	6·2
Victoria	6·2
Queensland	5·7
South Australia	6·3
Western Australia	9·2
Tasmania	6·7
New Zealand	7·1

For the whole of Australasia, the average consumption was 6·8 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. 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 1896, 1 ton of flour being taken as equal to 50 bushels of grain. The failure of the wheat crop in the drought-stricken areas of Victoria and South Australia resulted in the unusual experience of a net import into Australasia from other countries :—

Colony.	Net Imports.	Net Exports.
	bushels.	bushels.
New South Wales	3,588,423	.....
Victoria	.....	61,180
Queensland	2,509,707	.....
South Australia	.....	2,726,692
Western Australia	926,246	.....
Tasmania	105,894	.....
New Zealand	.....	782,515
Australasia	3,559,883	.....

In ordinary seasons Australasia ranks about sixth amongst the exporting countries; still, its contribution to the world's markets does not form more than one-thirtieth of the demand, and it cannot, therefore, be said to form a factor of any consequence in the trade.

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 price in 1894 showed a still further downward tendency, the average for the year being 2s. 10d. per bushel. The following year, however, showed an improvement, and the average was 2s. 11d. per bushel; while in 1896 and 1897 the prices averaged 3s. 4d. and 3s. 9d. per bushel respectively.

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.
1888	31 10	1893	26 4
1889	29 9	1894	22 10
1890	31 11	1895	23 1
1891	37 0	1896	26 2
1892	30 3	1897	30 2

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 took place between 1888 and 1895, due for the most part to the fall in prices rather than to any decrease of production. The effect of the rise in prices is seen in the more satisfactory results in New South Wales during the seasons 1895–6 and 1896–7; for Victoria and South Australia the drought is largely responsible for the low values in those years :—

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.
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
1896	8·7	4·0	1·8	1 17 0	0 17 9	0 9 10
1897	10·2	4·5	1·7	2 3 5	1 3 8	0 8 7

* 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.	1896.
	acres.	acres.	acres.	acres.	acres.
New South Wales	7,224	13,795	16,348	12,958	39,530
Victoria	91,061	175,944	146,995	190,157	419,460
Queensland	69	131	88	715	1,881
South Australia	1,638	3,586	3,023	12,637	40,215
Western Australia	507	1,474	827	1,301	1,753
Tasmania	29,022	29,631	27,535	28,360	44,768
New Zealand	15,872	139,185	243,387	323,508	372,597
Australasia	145,393	363,746	438,203	569,636	920,204

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.	1896.
	bushels.	bushels.	bushels.	bushels.	bushels.
New South Wales	152,426	280,887	356,566	276,259	834,633
Victoria	2,136,430	3,299,889	3,612,111	4,412,730	6,816,951
Queensland	.....	.....	1,121	16,669	32,181
South Australia	33,160	38,894	32,219	80,876	189,716
Western Australia	8,162	28,330	8,270	18,539	18,871
Tasmania	751,475	593,477	783,129	873,173	971,996
New Zealand	512,665	3,726,810	6,924,848	11,009,020	11,232,803
Australasia	3,594,318	7,968,287	11,718,264	16,687,266	20,097,151

The average yield per acre in each colony for the ten years ended 1896 was as follows:—

	Bushels.
New South Wales	20·0
Victoria	19·8
Queensland	18·2
South Australia	9·2
Western Australia	16·4
Tasmania	26·1
New Zealand	31·1

The average yield of Australasia is 26·0 bushels, exceeding Germany with 25·7 bushels; United States, 25·1 bushels; France, 23·8 bushels; Hungary, 22·7 bushels; Austria, 22·7 bushels; and Russia in Europe, 18·8 bushels. Of the seven colonies, New Zealand has the highest average yield per acre; but its return is exceeded by Holland, with 44·3 bushels; the United Kingdom, with 39·6 bushels; and Canada, 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 1896–7, will be found below :—

Colony.	Value.	Value per acre.
	£	£ s. d.
New South Wales	83,464	2 2 3
Victoria	752,705	1 15 11
Queensland	3,620	1 18 6
South Australia	20,157	0 10 0
Western Australia	2,595	1 9 7
Tasmania	101,250	2 5 3
New Zealand	1,263,690	3 7 9
Australasia	2,227,481	2 8 5

The net import or export of oats by each of the colonies is given in the following table. New Zealand was the only province which exported this cereal to any considerable extent in 1896, its export for the year being 2,246,921 bushels, of which quantity 224,005 bushels were forwarded to the United Kingdom :—

Colony.	Net Imports.	Net Exports.
	bushels.	bushels.
New South Wales	877,313	.....
Victoria	241,977	.....
Queensland	88,484	.....
South Australia	18,298	.....
Western Australia	998,510	.....
Tasmania	.....	304,739
New Zealand	.....	2,246,921
Australasia	.....	327,078

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

	Bushels.
Europe (official estimates)	1,697,385,222
,, (unofficial estimates)	34,050,000
United States	799,253,793
Australasia	20,097,151
Canada	107,253,299
Total	2,658,039,465

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 22,000 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.	1896.
	acres.	acres.	acres.	acres.	acres.
New South Wales	57,959	119,956	117,478	174,577	211,382
Victoria	1,714	1,709	1,783	8,230	9,752
Queensland	1,914	20,329	46,480	101,598	115,715
New Zealand	770	.....	3,177	5,447	12,534
Other colonies ...	91	113	36	23	30
Australasia ...	62,448	142,107	168,954	289,875	349,413

The production in the same years was as follows :—

Colony.	1861.	1871.	1881	1891.	1896.
	bushels.	bushels.	bushels.	bushels.	bushels.
New South Wales	1,727,434	4,015,973	4,330,956	5,721,706	5,754,217
Victoria	20,788	30,833	81,007	461,447	566,027
Queensland	42,100	508,000	1,313,655	3,077,915	3,065,333
New Zealand	31,570	.....	127,257	238,746	503,652
Other colonies ...	367	2,000	648	483	504
Australasia ...	1,822,259	4,556,806	5,853,523	9,500,297	9,889,733

The following table shows the average yield of each colony and of Australasia for the ten years ended 1896 :—

Colony.	Bushels.
New South Wales	29·7
Victoria	50·1
Queensland	24·2
Western Australia	18·9
New Zealand	42·1
Australasia	28·7

The averages for Victoria and New Zealand are of little value, as the area under maize in those colonies is small and very favourably situated ; while Western Australia in 1896 had but 30 acres under cultivation, producing 504 bushels. The average yield of maize in the United States

is 22·3 bushels; while for Hungary the average is 18·8 bushels; for Austria, 18·2 bushels; for France, 18·1 bushels; for Italy, 14·4 bushels; for Roumania, 12·3 bushels, and for Russia in Europe, 12·3 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 1896-7, and the average return per acre, will be found below :—

Colony.	Total value of crop.	Average value per acre.
	£	£ s. d.
New South Wales	575,422	2 14 5
Victoria	104,950	10 15 3
Queensland	306,533	2 12 11
New Zealand	81,844	6 10 7
Other colonies	101	3 7 4
Australasia	1,068,850	3 1 2

The high average value per acre of maize produced in Victoria and New Zealand is due to the fact that the area under this crop 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 1896 was as follows :—

Colony.	Net Imports.	Net Exports.
	bushels.	bushels.
New South Wales	48,630	.....
Victoria	1,707	.....
Queensland	.. ..	30,098
South Australia	22,593	.....
Western Australia	13,347	.....
Tasmania	1,577	.....
New Zealand	.....	13,482
Australasia	44,274	.....

Although the principal maize-growing colony, New South Wales is the only one which imports maize to any extent from abroad. 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 more than 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)	303,330,204
,, (unofficial)	54,196,250
Asia (official)	823,868
Africa ,,	2,904,979
,, (unofficial)	13,620,000
United States (official)	2,283,875,165
America (unofficial)	229,109,606
Australasia	9,889,733
Various Islands (unofficial)	30,147
Total	2,897,779,952

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.	1896.
	acres.	acres.	acres.	acres.	acres.
New South Wales	2,924	3,461	6,427	4,459	6,453
Victoria	3,419	16,772	48,652	45,021	62,373
Queensland	13	971	256	739	1,122
South Australia	10,637	17,225	11,953	11,461	14,484
Western Australia	2,412	5,083	3,679	3,738	1,903
Tasmania	7,279	4,275	4,597	2,650	3,988
New Zealand	3,457	13,305	29,808	24,268	29,813
Australasia	30,141	61,092	105,372	92,336	120,136

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

Colony.	1861.	1871.	1881.	1891.	1896.
	bushels.	bushels.	bushels.	bushels.	bushels.
New South Wales	41,054	55,284	135,218	93,446	110,340
Victoria	68,118	335,506	927,566	830,741	815,605
Queensland	158	11,836	3,207	21,302	19,340
South Australia	168,137	164,161	137,165	107,183	107,798
Western Australia	2,412	5,083	36,790	48,594	12,816
Tasmania	169,381	76,812	102,475	71,686	74,790
New Zealand	96,658	287,646	664,093	688,683	821,506
Australasia	545,918	936,328	2,006,514	1,861,635	1,962,195

The average yield of barley per acre in each colony, for the ten years ended 1896, is given in the following table :—

Colony.	Bushels.
New South Wales	17·3
Victoria	16·8
Queensland	21·9
South Australia	12·6
Western Australia	13·6
Tasmania	22·2
New Zealand	28·0
Australasia	19·3

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 trade in barley and malt of each colony in 1896 was as follows :—

Colony.	Barley.		Malt.	
	Net Imports.	Net Exports.	Net Imports.	Net Exports.
	bushels.	bushels.	bushels.	bushels.
New South Wales	44,414	.....	336,791	.....
Victoria	37,754	.....	.....	81,027
Queensland	18,295	.....	147,199	.....
South Australia	36,164	.....	28,774	.....
Western Australia	8,343	.....	76,780	.....
Tasmania	.....	23,931	.....	31,130
New Zealand	.....	43,729	.....	120,828
Australasia	77,310	.....	356,559	.....

The total value of the barley crop and the average return of this cereal per acre during the season 1896–7 will be found below :—

Colony.	Total value of barley crop.	Average value per acre.
	£	£ s. d.
New South Wales	15,171	2 7 0
Victoria	139,332	2 4 8
Queensland	2,659	2 7 5
South Australia	17,966	1 4 10
Western Australia	2,563	1 6 11
Tasmania	10,284	2 11 7
New Zealand	143,764	4 16 5
Australasia	331,739	2 15 3

POTATOES.

The cultivation of the potato is not confined to any particular colony. Victoria and New South Wales have the largest areas under this crop, but both are exceeded by New Zealand in production. The following table shows the acreage under potatoes in each colony :—

Colony.	1861.	1871.	1881.	1891.	1896.
	acres.	acres.	acres.	acres.	acres.
New South Wales	10,040	14,770	15,943	22,560	31,170
Victoria	27,174	39,064	39,129	57,334	43,532
Queensland	512	3,121	5,086	9,173	10,803
South Australia	2,612	3,156	6,136	6,892	6,417
Western Australia	277	494	278	532	720
Tasmania	9,349	8,154	9,670	16,393	21,651
New Zealand.....	7,292	11,933	22,540	27,266	29,990
Australasia	57,256	80,692	98,782	140,150	144,283

The production for the same periods was as follows :—

Colony.	1861.	1871.	1881.	1891.	1896.
	tons.	tons.	tons.	tons.	tons.
New South Wales	30,942	44,758	44,323	62,283	84,214
Victoria	59,364	125,841	134,290	109,786	146,555
Queensland	1,080	6,585	11,984	25,018	32,773
South Australia	7,726	10,989	18,154	27,824	16,139
Western Australia	817	1,457	556	1,596	2,089
Tasmania	47,428	22,608	33,565	63,100	72,241
New Zealand..	37,554	42,130	121,890	162,046	157,529
Australasia	184,911	254,368	364,762	451,653	511,540

The average production of potatoes per acre is next given, for the ten years ended 1896. New Zealand, it will be seen, shows a considerably larger return than any of the other provinces :—

	tons.
New South Wales	2·8
Victoria	3·4
Queensland	3·1
South Australia	3·6
Western Australia	3·2
Tasmania	3·8
New Zealand	5·6
Australasia	3·8

These results compare well with the following returns from other countries :—

	tons.
Belgium	5·7
United Kingdom	4·8
Germany	4·1
Austria	3·3
Hungary	2·2
Roumania	2·2
United States	2·0
Italy	1·5

Only three of the colonies are in a position to export potatoes in any quantity—Tasmania, Victoria, and New Zealand. The surplus in Victoria, though at one time considerable, has now very much decreased. The following were the imports or exports of potatoes by each colony in 1896 :—

Colony.	Net Imports.	Net Exports.
	tons.	tons.
New South Wales	39,371	.....
Victoria	.....	12,517
Queensland	19,211	.....
South Australia	.....	51
Western Australia	8,286	.....
Tasmania	.....	48,252
New Zealand	.....	3,632
Australasia	2,416	.....

The total value of the potato crop and the average return per acre for 1896–7 will be found below :—

Colony.	Value of crop.	Average value per acre.
	£	£ s. d.
New South Wales	294,749	9 9 1
Victoria	513,553	11 15 11
Queensland	114,706	10 12 4
South Australia	56,554	8 16 3
Western Australia	20,890	29 0 3
Tasmania	216,723	10 0 2
New Zealand	472,587	15 15 2
Australasia	1,689,762	11 14 3

Hay.

Considerable quantities of wheat, oats, and barley are grown for the purpose of being converted into hay, but the area cut varies, of course, according to the season. In 1896 the season was very unfavourable to grain, and in point of value the hay crop came second amongst agricultural products. The area cut for hay has largely increased since 1881, as will be seen from the table appended :—

Colony.	1861.	1871.	1881.	1891.	1896.
	acres.	acres.	acres.	acres.	acres.
New South Wales	45,175	51,805	146,610	163,863	327,209
Victoria	74,681	103,206	212,150	369,498	416,667
Queensland	280	3,828	16,926	30,655	35,764
South Australia	62,874	97,812	333,467	304,171	339,257
Western Australia	6,676	*14,342	24,445	28,534	69,436
Tasmania	31,803	31,578	34,790	45,445	47,798
New Zealand	†27,160	30,717	68,423	46,652	297,813
Australasia.....	248,649	333,288	836,811	988,818	1,533,944

* In 1869. † In 1867.

The production for the same periods was as follows :—

Colony.	1861.	1871.	1881.	1891.	1896.
	tons.	tons.	tons.	tons.	tons.
New South Wales.....	57,363	77,460	198,532	209,417	334,902
Victoria	92,497	144,637	238,793	505,246	449,056
Queensland	459	6,278	19,640	58,842	69,559
South Australia.....	78,886	98,266	240,827	193,317	170,808
Western Australia	6,609	14,288	24,445	28,534	50,500
Tasmania	59,851	30,891	44,957	66,996	44,344
New Zealand.....	36,666	35,674	89,081	67,361	440,000
Australasia.....	332,331	407,494	856,275	1,129,713	1,559,169

The average yield of hay per acre will be found in the next table, the period covered being the ten years which closed with 1896 :—

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

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. For the most part, hay is grown in each province in quantities sufficient for its own requirements, New South Wales and Western Australia ordinarily being the only colonies which import to any extent, although in 1896 they were joined by Queensland.

The net import or export of hay and chaff by each colony during the year 1896 was as follows :—

Colony.	Net Imports.	Net Exports.
	tons.	tons.
New South Wales	48,473	.....
Victoria	.....	19,464
Queensland	7,004	.....
South Australia	.....	32,766
Western Australia	13,512	.....
Tasmania	.....	13,428
New Zealand	.....	5,346
Australasia	.....	2,015

The total value of the hay crop and the average return per acre for the season 1896–7 will be found below :—

Colony.	Total Value of Hay Crop.	Average Value per Acre.
	£	£ s. d.
New South Wales	1,339,608	4 1 11
Victoria	1,272,325	3 1 1
Queensland	278,236	7 15 11
South Australia	483,956	1 8 6
Western Australia	378,750	5 9 1
Tasmania	144,108	3 0 4
New Zealand	744,532	2 10 0
Australasia	4,641,515	3 0 6

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 1896, 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

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

Colony.	Green Food.			Sown Grasses.		
	1887.	1891.	1896.	1887.	1891.	1896.
	acres.	acres.	acres.	acres.	acres.	acres.
New South Wales..	20,403	32,138	74,472	192,678	333,238	384,016
Victoria	6,036	9,202	23,043	154,612	174,982	172,582
Queensland	9,582	10,727	16,822	13,619	20,921	2,767
South Australia ...	10,079	6,416	7,371	23,217	17,519	20,027
Western Australia..	... ..	238	815	.....	.....	4,044
Tasmania	1,246	1,101	1,938	184,653	208,596	253,306
New Zealand.....	98,029	118,484	10,083	5,869,247	7,357,229	9,935,812
Australasia ...	145,375	178,306	134,544	6,438,026	8,112,485	10,772,554

In Victoria, Tasmania, and New Zealand large quantities of grass-seeds, chiefly rye-grass and cocksfoot, are produced, the quantities in 1896 being given as 32,433 bushels, 25,000 bushels, and 800,000 bushels respectively, valued at £5,270 in Victoria, £3,750 in Tasmania, and £120,000 in New Zealand, or a total of £129,020. 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 2,906 and 2,302 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 some of the foreign wines have suffered, both in quantity and quality, owing to the devastation of the vineyards by phylloxera, is an additional reason why the vine-growers of this continent should look 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.	1896.
	acres.	acres.	acres.	acres.	acres.
New South Wales	1,130	4,152	4,027	8,281	8,061
Victoria	1,464	5,523	4,923	24,483	27,934
Queensland	40	568	1,212	1,988	2,020
South Australia.....	3,918	5,455	4,202	12,314	18,333
Western Australia	457	692	527	1,004	2,294
Australia	7,009	16,390	14,891	48,070	58,642

At present the area devoted to vines is much larger in Victoria and South Australia than in the other colonies. Of recent years great attention has been paid to the industry in Victoria, and that province now produces more than half the wine made in Australia. The following tables show the progress made in wine-growing during the last thirty-five years :—

Colony.	1861.	1871.	1881.	1891.	1896.
	gallons.	gallons.	gallons.	gallons.	gallons.
New South Wales.....	85,328	413,321	513,688	913,107	794,256
Victoria	47,568	713,589	539,191	1,554,130	2,822,263
Queensland.....	.....	.....	72,121	168,526	170,733
South Australia.....	312,021	852,315	313,060	861,835	1,743,090
Western Australia	.....	.....	99,600	166,664	75,693
Australia	444,917	1,979,225	1,537,660	3,604,262	5,606,035

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

Colony.	1861.	1871.	1881.	1891.	1896.
	tons.	tons.	tons.	tons.	tons.
New South Wales.....	224	508	1,103	3,694	2,885
Victoria	849	1,545	740	2,791	6,537
Queensland.....	.....	.....	255	1,169	600
South Australia.....	1,161	1,692	1,498	4,590	18,000
Western Australia	.....	.....	.....	.....	400
Australia.....	2,234	3,745	3,596	12,244	28,422

Among other produce of the vineyards may be mentioned 7,134 gallons of brandy in New South Wales, and 767 gallons in Queensland; while Victoria and South Australia produced respectively 12,038 cwt. and 7,097 cwt. of raisins and currants.

It is impossible to tabulate the average wine-yield 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 1896-7 was about 81 gallons in Western Australia, 140 gallons in Victoria, 172 gallons in New South Wales, and 180 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; indeed, the production in 1896–7 was 55 per cent. greater than in 1894–5. The table is based on figures taken from the *Moniteur Vinicole*, and refers to the vintage of 1897 :—

Country.	Production in million gallons.	Country.	Production in million gallons.
France	728	Bulgaria	24
Italy	485	Servia	20
Spain	447	United States	19
Algeria	83	Brazil	8
Roumania	72	Azores, Canaries, and Madeira	5
Austria-Hungary	62	Tunis	4
Russia	56	Cape Colony	2
Portugal	56	Mexico	2
Germany	47	Persia	1
Turkey	40	Australia	6
Chili	33		
Argentine	30		
Switzerland	28		
Greece	27	Total	2,285

The following table illustrates the progress made in the export of Australian wine to countries outside of Australasia since 1881. It will be noticed that in 1896 the trade had grown to sixteen times the value in 1881, while the number of gallons exported to foreign countries had increased more than thirty-fold. The 1896 figures are exclusive of Queensland, 27 gallons, valued at £15 ; and Western Australia, 72 gallons, valued at £20 :—

Colony.	1881.		1891.		1896.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	gallons.	£	gallons.	£	gallons.	£
New South Wales..	13,271	3,520	12,368	2,904	12,706	2,542
Victoria	5,588	2,341	142,294	26,152	338,667	51,520
South Australia	1,751	580	227,681	39,054	312,401	47,522
Australia ...	20,610	6,441	382,343	68,110	663,774	101,584

Including the intercolonial as well as the foreign trade, the exports of each colony during the same years are shown below. The figures for 1896 are exclusive of Queensland, 49 gallons, valued at £22 ; and Western Australia, 80 gallons, valued at £23 :—

Colony.	1881.		1891.		1896.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	gallons.	£	gallons.	£	gallons.	£
New South Wales..	22,377	7,233	54,143	11,644	24,177	6,010
Victoria	12,544	5,388	160,982	32,516	354,361	56,634
South Australia.....	54,001	12,637	285,107	58,282	389,389	72,697
Australia ...	88,922	25,258	500,232	102,442	767,927	135,341

The total value of the grape crop and the average return per acre in the Australian colonies, for the year 1896, 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	101,385	12 11 7	13 17 9
Victoria	303,091	10 17 0	12 14 3
Queensland	17,759	8 15 10	9 12 10
South Australia	160,997	8 15 7	11 4 8
Western Australia.....	13,569	5 18 4	9 3 1
Australia	596,801	10 3 7	12 4 7

The Government of Victoria have advanced £8,000 towards the establishment of wineries at Rutherglen, Mooroopna, and in other country districts, the agreement being that the sum granted in each case should be supplemented by an equal amount raised locally. It is anticipated that these wineries will soon be in full operation ; and it is proposed to extend the district co-operative wineries by a further State expenditure of £20,000 during the financial year, 1898–9.

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 for the protection of 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.	1896.
	acres.	acres.	acres.	acres.	acres.
New South Wales.....	22	4,394	12,167	22,262	31,053
Queensland.....	94	9,581	28,026	50,948	83,093
Total	116	13,975	40,193	73,210	114,146

The progress of the industry has been very rapid, especially in Queensland, the area of suitable land in that colony being very large. 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.	1892.	1893.	1894.	1895.	1896.
	acres.	acres.	acres.	acres.	acres.
New South Wales..... ...	11,560	11,755	14,204	14,398	18,194
Queensland.....	40,572	43,670	49,839	55,771	66,640
Total	52,132	55,425	64,043	70,169	84,834

From returns published by some of the Queensland mills it has been estimated that the total production of cane in 1896 was about 832,000 tons. This would give an average yield of 12·5 tons per acre for that colony, as compared with 17·6 tons per acre in New South Wales. 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.	1892.	1893.	1894.	1895.	1896.
	tons.	tons.	tons.	tons.	tons.
New South Wales.....	24,289	23,930	22,638	19,740	28,557
Queensland.....	61,368	76,147	91,712	86,255	100,774
Total	85,657	100,077	114,350	105,995	129,331

The net import of sugar by each colony in 1896 is given in the subjoined table. Queensland was the only province which was able to fill its own requirements and spare a quantity of sugar for export. The surplus amounted to 75,325 tons, valued at £862,072, and was almost wholly exported to the other colonies, only 72 tons being shipped to other countries. The following figures, which include the 75,253 tons from Queensland, represent the quantity and value of sugar imported :—

Colony.	Quantity.	Value.
	tons.	£
New South Wales	33,894	458,828
Victoria	53,706	638,703
South Australia	11,299	132,664
Western Australia	6,392	92,685
Tasmania	6,213	92,850
New Zealand	34,287	412,511
Australasia	145,791	1,828,241

Deducting the export of Queensland, the imports from countries outside of Australasia amounted to 69,793 tons, of which 69,715 tons, of the value of £895,668, can be traced to the original countries of shipment, namely:—

Country.	Quantity.	Value.
	tons.	£
Mauritius	21,017	307,554
Fiji	25,248	256,552
Java	16,853	237,126
Hongkong	5,047	72,489
Other sugar-producing countries	1,550	21,947
Total	69,715	895,668

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 1896:—

Colony.	Value of Cane grown.	Average value per acre.
	£	£ s. d.
New South Wales	164,161	5 5 9
Queensland	398,942	4 16 0

In connection with the prospects of this important industry, the present duties levied on raw sugar are worth recording. They are as follow:—New South Wales, £3 per ton; Victoria, £5 15s. to £6 per ton; Queensland, £5 per ton; South Australia, £3 per ton; Northern Territory, £5 per ton; Western Australia, free; Tasmania, £6 per ton; New Zealand, £4 13s. 4d. per ton.

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 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 22½ 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 were 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, made this clear, and estimated 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.

As a result of these concessions a company was formed in Victoria, and the first campaign of their factory at Maffra was completed at the end of June, 1898. The results obtained have, for various reasons, proved somewhat disappointing. The season, to begin with, was the reverse of favourable for the proper development of the beets. Shortly after planting, a period of extreme dryness was experienced, and when at length the rain came it caused too great a development of "tops" at the expense of the proper saccharine qualities of the roots. Then, again, it appears that the sugar-producing capabilities of beets grown in new land are vastly inferior to those of roots taken from land which has been in cultivation with this crop for some years. In Germany, the factories refuse to accept first crops of beets for this reason. There were other difficulties to be contended with, such as excessive cost of cartage owing to the bad state of the roads, high rates of wages to factory hands, and incapacity of some of the employés. However, the sugar produced—amounting to 600 tons—reached a standard of purity of

99·9, while the average for the campaign was 99·8. A ready market can be found for the sugar at £20 to £21 10s. per ton. In August, 1898, the Government of Victoria were called upon to assist the company by an advance of £13,000, in addition to the sum of £50,000 to be advanced under the provisions of the Act of 1896.

In New South Wales, although, as already stated, portions of the soil, particularly in the New England district, have been demonstrated to be admirably adapted to the cultivation of beet of excellent saccharine properties, no systematic effort has yet been made towards the establishment of the sugar-beet industry on a commercial basis.

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	299	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
1895	1,231	10,543	2,029	15,223	1,061	7,511	4,321	33,282
1896	2,744	27,468	1,264	7,390	994	8,629	5,002	43,987

Owing to over-production and the want of a foreign market, the area devoted to tobacco-culture greatly declined from 1888 to 1892, but since the latter year the industry has again shown signs of development. 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 in the case of New South Wales and Victoria. In the mother colony this decline continued until 1894; but in Victoria and Queensland the smallest area devoted to the crop was during the season 1892. The year 1895 saw a great increase in the cultivation of tobacco in all three colonies, and in New South Wales in 1896 there was again a large extension of the area under the plant, although in Victoria and Queensland the advance made in 1895 was not maintained. In the mother colony the production amounted to 27,468 cwt., as compared with 10,548 cwt. in 1895, and 8,132 cwt. in 1894. For Victoria the production of 15,223 cwt. of leaf in 1895 was the highest in the history of the province, but it fell in the following year to 7,890 cwt., the area having decreased by 765 acres. In Queensland the yield of 8,629 cwt. in 1896 was only exceeded in 1894, although the area in cultivation was rather less than in 1895.

The average production of tobacco per acre for the ten years ended 31st December, 1896, was as follows:—

	Cwt.
New South Wales	10·4
Victoria	6·0
Queensland	8·7
Australasia	8·7

The following table shows the production per acre in foreign countries for the latest available period; but the comparison with Australasia, the figures for which refer to the ten years ended 1896, is not of much value, as the acreage under tobacco in these colonies is but small:—

Country.	Cwt. per acre.	Country.	Cwt. per acre.
Germany	17·1	Japan	8·0
Holland	15·5	Turkey	7·8
Russia	13·6	Manilla	7·4
Austria	12·0	Brazil	7·0
France	11·8	United States	6·6
Italy	10·5	India	5·9
Hungary	10·0	Roumania	4·5
West Indies	8·8	Algeria	3·3
Java	8·4	Australasia	8·7

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, and, following the example set by Victoria and New South Wales, the services of an American expert have been secured. New Zealand, also, has commenced the cultivation of tobacco, but so far it is only in the nature of an experiment; and a

small area has been planted in the Northern Territory of South Australia. In 1897 the Victorian Government decided to grant a bonus of 3d. per lb. on all tobacco-leaf of approved quality grown in the colony, and cured and shipped under the supervision of the tobacco expert. The bonus is only payable to the actual grower of the leaf, and 3 tons have been assigned as the maximum quantity for which payment will be made to any one grower or association.

The following table shows the imports of tobacco, cigars, and cigarettes for home consumption during 1896 :—

Colony.	Quantity.
	lb.
New South Wales	1,883,564
Victoria	1,809,497
Queensland	750,191
South Australia	636,612
Western Australia	710,099
Tasmania	297,876
New Zealand	1,548,107
Australasia	7,635,946

The total value of the tobacco crop and the average gross return per acre in the Australian colonies, during the year 1896, are given below :—

Colony.	Total value of crop.	Average value per acre.
	£	£ s. d.
New South Wales	41,202	15 0 4
Victoria	15,780	12 9 8
Queensland	17,258	17 7 3
Australasia	74,240	14 16 10

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 1891 and 1896 the proportion of the total cultivation allotted to fruit was 2·1 per cent., while in 1881 the proportion was 1·5 per cent. The area per 1,000 persons in 1896 was 42·8 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 with 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 lower quality; and partly owing to the lack of means of rapid transit to market at reasonable rates. The inferior quality of much of the fruit produced was due to the ravages of fruit pests. The pests were almost wholly imported from Europe and America on fruit and cuttings, and as the orchards of Australia were threatened, and the fruit industry likely to be seriously interfered with, Acts have been passed in all the colonies prohibiting the importation of diseased fruit. The result of this legislation has been wholly beneficial, and if supplemented by legislation aimed at eradicating diseases existing in the orchards themselves, the future of the fruit industry would be assured. The area under orchards and gardens in 1881, 1891, and 1896 was as follows:—

Colony.	1881.		1891.		1896.	
	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	56,885	3·4
Victoria	20,630	1·4	37,435	1·8	45,734	1·7
Queensland	3,262	2·8	9,758	4·0	10,399	3·3
South Australia	9,864	0·4	14,422	0·7	18,415	0·8
Western Australia	.....	...	.....	...	2,736	2·5
Tasmania	6,717	4·5	10,696	6·4	11,753	5·1
New Zealand	16,360	1·5	29,235	2·0	39,215	2·5
Australasia	81,398	1·5	141,662	2·1	185,137	2·1

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; while over 35,000 cases of oranges have been shipped by New South Wales to England during the first seven months of 1898.

The following table shows the import and export trade of each colony in green fruit and pulp for 1896, from which it will be seen that

Tasmania is, as yet, the only colony whose export largely exceeds its import :—

Colony.	Imports.	Exports of Domestic Produce.
	£	£
New South Wales	261,297	100,092
Victoria	71,149	31,721
Queensland	68,308	67,013
South Australia	18,628	19,411
Western Australia	13,402	.....
Tasmania	9,398	139,902
New Zealand	89,803	1,333
Australasia	531,985	359,472

The total value of the produce of gardens and orchards and the average return per acre in 1896 were as given below :—

Colony.	Total Value of Crop.	Average value per acre.
	£	£ s. d.
New South Wales	470,350	8 5 5
Victoria	929,035	20 6 4
Queensland	255,598	24 11 7
South Australia	380,240	20 12 11
Western Australia	49,615	18 2 8
Tasmania	176,295	15 0 0
New Zealand	859,822	21 18 6
Australasia	3,120,955	16 17 2

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 472,275 acres was planted with these crops. The area under minor crops in each province in 1896 was as follows :—

Colony.	Acres.
New South Wales	7,356
Victoria	33,425
Queensland	4,947
South Australia	7,455
Western Australia	221
Tasmania	20,765
New Zealand	497,964
Australasia	572,133

In 1896 there were 138 acres under coffee in Queensland, with an average production of 70 lb. to the acre; and the returns for 1897 show that the area had increased to 311 acres, with an average production of 262 lb. per acre. Small quantities of cotton, also, are grown in Queensland; and it has been found that heavy crops of cotton can be raised at the Pera Artesian Settlement in New South Wales. In 1897 the South Australian Government granted a lease of Bathurst Island, comprising an area of 500,000 acres, to a syndicate, which proposes to plant india-rubber trees on a large scale.

Dissemination of Agricultural Knowledge.

Although considerable progress has of late years been made in some directions, yet it must be admitted generally that agriculture in the Australasian colonies has only now passed the tentative stage. The typical Australian agriculturist, relying largely on a bountiful Nature, does not exercise upon his 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 the various colonies for the promotion of scientific farming will bear good fruit. In most of the provinces, agricultural colleges and model farms have been established, 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 Wagga, Wollongbar, Bathurst, Coolabah, and the Pera Bore. Victoria has the two agricultural colleges of Dookie and Longerenong, with experimental farms attached to them, and another farm at Framlingham, together with a viticultural college at Rutherglen. South Australia has an agricultural college and experimental farm at Roseworthy. The Queensland Government established an agricultural college and farm at Gatton in 1896. By a change

in the distribution of the money voted for State scholarships, four bursaries have been allotted, entitling the holders to free board and instruction for a period of three years as resident students of the college. New Zealand possesses an agricultural college and an experimental farm at Lincoln, in Canterbury.

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. 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. A State school has been established in Adelaide for the purpose of affording instruction to "secondary agricultural pupils." The fees paid by the scholars, who must be over 13 years of age and have passed the compulsory examination, are at the same rate as those paid in the ordinary State schools. In Tasmania, the Council of Agriculture gives valuable advice to farmers concerning improved methods of agriculture, extermination of insect pests, etc.; while Western Australia possesses seventeen agricultural halls subsidised by the Government, where the latest literature of interest to farmers may be examined, and where lectures are delivered on agricultural subjects.

Agricultural Bonuses.

Although the Government of Queensland has encouraged 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 about a quarter of a million 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 about £200,000 had been paid away in April, 1898. 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. These grants have been supplemented, and the expenditure has now reached a sum of £40,526. 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 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. The amount paid on account of the growth of general vegetable products is £5,729.

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 the total expenditure amounted to £30,388. To raisin, currant, fig, and prune factories a bonus was granted of £5 per ton of dried fruit up to 20 tons, and the payments on this account amounted to £6,852. The quantity of raisins prepared for market last season was 564 tons, of which 29 tons were exported during 1897, and the colony is now in a fair way of becoming independent of importations of this fruit; little, however, has been done in 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; and this amount has been supplemented from time to time. The bonus on the export of butter has now been discontinued, the industry being well established; likewise a bonus at the rate of £3 per ton which was payable on the export of cheese to ports outside the Australasian colonies, provided the price realised when marketed was not less than £2 10s. per cwt. There is still in existence a bonus on green fruit exported to foreign ports approved

by the Minister for Agriculture. The bonus cannot exceed 25 per cent. of the price realised by the fruit, nor in any circumstances be in excess of 2s. per case. On honey exported to approved ports outside of Australasia, a bonus of 1d. per lb. was payable, provided the honey arrived at the port of consignment in a good and marketable condition. The expenditure on account of these various products will be found in the table on the following page.

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 and cuttings of American phylloxera-resistant vines was obtained. A portion of such supply was distributed amongst the vignerons; but the Government, acting on the advice of Baron von Mueller, decided to abandon the importation of the American varieties, as it was found that new diseases were introduced with them.

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. 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 encouragement 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.

The following table represents the amount of disbursements by way of bonuses in Victoria up to the 13th of April, 1898 :—

Bonus for—	Amounts paid.	When lapsed.
	£ s. d.	
Growth of general vegetable products	5,729 0 0	31 Dec., 1896.
Growth and cultivation of forest trees	15 17 6	Still in force.
Growth of vines and fruit-trees	40,526 12 6	.....
Establishment of Factories—		
Vegetable oil	106 16 6	Still in force.
Fruit canning and drying	590 7 10	30 June, 1897.
Butter and creameries	30,387 16 2	30 ,, 1894.
Raisins, currants, figs, and prunes	6,852 8 5	30 ,, 1895.
Insecticide	34 10 0	30 ,, 1895.
Tobacco	737 16 6	30 ,, 1895.
Flax and hemp	315 6 7	Still in force.
Export of butter	103,691 0 4	30 June, 1893.
Export of cheese	1,499 5 0	30 ,, 1895.
Export of honey	506 2 4	30 ,, 1896.
Export of green fruit	4,407 7 0	Still in force.
Establishment of wineries	4,000 0 0	Still in force.
Total	£199,400 6 8	

A sum of £60,000 is still available in connection with the vote granted in aid of the sugar-beet industry. For the financial year 1898–9, it is proposed by the Government to expend £150,000 in assisting the agricultural industry, including £17,500 for the encouragement of the cultivation, manufacture, and export of fruit, tobacco, flax, hemp, and silk; and £32,500 for the development of the export trade; in addition to £50,000 for new freezing works, £20,000 for district co-operative wineries, and £30,000 for dairy schools and agricultural education.

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. But the most important function of irrigation, so far, has been to provide supplies of fodder in pastoral and farming districts; landholders who thus made use of irrigation, in connection with ordinary agricultural and pastoral pursuits, during the recent unfavourable seasons, have benefited largely by so doing. For some years past small areas have been irrigated by private enterprise; about 40,000 acres are irrigated in New South Wales and 7,000 acres in Queensland. In New South Wales patches of irrigated lucerne or other fodder crop are met with at intervals on all the western rivers, and occasionally on creeks also. Irrigated orchards and gardens are numerous. At Hay and Balranald,

Irrigation Trusts have been established under the control of the municipal councils. The Hay Trust comprises 2,880 acres, of which 778 acres, representing 62 holdings, have been applied for by settlers; and the Balranald Trust comprises 2,900 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 have carried out the undertaking. In Victoria, in 1897, there existed fifteen works controlled by Waterworks Trusts in rural districts, twenty-nine works controlled by Water Supply and Irrigation Trusts in rural districts, and four works similarly controlled in urban districts, or a total of forty-eight, which may properly be classed as Irrigation Trusts. The jurisdiction of these Trusts extends over a very large tract of country; but while the area capable of being irrigated is enormous, it is estimated that only about 117,500 acres were actually irrigated in 1895. The works constructed are in various districts, chiefly on the Goulburn, Loddon, Wimmera, and Avoca Rivers. The total amount advanced by the State to the various Trusts, at the end of 1896, in order to enable them to construct the necessary works, was £995,020.

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. At the end of 1897, the total area under irrigated culture was 9,200 acres, of which 1,200 acres were under fodder plants, and 8,000 acres under orchards and vineyards. It is estimated that the total value of fruit, etc., produced for export in 1897, was £61,000, and for local use, £4,000.

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, Chaffey Brothers have had to go into liquidation; but an arrangement has been arrived at, under which the settlers, both at Renmark and Mildura, are able to continue their operations.

In New South Wales matters are in a more backward state. The Water Conservation Branch attached to the Department of Works

obtained 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 has submitted a report on the subject of water conservation and irrigation in this colony. His report endorsed the conclusion previously arrived at that the Murray and the Murrumbidgee are the only rivers which carry sufficient supplies of water to warrant the construction of large irrigation works. He further gave the opinion that even these rivers require to have their supplies supplemented in summer with the aid of large storage reservoirs. Colonel Home considered that the scheme for a canal from the south side of the Murrumbidgee is the most promising, and he recommended that this should be taken up first. The preparation of this project is now in an advanced stage.

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.

Contracts have already been let by the Government of New South Wales for the sinking of eighty-three wells; of these, sixty-five have been completed, ten are in progress, and the others will be commenced at an early date. Of the completed wells, forty-two are flowing, sixteen sub-artesian, yielding pumping supplies, and seven have been failures; these wells represent 104,518 feet of boring, while with the uncompleted wells the total depth bored has been 126,905 feet. From the completed wells about 28,000,000 gallons of water flow

every day to the surface. The deepest bore completed is that at the Dolgelly, on the road from Moree to Boggabilla, where boring has been carried to a depth of 4,086 feet; this well yields a supply of approximately 745,200 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 3,000,000 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 leased 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 have been obtained at Native Dog, Barringun, Enngonia, and Belalie bores, on the road from Bourke to Barringun. Lucerne, maize, wheat, tobacco, millet, planter's friend, sugar-cane, date palms, pineapples, bananas, and many other fruits and vegetables of tropical and subtropical 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. Seven bores have been completed. Three of these give a pumping supply, and four are flowing, yielding an aggregate supply of 3,000,000 gallons daily. Boring operations are being extended farther to the north-west, and the country is now being tested to the north of Tibooburra, at the Warri Creek, almost on the Queensland border. A remarkable flow has also been obtained at the Moree bore, amounting to 1,500,000 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, 800,000 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, there are altogether 110 private bores in New South Wales, with an approximate flow of 40,000,000 gallons daily. Amongst the most important are two wells on Lissington Holding, with flows of 3,000,000 gallons per diem; and one at Lila Springs, also with a daily flow of 3,000,000 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 68,000,000 gallons, and that, in addition, large supplies can be pumped from sub-artesian wells. The average depth of the sixty-five wells completed by the Government is 1,607 feet 11 inches, with a range from 120 to 4,086 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 £187,123 9s., or an average of £2,878 16s. 5d. per bore, or £1 15s. 9d. per foot.

The Queensland Hydraulic Engineer reports that, in the middle of the year 1897, twenty-one bores had been successfully completed by private contractors on Government account; while four others were found to give a sub-artesian supply, two were in progress, and eleven had been abandoned; the most copious being that at Charleville, where a daily supply of 3,000,000 gallons was obtained. The deepest bore is that at Winton, which reaches a depth of 4,010 feet; and the mean depth of the twenty-one bores is 1,833 feet. The total daily flow of these bores is given as 9,046,330 gallons. In addition to the Government wells, there were 323 private bores, giving an artesian supply aggregating 173,209,607 gallons per day. The deepest bore was Darr River Downs No. 4, viz., 4,000 feet; and the mean depth of 312 bores was 1,213 feet. The maximum flow of 4,000,000 gallons daily is obtained at No. 1 bore, Boatman. Sixty-seven bores give a sub-artesian supply; forty-two were in progress in the middle of 1897; and thirty-nine have been abandoned. At Back Creek and No. 3 Bore, Bingara, water of so low a temperature as 70 degrees Fahrenheit was flowing; while at Dagworth, the water had a temperature of 196 degrees. The mean temperature of the Government wells was 134 degrees, and of the private wells, 110 degrees.

At the end of 1897 the Water Conservation Department of South Australia had completed eighty-seven bores, of which, however, only thirty-three were successful. These are spread over widely-distant parts of the territory, successful bores existing at Nullarbor Plains, on the boundary of Western Australia; at Oodnadatta, the present terminus of the Northern Railway system; and at Tintinara, in the south-eastern extremity of the colony. The bore at Tintinara has proved the fact that the marine tertiary area is water-bearing. For purposes of water conservation, the colony may be divided into four large areas, which, together with the number of bores, are shown below :—

Division.	Successful Bores.	Unsuccessful Bores.	Total.
West Coast	3	9	12
Far North and North-west	13	19	32
Central Area	15	24	39
South-east	2	2	4
Total	33	54	87

Of the bores on the west coast, Robert's Well No. 1, on Nullarbor Plains, reaches a depth of 777 feet, and gives a daily supply of 68,000 gallons; the total supply from the three flowing wells being 133,000 gallons. Much greater depths have been reached in the far north; a well at Kopperamanna being the deepest in the colony, viz., 3,000 feet. This well gives a daily supply of 800,000 gallons. A well at Strangways, and another at Coward, give daily supplies of 1,200,000 gallons each—the maximum obtained in South Australia. Apart from a well at Corrie Appa, which had not been brought into use, but promised a very abundant supply, the twelve flowing bores in this division gave a daily outflow of 3,928,200 gallons. The wells in the central area are much less important, the largest supply, viz., 108,000 gallons daily, being obtained from one in the vicinity of Gawler. The deepest well in this division is situated at Percyton, which reaches 930 feet. The total daily supply in the central area amounts to 354,400 gallons. The two successful wells in the south-east have a daily outflow of 34,000 gallons, viz., 30,000 gallons at Emu Flat, at a depth of 268 feet; and 4,000 gallons at Tintinara, at a depth of 243 feet. The total daily supply for the whole colony reaches, therefore, 4,449,600 gallons. According to a report by the engineer-in-chief, it would appear that the South Australian Government had expended £19,202 on machinery and £148,689 in boring operations, or a total of £167,891, at the end of the year 1897.

The Government of Western Australia, following the example set by those of the eastern colonies, have sunk a number of wells in the direction of the Coolgardie gold-field, and of the South Australian border, and has let contracts for others. At the end of 1896, a well at the Perth station gave a daily supply of 400,000 gallons; and one at the Midland Junction, 266,000 gallons. Of completed private bores, the largest supply, 150,000 gallons daily, was yielded by a well at Guildford. The deepest completed well, viz., the one at Perth station, reached 800 feet.

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.

State Advances to Farmers.

The oldest system by which advances of money are made to farmers is probably that which was established, as early as 1770, by the German "Landschaften Bank"; and the principle, assuming different forms according to the circumstances of the countries into which it was

introduced, was gradually extended to the other great countries of Europe, with the exception of the United Kingdom, where an unwieldy system of land transfer, and the growing accumulation of large estates, form obstacles in the way of its successful application. Since 1849, mainly by the efforts of Raiffeisen, the German Land Credit Banks have taken the form of purely co-operative institutions, and in this respect they have been followed by Sweden, the Baltic provinces of Russia, and Poland, as well as, to some extent, by Austria-Hungary; but in most of the European countries the institutions may be classed as partly State and partly co-operative. In France alone is the system exclusively administered by the State; and it is the French *Credit Foncier* which has been adopted in Australasia wherever the idea of rendering financial aid to agriculturists has been carried into effect, namely, in the colonies of Victoria, South Australia, Western Australia, and New Zealand. In Tasmania a Bill to establish a land-credit bank is now before Parliament; and in New South Wales and Queensland the system has received some consideration.

In Victoria, a section of the Savings Banks Act of 1890 empowered the Commissioners to entertain applications for loans, and to lend sums of money on security by way of mortgage of any lands and hereditaments held in fee-simple free of all prior charges, quit-rents excepted, at such rate of interest as might, from time to time, be fixed by them. The conditions were not very liberal, but they endured for a number of years. Five per cent. was the rate of interest charged, and 2 per cent. was payable annually in redemption of the principal. Opportunity was taken in the Act for the amalgamation of the Savings Banks, assented to on the 24th December, 1896, to definitely grant advances to farmers under the land-credit system. On the 30th June, 1897, the total amount outstanding on loan under the old conditions was £176,696, representing advances to 425 farmers; and it is stated that all repayments which had become due in the three years during which the Act was in force prior to that date were made in full. Under the new Act the Commissioners of Savings Banks are empowered to assist farmers, graziers, market-gardeners, or persons employed in agricultural, horticultural, viticultural, or pastoral pursuits, by making advances, either by instalments or otherwise, upon the security of any agricultural, horticultural, viticultural, or pastoral land held by them, either in fee simple, or under a lease from the Crown in which the rent reserved is taken in part payment of the purchase money of the land demised by such lease. The Commissioners have the option of making such advances either in cash or in mortgage bonds; and it is provided that all advances, together with interest at the rate of 4½ per cent. per annum, are to be repaid in sixty-three half-yearly instalments, or such smaller number as may be agreed upon by the Commissioners and the borrower. From the commencement of the Act to the 21st September, 1897, the Commissioners received 1,440 applications for loans, aggregating a sum of £735,592. Of these, 266 were considered

unsuitable; 994, amounting to £505,592, were valued; and the remaining 180 were awaiting valuation. Of those valued, 206 applications, representing £108,732, were rejected; while 720, applying for £348,887, were granted to the amount of £341,498; and 68, applying for £47,973, were under offer to the applicants with amounts reduced to £43,230. The actual advances made during the financial year 1896–7 amounted to £108,350, viz., £67,090 on freehold, £24,460 on leasehold, and £16,800 on freehold and leasehold securities combined. The remaining applications which had been approved were awaiting the completion of the necessary deeds. To enable them to make the necessary advances, the Commissioners had sold Treasury bonds of the nominal value of £116,100, which realised £116,129.

The South Australian Parliament, on the 20th December of that year, passed the State Advance Act of 1895, providing for the establishment of a State Bank for the purpose of making advances to farmers and producers, to local authorities, and in aid of industries, on proper security, consisting either of lands held in fee simple or under Crown lease; the funds for this purpose to be raised by the issue of mortgage bonds guaranteed by the State. The rate of interest was to be a matter of arrangement between the bank and the borrower, the maximum being 5 per cent. per annum. To the 31st March, 1898, the South Australian State Bank, thus established, had advanced £372,520, and received repayments to the amount of £11,718. On that date there were arrears of interest to the amount of £94 outstanding; and £3,824 interest had accrued and become due on the 1st April. In order to enable these advances to be made, mortgage bonds had been sold to the amount of £370,200, of which £11,700 had been repurchased, leaving the amount current at £358,500. The advances made during the financial year 1896–7 amounted to £231,595; and during the nine months ended 31st March, 1898, £110,500.

In Western Australia the Agricultural Bank Act of 1894 authorised the establishment of a bank for the purpose of assisting persons in the occupation, cultivation, and improvement of agricultural lands. Under the provisions of the Act the manager of the bank is empowered to make advances to farmers and other cultivators of the soil on the security of their holdings in fee simple, or under special occupation lease, or under conditional purchase from the Crown, or under the Homestead Farms Act of 1893. The advances are granted either for the purpose of making improvements on unimproved holdings, or of making additional improvements on holdings already improved, and, under the original Act, could not exceed in amount one-half of the fair estimated value of the improvements proposed to be made. The maximum rate of interest chargeable was fixed at 6 per cent. per annum payable half-yearly, and it was provided that the largest sum to be advanced to any one person shall be £400. Repayment is made in half-yearly instalments of one-fiftieth of the principal sum, to commence on the 1st January or the 1st July next following the expiration of five years

from the date of the advance, until the whole amount is repaid with interest. Arrangements can, however, be made for the repayment of advances at shorter intervals, and in larger instalments. For the purposes of the Act, improvements were defined as clearing, cultivating, and ringbarking; but by an Amending Act passed in 1896 the term was extended so as to include fencing, drainage works, wells of fresh water, reservoirs, buildings, or any other works enhancing the value of the holding. The same Act raised the largest sum which can be advanced to £800, reduced the maximum rate of interest to 5 per cent., made provision for the acceptance of pastoral leases as security, and allowed advances to be made up to three-fourths of the estimated value of the proposed improvements. The capital allotted to the Agricultural Bank is £100,000; and to the 30th June, 1897, loans to the amount of £52,425 had been approved, of which sum £22,300 had been advanced to borrowers in progress payments, leaving £30,125 still to be paid. During the financial year 1896–7 loans to the amount of £34,325 were approved, and instalments to the amount of £15,279 paid. It is estimated that, for the sum of £22,300 advanced by the bank, improvements to the value of £45,793 have been effected, of which £34,670 represents clearing, and £7,262 cultivation; and that for the £30,125 approved but not yet paid, further improvements to the value of £58,393 will be made, of which £34,040 will represent clearing and £15,959 cultivation; the balance in both cases covering ringbarking, fencing, drainage works, wells, dams, and reservoirs, and farm buildings. It is stated that 485 separate properties have been improved by means of advances from the Agricultural Bank.

In New Zealand the Government Advances to Settlers Act of 1894 provided for the establishment of an Advances to Settlers Office, empowered to lend money on first mortgages of land occupied for farming, dairying, or market-gardening purposes, urban and suburban lands used for residential or manufacturing purposes being expressly excluded from the scope of the Act. At that time one class of loans only was contemplated, viz., loans on mortgage security, which were repayable by seventy-three half-yearly instalments, subject, however, to redemption at any time; but by an Amending Act passed in 1896 authority was given for the granting of fixed loans for any term not exceeding ten years. These loans can only be granted on freehold lands, and are repayable without sinking fund at the end of the period for which they are made. The amount advanced on fixed loan is not to exceed one-half the estimated value of the security; while under the instalment system the Board of Control has power to grant loans up to 60 per cent. of the realisable value of freehold securities, and up to 50 per cent. of the lessee's interest in leasehold securities. In both cases interest is fixed at the rate of 5 per cent. per annum, and the amount advanced cannot be less than £25 nor more than £3,000—the maximum under the 1894 Act having been £2,500. Instalment loans are repayable in 36½

years, in half-yearly payments, at the rate of 5 per cent. for interest and 1 per cent. in redemption of the principal sum. To the 31st March, 1898, the Board received 7,433 applications for loans, amounting to £2,512,648, of which 1,341, amounting to £419,433, were declined. Excluding cases pending on the date mentioned, 5,837 applications for loans, amounting to £2,028,445, were granted, this sum being reduced to £1,736,205. Of the applications granted, 698, involving an amount of £330,240, were declined by the applicants, owing to the reductions proposed by the Board, leaving an actual number of 5,139 applications, to the amount of £1,405,965, to be dealt with. The division of these grants is shown below. The figures include 134 fixed loans to the amount of £41,740, advanced on securities valued at £109,404 :—

Class of Security.	Applications Granted.	Amount Granted.	Value of Security.
	No.	£	£
Freehold	3,277	1,139,155	2,498,998
Leasehold	1,781	230,090	571,582
Freehold and Leasehold combined	81	36,720	81,191
Total	5,139	1,405,965	3,151,771

The amount actually advanced on mortgage to the 31st March, 1898, was £1,357,040; repayments amounting to £99,122 had been made; so that the amount outstanding was £1,257,918. At that date there were instalments to the amount of £721 overdue; interest receivable was overdue to the amount of £3,321; and interest to the amount of £15,769 had accrued. The capital of the Office was provided by a 3 per cent. loan for £1,500,000, which realised £1,394,103, and by an advance of £24,500 from the Consolidated Revenue Fund. During the financial year 1897–8, advances to the amount of £320,563 were made by the Office, and interest amounting to £45,791 paid; while repayments of £71,187, and interest to the amount of £52,910, were received.

A Bill was introduced in the Tasmanian Parliament in June, 1898, for the purpose of establishing the system of land credit in that colony. The Bill provides for the appointment of Commissioners, who may come to the assistance of persons employed in agricultural, horticultural, viticultural, or pastoral pursuits, by making advances to them, either by instalment or otherwise, upon the security of any land held by such persons in fee simple as registered proprietors thereof under the provisions of the Real Property Act.