

WHEAT AND FLOUR : STOCKS AT 30th NOVEMBER. (a)

30th November—	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	Total.
WHEAT (BUSHELS).							
1939	5,059,320	3,435,783	304,199	5,139,508	2,114,766	162,251	16,215,827
1946	10,510,000	1,994,000	751,000	940,000	884,000	62,000	15,141,000
1947	1,571,000	3,735,000	372,000	1,715,000	766,000	217,000	8,376,000
1948	13,102,000	3,227,000	1,273,000	3,890,000	583,000	386,000	22,461,000
1949	6,656,000	4,034,000	838,000	1,490,000	1,642,000	110,000	14,770,000
1950	15,650,000	10,943,000	1,614,000	6,360,000	5,143,000	170,000	39,880,000
FLOUR (TONS OF 2,000 LB.).							
1939	34,875	27,350	5,292	21,479	8,592	1,695	99,283
1946	28,000	35,997	5,521	20,000	15,287	726	105,531
1947	30,244	47,242	4,001	9,400	15,132	1,089	107,108
1948	20,505	24,609	5,637	17,000	15,163	117	83,031
1949	26,082	10,407	3,978	16,700	24,107	443	90,717
1950	26,462	35,720	5,755	6,450	8,925	1,120	84,432
TOTAL IN TERMS OF WHEAT (BUSHELS).							
1939	6,674,033	4,702,088	549,219	6,133,986	2,512,576	240,728	20,812,630
1946	11,806,400	3,660,661	1,006,622	1,866,000	1,591,788	95,614	20,027,085
1947	2,971,297	5,922,305	557,246	2,150,220	1,466,611	267,421	13,335,100
1948	14,051,381	4,366,397	1,533,993	4,677,100	1,235,047	391,417	26,305,335
1949	7,863,597	4,932,544	1,022,181	2,263,210	2,758,154	130,511	18,970,197
1950	16,875,191	12,596,836	1,880,457	6,658,635	5,556,227	221,856	43,789,202

(a) One ton of flour is treated as equivalent to 46.3 bushels of wheat.

17. **Flour Milling.**—Particulars of the grain-milling industry are given in some detail in Chapter XXIV.—Manufacturing Industry. The following table summarizes the operations of flour mills in Australia for the years 1938-39 and 1945-46 to 1949-50.

OPERATIONS OF FLOUR MILLS : AUSTRALIA.

Particulars.	Unit.	1938-39.	1945-46.	1946-47	1947-48.	1948-49.	1949-50.
Number of mills ..	No.	172	170	172	167	164	161
No. of persons employed ..	"	3,783	4,099	4,442	4,623	4,768	4,541
Wheat milled ..	'000 bus.	66,999	63,416	73,780	76,927	83,387	73,066
Output of Flour(a) ..	" tons	1,373	1,219	1,490	1,555	1,635	1,504
" " Bran ..	" "	289	238	288	308	319	273
" " Pollard ..	" "	284	256	316	326	355	317

(a) Includes wheatmeal for baking.

18. **Bulk Handling of Wheat in Australia.**—(i) *Development of the Bulk Handling System.* Methods of handling wheat in bulk have been discussed in Australia since the first exportable surpluses were produced, but no positive action was taken to implement any scheme until serious losses from vermin and weevils occurred in wheat which had been stacked during the 1914-18 War, when the bumper harvest of 1915, combined with the restriction on export movements, created serious storage difficulties.

Recommendations by many of the earlier investigators that some system of bulk handling be introduced were received with apathy on the part of most growers and met with so much determined opposition from millers, grain merchants and railway authorities that it was not until 1917 that the gravity of the storage situation led to the appointment by the Commonwealth Government of the Wheat Storage Commission. After extensive

investigations, the Commission made certain recommendations which were incorporated in the Wheat Storage Act 1917, under which the Commonwealth Government made available the sum of almost £3,000,000 to finance State installation of bulk handling facilities. In New South Wales legislative action to inaugurate the system had been taken in 1916, but it was not until the 1920-21 season that the scheme became operative. Western Australia made studies of the system in operation in New South Wales, and evolved a system of horizontal storage as contrasted to vertical storage, and introduced this system in 1935. Victoria, having had the benefit of the New South Wales and Western Australian experience, introduced in the 1938-39 season a system combining the best features of both. South Australia, owing to the distribution of its wheatlands, and the relatively short hauls to the seaboard which can be economically effected by motor transport, decided that the establishment of bulk handling methods was unwarranted, while Queensland, because of similar conditions, and the small wheat producing State of Tasmania have not found bulk handling necessary.

(ii) *Advantages and Disadvantages of the Bulk Handling System.* Although the optimistic estimates of cost reductions envisaged by the early proponents of the scheme have not been realized, there is no doubt that considerable saving of time and money has occurred as a result of the installation of bulk handling systems. Briefly, the main advantages are :—

- (a) Reduction of handling costs at farms, sidings and terminals. These savings have been made in the costs of the bags and their sewing and labour costs in stacking. At the terminals, the mechanical loading of ships has resulted in considerable saving in time, thus speeding up the turn-around and reducing the usual costs of shipping.
- (b) Reduction in the deterioration of long standing stacks of bagged wheat.
- (c) Protection of grain from mice, weevils, climatic conditions and leakage.

There are, of course, disadvantages, but there appears no doubt that the advantages outweigh the disadvantages, and, in fact, the more serious of the disadvantages can be overcome by positive action on the part of the authorities controlling the system. The main disadvantages of the New South Wales and Victorian systems are :—

- (a) Heavy initial capital cost in erection of silos and terminals and construction of bulk waggons for transporting the bulk wheat.
- (b) The system tends to choke in flush seasons or through deferment of sales by growers. It cannot hope to provide all the storage space required in flush years.
- (c) In years of short crops, wheat receipts may fall short of silo capacity, which involves a loss on operating costs.

These disadvantages have been minimized in the Western Australian system because of its relatively low cost and flexibility.

(iii) *General Description of the Bulk Handling System.* Silos or elevators are erected at railway sidings in districts where the wheat harvest has been shown to be sufficiently heavy to warrant their installation. In New South Wales and Victoria, these silos are generally concrete and steel vertical storage bins, with mechanical loading devices which, in some cases, incorporate weighing machinery to check the wheat out as well as into the silo. In Western Australia, the silos are horizontal storage bins made of wood and corrugated iron, which are demountable, and the loading machinery is of a portable type.

At the terminals, the construction is generally of steel and concrete with loading booms which permit the wheat to be poured directly into the ships' holds, where it is subsequently "trimmed" either by a special wheat trimming machine or by hand.

Bulk wheat exports are effected by the following methods :—

- (a) Discharge from orthodox terminal elevators at Sydney and Newcastle (New South Wales), Geelong (Victoria) and Bunbury and Fremantle (Western Australia) and from provisional installations at Geraldton (Western Australia).
- (b) Transfer from bulk trucks to ships without going through terminal elevators, as at Geraldton.
- (c) De-sacking into ships' holds at South Australian ports.

In addition to full cargoes, exports of bagged wheat comprise parcels in liners and quantities used under shipping rules for topping-up bulk cargoes.

(iv) *Bull: Handling in the States.* A brief history of the inauguration of bulk handling and particulars of the operation and projected extensions of the system in the three States concerned are set out below :—

(a) *New South Wales.* The Grain Elevator Act was passed on 16th August, 1916, but owing to war-time conditions and financial obstacles, progress was delayed. However, finance was obtained from the Commonwealth under the terms of the Wheat Storage Act 1917, and the work commenced in that year. The initial plans provided for 70 country silos with capacities ranging from 50,000 to 500,000 bushels with a total of 15.4 million bushels, and a terminal elevator at Sydney with a capacity of 6,509,000 bushels. Construction of North and North-western silos and the Newcastle terminal was deferred, and the short crops of the early 'twenties did little to boost the system. Progress was slow until 1925 when the system experienced its first good season, and Government approval for the construction of more silos was given. In 1929, a further programme of expansion was commenced, but it was not until after the profitable operations arising from the heavy crop of 1932-33 that the expansion became more rapid. Between 1927 and 1936, 102 country plants were added to the system, the terminal at Sydney was enlarged and a terminal erected at Newcastle. At present, there are 180 elevators situated at the more important wheat receiving stations throughout the State, with a storage capacity of 24,478,000 bushels, as well as terminal elevators at Sydney and Newcastle, which have a receiving capacity per day of 6,000 tons and 2,000 tons respectively.

Work is proceeding on additions to country silos and the extension to the Newcastle terminal. In addition, four wheat storage sub-terminals at Junee, Temora, Parkes and Werris Creek are being erected to overcome the shortage of sacks and the immediate difficulties involved in constructing permanent silos at country centres. Work is also proceeding on the erection of about 60 temporary country bulkheads, storing about 100,000 bushels each.

The following table illustrates the development of the bulk handling system in New South Wales from its inception in 1920-21 :—

GRAIN ELEVATORS : WHEAT RECEIVED, NEW SOUTH WALES.

Season.	Elevators in Country Districts.		Storage capacity of Elevators available in Country Districts. (a)	Wheat Received.			Proportion of Total Crop Received in Elevators.
	Available.	Used.		In Country Elevators.	In Terminal Elevators from Non-Silo Stations.		
					In Country Elevators.	Total.	
No.	No.	Bushels.	Bushels.	Bushels.	Bushels.	%	
1920-21 ..	28	28	5,450,000	1,941,694	..	1,941,694	3.5
1925-26 ..	62	62	13,500,000	8,295,148	841,185	9,136,333	27.0
1930-31 ..	99	99	16,373,000	22,948,116	724,972	23,673,088	35.9
1935-36 ..	158	156	21,773,000	24,811,726	295,897	25,107,623	51.4
1940-41 ..	175	159	23,548,000	11,453,207	7,140	11,460,347	47.9
1945-46 ..	180	178	24,478,000	25,825,915	..	25,825,915	41.3
1946-47 ..	180	90	24,478,000	5,835,923	..	5,835,923	37.2
1947-48 ..	(c) 181	(c) 181	24,578,000	43,029,765	272,202	43,301,967	45.5
1948-49 ..	180	180	24,478,000	36,103,108	..	36,103,108	55.8
1949-50 ..	180	180	24,478,000	40,208,521	88,164	40,296,685	49.2

(a) At one filling. (b) New South Wales wheat only. In addition, 5,377,386 bushels of Victorian wheat were handled through the country system. (c) Includes one leased silo not part of the system

(b) *Victoria.* Although the recommendations of a Royal Commission were embodied in an enabling bill in 1916 it failed to pass, and despite great damage to war-stored grain from mice and weevils, no action was taken on the offer of Commonwealth aid in 1917. In 1922-23 a further attempt to establish the system failed. It appeared that a start would be made in 1925 when New South Wales had its first good crop since the inception of the bulk handling system, but subsequent experience in that State discouraged further action in Victoria. However, the severe depression of the early 'thirties, combined with the recurrent mouse plagues and the reduction in freight on bulk wheat gave rise to increasingly urgent demands from farmers for the installation of bulk handling facilities, and eventually other groups lent their weight in support. The Grain Elevators Board was constituted on 1st February, 1935, under the provision of the Grain Elevators Act 1934. The first group of elevators, comprising 48 country elevators and the Geelong terminal elevator commenced operations in 1938-39, when 10,782,190 bushels were handled. The construction of the balance of the elevators, as planned in the initial scheme, proceeded from year to year, until completed in the 1944-45 season.

In addition to the elevators erected by the Board, arrangements were made for the leasing of nine existing elevators owned by flour millers at country mills. These elevators are operated by the Board as part of the elevator system.

Amendments to the Grain Elevators Acts were passed in 1950 to permit the construction of elevators at a number of stations not yet provided with bulk handling facilities, and to erect additional bins at stations where the existing storage capacity is inadequate. The shortage of essential construction materials and labour has prevented a commencement of this new work.

Temporary means of extending bulk handling facilities have been adopted pending these extensions and owing to cornsack difficulties. Arrangements are in hand for the construction by the Australian Wheat Board of temporary bulkheads at approximately 50 stations for the 1951-52 season.

The following table sets out the development of the bulk handling system in Victoria for a series of years from 1939-40.

GRAIN ELEVATORS : WHEAT RECEIVED, VICTORIA.

Season.	Elevators.		Terminal.		Wheat Received.	Proportion of Total Crop Received in Elevators.
	Number.	Capacity at one filling.	Number.	Capacity at one filling.		
1939-40 ..	48	'000 Bush. 5,385	1	'000 Bush. 2,250	'000 Bush. 10,784	23.9
1945-46 ..	138	14,159	1	4,100	19,231	64.9
1946-47 ..	138	14,159	1	4,100	35,774	73.1
1947-48 ..	138	14,159	1	4,100	34,948	74.4
1948-49 ..	138	14,159	1	4,100	38,739	79.0
1949-50 ..	138	14,159	1	4,100	45,341	78.9

(c) *Western Australia.* In 1920, a company known as the Western Australian Grain Growers Co-operative Elevators Ltd. was formed for the purpose of operating bulk handling of wheat, but the company did only exploratory work and was wound up.

Having observed New South Wales experience with vertical storage in concrete silos, Westralian Farmers Co-operative Ltd., in 1929, evolved a new method of horizontal

storage, using simple structures of timber and galvanized iron. Simple structures for storage are quite adequate, owing to stable weather conditions and small liability to rain damage. Further, the method of construction allows easy dismantling, movement, and re-erection of bins in areas where they are more urgently required. In 1933, joint action by the Trustees of the Wheat Pool and Westralian Farmers' Co-operative Ltd. led to the registration of Co-operative Bulk Handling Ltd. on 5th April, 1933. The new company took over existing plants and leases and a Deed of Trust dated 24th October, 1933, was entered into between the company and a trustee appointed to represent all growers who put wheat through the system, whereby, after the company had completed its building programme of capital expenditure and the liabilities of the company were paid off, the management and control of the business of the company would be handed over to grower users. This was effected under the provisions of the State Bulk Handling Act, which was proclaimed on 1st February, 1936. In 1943, the building programme of the company having been completed so far as it was then considered necessary, the management and control of the company were handed over to the growers in accordance with the Deed of Trust. Subject to the provision of the Bulk Handling Act, the company is granted the sole right until 31st December, 1955, of receiving wheat in bulk at railway stations and sidings where the company has installations.

In addition to the 234 sidings equipped for bulk handling, the company operates at Geraldton a shipping gallery and conveyor belt, both of which are owned by the State Government, and a silo at Fremantle which had been erected by the Australian Wheat Board during the war for the fumigation of export wheat. Albany has not yet any terminal facilities, and wheat from that district is shipped through Bunbury, where the storage capacity is 8,000 tons.

Owing to the nature of the system in use in Western Australia, particulars of the capacity comparable with those published for New South Wales and Victoria do not exist. The table below sets out the number of sidings equipped for bulk handling, receipts of bulk wheat and the proportion of the marketable harvest represented by the receivals for the seasons indicated.

BULK WHEAT HANDLED : WESTERN AUSTRALIA.

Season.	Total Sidings Equipped.(a)				Total Bulk Receivals.	Receivals as a Proportion of Marketable Harvest.	
	No.	Bushels.					%
1931-32	5	1,265,000	3.4
1936-37	102	10,376,000	58.3
1941-42	232	33,304,000	(b) 97.8
1946-47	234	20,204,000	(b) 99.0
1947-48	234	30,903,113	99.0
1948-49	234	32,815,119	(c) 100.0
1949-50	234	34,565,140	(c) 100.0

(a) These figures do not include four bins in Lakes District erected in 1940, a fifth point at Ravenshorpe equipped for the 1947-48 season, and two installations in East and West Yorkrakin built in 1949. These points are removed from the railway and wheat received is transported by road to the rail or direct to the port. They do not include six points at which wheat is directly loaded into railway wagons.

(b) Quantities affected by war-time restrictions and difficulties. (c) In 1948, the Wheat Stabilization Act passed by the Western Australian Parliament as complementary legislation to the Federal Act provided for all bagged wheat to be treated. This is done by the company paying the grower the value of the bag when received and issuing him a bulk wheat receipt.