



Commonwealth Bureau of Census and Statistics,

CANBERRA.

OFFICIAL STATISTICS, COMMONWEALTH OF AUSTRALIA.

MANUFACTURING INDUSTRIES,
1937-38.

No. 5. CHEMICAL FERTILIZERS.

PREPARED UNDER INSTRUCTIONS FROM
THE HONORABLE THE TREASURER.

BY

ROLAND WILSON, B.Com., D.Phil., Ph.D.,
COMMONWEALTH STATISTICIAN.

P R E F A C E

1. Industries included in the Series: A complete list of the industries for which summaries in this series are being issued is given on the back of the cover page. They will be published as the material becomes available, and not necessarily in the order shown in the list. The following summaries have already been published: Nos. 6, 4, 3, 2 and 1.
2. Classification of Factories: The classification of factories in Australia is based on the nature of the product. Where two or more distinct types of industrial activity are carried on in one establishment, factory proprietors are requested to furnish separate returns for each activity. In some instances, however, this is not practicable, and in such cases there is no alternative but to classify the factory according to its predominant activity. This difficulty is most acute in the Metal Trades industries (e.g. Engineering firms also producing Agricultural Implements, Stoves and Ovens, and/or Brass and Copper products), but it is also to be found in factories concerned with the treatment or manufacture of Skins, Leather, Clothing, Wood products and some other articles. In consequence, and to an extent which will vary with individual industries, the figures may include the subsidiary but extraneous activities of those establishments included in the industry, while they will exclude relevant activities which are subsidiary to the predominant activity of establishments classified to some other industry. This qualification is not important in the case of Chemical Fertilizers, the industry with which this summary is concerned.
3. Basis of the Statistics: The scope of the factory statistics is fully explained in Part I of the annual Production Bulletin.

Briefly, a "factory" is taken to be an industrial establishment in which four or more hands are employed or in which power other than hand is used.

All persons employed in the manufacturing activities of the factory are counted as factory employees. The figures relating to employment, therefore, exclude all those engaged in selling and distribution, such as salesmen, travellers, collectors, carters engaged solely on outward delivery, and retailing storemen. The figures do include, however, proprietors who work in their own business and "out-workers".

The value of output is the wholesale selling value at the factory of goods made or processed during the year, including by-products. In addition, it includes the value of other work done, such as repair work, assembling and making up for customers.

The value of production is the value of output minus the cost of raw materials, containers, power, fuel, light, lubricants, water, tools replaced, and repairs to plant.

ROLAND WILSON
Commonwealth Statistician

Canberra, A.C.T.
5th April, 1939.

CHEMICAL FERTILIZERS.

The following table furnishes a summary of the principal statistics of the factories engaged in the manufacture of Chemical Fertilizers in Australia for the period 1908 to 1937-38:-

1. CHEMICAL FERTILIZERS - AUSTRALIA, 1908 TO 1937-38.

Year	Number of Factories	Persons Employed (a)	Salaries and Wages Paid (b)	Power, Fuel and Light Used	Value of Other Materials Used	Value of Production	Value of Output
	No.	No.	£'000	£'000	£'000	£'000	£'000
1908	9	(c) 378	30	4	197	75	276
1913	16	(c) 1,412	175	19	785	478	1,282
1920-21	21	(c) 1,498	312	54	1,728	568	2,350
1928-29	37	(d) 2,462	650	109	3,049	1,523	4,581
1929-30	37	2,242	577	110	3,504	1,757	5,371
1930-31	31	1,538	391	84	2,379	1,185	3,648
1931-32	34	1,477	328	75	2,144	932	3,152
1932-33	33	1,702	377	89	2,950	1,090	4,029
1933-34	34	1,706	365	86	2,452	1,040	3,578
1934-35	33	1,801	386	84	2,771	986	3,441
1935-36	33	1,995	442	88	2,727	1,001	3,906
1936-37	34	2,214	493	94	2,873	1,408	4,375
1937-38	32	2,474	600	109	3,239	1,556	4,904

(a) Including Working Proprietors. (b) Exclusive of amounts drawn by Working Proprietors. (c) Average over period worked by factory. (d) For 1928-29 and succeeding years the employment figures have been averaged over the whole year

In the following table particulars of the Industry are given for each State during the year 1937-38.

2. CHEMICAL FERTILIZERS - STATES, 1937-38.

Particulars	New South Wales	Victoria	Queensland	South Australia	Western Australia	Tasmania	AUSTRALIA
	No.	No.	No.	No.	No.	No.	No.
Number of Factories	5	4	5	6	5	7	32
Number Employed (a)-							
Males ..	283	1,014	89	646	382	35	2,449
Females ..	5	8	5	5	3	-	26
Total ..	288	1,022	93	651	385	35	2,474
	£	£	£	£	£	£	£
Value of -							
Salaries and Wages Paid (b)	77,953	250,754	21,088	141,947	101,913	6,631	600,283
Fuel used ..	14,061	47,331	1,437	22,029	23,136	541	108,587
Materials etc. used	436,976	1,191,777	241,518	562,913	730,172	75,966	3,239,323
Production ..	295,752	603,795	75,277	258,610	300,207	22,733	1,556,474
Output ..	746,783	1,842,303	318,382	643,552	1,053,517	99,240	4,904,383
Land and Buildings	109,211	543,560	14,062	220,855	489,221	47,145	1,424,055
Plant and Machinery	127,176	790,338	14,685	612,145	542,044	28,110	2,215,700
	H.P.	H.P.	H.P.	H.P.	H.P.	H.P.	H.P.
H.P. of Engines Ordinarily in use ..	1,787	6,359	632	3,793	3,230	192	15,993

(a) Includes Working Proprietors. (b) Exclusive of amounts drawn by Working Proprietors.

/Particulars

Particulars of the average salary and wage paid to employees are shown in the following table together with the average values of output, production, etc. for each of the years indicated:-

3. AVERAGE SALARIES AND WAGES PAID, OUTPUT, ETC. PER EMPLOYEE - AUSTRALIA, 1908 TO 1937-38.

Year	Salaries and Wages per Employee (a)	Value of Output per Person Engaged(b)	Value of Production per Person Engaged(b)	Ratio per cent of Salaries and Wages to Value of Production
	£	£	£	%
1908	81	732	199	40.37
1913	124	908	338	36.61
1920-21	209	1,569	379	54.93
1928-29	264	1,901	618	42.66
1929-30	258	2,396	784	32.86
1930-31	254	2,372	771	32.98
1931-32	222	2,134	631	30.39
1932-33	222	2,367	641	34.59
1933-34	214	2,097	609	35.09
1934-35	214	1,911	547	39.17
1935-36	222	1,957	547	40.52
1936-37	223	1,976	636	35.03
1937-38	243	1,982	629	38.57

(a) Excludes Working Proprietors and amounts drawn by them. (b) Including Working Proprietors.

Particulars of the materials used and articles produced in the year 1937-38 are shown in the following table. The quantities and values shown here are those furnished by the establishments included in this Summary only. The figures do not include similar materials used or articles produced in establishments not classified as "Chemical Fertilizers".

4. MATERIALS USED AND ARTICLES PRODUCED - AUSTRALIA, 1937-38.

Particulars	Unit of Quantity	Quantity	Value £
Materials used -			
Meat Works Refuse, Offal, etc. ..	Ton	12,003	72,742
Muriate of Potash ..	"	5,351	60,741
Sulphate of Potash ..	"	2,391	26,879
Phosphate Rock ..	"	739,402	1,286,639
Pyrites ..	"	(a)	(a)
Sulphate of Ammonia ..	"	15,325	155,914
Sulphur ..	"	104,865	656,047
Nitrate of Soda ..	"	6,372	66,715
Superphosphate - Own manufacture ..	"	19,541	(b)
Purchased ..	"	9,545	46,659
Sulphuric Acid - Own manufacture ..	"	392,692	(b)
Purchased ..	"	64,678	202,626
Other Materials ..	..	Value only	149,665
Total Value of Materials Used:			2,724,627
Articles produced -			
Ground Phosphate produced for sale ..	Ton	408	1,422
Superphosphate - made for own use ..	"	14,455	(b)
made for sale ..	"	1,213,150	4,615,367
Sulphate of Ammonia made for sale ..	"	6,213	57,612
Complete Manures ..	"	50,723	450,700
Super Mixtures ..	"	16,480	92,209
Sulphuric Acid - made for own use ..	"	392,692	(b)
made for sale ..	"	13,301	75,372
Other Acids - Acetic ..	lb.	342,928	5,595
Hydrochloric ..	"	349,746	3,810
Nitric ..	"	117,391	3,726
Other Articles ..	..	Value only	198,570
Total Value of Output:			4,904,383

(a) Not available for publication.
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(b) Quantity only collected.

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The number of employees shown in Table 2 has been adjusted to represent the average employment over the whole year in those cases where short time was worked. In the following table the factories have been classified according to the average number employed during the actual period worked.

5. FACTORIES CLASSIFIED ACCORDING TO HANDS EMPLOYED - AUSTRALIA.
1908 TO 1936-37.

Number of Persons Employed in each Factory	1908		1913		1920-21		1928-29		1936-37(c)	
	Number of Factories	Number Employed	Number of Factories	Number Employed	Number of Factories	Number Employed	Number of Factories	Number Employed	Number of Factories	Number Employed
Under 4	4	-	1	2	5	9	6	9	5	9
4	1	4	-	-	1	4	4	16	3	12
5 to 10	2	10	1	6	2	12	4	22	-	-
11 to 20	1	12	1	11	1	19	3	43	4	66
21 to 50	2	78	3	123	1	42	2	68	4	128
51 to 100	2	153	5	380	5	339	6	423	12	872
Over 100	1	121	5	690	6	1,073	12	1,903	6	1,162
TOTAL:	9	378	13	1,412	21	1,495	37	2,484	34	2,449
Average Number Employed per Factory		42		88		71		67		66

(a) 1927-28 not yet available.

Further details of employment in Chemical Fertilizer Works are furnished in the next three tables. In the first the employees have been classified according to the nature of their employment.

6. PERSONS EMPLOYED CLASSIFIED ACCORDING TO GRADE OF OCCUPATION - AUSTRALIA, 1908 TO 1937-38.

Grade of Occupation	1908	1913	1920-21	1928-29	1937-38
	No.	No.	No.	No.	No.
Working Proprietors ..	4	5	4	3	2
Managers and Overseers ..	16	39	37	78	57
Clerical Staff ..	22	48	80	90	122
Engine Drivers and Firemen..	12	55	42	22	28
Workers, Skilled and Unskilled	324	1,216	1,260	2,196	2,209
Other (Carters and Messengers)	-	48	75	73	56
TOTAL:	378	1,412	1,498	2,462	2,474

The next table shows the actual number of persons employed (excluding Working Proprietors) on the pay day nearest to the 15th of each month for the years 1936-37 and 1937-38.

7. PERSONS EMPLOYED ON PAY-DAY NEAREST TO THE 15TH OF EACH MONTH - AUSTRALIA, 1936-37 AND 1937-38 (WORKING PROPRIETORS EXCLUDED).

Month	1936-37			1937-38		
	Males	Females	Total	Males	Females	Total
	No.	No.	No.	No.	No.	No.
July ..	1,854	23	1,877	2,159	25	2,184
August ..	1,814	23	1,837	2,139	25	2,164
September	1,821	23	1,844	2,026	25	2,051
October..	1,967	25	1,990	2,096	25	2,121
November	1,885	23	1,908	2,119	25	2,144
December	1,919	23	1,942	2,038	25	2,063
January..	1,996	22	2,018	2,119	25	2,144
February	2,219	23	2,242	2,609	25	2,634
March ..	2,934	25	2,959	3,411	25	3,436
April ..	3,127	25	3,152	3,192	27	3,219
May ..	2,665	25	2,690	2,850	28	2,878
June ..	2,383	25	2,408	2,442	28	2,470
Average:	2,215	24	2,239	2,438	26	2,464

A classification of the number of employees according to age on or about the 15th June, 1938 is shown in the next table.

8. PERSONS EMPLOYED CLASSIFIED ACCORDING TO AGE - JUNE, 1938.

Sex	Under 16 years	16 and under 21 years	Adults	Total
	No.	No.	No.	No.
Males	23	199	2,220	2,442
Per Cent of Total	1%	8%	91%	100%
Females	-	8	20	28
Per Cent of Total	-	29%	71%	100%
Persons	23	207	2,240	2,470
Per Cent of Total	1%	8%	91%	100%

Statistics of the power equipment of the factories included in this group are given in the next table. The details given include the rated horsepower of engines ordinarily in use for the years 1936-37 and 1937-38 together with those in reserve or idle in the latter year. On account of the change from average horsepower used to rated horsepower of engines installed, however, comparison with previous years cannot be made.

9. POWER EMPLOYED TO DRIVE MACHINERY - AUSTRALIA.

Class of Engine	Rated H.P. of Engines		
	Ordinarily In Use		In Reserve or Idle
	1936-37	1937-38	1937-38
Steam - Reciprocating ..	355	415	340
Turbine	-	-	-
Internal Combustion -			
Gas	-	-	-
Petrol or Other Light Oils	-	-	10
Heavy Oils.. ..	1,668	1,777	650
Water	-	-	-
Total Prime Movers:	2,023	2,192	1,000
Motors driven by electricity -			
Purchased	10,550	13,806	3,532
Own Generation	1,998	2,155	700
Total Electricity: .	12,548	15,961	4,232
TOTAL POWER USED (a):	12,573	15,998	5,232

(a) Without Duplication.

Details of the quantities and values of the various items of power, fuel and light used in Chemical Fertilizer Works are shown in the following table:-

10. POWER, FUEL AND LIGHT, ETC. USED - AUSTRALIA, 1937-38.

Particulars	Unit of Quantity	Quantity	Value £
Coal - Black ..	Ton	5,513	7,993
Brown	"	256	352
Coke	"	2,112	2,964
Wood	"	485	430
Fuel Oil	Gallon	690,473	16,557
Electricity	-	(a)	67,409
Gas	-	(a)	840
Other (Charcoal, etc.)	-	(a)	24
Water Used.. ..	-	(a)	6,019
Lubricating Oil ..	-	(a)	5,999
TOTAL;		Value only	108,587

(a) Value only available.

Particulars of the book values of premises occupied and plant used in Chemical Fertilizer Works at the 30th June for each of the five years ended 1937 are shown in the next table. In addition, details of the values of additions and replacements made and depreciation allowed during the year 1936-37 are also shown.

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It should be noted that the amounts expended in Additions and Replacements refer to expenditure incurred by existing factories and do not include the cost of erecting and equipping new factories; these latter items, however, are included with the book values shown at 30th June. The amounts shown for Depreciation are those returned by factories. Changes in the number of factories operating and other factors affect comparison from year to year.

11. VALUE OF LAND AND BUILDINGS, PLANT AND MACHINERY - AUSTRALIA 1937-38.

Particulars	Land and Buildings	Plant and Machinery
	£	£
Additions and Replacements made during year(a)	86,734	203,740
Depreciation allowed during year (a) ..	33,554	119,719
Book Value (a) as at 30th June -		
1938	1,424,055	2,215,700
1937	1,368,075	2,145,237
1936	1,378,636	2,127,113
1935	1,365,737	2,120,628
1934	1,446,410	2,095,142

(a) See Note Above.

The next two tables furnish particulars of the quantities of imports and exports of Fertilizers for the years indicated:-

12. IMPORTS OF FERTILIZERS - AUSTRALIA 1908 TO 1937-38.

Item	1908	1913	1920-21	1928-29	1936-37	1937-38
	cwt.	cwt.	cwt.	cwt.	cwt.	cwt.
Ammonium Sulphate	10	244	3	21,470	573,979	604,566
Bonedust ..	74,657	15,341	1,260	(a)	(a)	(a)
Guano ..	696,660	26,819	1,129,240	52,018	29,620	41
Potash Salts ..	(a)	(a)	(a)	70,337	269,476	212,308
Rock Phosphates..	1,267,665	3,200,648	4,756,140	12,349,710	13,259,884	15,551,909
Soda Nitrate ..	48,792	66,783	99,660	152,747	134,311	188,129
Superphosphates..	610,596	534,198	-	2,560	20	-
Other ..	148,438	212,281	166	216,618	7,530	3,316
TOTAL:	2,846,818	4,056,314	5,986,469	12,865,460	14,274,820	16,560,269

(a) Included with Other Fertilizers.

13. EXPORTS OF FERTILIZERS - AUSTRALIA, 1908 TO 1937-38.

Item	1908	1913	1920-21	1928-29	1936-37	1937-38
	cwt.	cwt.	cwt.	cwt.	cwt.	cwt.
Ammonium Sulphate	70,258	46,067	123,720	18,610	5,011	2,613
Bonedust ..	65,491	86,295	59,680	39	2,865	3,224
Guano ..	-	6,242	-	(a)	(a)	(a)
Rock Phosphates..	5,077	18,555	186,260	-	1	220
Soda Nitrate ..	429	10,154	2,720	6	59	10
Superphosphates..	250,236	257,629	472,860	316	41,254	33,924
Other ..	120,524	237,734	41,320	66,429	68,817	102,664
TOTAL:	512,015	662,676	886,560	85,400	118,007	142,655

(a) Included with Other Fertilizers.

The following table shows the weekly minimum rates of wage and hours of labour in operation at 30th June, 1938 as prescribed by Commonwealth or State Industrial Tribunals. Where no rate is shown it indicates that the particular occupation is not specifically provided for in the award or determination.

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14. CHEMICAL FERTILIZERS.

Minimum Weekly Rates of Wage and Hours of Labour as at 30th June, 1938.

Occupation	New South Wales (S)		Victoria (C)		Queensland (A)		South Australia (C)		Western Australia (S)		Tasmania (S)	
	Hrs	Week-ly Wage	Hrs	Week-ly Wage	Hrs	Week-ly Wage	Hrs	Week-ly Wage	Hrs	Week-ly Wage	Hrs	Week-ly Wage
<u>Rock Phosphate -</u>												
Trimmers, screeners, crushers ..	44	89/6	44	81/6	..	..	44	79/6	44	79/5	..	..
Barrowmen, Baggers ..	..	..	44	83/-	..	..	44	81/-	44	79/5	..	..
Workmen in tunnels..	..	..	..	..	..	..	..	..	44	82/5	..	..
Millmen at crusher..	..	..	44	86/-	..	..	44	84/-	44	85/5	44	85/-
<u>Superphosphate -</u>												
Shed men ..)									(..	..	..	..
Elevator feeders ..)									(44	83/5	..	..
Den labourers ..)	44	83/6	44	81/6	..	..	44	79/6	(44	83/5	..	..
Conveyor beltmen ..)									(..	..	44	79/-
Hand sowers ..)									(..	..	44	76/-
Barrowman ..)												
Dryer ..)	44	82/-	44	83/-	..	..	44	81/-	44	82/5	44	79/-
Mixer assistant ..)												
Denmen ..)											(44	79/-
Bagger ..)											(..	..
Wigher ..)											(44	79/-
Machine sower ..)	44	82/-	44	84/6	..	..	44	82/6	44	79/5	(..	..
Super heap men ..)											(..	..
Screen cleaner ..)											(..	..
Super tunnel men ..)									(44	86/1	..	..
Green Super trimmer ..)									(..	..	..	..
Mixers ..)	44	82/- to 94/-	44	86/-	..	..	44	84/-	(44	88/5	44	85/-
Denmen on excavators)									(44	83/5	47	82/-
Loader ..)									(..	..	44	79/-
Stacker ..)									(..	..	44	79/-
Truck loaders single handed ..	..	..	44	95/-	..	..	44	93/-	44	88/5	..	..
Sharf lumpers ..	44	86/6	44	95/-	..	..	44	93/-	..	..	..	..
<u>Mixed Manure -</u>												
Handling mixed manures	44	82/-	44	81/6	..	..	44	79/6	44	79/5	..	..
Handling animal manures, mixing, cleaning animal manure bags, working in bins ..	44	88/-	44	83/-	..	..	44	81/-	44	82/5	..	..
Bagging and Weighing	44	85/-	44	84/6	..	..	44	82/5	47	79/5	..	..
Lumping animal manures ..	..	..	44	89/-	..	..	44	87/-	..	..	..	..
<u>Juniors -</u>												
15 years ..	44	23/6	44	28/6	44	24/6 to 29/6	44	27/10	44	26/3	..	..
16 years ..	44	29/6	44	36/8	44	32/- to 37/-	44	35/9	44	33/8	..	..
17 years ..	44	35/-	44	44/10	44	45/- to 50/-	44	43/9	44	43/1	..	..
18 years ..	44	47/-	44	53/-	44	49/- to 54/-	44	51/8	44	52/5	..	..
19 years ..	44	58/-	44	61/1	44	Adult rates	44	59/8	44	63/8	..	..
20 years ..	44	70/6	44	69/3	..	..	44	67/6	44	Adult rates	..	..
<u>Apprentices -</u>												
1st year ..	44	17/1	..	..	..	..	..	..	..	..	..	..
2nd year ..	44	22/3	..	..	..	..	..	..	..	..	..	..
3rd year ..	44	35/9	..	..	..	..	..	..	..	..	..	..
4th year ..	44	53/7	..	..	..	..	..	..	..	..	..	..
5th year ..	44	68/2	..	..	..	..	..	..	..	..	..	..

(A) The Queensland Fertilizer Manufacturing (State) Award prescribes a minimum wage of 91/- for adults in the Southern Division, Eastern District; 96/5 in Mackay Division and 101/- in Northern Division, Eastern District. The maximum working hours per week are 44 in all divisions. (S) State award. (C) Commonwealth Court Award.