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BULK HANDLING AND STORAGE OF GRAIN.

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The development of the agricultural resources of the Commonwealth is now being seriously undertaken. The agricultural industry has been an important one in South Australia, Victoria and Tasmania for years, but did not receive keen attention in the other States.

The increasing population of the various States has impelled an increasing attention to agriculture. The various States are throwing open for agricultural settlement large areas of Crown and resumed lands, and providing light railways and roads to these districts. The following tables show the development of area under crop in Australia, 1860 to 1913-14, and the distribution of crops in Australia 1913-1914. (See Pages 2, 3, 5 and 7).

The increase in the area under crop during the past 15 years has been most marked in the case of New South Wales, Western Australia and Victoria.

In four of the States, viz., New South Wales, Victoria, South Australia and Western Australia, wheat growing for grain is by far the most extensive form of cultivation. The area under wheat for grain is given below for each State at various periods since 1860, and is shown diagrammatically in the graph hereafter. (See Fig. 1.)

The production of wheat for the same period is given below, and is also shown in diagram. (See Fig. 2.)

Table No. 1.

AREA UNDER CROP IN AUSTRALIA, 1860—1913—1914.*

Season	N.S. W.	Victoria.	Queensland.	South Aust.	West Aust.	Tasmania.	Nth. Ter.	Fed. Ter.	Com'onwealth
	ACRES.	ACRES.	ACRES.	ACRES.	ACRES.	ACRES.	ACRES.	ACRES.	ACRES.
1860—1	260,798	387,282	3,353	359,284	24,705	152,860			1,188,282
1865—6	378,255	448,194	14,414	547,124	38,180	159,547			1,585,714
1870—1	426,976	692,840	52,210	801,571	54,527	157,410			2,185,534
1875—6	451,139	736,520	77,347	1,111,882	47,571	142,547			2,567,006
1880—1	629,180	1,548,809	113,978	2,087,237	57,707	140,788			4,577,699
1885—6	737,701	1,867,496	198,334	2,298,412	60,058	144,761			5,306,762
1890—1	852,704	2,031,955	224,993	2,093,515	69,678	157,376			5,430,221
1895—6	1,348,600	2,413,235	285,319	2,092,942	97,821	212,703			6,450,620
1900—1	2,445,564	3,114,132	457,397	2,369,680	201,338	224,352			8,812,463
1905—6	2,840,235	3,219,962	522,748	2,255,569	364,704	230,237			9,433,455
1910—11	3,386,017	3,952,070	667,113	2,746,334	855,024	286,920	360		11,893,838
1911—12	3,628,513	3,640,241	526,388	2,965,338	1,072,653	270,000	375	3,509	12,107,017
1912—13	3,737,085	4,079,356	668,483	3,062,998	1,199,991	286,065	330	3,741	13,038,049
1913—14	4,567,592	4,391,321	747,814	3,169,559	1,537,923	264,140	354	4,309	14,683,012

*Official Year Book, No. 8, Commonwealth of Australia.

DISTRIBUTION OF CROPS IN AUSTRALIA, 1913-1914*

Crops.	N.S.W.	Victoria.	Queensl'nd	South Aust.	West. Aust.	Tasmania	N.T.	Federal Terr.	Total for Commonwealth.
	ACRES.	ACRES.	ACRES.	ACRES.	ACRES.	ACRES.	ACR.	ACRES.	ACRES.
Wheat	3,203,572	2,565,861	132,655	2,267,851	1,097,193	18,432	9	1,825	9,287,398
Oats... ..	103,262	442,060	4,093	116,932	133,625	58,886	8	154	859,020
Maize	156,793	17,962	156,775	239	38		45	27	331,879
BARLEY—Malting	16,392	44,584	6,274	71,537	6,417	6,735		5	151,944
Other	4,209	38,767	2,552	19,015	5,085	988		4	70,620
Beans and Peas	460	12,630	69	9,031	1,551	15,091	7		38,839
Rye	4,913	1,779	91	1,242	679	850		5	9,559
Other Cereals			5	10	14		45		74
Hay	798,978	977,684	76,469	568,550	246,640	84,138	61	2,152	2,754,672
Green Forage	146,093	98,963	171,290	49,948	13,126	7,037	21	26	486,504
Grass Seed		1,452	736	11		1,460	10		3,669
Orchards & other Fruit Gdns.	51,457	67,183	20,072	24,425	20,575	32,200	50	59	216,021
VINES—Productive	7,328	17,926	1,449	21,737	2,323				50,765
Unproductive	825	4,509	88	4,471	539				10,432
Market Gardens	10,585	10,777	2,611	2,265	2,851	769	60	22	29,940
SUGAR CANE—Productive... ..	6,198		102,803						109,001
Unproductive	7,034		44,940				1		51,975
Potatoes	38,695	74,574	10,085	10,809	5,229	30,811		30	170,233
Onions	208	6,121	96	309	116	82			6,932
Other Root Crops	1,334	2,515	3,998	462	172	4,083	10		12,574
Tobacco	1,992	284	731						3,007
Broom Millett	1,970	515	399				10		2,894
Pumpkins and Melons	4,206	2,233	6,556	249	743		12		13,999
Hops		117		3		1,353			1,473
All other Crops	1,088	2,825	2,977	463	1,005	1,225	5		9,588
Total Area	4,567,592	4,391,321	747,814	3,169,559	1,537,923	264,140	354	4,309	14,683,012

*Official Year Book, No. 8, of Commonwealth of Australia.

The quantity of wheat available for export in Australia, and separately for New South Wales, is shown in the accompanying diagram. Exact records are not available for the amount of wheat used for cattle and poultry feed. The total amount of wheat consumed in the Commonwealth for food and feed is approximately six bushels per head of population, and for seed averages about .8 to .9 bushels per acre put under wheat.

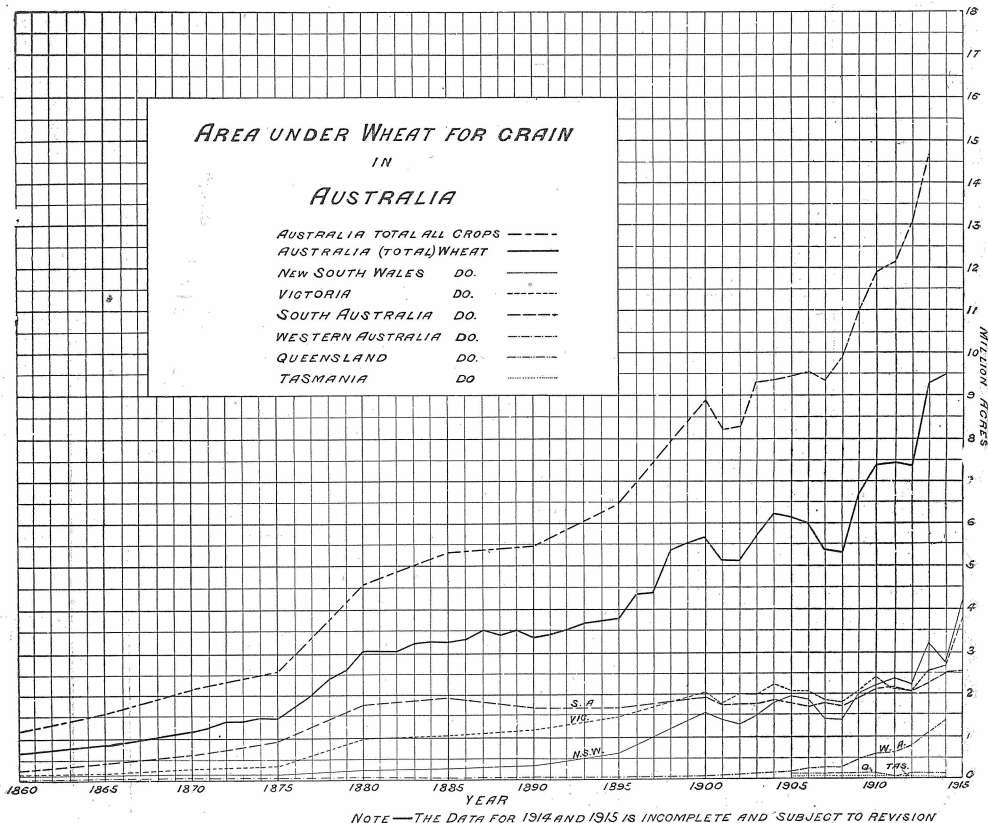


Fig. 1.

Table No. 3.

AREA UNDER WHEAT, 1860-1 TO 1913-14.*

Season.	N S.W.	Victoria.	Queensland.	South Aust	West Aust.	Tasmania.	Nth. Ter.	Fed. Ter.	Com'onwealth
	ACRES.	ACRES.	ACRES.	ACRES.	ACRES.	ACRES.	ACRES.	ACRES.	ACRES.
1860-1	128,829	161,252	196	273,672	13,584	66,450			643,983
1865-6	131,653	178,628	2,068	410,608	22,249	73,270			818,476
1870-1	147,997	284,167	2,892	604,761	26,640	57,382			1,123,839
1875-6	133,609	321,401	4,478	898,820	21,561	42,745			1,422,614
1880-1	253,138	977,285	12,632	1,733,542	27,686	50,022			3,054,305
1885-6	264,867	1,020,082	10,093	1,922,555	29,511	30,266			3,277,374
1890-1	333,233	1,145,163	10,390	1,673,573	33,820	32,452			3,228,631
1895-6	596,684	1,412,736	27,090	1,649,929	23,241	64,652			3,774,332
1900-1	1,530,609	2,017,321	79,304	1,913,247	74,308	51,825			5,666,614
1905-6	1,939,447	2,070,517	119,356	1,757,036	195,071	41,319			6,122,746
1910-11	2,128,826	2,398,089	106,718	2,104,717	581,862	52,242	2		7,372,456
1911-12	2,379,968	2,164,066	42,962	2,190,782	612,104	37,208	2	742	7,427,834
1912-13	2,230,500	2,085,216	124,963	2,079,633	793,096	25,226	3	1014	7,399,651
1913-14	3,203,572	2,565,861	132,655	2,267,851	1,097,193	18,432	9	1825	9,287,398

*Official Year Book, No. 8, Commonwealth of Australia.

Considerable quantities of wheat have for many years been exported from South Australia, and to a lesser extent from Victoria, but the export of wheat for the Commonwealth as a whole and New South Wales has only become a serious factor since 1903.

The effects of the disastrous drought of 1914 and of the estimated bountiful harvest of 1915 are clearly shown by the diagrams.

There is every reason to think that the area put under wheat in New South Wales will be increased from year to year for many years to come, as the agricultural possibilities of this State are very large.

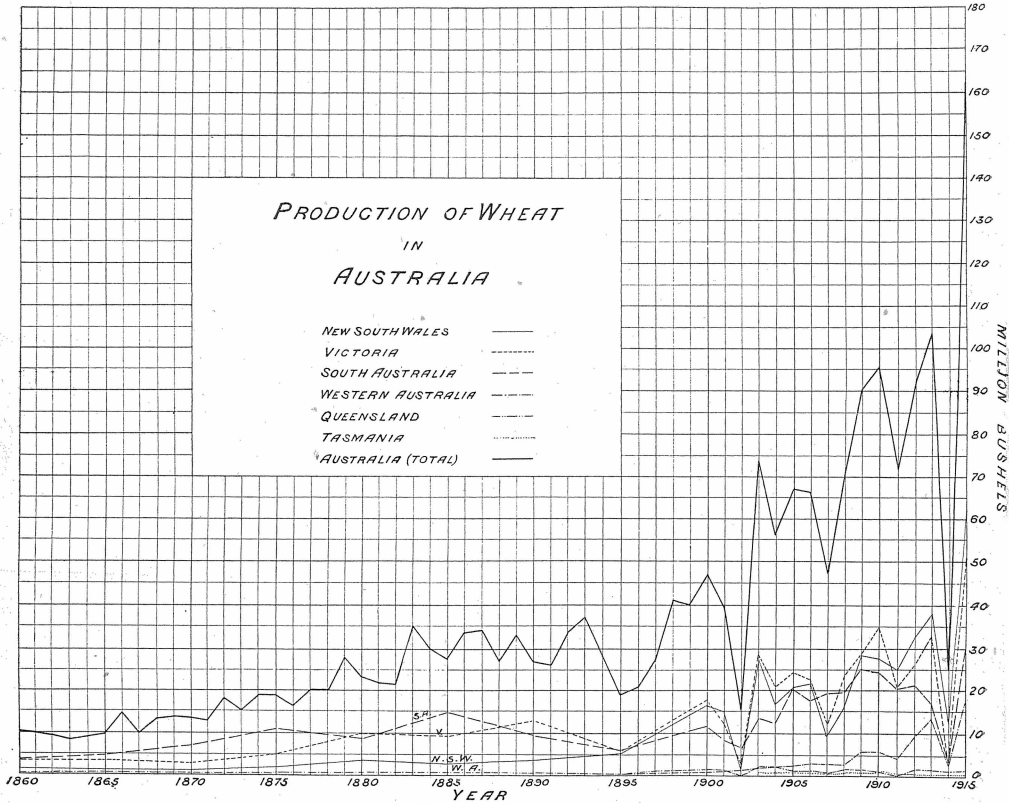


Fig. 2.

Table No. 4.

PRODUCTION OF WHEAT, 1860-1 TO 1913-14*

Season	N.S.W.	Victoria.	Queensland	South Aust.	West. Aust.	Tasmania	N. Ter.	Fed. Ter	Commonwealth
	BUSHEL.	BUSHEL.	BUSHEL.	BUSHEL.	RUSHEL.	BUSHEL.	BSHL.	BUSHL.	BUSHEL.
1860 - 1	1,581,598	3,459,914	3,136	3,576,593	208,332	1,415,896			10,245,469
1865 - 6	1,013,863	3,514,227	33,088	3,587,800	231,594	1,273,766			9,654,338
1870 - 1	999,595	2,870,409	39,787	6,961,164	315,769	896,881			12,084,605
1865 - 6	1,958,640	4,978,914	97,400	10,739,834	237,171	700,092			18,712,051
1880 - 1	3,717,355	9,727,369	223,243	8,606,510	332,232	750,040			23,356,749
1885 - 6	2,733,133	9,170,538	51,598	14,612,876	339,376	524,348			27,431,869
1890 - 1	3,649,216	12,751,295	207,990	9,399,389	467,389	642,980			27,118,259
1895 - 6	5,193,312	5,669,174	123,630	5,929,300	188,077	1,164,855			18,270,348
1900 - 1	16,173,771	17,847,321	1,194,088	11,253,148	774,653	1,110,421			48,353,402
1905 - 6	20,737,200	23,417,670	1,137,321	20,143,798	2,308,305	776,478			68,520,772
1910-11	27,913,547	34,813,019	1,022,373	24,344,740	5,897,540	1,120,744	20		95,111,983
1911-12	25,080,111	20,891,877	285,109	20,352,720	4,358,904	659,615	20	7,991	71,636,347
1912-13	32,466,506	26,223,104	1,975,505	21,496,216	9,168,594	630,315		20,830	91,981,070
1913-14	37,996,068	32,936,245	1,769,432	16,936,988	13,331,350	349,736		24,313	103,344,132

*Official Year Book, No. 8, of Commonwealth of Australia.

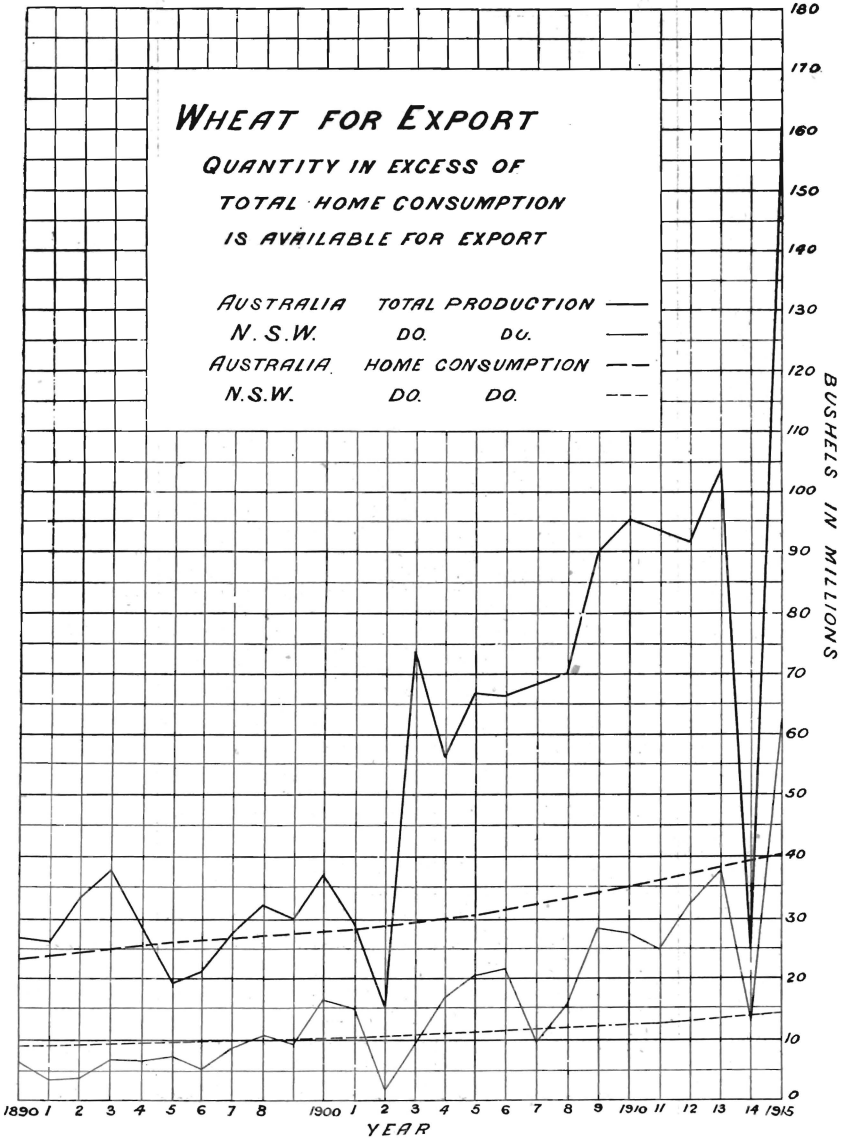


Fig. 3.



Fig. 4.

Stacking Wheat at Gilgandra Railway Station.

The diagram (Fig. No. 3) for area under wheat for grain is affected by dry and drought years, as some of the wheat originally intended for grain is cut for hay. The area under wheat for hay is not included in the above diagram. The diagram of production (Fig. No. 4) and home consumption shows the increasing importance of the wheat industry.

The estimated production for the Commonwealth is 162,000,000 bushels (approximately 4,400,000 tons), and for New South Wales 62,000,000 bushels (approximately 1,700,000 tons); of these the Commonwealth as a whole will be able to export 120,000,000 bushels (approximately 3,300,000 tons), and New South Wales 48,000,000 bushels (approximately 1,300,000 tons).

These figures show the increasing urgency of providing greater and more efficient transport, storage and shipping facilities.

The average return per acre of the principal wheat-growing countries of the world is given below.

Table No. 5

AVERAGE YIELD OF WHEAT IN VARIOUS COUNTRIES - 1912*

COUNTRY.	AVERAGE YIELD IN BUSHEL. PER ACRE	COUNTRY.	AVERAGE YIELD IN BUSHEL. PER ACRE
Belgium	38.70	Servia (1911) ..	16.04
Netherlands ..	38.58	United States ..	15.46
Germany	33.68	Italy	14.10
Sweden (1910) ..	32.48	Australia	12.53
New Zealand ..	30.05	India	12.12
United Kingdom	29.13	Argentine Repub	11.61
Bulgaria	23.03	Spain	11.41
Austria	21.70	Uruguay (1911)	10.96
Egypt (1911) ..	21.69	Russia in Europe	10.25
Japan	21.13	Russia in Asia ..	10.16
Canada	20.42	Portugal (1911)	9.78
France	20.03	Algeria	7.52
Hungary	19.27	Tunis	2.42
Rumania	16.86		

*Official Year Book, No. 8, of Commonwealth of Australia.

The latest available official statistics of the production of wheat in various countries are given in the following table:—

Table No. 6.

WHEAT YIELD OF VARIOUS COUNTRIES, 1912*

COUNTRY.	YIELD IN BUSHELS.	COUNTRY.	YIELD IN BUSHELS
United States ..	708,064,000	Bulgaria ..	63,732,334
Russia in Europe	621,813,850	United Kingdom	57,402,304
India	358,388,806	Egypt	30,891,407
France	325,073,376	Algeria	27,164,344
Canada	199,236,000	Japan	25,690,320
Argentine Republic	198,360,000	Belgium	15,343,694
Hungary	184,591,439	Servia	15,307,488
Russia in Asia ..	177,179,404	Portugal	11,846,400
Italy	165,674,683	Uruguay	8,754,400
Germany	160,180,258	Sweden	7,589,728
Spain	109,753,493	Netherlands ..	5,513,696
Australia	91,981,070	New Zealand ..	5,179,626
Rumania	86,176,264	Tunis	3,609,376
Austria	67,557,616	Denmark ..	3,477,888

*Official Year Book, No. 8, of Commonwealth of Australia.

The abundant harvest that has just been gathered will enable the position of Australia to move up several places in the world's list.

Table No. 7.

AVERAGE PRICE OF FOREIGN WHEAT IMPORTED INTO THE UNITED KINGDOM—1909 TO 1913*

COUNTRY.	AVERAGE PRICE PER IMPERIAL QUARTER.					COUNTRY.	AVERAGE PRICE PER IMPERIAL QUARTER.														
	1909	1910	1911	1912	1913		1909	1910	1911	1912	1913										
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.									
Australia ..	41	5	37	2	34	10	38	5	37	6											
Russia ..	39	3	35	7	33	4	37	6	33	11	Germany ..	38	3	36	11	33	6	36	8	31	0
Rumania	40	9	34	2	34	7	37	3	33	3	Bulgaria ..		32	11	35	1	36	4			
Brit. India	40	1	35	5	33	7	37	0	33	6	United States	38	6	37	3	34	4	35	9	35	1
Chile ..	39	1	33	7	33	0	36	9	36	7	Argentina ..	39	9	34	11	33	4	35	6	35	8
											Canada ..	39	3	36	9	34	10	35	2	34	8

*Official Year Book, No. 8, of Commonwealth of Australia.

Since the United Kingdom is the largest importer of Australian wheat, the price of wheat in the British markets is therefore a matter of prime importance to the local producer. Generally speaking, Australian wheat is noted for its high quality and clearness. Its general excellence is attested by the high price which it realises in the home markets.

The oat crop in Victoria and the maize crop in certain districts of New South Wales and Queensland are also of great importance, and warrant consideration for handling in bulk.

The enormous development of the grain trade in the United States with its long distances of transport, high wages, and prices governed by a foreign market, directed attention to means for reducing transportation charges, so that a sufficient return should be available to make the industry profitable to producers.

The successful solution of these problems enabled wheat growing to be extended to any suitable portion of the country.

The handling and storage of grain in bulk was first extensively developed and used in that country, and has for many years been the usual means of dealing with it, though bagging, with its attendant large amount of manual handling, is still in vogue in some districts. The grain is carted in bags, or loose in bulk, from the farms, and unloaded into the receiving boots at country collecting centres, called elevators, or into box waggons. Thereafter the grain is handled by mechanical appliances, and transported in bulk to local centres for consumption, or to export ports, from which it is shipped oversea in bulk. Most elevators are provided with bagging conveniences to provide this means of local distribution, if such is desired.

Roumania was the first European State to instal an extensive system for handling grain in bulk.