

PASTORAL RESOURCES AND DAIRY INDUSTRY.

NOTWITHSTANDING the fact that the soil, climate, and indigenous herbage of Australasia are admirably adapted to the sustenance of animal life, no attempt was made to test the capabilities of the land as a feeding-ground for flocks and herds on a large scale until the example of Captain Macarthur had demonstrated beyond doubt that Nature favoured the production in Australasia of a quality of wool which was unsurpassed by that grown in any part of the world. Then the settlers began to understand and utilise the natural resources of the country; and as the indomitable spirit of exploration gradually opened up the apparently boundless plains of the interior, pastoralists extended their domain, and sheep and cattle in increasing numbers spread over the face of eastern Australia. Now the expansion of the pastoral industry is gradually converting the central and western portions of the continent into holdings devoted to the production of the greatest element of the wealth of Australasia.

The beginnings of pastoral enterprise in Australia were very humble. The live stock of the community which accompanied Captain Phillip comprised only 1 bull, 4 cows, 1 calf, 1 stallion, 3 mares, 3 foals, 29 sheep, 12 pigs, and a few goats; and although the whole of the present flocks and herds of Australasia have not sprung from these animals alone, yet the figures show the small scale on which the business of stock-raising was first attempted. No systematic record of the arrival of stock seems to have been kept in the early days of settlement; but it would appear that during the period between Governor Phillip's landing and the year 1800 there were some slight importations, chiefly of sheep from India. In 1800 the stock in Australasia comprised 6,124 sheep, 1,044 cattle, 203 horses, and 4,017 swine; while at the end of the year 1901, there were no less than 92,358,824 sheep, 9,827,433 cattle, 1,905,172 horses, and 1,171,381 swine.

The following figures give the number of stock in Australasia at various dates up to 1851:—

Year.	Sheep.	Cattle.	Horses.	Swine.
1792.....	105	23	11	43
1800.....	6,124	1,044	203	4,017
1810.....	33,818	11,276	1,114	8,992
1821.....	290,158	102,939	4,564	33,906
1842.....	6,312,004	1,014,833	70,615	66,086
1851.....	17,326,021	1,921,963	166,421	121,035

The increase in the number of each kind of live stock since the year 1861 is illustrated in the following table :—

Year.	Sheep.	Cattle.	Horses.	Swine.
1861.....	23,741,706	4,039,839	459,970	362,417
1871.....	49,773,584	4,713,820	782,558	737,477
1881.....	78,063,426	8,709,628	1,249,765	903,271
1891.....	124,547,937	11,861,330	1,785,835	1,154,553
1901.....	92,358,824	9,827,433	1,905,172	1,171,381
1902.....	74,348,003	8,472,880	1,821,431	1,002,057

The average number of sheep, cattle, horses, and swine per head of the population of Australasia at the same periods was as follows :—

Year.	Sheep.	Cattle.	Horses.	Swine.
1861.....	18·8	3·2	0·4	0·3
1871.....	25·3	2·4	0·4	0·4
1881.....	27·7	3·1	0·4	0·3
1891.....	31·8	3·0	0·5	0·3
1901.....	20·2	2·1	0·4	0·3
1902.....	15·8	1·8	0·4	0·2

It will be seen that in 1861 there were 18·8 sheep for every person in Australasia, and that this number had increased to 31·8 in 1891. In consequence of the continued dry seasons, and the demands made upon the flocks for the export trade, the average for the last five years has fallen to 20·9 per inhabitant. The average number of cattle depastured during the last five years per inhabitant was 2·3, as against 3·2 forty-two years ago. The breeding of horses and swine has about kept pace with the population.

SHEEP.

The suitability for pastoral pursuits of the land discovered in the early days was undoubtedly the means of inducing the infant colony of New South Wales to take its first step on the path of commercial progress, and, looking backward, it is not a little surprising to find how steadily some of the settlers, in the face of the almost insurmountable difficulty of transport which existed a century ago, availed themselves of the opportunities at their disposal. The importation of valuable specimens of sheep from England or the Cape of Good Hope prior to the introduction of steam was at all times attended with great risk, and it frequently happened that many of these costly animals died during the tedious voyage. These enterprises were, however, on the whole successful, and thus the flocks and herds of the colonists surely, if at first slowly, increased and multiplied.

By the year 1795, Captain Macarthur, one of the first promoters of sheep-breeding in New South Wales, had accumulated a flock of 1,000 sheep, which were held in great estimation, and gradually increased in value until, as recorded by an entry in his journal ten years later, the market price of a fat wether had risen to £5. Not satisfied with the natural increase of his flocks, Macarthur sought to improve the quality of his fleeces, by which means he could see opening before him the promise of great wealth and the prospect of establishing important commercial relations with Great Britain. With these ends in view, he procured from the Cape of Good Hope, at great cost and trouble, a number of superior rams and ewes. A happy circumstance favoured his enterprise; for he had the good fortune to secure three rams and five ewes of very fine Spanish breed, which had been presented by the King of Spain to the Dutch Government. These animals, out of a total of twenty-nine purchased at the Cape, arrived in Sydney in 1797, and were disposed of to various breeders. With the exception of Macarthur, however, those who had secured sheep of the superior breed made no attempt to follow up this advantage, being probably amply satisfied with the larger gains from the sale of an increased number of animals. Macarthur, on the other hand, thought little of present profits, and still less of breeding entirely for human consumption. He attentively watched the results of crossing his imported rams with the old stock, and by systematically selecting the finer ewes which were the offspring, for further mingling with the sires, he gradually improved the strain, and in a few years obtained fleeces of very fine texture which met with the ready appreciation of English manufacturers. It has been asserted that Macarthur was not the first to introduce merino sheep into Australia; but whether this be so or not, there is no doubt that to him is due the credit of having been the first to prove that the production of fine wool could be made a profitable industry in New South Wales.

Prior to the present century the production of the finest wool had been confined chiefly to Spain, and woollen manufactures were necessarily carried on in England upon a somewhat limited scale, which was not likely to improve in face of certain restrictions which the operatives endeavoured to place upon their employers. These men, in support of their contention that the woollen trade could not be expanded on account of the limited supply of raw material, argued that fine wool was obtainable only in Spain; and it was at this favourable period that Macarthur arrived in England with specimens of the wool obtained from his finest sheep, conclusively proving the capabilities of Australia as a wool-producing country. In this way he opened up with English manufacturers a small trade which, as Australasian wool rose in public estimation, gradually increased until it reached its present enormous dimensions. During his visit to England, Macarthur purchased an additional stock of ten rams and ewes of the noted Spanish breed, nearly equal in quality to those which in 1797 he had procured from the Cape of Good Hope. That these animals were the finest obtainable in Europe may be gathered from

the fact they also had formed portion of a present from the King of Spain to George III. After his return to New South Wales, Macarthur patiently continued for many years the process of selection, with such success that in 1858, when his flock was finally dispersed, it was estimated that his superior ewes numbered fully 1,000. Victoria secured a considerable portion of his flock, and the process of breeding proceeded simultaneously in that and other adjacent states.

Although the increase in the numbers of the finer sheep was satisfactory, yet the importation of superior stock was not discontinued, and the stock of the states was augmented in 1823 and 1825 by the further introduction of Spanish sheep. Sheep-breeding was about this period commenced in the Mudgee district of New South Wales; the climate of that region had a more favourable effect upon the quality of the fleeces than that of any other part of the state, and it was thence that the finest merinos were for a long time procured. As was to be expected, the climate has in some respects changed the character of the Spanish fleece. The wool has become softer and more elastic, and while it has diminished in density it has increased in length, and the weight of the fleece has considerably increased. Thus, on the whole, the quality of the wool has improved under the beneficial influence of the climate, and if no further enhancement of its intrinsic value can be reasonably hoped for, there is at least every reason to believe that Australasian wool will maintain its present high standard of excellence.

The following table shows the number of sheep in each state at intervals of ten years since 1871:—

State.	Number of Sheep.				
	1871.	1881.	1891.	1901.	1902.
New South Wales	16,278,697	36,591,946	61,831,416	41,857,099	26,649,424
Victoria.....	10,002,381	10,267,265	12,928,148	10,841,790	*10,841,790
Queensland	7,403,334	8,292,883	20,289,633	10,030,971	7,213,985
South Australia....	4,412,055	6,810,856	7,745,541	5,060,540	4,922,662
Western Australia	670,999	1,267,912	1,962,212	2,542,844	2,697,897
Tasmania.....	1,305,489	1,847,479	1,662,801	1,792,481	1,679,518
Commonwealth .	40,072,955	65,078,341	106,419,751	72,125,725	54,005,276
New Zealand.....	9,700,629	12,985,085	18,128,186	20,233,099	20,342,727
Australasia	49,773,584	78,063,426	124,547,937	92,358,824	74,348,003

* 1901 figures: no later information available.

In all the states the number of sheep depastured had prior to 1902 largely increased during the period shown above with the exception of Tasmania. In that state, however, more attention is directed towards the breeding of stud sheep than to raising immense flocks, and the stud farms of the island have gained considerable distinction, and are annually drawn upon to improve the breed of sheep in the other states.

In South Australia the area adapted to sheep is limited, and no great expansion in sheep-farming can be looked for. As regards Victoria, the important strides made in agriculture and kindred pursuits afford sufficient explanation of the diminished attention paid to sheep farming. The statement given below shows, for 1901, the proportion of sheep in each state to the total flocks of Australasia, the Victorian figures for 1902 being not available. New South Wales, with 45·32 per cent. of the total flock, comes first, and New Zealand, with 21·91 per cent., second, while Victoria, with 11·74 per cent., and Queensland, with 10·86 per cent., are next in order. The other three states together possess only a little over 10 per cent. of the whole.

State.	1901. per cent.
New South Wales	45·32
Victoria	11·74
Queensland	10·86
South Australia	5·48
Western Australia	2·75
Tasmania	1·94
New Zealand	21·91
Australasia	100·00

In order to show the increase or decrease in sheep during the last eighteen years, the following table has been prepared, giving the numbers in the various states at the end of each year since 1885. It will be seen that returns were not collected in some years in Victoria, South Australia, and New Zealand, and that the figures for those states are therefore incomplete :—

Year.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	New Zealand.
1885	37,820,906	10,681,837	8,994,322	*	1,702,719	1,648,627	16,564,695
1886	39,169,304	10,700,403	9,690,445	*	1,809,071	1,609,046	*
1887	46,965,152	10,623,985	12,926,168	*	1,009,940	1,547,242	*
1888	46,503,469	10,818,575	13,444,005	*	2,112,392	1,430,065	15,468,860
1889	50,106,768	10,882,231	14,470,095	6,432,401	2,306,681	1,551,429	15,503,263
1890	55,986,431	12,692,843	18,007,234	7,050,544	2,524,913	1,610,256	18,128,186
1891	61,831,416	12,928,148	20,289,633	7,745,541	1,962,212	1,664,218	18,570,752
1892	58,080,114	12,965,306	21,708,310	7,209,500	1,635,500	1,623,338	19,380,369
1893	56,980,683	13,098,725	18,697,015	7,325,003	2,200,642	1,535,047	20,230,329
1894	56,977,270	13,180,943	19,587,691	*	2,132,311	1,727,200	19,820,604
1895	47,617,687	*	19,856,969	*	2,295,832	1,523,846	19,138,493
1896	48,318,790	*	19,593,696	6,402,593	2,243,976	1,650,567	19,687,954
1897	43,952,897	*	17,797,883	5,092,078	2,210,742	1,578,611	19,673,725
1898	41,241,004	*	17,552,603	5,076,696	2,251,548	1,493,638	19,348,506
1899	39,213,514	*	15,226,479	5,721,493	2,282,306	1,672,068	19,347,346
1900	40,020,506	*	10,339,185	5,283,247	2,431,861	1,683,956	19,355,195
1901	41,857,099	10,841,790	10,030,971	5,060,540	2,542,844	1,792,481	20,233,099
1902	26,649,424	*	7,213,985	4,922,662	2,697,897	1,679,518	20,342,727

* Returns not collected.

The number of sheep depastured in the Commonwealth increased with great regularity each year until 1891, when it reached 106,400,000 ;

since that year there has been an almost continuous succession of unfavourable seasons in New South Wales and Queensland, the two states chiefly interested in pastoral pursuits, with the result that the number of sheep depastured in these states has decreased by over 47,000,000 during the last ten years. In Queensland the number fell from 15,226,000 in 1899, to 10,339,000 in 1900, a decrease of 4,887,000 in one year, and at the present time the number is only just over 7,200,000. In New South Wales the returns place the number of sheep depastured in December, 1902, at 26,649,424, which is lower than in any year since 1884. The other states did not suffer to the same extent from adverse seasons, although the number of sheep in both Victoria and South Australia has decreased considerably since 1891. In Western Australia and Tasmania there were increases in the numbers, and in New Zealand, although the figures have been practically stationary for some years past, they show an advance on the number in 1891.

During the last ten years there has been a tendency towards dividing the sheep into smaller flocks. This is especially noticeable in New South Wales and Queensland. In the former state there are now 18,074 sheep-owners as compared with 14,033 in 1893, while the average size of the flocks in 1901 was about 2,390, as against 4,050 in the former year.

In Queensland, at the present time, there are 2,052 sheep-owners as compared with 1,440 in 1893, the average size of the flocks in 1901 being 4,970 as compared with 12,984 in 1893.

Adverse seasons during the period had, of course, the effect of considerably diminishing the number of sheep in each state, but, when full allowance has been made on this score, it will be found that the size of the flock has greatly decreased.

In New Zealand there are at the present time 18,803 flock-owners, as compared with 14,779 ten years ago; while 15,119 persons possess flocks of 1,000 sheep and under, as against 11,868 in 1893. There are now only 131 flocks of 20,000 and upwards, as compared with 178 ten years ago.

Of the 571,217 stud sheep in New Zealand, the proportions of the various breeds are as follows:—

	Per cent.
Lincoln	29.58
English Leicester	13.92
Romney	18.59
Merino	12.75
Border	11.65
Shropshire	6.43
South Devon	1.84
Other	5.24
Total	100.00

Out of a total of 19,771,510 flock sheep there were 87·03 per cent. cross breeds and other long wools, while 12·97 per cent. were merinos.

The total number of sheep (including lambs) slaughtered in the various states from which the information is available during the seven years ended 1902 is shown below. For South Australia and New Zealand no slaughtering returns are available, while the figures for Tasmania refer to the numbers killed in Hobart and Launceston only.

Year.	New South Wales.	Victoria.	Queensland.	Western Australia.	Tasmania (Hobart and Launceston).
1896	6,196,749	2,559,088	1,726,125	420,952	102,266
1897	5,790,103	2,434,519	1,902,735	505,091	107,223
1898	5,665,763	2,352,694	1,262,313	433,867	104,303
1899	4,795,259	2,557,858	1,497,546	.....	93,913
1900	4,359,513	2,371,415	860,648	445,046	91,829
1901	4,519,133	2,469,797	554,705	428,234	101,627
1902	4,635,850	2,827,938	715,443	482,907	114,900

The value of the sheep depastured in Australasia, on the basis of the average prices ruling in 1902, was £39,630,000, thus distributed among the various states :—

	£
New South Wales	13,324,000
*Victoria	4,791,000
Queensland	3,607,000
South Australia	1,707,000
Western Australia	1,484,000
Tasmania	994,000
Commonwealth	25,907,000
New Zealand	13,723,000
○ Australasia	£39,630,000

* Victorian sheep estimated at 1,716,000 less than in 1901.

CATTLE.

Except in Queensland, cattle-breeding in the Australasian States is secondary to that of sheep. Indeed, in New South Wales in 1902 the number of the herds was even less than in 1861, the decrease amounting to 530,697. The lowest point was reached by that state in 1885, when the herds only numbered 1,317,315, the result partly of continuous bad seasons, but principally of the more profitable character of sheep-farming, which had induced graziers on many runs to substitute sheep for cattle. From that period up till 1894, when the herds numbered 2,465,411, there was a gradual improvement, which seemed to indicate a disposition on the part of pastoralists in some parts of the state to devote more attention

to cattle-breeding. The serious droughts which have been experienced, however, have militated against the expansion of the cattle industry, and the numbers again fell away until the year 1899, but increased slightly during the next two years, when the adversity of the season was responsible for a shrinkage of over 300,000. The progress of Victoria in the breeding of cattle was steady until 1894, but since that year the numbers have decreased. In Queensland the number reached 7,012,997 in 1894, but owing to the combined effects of drought and tick fever, the herds have since diminished greatly, and in 1902 there were but 2,543,471. New Zealand, after having neglected the cattle industry for a long time, has during recent years largely increased its herds, the increase being the result of the special attention bestowed upon the dairy industry.

The following table shows the number of cattle in each state at ten-year intervals since 1861 :—

State.	Number of Cattle.					
	1861.	1871.	1881.	1891.	1901.	1902.
New South Wales	2,271,923	2,014,388	2,597,348	2,046,347	2,047,454	1,741,226
Victoria	628,092	799,509	1,286,677	1,812,104	1,602,284	*1,602,384
Queensland	560,196	1,168,235	3,618,513	6,192,759	3,772,727	2,543,471
South Australia	265,434	143,463	314,918	676,933	470,863	519,163
Western Australia	33,795	49,593	63,009	133,690	394,680	437,588
Tasmania	87,114	101,540	130,526	167,666	168,661	173,385
Commonwealth	3,846,554	4,277,228	8,010,991	11,029,499	8,465,649	7,022,217
New Zealand	193,285	436,592	693,637	831,831	1,361,784	1,460,603
Australasia	4,039,839	4,713,820	8,703,628	11,861,330	9,827,433	8,482,830

*Latest returns available.

The statement below shows the proportion of cattle in each state to the total herds in Australasia, at the end of 1901, the Victorian figures for 1902 not being available :—

State.	Per cent.
New South Wales.....	20·83
Victoria	16·31
Queensland.....	38·39
South Australia.....	4·88
Western Australia	4·01
Tasmania.....	1·72
New Zealand	13·86
Australasia.....	100·00

In spite of the vast losses in recent years, Queensland has still the largest number of cattle, but the extent of its losses will be realised when it is remembered that out of a total of 11,049,065 in 1899, nearly 46 per cent. were in Queensland, while in 1901, out of a total of 9,827,433 only 38 per cent. were in that state.

A clearer idea of the changes which late years have brought about in the cattle industry is afforded by the next table, showing the number in the various states at the close of each year since 1885: As will be seen, returns were not collected in three of the states—Victoria, South Australia, and New Zealand—for several of the years under review:—

Year.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	New Zealand.
1885	1,317,315	1,290,790	4,162,653	*	70,408	138,642	853,358
1886	1,367,844	1,303,265	4,071,563	*	88,254	148,665	*
1887	1,575,487	1,333,873	4,473,716	*	93,544	147,092	*
1888	1,622,907	1,370,660	4,654,932	*	95,822	142,010	853,358
1889	1,741,592	1,394,209	4,872,416	531,296	119,571	150,004	895,461
1890	2,001,229	1,782,881	5,558,264	574,082	130,970	162,440	831,831
1891	2,128,838	1,812,104	6,192,759	676,933	133,690	167,788	*
1892	2,221,459	1,824,704	6,591,416	631,522	162,886	170,055	851,801
1893	2,269,852	1,817,291	6,693,200	675,234	173,747	169,141	885,305
1894	2,405,411	1,833,900	7,012,997	*	187,214	177,038	964,034
1895	2,150,057	*	6,822,401	*	200,091	162,801	1,047,900
1896	2,226,163	*	6,507,377	638,591	199,793	157,736	1,138,572
1897	2,035,096	*	6,089,013	540,149	244,971	157,486	1,209,165
1898	2,029,516	*	5,571,292	613,894	269,947	149,754	1,203,024
1899	1,967,081	*	5,053,836	526,524	297,081	160,204	1,210,439
1900	1,933,116	*	4,078,191	472,428	338,665	165,516	1,256,680
1901	2,047,454	1,602,384	3,772,707	479,863	394,580	168,661	1,361,784
1902	1,741,226	*	2,543,471	519,163	437,558	178,385	1,460,663

* Returns not collected.

The number of cattle (including calves) slaughtered during each of the seven years ended 1902 is shown in the following table for all the states except South Australia and New Zealand, which do not furnish returns. The Tasmanian figures represent the numbers killed in Hobart and Launceston only:—

Year.	New South Wales.	Victoria.	Queensland.	Western Australia.	Tasmania. (Hobart and Launceston).
1896	351,246	245,477	474,946	30,664	9,393
1897	365,898	240,958	498,583	41,665	10,615
1898	364,042	244,319	572,735	33,203	10,029
1899	383,948	249,177	640,898	38,577	10,276
1900	399,992	248,797	503,223	40,950	9,114
1901	335,823	251,477	377,433	39,424	8,365
1902	288,131	233,206	344,731	43,914	9,793

The value of the cattle in Australasia, on the basis of the average prices ruling in 1901, was £49,934,000, thus divided amongst the various states :—

	£
New South Wales	10,421,000
Victoria	10,262,000
Queensland.....	11,726,000
South Australia.....	3,031,000
Western Australia	2,762,000
Tasmania	1,137,000
Commonwealth.....	39,339,000
New Zealand.....	10,595,000
Australasia	£49,934,000

Since 1901 the number of cattle in the Commonwealth has diminished considerably, but on the other hand prices have advanced. There is much uncertainty as to the true values at the time of writing, and for this reason it has been thought desirable to allow the figures for 1901 to stand, as they represent average values under normal conditions.

HORSES.

Australasia is eminently fitted for the breeding of most descriptions of horses, and attention has long been directed to this industry. At an early period the stock of colonial-bred horses was enriched by the importation of some excellent thoroughbred Arabians from India, and to this cause the high name which was acquired by the horses of Australia was largely due. The abundance of good pasture everywhere obtainable also contributed to this result. The native kangaroo-grass, especially when in seed, is full of saccharine matter, and young stock thrive excellently upon it. This plenitude of natural provender permitted a large increase in the stock of the settlers, which would have been of great advantage had it not been that the general cheapness of the animals led to a neglect of the canons of breeding. In consequence of the discovery of gold, horses became very high priced. Under ordinary conditions this circumstance would have been favourable to breeding, and such was actually the case in Victoria. In New South Wales, however, it was far otherwise. The best of its stock, including a large proportion of the most valuable breeding mares, was taken by Victoria, with the result that for twenty years after the gold rush the horses of the mother state greatly deteriorated. One class of stock only escaped—the thoroughbred racer, which was probably improved both by the importation of fresh stock from England, and by the judicious selection of mares.

The states are specially adapted to the breeding of saddle and light-harness horses, and it is doubtful whether these particular breeds of Australasian horses are anywhere surpassed. The bush horse is hardy

and swift, and capable of making very long and rapid journeys when fed only on the ordinary herbage of the country ; and in times of drought, when the grass and water have become scanty, these animals often perform astonishing feats of endurance. Generally speaking, the breed is improving, owing to the introduction of superior stud horses and the breeding from good mares. Where there has been a deterioration in the stock, it has been due to breeding from weedy mares for racing purposes and to the effects of drought.

The following table shows the number of horses in each state at ten-year intervals since 1861. In 1902, New South Wales possessed the largest number of horses, followed by Queensland and Victoria :—

State.	Number of Horses.					
	1861.	1871.	1881.	1891.	1901.	1902.
New South Wales	233,220	304,100	398,577	459,755	486,716	450,125
Victoria	84,057	181,643	278,195	440,696	392,237	*392,237
Queensland	28,983	91,910	194,217	399,364	462,119	399,122
South Australia	52,597	78,125	159,678	202,906	178,199	179,413
Western Australia ..	10,720	22,698	31,755	40,812	73,830	80,114
Tasmania	22,118	23,054	25,607	31,262	32,399	33,465
Commonwealth...	431,695	701,530	1,088,029	1,574,795	1,625,500	1,534,476
New Zealand.....	28,275	81,028	161,736	211,040	279,672	286,955
Australasia	459,970	782,558	1,249,765	1,785,835	1,905,172	1,821,431

* Latest figures available.

There is at present a considerable demand in India for Australian horses, especially for those of a superior class, and although the speculation of shipping horses to that country is attended with some risk, owing to the dangers of the voyage, there is reason to believe that in the near future the trade will assume considerable dimensions, as Australia is the natural market from which supplies may be derived. The number and value of the horses exported to India during 1902 from each state and New Zealand was as follows :—

State.	Number.	Value.
New South Wales	858	£15,764
Victoria	1,828	35,975
Queensland	2,928	27,848
Western Australia	24	300
New Zealand.....	147	1,085
Australasia	5,785	£80,972

The export from Australasia to India in 1901 consisted of 5,672 horses, valued at £80,313.

The war in South Africa created a demand for Australian horses as army remounts during the last few years, and in 1901 no less than 24,995 horses, valued at £320,152, were exported from Australasia to South African ports. In 1902 there was a considerable falling off, the horses exported only numbering 11,491, valued at £159,040.

The number from each state exported to South Africa during 1901 and 1902 was as follows:—

State.	1901.		1902.	
	Number.	Value.	Number.	Value.
		£		£
New South Wales ...	6,300	81,204	2,918	38,116
Victoria	6,857	129,642	2,977	56,747
Queensland	11,069	96,841	4,105	36,178
South Australia	15	355	455	5,821
Western Australia ...	472	7,080	5	265
Tasmania	280	5,000	.....	.....
Commonwealth...	24,993	320,122	10,460	137,127
New Zealand.....	2	30	1,031	21,913
Australasia	24,995	320,152	11,491	159,040

The following table shows the proportion of horses in each state to the total number in Australasia, at the end of 1901:—

State.	Per cent.
New South Wales	25·55
Victoria.....	20·59
Queensland	24·26
South Australia	9·35
Western Australia	3·87
Tasmania	1·70
New Zealand	14·68
Australasia	100·00

The value of horses in 1901, in the various states, is estimated as follows:—

New South Wales	£3,901,000
Victoria	4,707,000
Queensland	2,311,000
South Australia	1,247,000
Western Australia	923,000
Tasmania	356,000
Commonwealth	£13,445,000
New Zealand	3,636,000
Australasia	£17,081,000

ANGORA GOATS.

The breeding of the Angora goat, with a view to the production of mohair, has recently attracted attention in Queensland and New South Wales, and considerable numbers of pure-bred animals have been imported from the United States. It is found that the Angora thrives admirably in the warm dry climate existing in a great portion of the states mentioned, and, with the steady demand for mohair, it is confidently expected that the export of the product will in time form an important element in the trade of the Commonwealth.

STOCK-CARRYING CAPACITY OF AUSTRALASIA.

None of the states is stocked to its full capacity; indeed, in the large territory of Western Australia and in the Northern Territory of South Australia the process has only begun. A clear idea of the comparative extent to which each state is stocked cannot be given unless the different kinds of animals are reduced to a common value. Assuming, therefore, that one head of large stock is equivalent to ten sheep, and expressing cattle and horses in terms of sheep, it will be found that the number of acres to a sheep in each state is as follows:—

State.	No. of acres per sheep.
New South Wales	4·09
Victoria	1·93
Queensland	11·86
South Australia	48·57
Western Australia	79·31
Tasmania	4·54
New Zealand	1·77
Australasia	<u>11·22</u>

The most closely-stocked of the Commonwealth states is Victoria, with 1·93 acres per sheep, but this is by no means the limit to the carrying-capacity of that state; on the contrary, there is still a considerable tract to be brought under the sway of the pastoralist. The figures for this state, however, refer to the year 1901, there being no later information available, and it is probable that the area is slightly understated, as no estimate can be made of Victorian losses of cattle and horses. New Zealand is stocked to a slightly heavier extent, but neither that colony nor New South Wales, which averages 4 acres per sheep, can be said to have reached its full carrying-capacity. If the 1901 average of New South Wales, viz., 3 acres to a sheep, be taken as the possible limit to which Australasia may be stocked, there is room in these states for nearly 450 million sheep, or 45 million cattle more than were then depastured. That Australasia could carry 1 sheep to 3 acres, however, is an improbable supposition; in almost every state the best land is under occupation, and the demands of the farmer must

diminish the area at present at the disposal of the grazier. This will more especially prove true of Victoria, New Zealand, and Tasmania. On the other hand, by resisting the temptation to overstock inferior country, and by increasing the natural carrying-capacity by water conservation and irrigation and by the artificial cultivation of grasses, the states in which agriculture has made most progress will be able to carry stock in even larger numbers than they have hitherto attempted. Taking all circumstances into consideration, it may be fairly estimated that under the present system the states are capable of maintaining, in ordinary seasons, stock equivalent to 390,000,000 sheep—that is, about 180,000,000 sheep, or their equivalent in cattle, more than depastured in 1901.

The evil effects of the adverse seasons experienced in the Commonwealth during recent years have caused renewed attention to be devoted to the questions of water conservation and irrigation. Movements are on foot at the present time in New South Wales for the utilisation of the natural reservoirs such as that at the head of the Murrumbidgee and other suitable places where, at a comparatively small cost, supplies of water could be conserved to feed the rivers in time of drought. It is not alone the actual loss of stock that makes a drought so disastrous, but the fact that, even with the return of good seasons, a considerable period elapses before the country regains its full carrying-capacity. That much can be done in the direction of providing fodder during the dry season was shown in isolated instances during 1902. At Forbes, in New South Wales, 22 acres of irrigated lucerne maintained nearly 1,600 sheep in good condition for a period of four months prior to the breaking up of the drought. At Rodney, in Victoria, the farmers who utilised the waters of the Goulburn for irrigation purposes were able to send fat stock to the Melbourne and Bendigo markets, in addition to supplying the squatters of Riverina with lucerne and other fodder for their starving stock. With proper provision for water conservation, it may be safely said that the Commonwealth was not overstocked in 1896, when there were over 90,000,000 sheep and 11,000,000 head of cattle, whereas in 1902 there were but 54,000,000 sheep and 7,000,000 cattle.

It is a difficult task satisfactorily to estimate the losses occasioned by adverse seasons, but a careful computation shows that during the last six years the Commonwealth has carried on an average over 19,000,000 sheep and 2,300,000 head of cattle less than in 1896. The lesson of the past season has been taken to heart in those parts of the continent liable to drought conditions, and it is safe to say that no disaster such as that of 1902 is likely again to occur.

The wonderful recuperative powers of the states were amply evidenced in 1903 by the bountiful harvest and prolific growth of herbage over the major portion of the districts which were most keenly affected by the adversity of the season in the year before. The lambing returns have been excellent, while the weight and quality of the fleeces have

surpassed expectations. There is every hope, therefore, that ere long Australia will resume its position as the foremost pastoral country of the world.

The expenditure on water conservation of a moiety of the sum represented by the losses of the season of 1901-2 would go far towards solving the problem of how to utilise to their best advantage the fertile but comparatively rainless districts of the interior. Outside of a system of water conservation the only other alternative appears to be the construction of light lines of railway in the pastoral districts to enable the stock to be moved quickly from place to place in periods of drought, but these would not be of much avail in some seasons.

The number of stock in Australasia, expressed in terms of sheep, the number of acres per sheep, and the number of sheep per head of population, at various dates since 1861, were as given below :—

Year.	Sheep.	Cattle, in terms of Sheep.	Horses, in terms of Sheep.	Total.	Acres per Sheep.	Sheep per head of Population.
1861	23,741,706	40,398,390	4,599,700	68,739,796	28·7	54
1871	49,773,584	47,138,200	7,825,580	104,737,364	18·8	53
1881	78,063,426	87,096,280	12,497,650	177,657,356	11·1	63
1891	124,547,937	118,613,300	17,858,350	261,019,587	7·5	67
1901	92,358,824	98,274,330	19,051,720	209,684,874	9·4	46
1902	74,348,003	84,728,800	18,214,310	177,291,113	11·1	39

VALUE OF PASTORAL PROPERTY AND PRODUCTION.

The total value of pastoral property in Australasia—that is, of improvements, plant, and stock—was estimated a few years ago at £242,000,000. This estimate does not include land, but merely the stock, other than swine, depastured, and the improvements effected in the grazing area. It is difficult if not impossible to assign an exact value to the lands devoted to pastoral purposes, for though much purchased land is used for depasturing stock, the larger area comprises lands leased from the state, so that a statement which omitted to take into account the value of the state lands would be misleading.

The annual return from pastoral pursuits in 1902 was £28,688,673, the share of each state in the total production being as follows :—

New South Wales	£10,731,132
Victoria	4,347,964
Queensland	3,187,236
South Australia.....	1,900,313
Western Australia	1,035,871
Tasmania	610,619
Commonwealth.....	21,813,135
New Zealand	6,875,538
Australasia	£23,688,673

The products of dairy cattle and swine are not included in the foregoing statement, the figures being given in another place. It should be understood that the values quoted are those at the place of production. The value of the return from each class of stock may be approximately reckoned as follows:—

Sheep.....	£20,337,329
Cattle	5,237,668
Horses	3,113,676
Total	£28,688,673

WOOL.

As might be supposed, the greater part of the value of production from sheep is due to wool. Thus, out of the £20,337,329 shown above, £15,982,000 is the value of wool, viz. :—£15,746,000 for wool exported, and £236,000 for wool used locally. The value of the wool exported, according to the Customs returns, was £16,116,119—that is to say, £370,119 more than the figures shown above. The excess represents the charges for freight, handling, etc., between the sheep-walks and the port of shipment.

The price of wool, which in 1899 was much higher than for many years previously, declined almost as suddenly as it had advanced, and as the production for 1901 did not show much increase, except in New Zealand, the total value compares unfavourably with preceding years, and fell short of that of 1899 by £6,165,000. In 1902 wool again rose considerably in value, and though the production was less than in 1901, the increased price added over £1,700,000 to the figures of the previous wool year ended 30th June.

The following figures show the chief sources of origin of the wool sold in London during the years 1900-1-2.

Year.	Total Sales.	Australasian.	Cape.	Argentine.
	bales.	per cent.	per cent.	per cent.
1900	2,064,000	70·55	6·78	22·67
1901	2,494,000	69·97	8·70	21·33
1902	2,445,000	69·49	9·57	20·94

Nearly all the wool produced in Australasia is exported, the home consumption being small, amounting to only 1·76 lb. greasy, per head of population; while in Europe and America the quantity of wool available for consumption by the industry amounts to about 5 lb. per head. During the last two quinquennial periods the consumption of wool in Europe and America has averaged as follows:—

1891-94	5·12 lb. per head of population
1895-99	5·19 lb. „ „

The quantity, in the grease, of wool produced by each state at decennial periods since 1871 was as follows:—

State.	1871.	1881.	1891.	1901.	1902.
	lb.	lb.	lb.	lb.	lb.
New South Wales.....	74,401,300	161,022,900	321,416,000	301,942,000	221,565,900
Victoria	63,641,100	67,794,300	69,205,600	74,879,300	65,490,400
Queensland	36,553,200	34,275,300	83,118,100	70,141,800	41,659,100
South Australia.....	28,242,100	46,013,900	50,151,500	39,951,700	36,862,600
Western Australia..	1,888,000	4,654,600	9,501,700	14,049,000	13,377,700
Tasmania	6,687,800	10,525,100	10,102,900	8,939,000	8,304,400
Commonwealth	211,413,500	324,286,100	543,495,800	509,902,800	387,260,100
New Zealand	46,192,300	69,055,600	117,733,500	164,011,500	167,448,100
Australasia.....	257,605,800	393,341,700	661,229,300	673,914,300	554,708,200

The great fall in production is seen from the above table, which shows that the only states where an increase has taken place since 1891 are Western Australia and New Zealand, all the others showing a large decline. The increase in New Zealand has taken place in spite of the heavy demands upon the resources of the colony for the supply of sheep to meet the requirements of the London market in frozen mutton.

The weight of wool per sheep has been increasing regularly in each of the states, as will be seen from the following table, which shows the weight of clip per sheep at each decennial interval since 1861. It is manifest that the Victorian figures are unreliable, because there is no reason to suppose that there was a decline in the weight of the fleece in 1891; on the contrary, it is known to have been steadily improving. The Western Australian and Tasmanian results also show irregularities, and are omitted from the table. The values for New South Wales and Queensland best represent the increase in the weight of the fleece on the mainland, and the New Zealand figures are also believed to be correct. In South Australia the weight of wool per sheep has been consistently higher than in the other states, but the results are derived from the official statistics, and it would appear that the number of sheep in that state has been under-estimated.

State.	1861.	1871.	1881.	1891.	1901.
	lb.	lb.	lb.	lb.	lb.
New South Wales.....	3·28	4·57	4·47	5·74	7·2
Victoria	4·52	6·17	6·87	5·68	6·9
Queensland.....	3·40	4·73	4·50	4·73	7·1
South Australia.....	4·69	6·41	6·93	6·85	7·9
New Zealand.....	3·48	4·76	5·32	6·42	8·1

The values of the excess of exports over imports in each state for the period 1871-1902 were as follows. A careful examination of the figures proves rather conclusively that less care than might have been expected has been taken in stating the values, except in New South Wales and New Zealand, but they are obtained from the official records, and are given for what they are worth:—

State.	Excess of Exports over Imports.*				
	1871.	1881.	1891.	1901.	1902.
	£	£	£	£	£
New South Wales ...	4,705,820	7,173,166	10,927,487	9,050,884	7,316,148
Victoria	4,483,461	2,562,769	3,792,938	2,510,219	2,331,657
Queensland	1,158,833	1,331,869	3,453,548	2,130,778	1,305,871
South Australia	1,113,825	1,573,313	1,540,079	1,021,283	1,092,482
Western Australia ..	122,637	256,690	329,365	378,135	458,078
Tasmania	298,160	498,400	418,460	279,022	262,243
Commonwealth ...	11,882,736	13,396,207	20,461,877	15,370,321	12,766,479
New Zealand	1,606,144	2,914,046	4,129,686	3,669,642	3,349,640
Australasia	13,488,880	16,310,253	24,591,563	19,039,963	16,116,119

Western Australia was the only state to show an increase in the value during the year over that obtained in 1891.

The Customs figures are not necessarily a reliable guide as to the value of the wool clip in any particular year, since the returns show the exports up to the 31st December only, whereas the wool year does not close until six months later. Consequently, if the clip be late, as was the case last season, a large proportion of the quantity exported appears in the Customs returns for the following year. The figures for 1902 are therefore considerably less than they would have been under ordinary conditions.

According to the London returns, the imports of Australasian wool into Europe and America during the 1902 wool season comprised 1,699,000 bales, which at an average of £11 16s. 7d. per bale represents a total value of £20,097,754. For the previous season the imports were 1,745,000 bales, averaging £10 10s., equivalent to a total value of £18,322,500, so that notwithstanding the smaller import in 1902 the returns for that year exceeded the total for 1901 by £1,775,000.

Wool realised a high price in Australia at the sales closing in June, 1903, the average per bale being £11 18s. 4d., as against £9 6s. 4d. for the preceding year. In a comparison between London and Australian

prices it may be taken that freight and other charges add from 15s. to £1 per bale to the Australian rates, while the former returns include also New Zealand wool, which is not so valuable as that grown in Australia. The shipments of wool from Australasia during the twelve months ending June, 1903, show a decrease of 250,000 bales on the totals for the preceding year. The quantity shipped by the Commonwealth fell off by 284,000 bales, but the exports from New Zealand increased by about 30,000 bales, while there was also a slight expansion in the Tasmanian trade. From present indications the current season will be a phenomenal one as far as concerns the yield of wool per sheep. Copious rains have fallen throughout almost the whole of the Commonwealth, the lambing has been excellent, and the growth of wool extraordinary. It seems not unlikely that on many large runs the flocks will yield an average of from 9 to 10 lbs. of wool per head, which at present prices is equivalent to a return of about 7s. per head of sheep shorn. It is probable that the growth of wool has never been exceeded, and notwithstanding the greatly reduced numbers of the sheep, indications are so favourable that the net return of wool will approximate very closely to the returns for last year, while the quality of the wool will be vastly superior. The continental demand for last season's clip was very keen, and of the 739,338 bales sold in Australian markets no less than 56 per cent. was taken by continental buyers, while 26 per cent. was secured by Great Britain, 4 per cent. by America, and the remaining 14 per cent. by local manufacturers and Japanese and Eastern buyers. Of the 1,971,000 bales of Australasian and South African wool consumed in England, the Continent, and America during 1902, the respective proportions taken by each were 42.5 per cent., 54 per cent., and 3.5 per cent.

The price per lb. obtained for wool in grease in London at the end of each year from 1890 was as follows :—

Year.	New South Wales. (Average Merino).	Victoria. (Good Average Merino.)	New Zealand. (Average Cross-bred.)
	d.	d.	d.
1890	8½	10	10
1891	7½	9	9½
1892	7	8½	9½
1893	7	8½	9½
1894	6	7½	8½
1895	7½	9½	9½
1896	7	9	8½
1897	7½	9	8½
1898	7½	9½	7
1899	13	15½	10½
1900	7	9	7½
1901	7½	10	5½
1902	10½	12	7½

Taking the last sixteen years, the highest prices were realised for New South Wales and Victorian wools during 1899, namely, 13d. per lb. and 15½d. per lb. respectively. The maximum price for New Zealand wool, 11½d. per lb., was obtained in 1889. The lowest prices—6d. for New South Wales, and 7½d. for Victoria—were experienced in 1895, while owing to the heavy fall in the value of cross-breds, New Zealand wool realised as little as 4¾d. per lb. during 1901. The average prices realised during the whole period were 9d. per lb. for New South Wales average merino, 11d. for good average Victorian merino, and 7½d. for average New Zealand cross-bred. From these figures it will be seen that Victorian wool averages about 2d. per lb. higher than New South Wales wool. The figures must be taken with some qualification. Much of the New South Wales wool, the product of the Riverina districts, is exported *via* Melbourne and sold as Port Phillip wool, and brings a price considerably in excess of the average given in the table for the State of which it is the produce. The quantity of wool sold at the local sales in the Australasian States is increasing. Particulars of these sales will be found in the chapter on "Commerce."

THE FROZEN-MEAT TRADE.

In view of the large increase in the live stock of Australasia during favourable seasons, the question of the disposal of the surplus cast has become a matter of serious consequence. In New South Wales especially, and in the Riverina district in particular, it was found necessary to have recourse to the old method of boiling down, which a fortunate rise in the price of tallow made it possible to carry on with a margin of profit. The price of tallow during the last few years has however been low, and offered little inducement to pastoralists, while the loss of stock will prevent the trade being of much importance to Australia for some considerable time.

In New Zealand a much better solution of the question of disposal of the surplus cast was found, and a trade in frozen mutton with the United Kingdom has been established on a thoroughly payable basis—an example which some of the other states are endeavouring to follow, although considerably handicapped by the want of cross-bred sheep and the prejudice of the English consumer against merino mutton.

The first successful attempt at shipping frozen mutton to England was made by New Zealand in 1882, and since then the trade has attained great proportions, to the immediate benefit of the colonial producer as well as the English consumer. In 1882 the exports amounted to 1,700,000 lb., at that time regarded as a considerable quantity, but in 1902 the total was no less 226,000,000 lb., and there is every prospect of a further increase in 1903. The value of the trade in frozen and preserved meat has risen from £1,281,000 in 1895 to £2,686,000 in 1902, or by £1,405,000. The bulk of the trade was carried on with

Great Britain, the exports thereto in 1902 being valued at £2,457,000, but a market is opening up in South Africa, to which New Zealand consigned frozen and preserved meat to the value of £140,000 in 1902. The trade initiated by the New Zealand Land Company has been extended by the formation of numerous joint stock companies, which now own twenty-one meat-freezing works in the two islands, having an aggregate capacity for freezing about 4,000,000 sheep per year. The sheep are generally killed in the country, and transported by rail to the freezing works. Several fleets of steamers are engaged in the trade, and the freight rates charged enable the companies to realise satisfactory profits. The growth of the frozen and preserved meat industries of New Zealand since 1881 is shown in the following table. The shipments are almost exclusively made to the United Kingdom :—

Year.	Frozen or Chilled Meat.					Preserved Meat.		
	Beef.	Mutton.	Lamb.	Mutton and Lamb.	Total Weight.	Total Value.	Weight.	Value.
	cwt.	carcases.	carcases.	cwt.	cwt.	£	lb.	£
1881	.....	.....	.....	.....	.....	.....	1,074,640	22,391
1882	.....	.....	.....	.....	15,244	19,339	2,913,904	54,397
1883	937	.....	.....	86,995	87,932	118,261	3,868,480	72,778
1884	1,644	.....	.....	252,422	254,066	345,081	3,103,744	59,224
1885	9,170	.....	.....	286,961	296,131	373,326	4,047,904	81,401
1886	9,391	.....	.....	336,405	345,796	426,556	2,592,464	47,426
1887	6,630	656,823	110,816	421,405	428,035	454,942	4,706,016	79,246
1888	44,613	885,843	94,631	507,306	551,919	629,110	4,912,544	86,128
1889	68,298	990,486	118,794	588,524	656,822	783,374	5,325,152	106,772
1890	98,234	1,330,176	270,741	798,625	896,859	1,054,992	6,702,752	136,182
1891	103,007	1,447,583	338,344	889,012	992,019	1,135,122	5,447,904	111,133
1892	55,020	1,316,758	290,996	806,304	861,324	1,021,838	3,939,712	69,420
1893	11,059	1,355,247	475,365	888,455	899,514	1,078,427	2,656,416	46,601
1894	912	1,633,213	459,948	1,001,342	1,002,254	1,162,770	3,368,736	57,325
1895	12,090	1,632,590	735,254	1,078,640	1,090,730	1,214,778	4,124,400	66,137
1896	25,905	1,505,969	792,037	1,065,292	1,091,197	1,239,969	5,006,848	75,661
1897	59,044	1,653,170	1,038,316	1,291,532	1,341,626	1,512,286	5,946,216	78,235
1898	95,218	1,719,282	1,168,883	1,338,175	1,433,393	1,596,543	6,245,792	97,197
1899	172,345	2,102,533	1,272,525	1,557,439	1,729,784	1,965,564	5,382,272	90,919
1900	312,291	1,585,233	1,351,145	1,354,730	1,667,021	1,952,610	4,973,024	94,524
1901	221,211	1,806,671	1,513,017	1,499,124	1,720,335	2,116,800	3,948,896	87,683
1902	256,699	2,053,622	1,352,050	1,708,738	1,995,437	2,561,327	6,087,096	124,633

Amongst the states of the Commonwealth the export of meat has reached the largest dimensions in Queensland, although of course it consists chiefly of beef, the trade in mutton being proportionately very small. Of the total exports of frozen and preserved meat, amounting to £1,465,203 in 1902, South Africa took £771,333 worth, or more than one half, while of the remainder, £275,229 worth went to the United Kingdom. Three years previously Queensland exported over £750,000 worth of frozen beef to England. Existing contracts with South Africa and Manilla will keep the meat works in operation for some considerable time, and with the return of good seasons it is hoped that much of the British trade will be recovered. So far as they can

be given, the figures showing the growth of the Queensland frozen-meat trade, as well as the exports of preserved meat, will be found below:—

Year.	Frozen or Chilled Meat.				Preserved Meat.	
	Beef.	Mutton.	Total Weight.	Total Value.	Weight.	Value.
1881	cwt.	cwt.	cwt.	£	lb.	£
1881	.....	.....	.....	.....	2,276,409	39,956
1882	.....	.....	.....	.....	5,689,189	119,343
1883	.....	.....	1,951	2,151	6,729,721	151,001
1884	.....	.....	8,082	11,240	2,298,696	57,101
1885	.....	.....	3,926	5,003	8,306,432	171,432
1886	.....	.....	9,289	12,103	130,658	1,586
1887	.....	.....	.....	.....	5,272,170	99,653
1888	.....	.....	.....	.....	3,964,419	77,887
1889	8,745	15,542	24,287	62,240	853,621	16,743
1890	30,253	23,799	54,052	75,908	2,769,881	44,040
1891	52,609	53,698	106,307	161,345	3,333,317	59,032
1892	123,196	51,595	174,791	276,113	6,035,035	96,828
1893	204,349	21,898	226,247	377,039	8,001,788	143,146
1894	301,837	32,187	334,024	498,652	15,544,826	250,646
1895	461,733	28,221	489,954	580,489	25,941,400	393,492
1896	434,683	31,874	466,557	501,498	21,583,658	330,728
1897	529,162	31,162	560,324	659,260	15,699,098	241,189
1898	511,629	10,935	522,564	672,970	13,188,836	217,684
1899	651,029	32,529	683,558	833,733	25,148,815	383,899
1900	689,423	16,239	705,662	976,878	25,250,226	427,062
1901	675,221	19,208	694,429	1,016,038	13,310,615	221,709
1902	770,423	39,844	810,267	1,207,345	12,838,507	257,858

Next to New Zealand, the largest exporter of frozen mutton is New South Wales. During the last few years greater efforts have been made in this State to expand the trade, and the exports show a considerable increase, although a temporary check was experienced during the last four years in consequence of the unfavourable seasons. But New South Wales has laboured under the disadvantage of possessing few cross-bred sheep for export, and the food qualities of the merino are scarcely appreciated in the English market, where New Zealand mutton is favourably known, and brings on an average 1½d. per lb. more than Australian. A great expanse of New South Wales, however, is suited to the breeding of large-carcase sheep, and the pastoralists have

become alive to the importance of securing a share of the meat trade of the United Kingdom. Attention is being directed to the introduction of British rams, and a large increase in the cross-bred flocks has already taken place. The following table shows the growth of the frozen-meat trade of New South Wales; the exports of preserved meat consist almost wholly of tinned mutton :—

Year.	Frozen or Chilled Meat.				Preserved Meat.	
	Beef.	Mutton.	Total Weight.	Total Value.	Weight.	Value.
	quarters.	carcases.	cwt.	£	lb.	£
1881	.....	.....	9,980	8,554	.....	*176,721
1882	.....	.....	13,782	22,910	.....	*143,601
1883	.....	.....	34,911	43,100	.....	*221,912
1884	.....	.....	13,309	12,321	.....	*161,477
1885	.....	.....	6,271	6,064	.....	*166,561
1886	.....	.....^o	4,852	4,671	.....	*77,756
1887	.....	.....	21,831	19,310	9,761,154	150,714
1888	.....	.....	52,262	44,537	4,528,269	69,481
1889	.....	.....	37,868	33,426	2,877,303	52,321
1890	.....	.....	72,304	71,534	4,655,523	74,329
1891	.....	.....	105,013	101,828	6,581,713	87,632
1892	.....	.....	223,074	169,425	8,620,747	105,922
1893	4,773	364,958	220,584	141,640	13,092,942	164,592
1894	9,538	533,995	339,404	193,760	16,382,597	206,054
1895	88,719	1,021,006	607,818	380,107	22,384,285	302,828
1896	16,286	1,372,373	642,188	343,397	16,351,936	218,292
1897	28,529	1,065,990	503,925	275,118	10,903,611	147,165
1898	39,593	1,095,568	539,495	330,325	13,930,801	227,288
1899	32,855	950,222	459,353	331,904	11,453,332	185,804
1900	86,948	951,891	540,426	541,395	11,966,326	221,604
1901	72,662	963,614	510,148	578,923	12,398,011	260,455
1902	12,130	510,466	221,126	263,170	10,884,786	242,915

* Including Extract of Meat.

The total capacity of the boiling-down works in New South Wales is stated at 633,900 head of cattle or 16,965,000 sheep; of chilling works, 488,500 head of cattle or 5,422,800 sheep; of freezing works, 76,500 head of cattle or 3,150,000 sheep; and of meat-preserving works, 183,000 head of cattle or 5,445,000 sheep.

The only other state in which the meat-export trade has reached dimensions of any importance is Victoria, although its exports fall far below those of the states already dealt with. A statement of the Victorian trade from 1881 to 1902 will be found below :—

Year.	Frozen or Chilled Meat.				Preserved Meat.	
	Beef.	Mutton.	Total Weight.	Total Value.	Weight.	Value.
	cwt.	cwt.	cwt.	£	lb	£
1881	.....	.....	.....	.....	4,026,072	102,306
1882	.....	.....	18,522	18,969	1,274,066	30,705
1883	.....	.....	9,944	12,220	3,225,657	76,015
1884	.....	.....	41,373	53,196	2,667,866	63,707
1885	.....	.....	39,107	61,617	1,486,849	38,244
1886	.....	.....	39,384	70,319	616,652	17,868
1887	.....	.....	15,245	27,270	629,054	14,291
1888	.....	.....	.....	.....	714,856	16,115
1889	.....	.....	.....	.....	805,580	16,156
1890	.....	.....	.....	.....	893,114	20,197
1891	.....	.....	.....	.....	1,052,887	19,230
1892	.....	.....	.....	.....	1,982,151	51,624
1893	.....	.....	1,307	1,838	777,953	14,349
1894	53	27,182	27,235	25,370	2,267,791	40,082
1895	268	24,563	24,831	31,673	2,917,730	43,408
1896	127	23,634	23,761	25,827	4,335,511	71,576
1897	62	21,416	21,478	20,248	5,498,315	84,914
1898	233	7,556	7,789	9,101	2,852,191	38,516
1899	1,458	74,960	76,418	86,087	4,760,047	50,174
1900	2,814	79,507	82,321	112,040	4,776,979	67,265
1901	3,931	85,053	88,984	131,529	3,856,381	63,284
1902	5,210	118,700	123,910	195,674	2,216,862	47,959

There are at present depastured in Australasia 74,348,003 sheep and 8,472,880 cattle, of which 20,342,727 sheep and 1,460,663 cattle are in New Zealand. In that colony the industry of sheep and cattle raising has now reached such a stage that practically the whole of the stock available for market is used up every year either locally or for export, and as a consequence the numbers of both kinds of stock are stationary, and have been so for some years past. In the states of the Commonwealth a different state of things prevails. In New South Wales there is usually a large surplus of sheep beyond the state's requirements; while the cast of cattle is below the local demand, and is supplemented by the importation of stock from Queensland, the net import from that State for the past four years being 306,766 head. The other four States have each a deficiency of cattle and sheep.

It is estimated that in an average year the "cast" of cattle is 10.25 per cent.—that is to say, that percentage of all the cattle depastured

would be of marketable age, could they be made fit for slaughtering. Assuming this is as the basis of calculation it is estimated that in the Commonwealth there are annually 250,000 head of cattle in excess of those required for food and independent of those preserved or frozen.

The year 1902 was a disastrous one to sheep and cattle breeders in the Commonwealth, and especially to those of Queensland and New South Wales, but owing to the copious rains which have fallen the prospects for the 1903 season are remarkably bright. Fodder is abundant, and the lambing returns are very satisfactory, nevertheless it will be some time before there is any great quantity of meat available for export. This is unfortunate in view of the export trade which has been so patiently built up; but as it is now an established fact that Australian meat is greatly appreciated in England, and can be exported largely at remunerative prices, there are strong elements of hope for future progress when better seasons are experienced.

During the years 1894 and 1895 several attempts, more or less successful, were made to place live cattle and sheep in the English market. A great difficulty in the way of establishing such a trade was the wildness of the cattle, the mortality in some of the shipments being sufficiently high to provoke strong criticism in England as to the cruelty to which the cattle were subjected by being shipped on such a long voyage. It is to be feared, however, that these expressions of opinion were prompted, not altogether by the alleged sufferings of the cattle, but to a large extent by the interests of the English producer and the American exporter. At the same time, it is clear that a permanent and profitable trade cannot be established until the cattle have been handled sufficiently to bring them into a tractable condition, for the present system of depasturing followed in Australia renders the stock too wild to endure a long stay on shipboard. In view of the vast population of the United States, any increase in the export of live cattle from that country cannot be anticipated. The trade of the Argentine Republic with Great Britain in chilled and frozen beef has increased during the last three years from £200,000 to £1,700,000. The increase is partly due to the stoppage of the export of live cattle owing to disease, and partly to the falling off in Australian exports, and at the present time about one-fourth of the British imports of chilled and frozen beef comes from the Argentine. With the revocation of the order restricting the importation of live cattle both from the Argentine and Uruguay, it is expected that the primest beeves will be shipped from these countries alive. As far as concerns Great Britain it may be noted here that the 1902 returns show a decrease in cattle and sheep as compared with 1892. With the growth of population and general advance in the standard of living among the middle and lower classes, the home supplies of meat become yearly more inadequate to meet demands, and there is consequently an annual increase in the

imports from abroad. The comparative figures for population and live stock in the United Kingdom during the years 1892 and 1902 are as follows:—

	Population.	Cattle.	Sheep.
1892	38,110,250	11,519,400	33,642,800
1902	41,869,120	11,376,970	30,056,600

DAIRY-FARMING.

Dairy-farming has of late years made fair progress in Australasia, especially in New South Wales, Victoria, New Zealand, and, more recently, in Queensland. The introduction of the factory system at convenient centres and the use of the cream-separator have done much to cause the extension of the industry. The number of dairy cows at the end of 1902, and the estimated quantity of milk produced in each state during that year, were as follow:—

State.	No. of Dairy Cows.	Quantity of Milk produced (estimated).
New South Wales	351,287	114,742,000 gallons
Victoria	456,000*	149,145,000 "
Queensland	108,800*	25,483,000 "
South Australia	75,638	23,084,000 "
Western Australia	24,324	5,624,000 "
Tasmania	33,316	10,590,000 "
Commonwealth	1,049,365	328,668,000 "
New Zealand.....	428,773	155,250,000 "
Australasia	1,478,138	483,918,000 "

* Estimated; actual figures not available.

The estimated value of the milk and its products, butter and cheese, and of the return obtained from swine, together with the total value of dairy produce for each state in 1902, will be found below:—

State.	Value of Milk, Butter, and Cheese.	Value of Return from Swine.	Total Value of Dairy and Swine Produce.
	£	£	£
New South Wales	2,275,000	372,000	2,647,000
Victoria	2,910,000	490,000	3,400,000
Queensland	772,000	170,000	942,000
South Australia	447,000	148,000	595,000
Western Australia.....	128,000	113,000	241,000
Tasmania	446,000	97,000	543,000
Commonwealth	6,978,000	1,390,000	8,368,000
New Zealand	2,608,000	371,000	2,979,000
Australasia	9,586,000	1,761,000	11,347,000

The value of production shown in the foregoing table for 1902 is, notwithstanding the drought, greater than in the previous year, for, though the quantity of milk products was less in most of the states, the prices obtained by the farmers were considerably higher than those realised in 1901.

The production of butter and cheese in each state during 1902 is estimated to have been as follows :—

State.	Butter.	Cheese.
New South Wales	29,950,977 lb.	4,148,038 lb.
Victoria	39,227,754 ,,	3,849,561 ,,
Queensland	4,851,362 ,,	952,013 ,,
South Australia	4,521,246 ,,	705,969 ,,
Western Australia	359,670 ,,	.....
Tasmania	700,402 ,,	327,934 ,,
Commonwealth	79,611,411 ,,	9,983,515 ,,
New Zealand	43,530,000 ,,	11,500,000 ,,
Australasia	123,141,411 ,,	21,483,515 ,,

The states having a surplus of butter and cheese available for exportation during 1902 are shown in the following table :—

State.	Butter.	Cheese.
Victoria	14,194,875 lb.	493,727 lb.
New Zealand	28,444,304 ,,	8,368,080 ,,
Tasmania.....	.....	124,086 ,,
Total	42,639,179 ,,	8,985,893 ,,

New South Wales was formerly both an importer and an exporter of butter, for only during the spring and early summer months was the production larger than the local requirements, while during the remainder of the year butter had to be imported to meet the local demand. In favourable seasons this state now exports butter to the United Kingdom on a fair scale ; but a large quantity of New Zealand butter is still sent to the New South Wales markets on account of the more satisfactory price realised there. There is also an importation from South Australia and Victoria for the supply of the districts adjacent to those states. Queensland has lately become an exporter of butter, 1897 being the first year when the export exceeded the import. The net export in that year was 179,490 lb., which in 1901 had increased to 2,044,073 lb. Owing to an unfavourable season in 1902, however, the imports exceeded the exports by 2,718,434 lb.

The net imports of butter and cheese during 1902 are shown below :—

State.	Butter.	Cheese.
New South Wales	1,779,613 lb.	873,627 lb.
Queensland	2,718,434 ,,	708,295 ,,
South Australia	881,499 ,,	166,522 ,,
Western Australia	5,727,011 ,,	1,153,665 ,,
Tasmania	553,172 ,,	.....
Total.....	11,659,729 ,,	2,902,109 ,,

From the foregoing figures it will be seen that those states which produce a surplus of butter and cheese have, after providing for the deficiency of the other states, a balance available for exportation to outside countries, this balance in 1902 amounting to 30,979,450 lb. of butter and 6,083,784 lb. of cheese. An export trade in butter and cheese has long been maintained by New Zealand, while in recent years Victorian, New South Wales, and South Australian butters and, more recently still, Queensland butters have been sent to the London market, and their very favourable reception has given a fresh stimulus to the dairying industry in those states. The unfavourable season in 1902, however, caused a falling off of 50 per cent. in Queensland's butter production. Recently a fair number of co-operative factories has been established, and with a continuance of favourable climatic conditions there is a bright prospect before the industry. It is hoped that before long facilities will be available for shipping the product direct from Brisbane to London, thus avoiding the double handling of the butter, much of which is at present shipped *via* Sydney. The rapidity with which this trade is growing may be gauged from the following table, which shows the quantity of butter exported to the United Kingdom during the fourteen years ended 1902:—

Year.	Exporting State.				
	New South Wales.	Victoria.	Queensland.	South Australia.	New Zealand.
	lb.	lb.	lb.	lb.	lb.
1889	284,251	505,478	.....	.....	2,363,088
1890	589,160	1,286,583	.....	10,850	2,976,848
1891	391,180	3,778,775	.....	23,864	3,246,768
1892	1,532,782	6,446,900	.....	.....	4,648,980
1893	2,846,989	13,141,423	1,064	357,087	5,864,656
1894	4,333,927	22,139,521	.....	1,233,539	6,590,640
1895	1,852,360	21,127,025	31,420	1,017,629	6,181,728
1896	1,741,272	16,452,649	.....	242,872	6,730,304
1897	5,431,109	15,450,857	407,199	16,240	8,943,088
1898	5,309,811	13,548,293	628,296	389,836	9,051,168
1899	7,006,701	26,045,210	741,308	894,992	13,608,224
1900	8,477,617	26,185,679	872,244	707,448	18,577,552
1901	5,985,784	17,180,468	208,740	162,456	19,141,136
1902	121,672	1,424,460	.....	.....	19,063,184

Tasmania also sent about 20,000 lb. of butter to the United Kingdom in 1902, but the effects of the unfavourable seasons in the past two years on the general totals for the Commonwealth will be apparent from the above table.

In average years the price obtained for Australian butter in London is higher than the rates ruling in the local market; and as there can hardly be a limit placed to the capacity of Australasia to produce butter and cheese, it is probable that these higher prices will have the effect of greatly stimulating the dairy industry throughout all these states. In connection with this subject, it may

be mentioned that the value of the butter, cheese, and eggs imported into the United Kingdom during 1902 was £20,526,690, £6,412,002, and £6,308,985 respectively. The supply is chiefly drawn from the Continent of Europe and from America, and of the total amounts mentioned, the only imports from Australasia were butter to the value of £1,183,966, and cheese to the value of £131,054, practically the whole of the cheese, and £781,872 worth of butter from New Zealand being included in the Australasian figures.

It may not be out of place to remark that in one or two of the states the export of butter has helped to maintain prices in the local markets, and tended to restrict home consumption. If a season of great prosperity visits Australia there will be a very large increase in the local demand, with a consequent limitation in the supply available for export, so that it may be concluded that under any circumstances the prospects of the industry are encouraging. Even under existing circumstances local consumption shows a considerable increase. For example, in Victoria, the consumption in 1899 was 33,006,718 lb., in 1900, 35,968,878 lb., and in 1901, 39,208,646 lb., being a gradual increase in the local demand at the rate of about 3,000,000 lb. per annum.

It is interesting to note that the imports of dairy produce and margarine into the United Kingdom during 1902 reached a total value of £31,350,000, the highest yet recorded. The following figures furnished by the Board of Agriculture, London, show the percentages of imports of butter contributed by the various countries from which supplies were drawn during the last five years. It will be seen that Denmark maintains the leading position, while Russia occupies second place, having more than doubled its contribution during the five years, and that Australasia in 1902 only furnished 6 per cent. of the total, of which New Zealand's share was nearly 4 per cent. :—

Year.	Denmark	Russia.	France.	Holland.	Sweden.	Canada.	New Zealand.	Australia	Other Countries
	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.
1898	45·65	5·62	12·99	8·39	9·19	4·89	2·18	5·21	5·88
1899	42·19	4·10	10·44	8·40	7·25	7·38	3·29	7·79	9·16
1900	43·99	6·21	9·53	8·37	5·80	4·09	4·85	10·45	6·71
1901	43·13	10·22	8·42	8·07	4·87	5·82	4·52	6·70	8·25
1902	42·85	12·32	10·42	9·90	4·82	7·19	3·98	2·02	6·50

During the last decade the average yearly increase in the quantity of butter imported into the United Kingdom was about 8,500 tons. The increase is partly accounted for by the rapid growth of the population generally, but more by reason of the fact that the enlarging population of the towns is drawing more and more new milk from the churn and leaving less for butter and cheese making. Moreover, the number of cows per head of the population is decreasing rapidly, and at the present time there are 11 cows less per 1,000 inhabitants than was the case ten years ago.

SWINE.

The breeding of swine is usually carried on in conjunction with dairy-farming, and the following table shows the number of swine in each state at ten-year intervals since 1871 :—

State.	Number of Swine.				
	1871.	1881.	1891.	1901.	1902.
New South Wales ...	213,193	213,916	253,189	265,730	192,097
Victoria	177,447	239,926	286,780	350,370	350,370*
Queensland	32,707	56,438	122,672	121,641	77,202
South Australia	95,542	120,718	83,797	89,875	83,791
Western Australia.....	14,265	22,530	25,930	61,025	52,765
Tasmania.....	52,863	49,660	73,520	58,716	52,092
Commonwealth ..	586,017	703,188	845,888	947,357	808,317
New Zealand.....	151,460	200,083	308,812	224,024	193,740
Australasia.....	737,477	903,271	1,154,700	1,171,381	1,002,057

* Year 1901, no later information.

The production of swine should be a large factor in dairy-farming, but the increase in the number of pigs has not been so large as might have been expected. In Queensland, Tasmania, South Australia, and New Zealand the number of swine is actually less now than in 1891. Victoria possessed the largest stock in 1901, with 29·9 per cent. of the total number in Australasia; then came New South Wales and New Zealand with 22·7 per cent. and 19·1 per cent. respectively; Queensland had 10·4 per cent. of the total; South Australia, 7·7 per cent.; Western Australia, 5·2 per cent.; and Tasmania, 5·0 per cent.

The products of the swine—bacon, ham, lard, and salt pork—are now exported by all the states with the exception of New South Wales and Western Australia, as is shown by the following table, which shows the excess of exports in the year 1902 :—

State.	Bacon and Ham.	Salt and Frozen Pork.	Lard.	Net Value exported.
	£	£	£	£
New South Wales.....	*63,216	5,356	*11,555	*69,415
Victoria	131,903	514	9,836	142,253
Queensland ..	16,706	3,607	1,803	22,176
South Australia	27,990	.....	*13,453	14,537
Western Australia.....	*134,430	*1,312	*1,985	*137,727
Tasmania	2,247	.....	*1,380	867
Commonwealth.....	*18,800	8,225	*16,734	*27,309
New Zealand	18,450	9,858	2,470	30,778
Australasia	*350	18,083	*14,264	3,469

* Excess of imports.

POULTRY AND MINOR INDUSTRIES.

An estimate is given below of the value of the production of poultry and eggs, together with that arising from bee-farming, in each state during the year 1902 :—

State	Poultry and Eggs.	Honey and Beeswax.
New South Wales	£732,000	£24,000
Victoria	716,000	15,000
Queensland	305,000	5,000
South Australia	343,000	10,000
Western Australia.....	178,000	3,000
Tasmania	105,000	4,000
Commonwealth	£2,379,000	£61,000
New Zealand	471,000	16,000
Australasia	£2,850,000	£77,000

The most remarkable feature is the trade in eggs between South Australia as supplier and New South Wales, Victoria, and Western Australia as buyers. The returns for 1902 show that during that year South Australia exported eggs to the value of £105,463 to these States, viz., £4,585 to Victoria, £27,168 to New South Wales, and £73,710 to Western Australia. The bulk of the trade with New South Wales is transacted with the Barrier district, which is commercially a dependency of South Australia.

During the last few years an important trade has sprung up in the export of frozen poultry, and frozen rabbits and hares. In 1902, 98,462 fowls, 21,699 ducks, geese, and turkeys, 113,125 pairs of rabbits, and 61,448 hares were exported from New South Wales through the Government Dépôt. The total value of frozen poultry, game, and rabbits exported during 1902 amounted to £43,181, of which about £24,000 worth was sent to South Africa.

In Victoria the export of rabbits and hares has reached much larger dimensions, over 3,250,000 pairs, valued at £160,000, being sent away in 1902. In addition to this there was an export of over £30,000 worth of frozen poultry and game. In this state, as in New South Wales, a large number of persons find remunerative employment in trapping hares and rabbits.

At the Government Dépôt in New Zealand during 1902, 75,000 head of poultry were dressed and exported, the bulk of which was consigned to South African markets.

The exports of poultry and game from South Australia in 1902 amounted to about £20,000.

PASTORAL AND DAIRY PRODUCTION.

The total value of pastoral and dairy production, including that from poultry and bee farming, during the year 1902, in each state and in the whole of Australasia, together with the value per inhabitant, were as shown in the following table:—

State.	Total Value of Pastoral and Dairy Production.	Value per Inhabitant.
	£	£ s. d.
New South Wales	14,134,000	10 1 0
Victoria	8,479,000	7 0 6
Queensland	4,439,000	8 12 6
South Australia	2,848,000	7 14 0
Western Australia	1,458,000	6 14 0
Tasmania	1,263,000	7 3 0
Commonwealth	32,621,000	8 8 0
New Zealand	10,342,000	12 16 0
Australasia	42,963,000	9 3 0

The following table gives similar information for the last four census periods. It will be seen that the only states which show increases since 1891 are Western Australia, Tasmania, and New Zealand:—

State.	1871.	1881.	1891.	1901.
	£	£	£	£
New South Wales	8,709,000	13,151,000	17,460,000	15,598,000
Victoria	7,260,000	7,499,000	9,321,000	9,242,000
Queensland	1,959,000	4,186,000	7,561,400	6,670,000
South Australia	1,800,000	3,178,000	3,148,525	2,936,000
Western Australia	274,000	431,000	647,350	1,344,000
Tasmania	734,000	1,093,000	1,117,550	1,100,000
Commonwealth	20,736,000	29,538,000	39,255,825	36,890,000
New Zealand	3,210,000	7,096,000	9,153,225	9,970,000
Australasia { Total.....	23,946,000	36,634,000	48,409,050	46,860,000
Per head.	£ s. d. 12 7 7	£ s. d. 13 3 11	£ s. d. 12 12 0	£ s. d. 10 4 6

On reference to the above table, it will be seen that although the total production has been nearly doubled since 1871 the value per head

has decreased considerably. In 1901 the value of pastoral and dairy production was £1,549,000 less than in 1891; but to a great extent this was due to diminished production caused by a succession of dry seasons—the cast of both sheep and cattle being much reduced as compared with 1891. On the other hand, the production of butter was larger, and also the export of meat, as will be seen below:—

Produce.	1891.	1901.
Wool, as in grease	Lb. 661,229,000	673,914,000
Cast of sheep	No. 17,000,000	10,345,000
Cast of cattle	No. 1,216,000	1,014,000
Butter produced	Lb. 70,628,000	131,398,606
Meat export.....	Cwt. 1,454,000	3,322,939

The movement in prices will be seen from the following tabulation, which is based chiefly on an analysis of the New South Wales trade. The prices of 1902 are represented by 1,000:—

Year.	Price Levels of—				
	Wool.	Butter.	Cattle.	Tallow.	Hides.
1891	836	838	464	715	802
1892	821	844	457	730	685
1893	735	781	377	809	607
1894	680	647	289	751	560
1895	757	562	285	695	728
1896	809	790	474	626	611
1897	780	783	371	590	804
1898	829	832	490	669	855
1899	1,171	863	455	801	969
1900	951	830	564	869	1,025
1901	863	858	724	836	1,134
1902	1,000	1,000	1,000	1,000	1,000

The price of wool, which advanced suddenly in 1899, declined again during 1900 and 1901, but there was an advance in 1902, which partly compensated for the small clip.

EMPLOYMENT IN PASTORAL AND DAIRYING PURSUITS.

The following tables show the total number of persons engaged in pastoral and dairying pursuits in Australasia for the years 1891 and 1901. In each case the figures include only the direct producers who were working on holdings in March of the respective years, and do

not take into account persons employed in butter factories, or casual hands engaged at other periods of the year :—

	PASTORAL.			
	1891.		1901.	
	Males.	Females.	Males.	Females.
New South Wales.....	26,176	334	31,312	595
Victoria	5,660	1,881	11,650	1,692
Queensland.....	12,530	198	16,714	180
South Australia.....	3,582	317	4,112	81
Western Australia.....	1,530	98	1,633	52
Tasmania	1,859	142	957	26
New Zealand.....	6,486	90	12,014	156
Total	57,823	3,060	78,392	2,782
Total—Males and Females :	60,883		81,174.	

	DAIRYING.			
	Males.	Females.	Males.	Females.
New South Wales.....	4,996	4,758	15,850	2,285
Victoria	4,850	2,933	11,701	5,877
Queensland.....	1,121	455	3,170	826
South Australia.....	419	1,014	839	2,029
Western Australia.....	175	72	350	144
Tasmania	181	265	561	337
New Zealand.....	2,793	180	7,586	1,654
Total	14,535	9,677	40,057	13,152
Total—Males and Females :	24,212		53,209.	

From the above table it will be seen that there has been an increase equal to 58 per cent. in the number of persons engaged in pastoral and dairying pursuits during the last ten years. This is chiefly owing to the rapid expansion of the dairying industry, especially in the three larger provinces, where the increase in this branch was more than double that of the first year of the period. Comparing the number of persons employed with the total stock expressed in terms of sheep, it will be found that the proportion in 1901 was 1 person to every 1,552 sheep, as against 1 to every 3,070 sheep in 1891. The decreased proportion in 1901 is of course partly attributable to the loss in stock from unfavourable seasons, but it arises chiefly from the greater amount of employment in the dairying industry, as well as from the tendency previously mentioned to divide the sheep into smaller flocks.