

## SECTION XIII. MANUFACTURING INDUSTRIES.

### § 1. General.

1. **Industrial Progress.**—The statistics of manufactures in the Commonwealth shew that many industries have now been permanently established on a secure basis, and also indicate a consistent progress both in regard to the extension of existing industries and the establishment of new ones. As will be seen from the following pages, this growth has been particularly rapid since the abolition of inter-colonial tariffs consequent upon the creation of the Commonwealth of Australia in 1901.

(i.) *The Gold Discoveries, 1851.* Prior to the gold discoveries (1851) there was little development in the manufacturing industries of Australia. Reference to that period will be found in previous issues of the Year Book (see No. 6, page 524).

(ii.) *Later Progress.* Soon after the discovery of gold, the construction of the first railways (1854) and the re-establishment of regular steamship communication with Europe (1856) helped to encourage the nascent industrial activity. The Colonies of New South Wales and Victoria, which had recently (1855) received the benefits of responsible government, soon turned their attention to the settlement of an agricultural population on the land. The Acts which were passed had a beneficial effect on the workers, giving them opportunities for employment not previously open to them, and fostering the manufacturing industries by increasing the measure of primary production. During the following years the various manufacturing industries prospered. The statistics of the States are not sufficiently complete or uniform to enable a statement of the progress of these industries to be given. The following table, however, shewing, so far as returns are available, the number of factories and the number of employees in each State at decennial periods from 1861 to 1911, and for each of the four years 1912 to 1915, will serve to indicate generally the progress which has been made:—

#### NUMBER OF FACTORIES AND EMPLOYEES IN EACH STATE, 1861 to 1915.

Year.	N.S.W.	Victoria.	Queensland.	S. Aust.	W. Aust.	Tasmania.	C'wealth.
NUMBER OF FACTORIES.							
1861	601	531	...	...	...	...	...
1871	1,813	1,740	...	...	...	...	...
1881	2,961	2,488	571†	823†	...	...	...
1891	3,056	3,141	1,328†	996†	175	...	...
1901	3,367	3,249	2,110†	1,335†	662	420*	11,143†
1911	5,039	5,126	1,657	1,314	710	609	14,455
1912	5,162	5,263	1,790	1,341	711	611	14,878
1913	5,346	5,613	1,838	1,353	763	623	15,536
1914	5,269	5,650	1,796	1,323	787	603	15,428
1915	5,269	5,413	1,775	1,266	780	589	15,092

#### NUMBER OF EMPLOYEES.

1861	...	4,395	...	...	...	...	...
1871	13,583	19,569	...	5,629†	...	...	...
1881	31,191	43,209	...	10,995†	...	...	...
1891	50,879	53,525	...	14,099†	...	...	...
1901	66,135	66,529	26,172†	19,283†	12,198	7,466*	197,783†
1911	108,624	111,948	37,156	27,885	15,799	10,298	311,710
1912	115,561	116,108	40,948	28,500	16,382	9,957	327,456
1913	120,400	118,744	42,363	28,511	17,299	9,784	337,101
1914	116,611	118,399	43,282	26,874	17,640	8,922	331,728
1915	116,611	113,834	42,079	25,496	14,631	8,420	321,071

\* For 1902. † Not on same basis as other States. ‡ Not on same basis for some of States as in 1911.  
 § For year ended 30th June, 1915.

NOTE.—In this and all subsequent tables, except where specially mentioned, "Number of Employees" includes working proprietors.

Since the inauguration of the Commonwealth, the throwing open of the whole of the Australian markets to the industrial products of each State has facilitated the internal distribution of the products of Australian industry.

**2. Defects in Industrial Statistics.**—A complete statistical account of the growth of the manufacturing industries in Australia unfortunately cannot be given for any lengthy period, owing to the fact that the necessary statistics have not been collected in past years by the several States upon a definite and identical basis. Even in respect of either the definition of a "factory" or (so far as they might be included in related returns) the statistics of persons employed therein, there was formerly no common agreement. The relatively minor place that manufacturing industry held in relation to the total activity of Australia was, perhaps, responsible for the fact that the necessity for uniform method was not earlier recognised.

In 1896 it was agreed, as between Victoria and New South Wales, to adopt a common definition of the term "factory," viz., "any factory, workshop, or mill where four or more persons are employed or power is used." This agreement was adopted for the States generally at the Conference of State Statisticians in 1902, when it was decided, however, that the term "factory" should include also "all establishments, whether making for the trade, wholesale or retail, or for export." It was further agreed that industries should be arranged, as far as possible, under a uniform classification. As a result of the conference of 1902 a higher degree of uniformity in the collection and presentation of industrial statistics was attained in the several States, so that returns upon which anything like a proper comparative study of the development and progress of various manufacturing industries in the Commonwealth may be based, date back only as far as the year 1903, when the resolution of the conference first came to be put into force. All the States did not, however, fall completely into line, and, as may be seen in the succeeding parts of this section, the comparisons afforded by the returns for the years 1903 to 1906 inclusive, are in some cases subject to various limitations. At the Conference of Statisticians held in Melbourne in 1906 special consideration was given to the methods to be adopted for the collection of statistical information regarding primary and secondary production and industry. A definite classification of industries was adopted, and a set of forms for the collection and compilation of industrial statistics on a definite and uniform basis in each State was agreed upon. The States have not, even yet, fallen entirely into line in collecting and classifying the returns. The particulars for the past seven years are, however, in more complete co-ordination than formerly, and it is now possible to give particulars for the several States in greater detail and with greater uniformity throughout.

**3. Classification of Manufacturing Industries.**—Under the classification adopted at the Conference of Statisticians held in 1906, factories were placed under nineteen different categories, according to the nature of the industry carried on therein; many of the categories were also subdivided. Where two or more industries are carried on by one proprietor in one building, each industry is, when possible, treated as a separate establishment. The statement given hereafter shews the classification which has been adopted; it must be understood, however, that this classification does not pretend to be exhaustive, but merely serves as a guide for the collection and presentation of statistics in the several States on a definite and uniform basis:—

## CLASSIFICATION OF MANUFACTURING INDUSTRIES.

<p><b>CLASS I.—TREATING RAW MATERIALS, ETC.</b> Boiling-down, Tallow Refining, etc. Tanneries Woolscouring &amp; Fellmongering Chaff-cutting, etc.</p>	<p>Corn-flour, Oatmeal, etc. Flour Mills Jam and Fruit Canning Pickles, Sauces, and Vinegar Sugar Mills Sugar Refining Aerated Waters, Cordials, etc. Breweries Condiments, Coffee, Spices, etc. Distilleries Ice and Refrigerating Malting Tobacco, Cigars, etc.</p>	<p><b>CLASS XII.—SHIP AND BOAT BUILDING AND REPAIRING.</b> Docks and Slips Sailmaking Ship and Boat Building and Repairing</p> <p><b>CLASS XIII.—FURNITURE, BEDDING, ETC.</b> Bedding, Flock, &amp; Upholstery Billiard Tables Furniture and Cabinet Making Picture Frames Window Blinds</p>
<p><b>CLASS II.—OILS AND FAT, ETC.</b> Oil and Grease Soap and Candles</p>	<p><b>CLASS VII.—CLOTHING AND TEXTILE FABRICS.</b> Woolen and Tweed Mills Boots and Shoes Slop Clothing Clothing (Tailoring) Dressmaking and Millinery— Makers' material Customers' material Dyeworks and Cleaning Furriers Hats and Caps Waterproof and Oilskin Shirts, Ties, and Scarfs Rope and Cordage Tents and Tarpaulins</p>	<p><b>CLASS XIV.—DRUGS AND CHEMICALS, ETC.</b> Chemicals, Drugs, and Medicines Fertilisers Paints, Varnishes, and By-products</p>
<p><b>CLASS III.—STONE, CLAY, GLASS, ETC.</b> Bricks and Tiles Glass (including Bottles) Glass (Ornamental) Lime, Plaster, Cement and Asphalt Marble, Slate, etc. Modelling, etc. Pottery and Earthenware</p>	<p><b>CLASS VIII.—BOOKS, PAPER, PRINTING, ETC.</b> Electrotyping &amp; Stereotyping Paper-making, Paper Boxes, Bags, etc. Photo-engraving Printing and Binding</p>	<p><b>CLASS XV.—SURGICAL AND OTHER SCIENTIFIC INSTRUMENTS.</b> Surgical, Optical, and other Scientific Instruments</p>
<p><b>CLASS IV.—WORKING IN WOOD.</b> Boxes and Cases Cooperage Joinery Saw Mills Wood-turning, etc.</p>	<p><b>CLASS IX.—MUSICAL INSTRUMENTS, ETC.</b> Musical Instruments and Sewing Machines</p>	<p><b>CLASS XVI.—TIMEPIECES, JEWELLERY, &amp; PLATED WARE.</b> Electro-plating Manufacturing Jewellery, etc.</p>
<p><b>CLASS V.—METAL WORKS, MACHINERY, ETC.</b> Agricultural Implements Brass and Copper Cutlery Engineering Galvanised Iron-working Ironworks and Foundries Lead Mills Railway Carriages Railway and Tramway Workshops Smelting Stoves and Ovens Tinsmithing Wireworking Other Metal Works</p>	<p><b>CLASS X.—ARMS &amp; EXPLOSIVES</b> Arms and Explosives</p>	<p><b>CLASS XVII.—HEAT, LIGHT, AND POWER.</b> Coke Works Electric Apparatus Electric Light and Power Gas Works and Kerosene Lamps and Fittings, etc. Hydraulic Power</p>
<p><b>CLASS VI.—FOOD AND DRINK, ETC.</b> Bacon Curing Butter Factories Butterine and Margarine Cheese Factories Condensed Milk Meat and Fish Preserving Biscuits Confectionery</p>	<p><b>CLASS XI.—VEHICLES, SADDLERY, HARNESS, ETC.</b> Coach and Wagon Building Cycles Perambulators Saddlery, Harness, etc. Spokes, etc.</p>	<p><b>CLASS XVIII.—LEATHERWARE (N.E.I.)</b> Leather Belting, Fancy Leather, Portmanteaux &amp; Bags</p> <p><b>CLASS XIX.—MINOR WARES.</b> Basket and Wickerware, Matting, etc. Brooms and Brushware Rubber Goods Toys Umbrellas Other Industries</p>

## § 2. Number of Manufactories.

1. **General.**—In stating the number of factories in the States of the Commonwealth, it is to be remembered that in the collection of statistics for years prior to 1907 the same basis has not been adopted in each State. In Queensland, for example, prior to 1906, the statistics included all establishments where two or more hands were employed, except Government railway workshops, which were not included till 1907. The difference in other respects is not material.

In the following table, shewing the total number of manufactories in the Commonwealth during the years 1903 and 1910 to 1915, it should be noted that not only are the results affected by differences of classification prior to 1907, but also that the number of

factories from year to year does not unequivocally indicate a change in the position of the industry, since amalgamations may account for part of the reduction of the numbers. (See § 3, 5.)

### MANUFACTORIES OF THE COMMONWEALTH, 1903, and 1910 to 1915.

Year.	N.S.W.	Victoria.	Queensland.	South Aust.	West. Aust.	Tasmania.	C'wealth.
1903 ...	3,476	4,151	2,001*	906*†	586	431	11,551
1910 ...	4,821	4,873	1,563	1,278	680	635	13,850
1911 ...	5,039	5,126	1,657	1,314	710	609	14,455
1912 ...	5,162	5,263	1,790	1,341	711	611	14,878
1913 ...	5,346	5,613	1,838	1,353	763	623	15,536
1914 ...	5,269	5,650	1,796	1,323	787	603	15,428
1915 ...	5,269	5,413	1,775	1,266	780	589	15,092

\* Not on same basis as other States. † 1904 results, those for 1903 not available.

† For year ended 30th June, 1915.

(i.) *Classification of Factories in Commonwealth, 1910 to 1915.* The following table shows the total number of factories in the Commonwealth at the end of each year from 1910 to 1915, classified on the basis indicated in § 1, 3 hereof:—

### CLASSIFICATION OF FACTORIES IN THE COMMONWEALTH, 1910 to 1915.

Class of Industry.	1910.	1911.	1912.	1913.	1914.	1915.
	No.	No.	No.	No.	No.	No.
I. Treating raw material, product of agricultural and pastoral pursuits, etc. ...	855	857	871	907	870	839
II. Treating oils and fats, animal, vegetable, etc. ...	100	105	102	100	101	99
III. Processes in stone, clay, glass, etc. ...	703	719	709	732	706	654
IV. Working in wood ...	1,474	1,625	1,752	1,812	1,764	1,702
V. Metal works, machinery, etc. ...	1,620	1,697	1,779	1,814	1,824	1,814
VI. Connected with food and drink, etc. ...	2,286	2,310	2,331	2,366	2,353	2,328
VII. Clothing and textile fabrics, etc. ...	2,982	3,093	3,115	3,266	3,254	3,117
VIII. Books, paper, printing and engraving ...	1,062	1,144	1,158	1,206	1,229	1,225
IX. Musical instruments, etc. ...	20	19	21	21	19	19
X. Arms and explosives ...	13	14	16	20	19	20
XI. Vehicles and fittings, saddlery & harness, etc. ...	1,195	1,208	1,249	1,396	1,365	1,337
XII. Ship and boat building and repairing ...	85	87	87	96	93	68
XIII. Furniture, bedding, and upholstery ...	560	613	670	719	703	693
XIV. Drugs, chemicals, and by-products ...	176	189	202	206	213	206
XV. Surgical and other scientific instruments ...	35	41	44	48	52	51
XVI. Jewellery, timepieces, and platedware ...	155	169	177	190	200	199
XVII. Heat, light, and power ...	326	351	372	420	454	474
XVIII. Leatherware, n.e.i. ...	60	62	66	67	65	67
XIX. Minor wares, n.e.i. ...	143	152	147	150	164	160
Total ...	13,850	14,455	14,878	15,536	15,428	15,092

For the purpose of the returns in the above table the definition of a factory adopted at the Conference of Statisticians in 1902 (see § 1, 2 hereof) is used, viz., "Any factory, workshop or mill where four or more persons are employed or power is used." The total increase in the number of factories according to this table from 1910 to 1915 was 1,242, or an average of 248 a year. The state of the manufacturing industries throughout Australia cannot, however, be gauged from a mere enumeration of the number of factories. Some of the factories concerned were practically in their infancy, employing but few hands, while others were developed on a large scale. Also, as pointed out previously, amalgamations may in some instances account for a reduction in the numbers.

(ii.) *Classification of Factories in each State, 1915.* The following table shows the number of factories in each State of the Commonwealth at the end of the year 1915, classified according to the nature of the industry. (See classification given in § 1, 3 hereof):—

CLASSIFICATION OF FACTORIES IN EACH STATE, 1915.

Class of Industry.	N.S.W.	Vic.	Q'land.	S. Aus.	W. Aus.	Tas.	Cwith.
	No.	No.	No.	No.	No.	No.	No.
I. Treating raw material, product of agricul. and pastoral pursuits, etc.	281	322	44	105	41	46	839
II. Treating oils and fats, animal, vegetable, etc.	42	25	14	10	6	2	99
III. Processes in stone, clay, glass, etc.	293	410	320	94	71	139	1,702
IV. Working in wood	668	410	217	177	80	41	1,814
V. Metal works, machinery, etc.	568	731	439	248	139	114	2,328
VI. Connected with food and drink, etc.	757	631	251	226	144	80	3,117
VII. Clothing and textile fabrics, etc.	1,001	1,415	251	226	144	80	3,117
VIII. Books, paper, printing & engraving	458	443	144	85	71	24	1,225
IX. Musical instruments, etc.	13	5	...	1	...	...	19
X. Arms and explosives	7	12	...	1	...	...	20
XI. Vehicles and fittings, saddlery and harness, etc.	397	529	153	133	72	53	1,337
XII. Ship and boat building & repairing	43	12	13	8	6	6	88
XIII. Furniture, bedding, and upholstery	243	265	73	48	41	23	633
XIV. Drugs, chemicals, and by-products	93	79	3	11	13	7	206
XV. Surgical and other scientific instruments	15	23	6	2	5	...	51
XVI. Jewellery, timepieces, & platedware	59	94	16	14	8	8	199
XVII. Heat, light, and power	238	142	28	17	31	18	474
XVIII. Leatherware, n.e.i.	24	33	4	3	3	...	67
XIX. Minor wares, n.e.i.	69	53	10	12	9	7	160
Total ...	5,269	5,413	1,775	1,266	780	589	15,092

\* Year ended 30th June, 1915.

2. Use of Mechanical Power.—The principal motive power is steam, but the chief towns possess electric power stations owned either by the Government, or by public bodies or private companies. From these many factories find it convenient to derive their motive power.

The following table shows the number of factories in which machinery was worked by steam, gas, oil, or electricity, and the horse-power of engines or motors used, in each State and in the Commonwealth, during the year 1915 :—

UTILISATION OF MECHANICAL POWER IN FACTORIES IN EACH STATE; 1915.

State.	Number of Establishments.			Actual Horse-power of Engines Used.				
	Using Machinery worked by Steam, Gas, Oil, or Electricity	Others.	Total.	Steam.	Gas.	Oil.	Electricity.	Total.
	No.	No.	No.	H.P.	H.P.	H.P.	H.P.	H.P.
New South Wales*	3,987	1,282	5,269	158,718	14,552	1,885	50,179	225,334
Victoria ...	4,030	1,383	5,413	71,223	17,935	2,272	26,385	117,815
Queensland ...	1,352	423	1,775	39,494	10,470	1,337	10,630	62,131
South Australia ...	971	295	1,266	26,698	6,888	1,859	6,485	41,930
Western Australia ...	619	161	780	30,031	4,923	979	4,826	40,759
Tasmania ...	479	110	589	7,330	226	226	9,083	16,865
Commonwealth	11,438	3,654	15,092	333,494	54,994	8,556	107,788	504,834

\* Year ended 30th June, 1915.

A comparison of the above table with that immediately preceding will explain the preponderance of horse-power employed in the New South Wales factories, this State possessing by far the largest number of industries demanding a considerable amount of power; Victoria, on the other hand, has the largest number of establishments, such as those connected with clothing and textile fabrics, wherein much less mechanical power is utilised.

The number of establishments in the Commonwealth using machinery worked by steam, gas, oil, or electricity during 1915 was 11,438, or 75.79 per cent. of the total; 3,654 establishments, representing 24.21 per cent., used no mechanical power. The total average horse-power in use was 504,834, of which engines in which the motive power was steam formed 66.06 per cent.; gas, 10.89 per cent.; oil, 1.70 per cent.; and electricity, 21.35 per

cent. During 1915 there were 42 more establishments using power than in 1914, the increase in horse-power employed being 13,297, or 2.7 per cent.

The following table shows the horse-power of engines used in connection with factories in the Commonwealth during each of the last six years:—

**UTILISATION OF MECHANICAL POWER IN FACTORIES IN COMMONWEALTH,  
1910 to 1915.**

Year.	Number of Establishments.			Actual Horse-power of Engines used.				
	Using Machinery worked by Steam, Gas, Oil, or Electricity.	Others.	Total.	Steam.	Gas.	Oil.	Elec- tricity.	Total.
	No.	No.	No.	H.P.	H.P.	H.P.	H.P.	H.P.
1910 ...	9,264	4,586	13,850	228,902	28,323	4,939	36,437	298,601
1911 ...	9,972	4,483	14,455	255,061	35,389	6,024	46,576	343,550
1912 ...	10,558	4,320	14,878	284,228	43,905	6,829	56,797	391,759
1913 ...	11,239	4,297	15,536	313,085	48,677	8,142	72,250	442,154
1914 ...	11,396	4,032	15,428	336,766	50,976	8,542	95,253	491,537
1915 ...	11,438	3,654	15,092	333,494	54,994	8,558	107,788	504,834

During the last five years the number of establishments using mechanical power has increased over 23½ per cent., the actual horse-power of engines used increasing over 69 per cent. during the same period.

**§ 3. Numbers Employed in Australian Factories.**

1. **Total Number Employed.**—Each person employed in and about a factory, in whatever capacity, is now included as a factory employee, consequently every proprietor who works in his business is counted as an employee, and all "outworkers" (see paragraph 6 hereinafter) are also included. The individuals embraced may be classed under the following heads, viz.:—(i.) Working proprietors; (ii.) managers and overseers; (iii.) accountants and clerks; (iv.) enginedrivers and firemen; (v.) skilled and unskilled workers in the factories, mills, or workshops; (vi.) carters and messengers; and (vii.) others.

(i.) *Average Numbers Employed, 1910 to 1915.* The following table shows, for each year from 1910 to 1915 inclusive, (a) the average numbers of persons (including both sexes and all ages) employed in manufacturing industries in each State; (b) the percentage of the numbers employed in each State on the total numbers employed in the Commonwealth; and (c) the numbers employed per ten thousand of the mean population in each State and the Commonwealth:—

**AVERAGE NUMBER OF PERSONS EMPLOYED IN MANUFACTURING INDUSTRIES,  
1910 to 1915.**

Year.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	C'wealth.
AVERAGE NUMBER.							
1910 ...	99,711	102,176	33,944	27,010	14,107	9,980	286,928
1911 ...	108,624	111,948	37,156	27,885	15,799	10,298	311,710
1912 ...	115,561	116,108	40,948	28,500	16,382	9,957	327,456
1913 ...	120,400	118,744	42,363	28,511	17,299	9,784	337,101
1914 ...	116,611*	118,399	43,232	26,874	17,640	8,922	331,728
1915 ...	116,611*	113,834	42,079	25,496	14,631	8,420	321,071
PERCENTAGE ON COMMONWEALTH TOTAL.							
1910 ...	34.76	35.61	11.83	9.41	4.91	3.48	100.00
1911 ...	34.85	35.91	11.92	8.95	5.07	3.30	100.00
1912 ...	35.29	35.46	12.51	8.70	5.00	3.04	100.00
1913 ...	35.72	35.22	12.57	8.46	5.13	2.90	100.00
1914 ...	35.15	35.69	13.05	8.10	5.32	2.69	100.00
1915 ...	36.32	35.45	13.11	7.94	4.56	2.62	100.00

AVERAGE NUMBER OF PERSONS EMPLOYED IN MANUFACTURING INDUSTRIES, 1910 TO 1915—Continued.

Year.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	C'wealth.
PER 10,000 OF MEAN POPULATION.							
1910 ...	611	797	574	673	521	522	657
1911 ...	654	843	605	679	551	541	694
1912 ...	665	856	648	676	543	519	705
1913 ...	665	852	649	658	551	499	702
1914 ...	626*	832	641	611	545	450	674
1915 ...	626*	798	612	637	454	422	650

\* Year ended 30th June, 1915.

(ii.) *Rates of Increase, 1910 to 1915.* From the preceding table it may be seen that except during the last two years there has been a general increase in the average number of persons employed in manufacturing industries during the period referred to. The following table shows the percentage of increase on the average number for the preceding year from 1911 to 1915:—

PERCENTAGE OF INCREASE IN AVERAGE NUMBER EMPLOYED, 1911 to 1915.

Years.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	C'wealth.
1910-11 ...	8.94	9.56	9.46	3.32	11.99	3.19	8.65
1911-12 ...	6.35	3.72	10.20	2.12	3.69	-3.31	5.03
1912-13 ...	4.19	2.27	3.46	0.04	5.60	-1.74	2.95
1913-14 ...	-3.27*	-0.29	2.17	-5.74	1.97	-8.81	-1.64
1914-15 ...	-3.27*	-3.86	-2.78	-5.13	-17.06	-5.63	-3.21

Note. — signifies a decrease. \* See note (\*) to preceding table.

2. **Classification of Numbers Employed in Factories in the Commonwealth, 1910 to 1915.**—The following table gives a classification of the average numbers of persons employed in factories of different descriptions in the Commonwealth during the years 1910 to 1915 inclusive:—

AVERAGE NUMBER OF PERSONS EMPLOYED IN VARIOUS FACTORIES IN THE COMMONWEALTH, 1910 to 1915.

Class of Industry.	1910.	1911.	1912.	1913.	1914.	1915.
I. Treating raw material, product of agricultural and pastoral pursuits, etc. ...	9,655	9,805	9,624	9,495	9,221	9,306
II. Treating oils and fats, animal, vegetable, etc. ...	1,872	2,019	2,091	2,091	2,259	2,523
III. Processes in stone, clay, glass, etc. ...	10,737	12,093	12,909	13,794	13,570	12,616
IV. Working in wood ...	24,520	27,948	30,660	31,646	30,137	26,030
V. Metal works, machinery, etc. ...	54,238	60,538	66,472	68,839	66,112	65,368
VI. Connected with food and drink, etc. ...	42,921	45,623	46,812	49,882	51,980	49,266
VII. Clothing and textile fabrics, etc. ...	78,983	83,845	84,661	84,237	81,076	78,952
VIII. Books, paper, printing and engraving ...	23,064	24,292	25,077	26,013	25,213	24,928
IX. Musical instruments, etc. ...	553	607	628	616	542	515
X. Arms and explosives ...	431	508	899	1,240	1,674	2,028
XI. Vehicles and fittings, saddlery and harness, etc. ...	12,484	13,294	13,400	13,913	13,125	12,350
XII. Ship and boat building and repairing ...	2,508	2,920	3,821	4,216	5,633	6,097
XIII. Furniture, bedding and upholstery ...	8,434	9,480	10,405	10,462	9,534	8,961
XIV. Drugs, chemicals and by-products ...	3,827	4,165	4,381	4,328	4,490	4,601
XV. Surgical & other scientific instruments ...	190	233	238	264	282	301
XVI. Jewellery, timepieces, and plated ware ...	1,896	2,142	2,302	2,170	2,026	1,878
XVII. Heat, light, and power ...	6,735	7,651	8,550	9,394	9,942	9,939
XVIII. Leatherware, n.e.i. ...	1,097	1,226	1,231	1,204	1,217	1,292
XIX. Minor wares, n.e.i. ...	2,783	3,321	3,295	3,297	3,695	4,120
Total ...	286,928	311,710	327,456	337,101	331,728	321,071

The total increase in the average number of hands employed from 1910 to 1915 was 34,143, or an annual average of 6,828. The increase was general throughout all the various classes of industry. The greatest development took place in Classes V. and VI., the increases being 11,130 and 6,345 respectively.

3. Classification of Numbers Employed in each State, according to Class of Industry, 1915.—The following table shews a similar classification of employees in manufacturing industries in each State for the year 1915:—

**AVERAGE NUMBER OF PERSONS EMPLOYED IN VARIOUS FACTORIES  
IN EACH STATE, 1915.**

Class of Industry.	N.S.W.	Vic.	Q'land.	S. Aus.	W. Aus.	Tas.	C'wth.
I. Treating raw material, product of agricul. and pastoral pursuits, etc.	3,818	3,345	623	844	305	371	9,306
II. Treating oils and fats, animal, vegetable, etc.	1,008	740	168	221	353	33	2,523
III. Processes in stone, clay, glass, etc.	6,256	3,822	636	1,202	491	209	12,616
IV. Working in wood	8,254	6,345	5,097	1,269	3,472	1,593	26,030
V. Metal works, machinery, etc.	26,407	19,217	7,204	8,096	3,077	1,367	65,368
VI. Connected with food and drink, etc.	15,380	13,778	13,783	3,274	1,523	1,518	49,266
VII. Clothing and textile fabrics, etc.	24,693	38,041	7,660	4,654	2,327	1,377	78,952
VIII. Books, paper, printing & engraving	9,279	8,881	3,038	1,835	1,175	720	24,928
IX. Musical instruments, etc.	354	145	...	16	...	...	515
X. Arms and explosives	700	1,324	...	4	...	...	2,028
XI. Vehicles and fittings, saddlery, and harness, etc.	4,080	4,589	1,408	1,275	562	436	12,350
XII. Ship and boat building & repairing	4,710	1,085	118	125	19	40	6,097
XIII. Furniture, bedding, and upholstery	3,642	2,689	1,129	905	396	300	8,961
XIV. Drugs, chemicals, and by-products	1,559	1,860	76	694	394	18	4,601
XV. Surgical and other scientific instruments	112	115	46	6	22	...	301
XVI. Jewellery, timepieces, & platedware	714	825	123	116	66	34	1,878
XVII. Heat, light, and power	3,721	4,012	696	844	311	355	9,339
XVIII. Leatherware, n.e.i.	532	604	106	24	26	...	1,292
XIX. Minor wares, n.e.i....	1,182	2,417	168	192	112	49	4,120
Total ... ..	116,611	113,834	42,079	25,496	14,631	8,420	321,071

\* Year ended 30th June, 1915.

The largest number employed in any particular class in the Commonwealth was in Class VII., in which there were 78,952 employees, or 24.53 per cent. of the whole number. The class affording employment to the smallest number of hands was Class XV., in which there were 301 hands, or 0.09 per cent. of the total number of employees. Classes VI., VII., and VIII. comprise those industries in which female labour is largely employed. (See § 4, 5 hereof.)

4. Classification of Numbers Employed in each State according to Nature of Employment, 1915.—In the following table the average numbers of persons employed in each State during the year 1915 are classified according to the nature of their employment:—

**AVERAGE NUMBER OF PERSONS EMPLOYED IN EACH STATE, CLASSIFIED  
ACCORDING TO NATURE OF EMPLOYMENT, 1915.**

State.	Average Number of Persons Employed.						Total.
	Working Proprietors.	Managers and Overseers	Accountants and Clerks.	Engine-drivers and Firemen.	Workers, Skilled & Unskilled in Factory Mill or Workshop	Carters, Messengers and Others.	
New South Wales*	4,452	3,756	4,615	2,812	97,938	3,038	116,611
Victoria ...	5,366	3,347	4,062	1,685	95,811	3,563	113,834
Queensland ...	1,522	1,429	1,760	1,524	33,502	2,342	42,079
South Australia ...	1,243	852	1,098	542	21,209	552	25,496
Western Australia ...	561	558	609	444	11,190	1,269	14,631
Tasmania ...	410	370	429	314	6,530	367	8,420
Commonwealth ...	13,554	10,312	12,573	7,321	266,180	11,131	321,071

\* Year ended 30th June, 1915.

† Including out-workers.



## 5. Classification of Factories according to Number of Hands Employed, 1915.—

(i.) The number of factories in each State, classified according to the number of hands employed and the total number of hands employed therein, is shewn in the following table:—

**CLASSIFICATION OF FACTORIES IN EACH STATE ACCORDING TO NUMBER OF HANDS EMPLOYED, 1915.**

No. of Persons Employed in each Factory.	N.S.W.*	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	C'wealth.
NUMBER OF FACTORIES.							
Under 4 ...	962	1,148	243	199	171	130	2,853
4 ...	530	623	172	177	70	71	1,643
5 to 10 ...	1,778	1,805	597	468	267	218	5,133
11 to 20 ...	927	827	328	187	125	83	2,477
21 to 50 ...	646	608	262	139	94	60	1,809
51 to 100 ...	232	214	92	52	29	17	636
Over 100 ...	194	188	81	44	24	10	541
Total ...	5,269	5,413	1,775	1,266	780	589	15,092

AVERAGE NUMBER OF HANDS EMPLOYED.

Under 4 ...	2,234	2,635	547	477	366	283	6,542
4 ...	2,120	2,492	688	708	280	284	6,572
5 to 10 ...	12,338	12,390	4,144	3,262	1,865	1,487	35,486
11 to 20 ...	13,462	12,011	4,785	2,647	1,822	1,218	35,945
21 to 50 ...	20,194	19,621	8,229	4,369	3,006	1,922	57,341
51 to 100 ...	16,314	14,693	6,737	3,548	1,999	1,090	44,381
Over 100 ...	49,949	49,992	16,949	10,485	5,293	2,136	134,804
Total ...	116,611	113,834	42,079	25,496	14,631	8,420	321,071

\* Year ended 30th June, 1915.

(ii.) Reference to the following table will shew the tendency of the ratio of the number of hands employed in the larger establishments to still further increase and that of the smaller factories to diminish. During the quinquennial period under discussion, the ratio of hands in factories employing under 21 hands to total number of employees in all factories shews a decline from 28.43 per cent. in 1910 to 26.33 in 1915. A slightly heavier falling off appears in establishments employing from 21 to 100 hands, viz., 34.24 to 31.68 per cent. The larger establishments with 101 hands and upwards during the same period exhibit an increase from 37.33 to 41.99 per cent. of total employed. The average number employed in all establishments in 1910 was 20.72, and in 1915, 21.27.

**CLASSIFICATION OF FACTORIES IN THE COMMONWEALTH ACCORDING TO  
NUMBER OF HANDS EMPLOYED DURING THE YEARS 1910 to 1915.**

Year.	Establishments Employing on the Average—							
	20 hands and under.		21 to 100 hands.		101 hands and upwards.		Total.	
	Es- tablish- ments.	Hands.	Es- tablish- ments.	Hands.	Es- tablish- ments.	Hands.	Es- tablish- ments.	Hands.
1910—								
Number ... ..	10,985	81,561	2,381	98,243	484	107,124	13,850	286,928
Average per establishment ...	...	7.42	...	41.26	...	221.33	...	20.72
Percentage on total ...	79.31	28.43	17.20	34.24	3.49	37.33	100.00	100.00
1911—								
Number ... ..	11,362	85,562	2,567	106,624	526	119,524	14,455	311,710
Average per establishment ...	...	7.53	...	41.54	...	227.23	...	21.56
Percentage on total ...	78.60	27.45	17.76	34.21	3.64	38.34	100.00	100.00
1912—								
Number ... ..	11,660	87,231	2,673	111,126	545	129,099	14,878	327,456
Average per establishment ...	...	7.48	...	41.57	...	236.88	...	22.01
Percentage on total ...	78.37	26.63	17.97	33.94	3.66	39.43	100.00	100.00
1913—								
Number ... ..	12,280	90,005	2,676	109,704	580	137,392	15,536	337,101
Average per establishment ...	...	7.33	...	41.00	...	236.88	...	21.70
Percentage on total ...	79.04	26.70	17.23	32.54	3.73	40.76	100.00	100.00
1914—								
Number ... ..	12,284	88,071	2,589	106,584	554	136,924	15,427	331,579
Average per establishment ...	...	7.17	...	41.16	...	247.15	...	21.49
Percentage on total ...	79.62	26.56	16.79	32.14	3.59	41.30	100.00	100.00
1915—								
Number ... ..	12,106	84,545	2,445	101,722	541	134,804	15,092	321,071
Average per establishment ...	...	6.99	...	41.60	...	249.18	...	21.27
Percentage on total ...	80.22	26.33	16.20	31.63	3.58	41.99	100.00	100.00

6. **Outworkers.**—The term “outworker” or “homeworker” has acquired a special meaning in connection with manufacturing industries, and technically embraces only those to whom work is given out by factory owners to be wrought upon in the employees' own homes. Individuals working for themselves are not included. The following table gives particulars of the average number of outworkers connected with factories in each State during each year from 1910 to 1915 inclusive :—

**NUMBER OF OUTWORKERS\* CONNECTED WITH FACTORIES, 1910 to 1915.**

Year.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	C'wealth.
1910	720	1,584	224	68	20	76	2,692
1911	784	1,906	158	88	15	96	3,047
1912	895	1,959	140	71	14	86	3,165
1913	724	1,910	522	54	7	72	3,289
1914	582†	1,737	117	58	8	58	2,560
1915	582†	1,473	92	44	6	70	2,267

\* In all tables relating to number of hands employed in factories, outworkers are included.  
† Year ended 30th June, 1915.

The Factories Acts in each State contain provisions regulating the employment of outworkers. Generally records of out-work must be kept by factory proprietors, specifying the names and remuneration of workers, and stating the places where the work is done. Further particulars are given in a later part of this book. (See Section XXVII. *Industrial Unionism and Industrial Legislation.*)

### § 4. Sex Distribution in Factories.

1. **Employment of Females in Factories.**—In all the States the employment of female labour in factories is now regulated by Act of Parliament. In Victoria the first Act dealing with the subject was passed in the year 1873, and provided that no female should be employed for more than eight hours a day without the permission of the Chief Secretary. The number of working hours for women is now limited to forty-eight per week in all the States, overtime being allowed only with the permission of the Departments, and then to a limited extent. The maximum periods of continuous labour, and the intervals of cessation therefrom, are also prescribed by the several Acts. Further reference is made to the restrictions regarding the employment of females in a later part of this book. (See Section XXVII. *Industrial Unionism and Industrial Legislation.*)

2. **Distribution of Employees according to Sex, 1910 to 1915.**—In New South Wales the ratio of the number of females employed in factories to the number of males during 1886 was about one to seven; in 1891 one to six; in 1903 it became about one to four; and is now lower than one to three. In Victoria the ratio of females to males during the year 1886 was about one to five. Five years later (1891) it was somewhat less, but in 1896 had increased to about one woman to three men, and at present is slightly under one to two. In the remaining States the ratios during 1915 were—Queensland and South Australia, less than one female employed to every four males, Western Australia less than one to five, and Tasmania slightly more than one to six. The proportion for the whole of the Commonwealth was just below one to three. The employment of women is, however, largely confined to a few trades.

The great prosperity in clothing and textile industries is one of the main causes of increase in female employment. Certain trades are specifically known as women's trades, such as clothing and textile trades, preparation of food, book-binding, and lighter work connected with the drug trade, as, for example, wrapping. In common with commercial establishments, a considerable number of women are also employed as clerks and typists in factories.

(i.) *Average Number of Males and Females Employed, 1910 to 1915.* The following table shows the average number of male and female employees in factories in each State from 1910 to 1915:—

#### AVERAGE NUMBER OF MALES AND FEMALES EMPLOYED IN MANUFACTURING INDUSTRIES, 1910 to 1915.

State.	1910.	1911.	1912.	1913.	1914.	1915.
<b>MALES.</b>						
New South Wales ...	75,384	82,083	88,178	93,036	*90,394	*90,394
Victoria ...	66,309	73,573	77,565	80,054	79,772	75,971
Queensland ...	27,165	29,832	33,254	34,715	35,717	34,887
South Australia ...	21,864	22,629	23,083	23,323	22,111	20,772
Western Australia ...	11,654	13,212	13,805	14,625	14,996	12,290
Tasmania...	8,277	8,737	8,391	8,354	7,613	7,161
Commonwealth ...	210,653	230,066	244,276	254,107	250,603	240,975

## SEX DISTRIBUTION IN FACTORIES:

AVERAGE NUMBER OF MALES AND FEMALES EMPLOYED IN  
MANUFACTURING INDUSTRIES, 1910 to 1915—Continued.

State.	1910.	1911.	1912.	1913.	1914.	1915.
FEMALES.						
New South Wales ...	24,327	26,541	27,383	27,364	*26,217	*26,217
Victoria ...	35,867	38,375	38,543	38,690	38,627	37,863
Queensland ...	6,779	7,324	7,694	7,648	7,565	7,692
South Australia ...	5,146	5,256	5,417	5,188	4,763	4,724
Western Australia ...	2,453	2,587	2,577	2,674	2,644	2,341
Tasmania ...	1,703	1,561	1,566	1,430	1,309	1,259
Commonwealth ...	76,275	81,644	83,180	82,994	81,125	80,096

\* Year ended 30th June, 1915.

It will be seen that during the years specified there has been for the whole Commonwealth a total increase in the number of male employees of 30,322, or an annual average of 6,064, and in the number of female employees a total increase of 3,821, or an annual average of 764.

(ii.) *Average Number of Males and Females Employed per 10,000 of Mean Population, 1910 to 1915.* The following table shews the average number of male and female employees per 10,000 of the mean male and female population respectively in each State from 1910 to 1915:—

AVERAGE NUMBER OF MALE AND FEMALE FACTORY EMPLOYEES PER 10,000  
OF MEAN MALE AND FEMALE POPULATION RESPECTIVELY, 1910 to 1915.

State.	1910.	1911.	1912.	1913.	1914. *	1915.
MALES.						
New South Wales ...	883	947	967	979	*935	*935
Victoria ...	1,045	1,118	1,145	1,151	1,119	1,078
Queensland ...	843	892	970	982	978	932
South Australia ...	1,071	1,084	1,077	1,062	1,002	958
Western Australia ...	754	805	802	823	826	696
Tasmania ...	848	900	854	823	741	702
Commonwealth ...	929	986	1,009	1,015	981	948
FEMALES.						
New South Wales ...	312	334	332	319	*293	*293
Victoria ...	554	579	567	555	543	525
Queensland ...	252	262	266	256	244	242
South Australia ...	261	260	261	242	217	212
Western Australia ...	210	211	199	196	186	161
Tasmania ...	182	167	168	151	137	129
Commonwealth ...	363	379	374	361	342	333

\* Year ended 30th June, 1915.

3. **Rate of Increase for each Sex.**—The percentages of annual increase during the years 1911 to 1915 in the average number of males and females employed in manufacturing industries in the several States and the Commonwealth are shewn below:—

**PERCENTAGES OF ANNUAL INCREASE IN NUMBERS OF MALE AND FEMALE EMPLOYEES, 1911 to 1915.**

State.	1910-11.	1911-12.	1912-13.	1913-14.	1914-15.
<b>MALES.</b>					
	%	%	%	%	%
New South Wales ...	8.89	7.37	5.51	-2.84*	...*
Victoria ...	10.95	5.43	3.21	-0.35	-4.76
Queensland ...	9.82	11.47	4.39	2.89	-3.72
South Australia ...	3.60	1.91	1.04	-5.20	-6.06
Western Australia ...	13.37	4.49	5.94	2.54	-18.04
Tasmania ...	5.56	-3.96	-0.44	-8.87	-5.94
Commonwealth ...	9.23	6.15	4.02	-1.38	-6.01†
<b>FEMALES.</b>					
	%	%	%	%	%
New South Wales ...	9.10	3.17	-0.07	-4.19'	...*
Victoria ...	6.99	0.44	0.38	-0.16	-1.98
Queensland ...	8.04	4.99	-0.60	-1.08	1.68
South Australia ...	2.14	3.06	-4.23	-8.19	-0.82
Western Australia ...	5.46	-0.39	3.76	-1.12	-11.46
Tasmania ...	-8.34	0.32	-8.68	-8.46	-3.82
Commonwealth ...	7.04	1.88	-0.22	-2.25	-1.87†

Note.—The minus (—) sign indicates decrease. \* See note (\*) to § 4. 2 (i).

† Exclusive of New South Wales.

The above table shews that for the first three years of the quinquennial period under discussion, taking the Commonwealth as a whole, there has been relatively a larger increase in the number of male than in the number of female employees. This position existed in every State with the exception of New South Wales in 1911 and South Australia in 1912. During 1914 and 1915 the Commonwealth totals shew a decrease of 1.38 and 6.01 respectively for male and of 2.25 and 1.87 for female employees. The only States with an increased percentage during these two years were Queensland and Western Australia for males in 1914, and Queensland for females during 1915. This matter is referred to further in the following paragraph.

4. **Ratio of Female Employment in Factories.**—The extent to which females are employed in the factories of the Commonwealth may perhaps be best shewn by giving the masculinity of employees for each State for a series of years. The following table furnishes particulars for each of the years 1910 to 1915 inclusive:—

**EXCESS OF MALES OVER FEMALES PER 100 OF BOTH SEXES COMBINED,  
1910 to 1915.**

Year.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	C'wealth.
1910	51.2	29.6	60.1	61.9	65.2	65.9	46.8
1911	51.1	31.5	60.6	62.3	67.3	69.7	47.6
1912	52.6	33.6	62.4	62.0	68.6	68.6	49.2
1913	54.5	34.8	63.9	63.6	69.1	70.8	50.8
1914	*55.0	34.8	65.0	64.6	70.0	70.7	51.1
1915	*55.0	33.5	63.4	62.9	68.0	70.1	50.1

\* Year ended 30th June, 1915.

The proportion of the sexes has not materially changed during the past ten years, the 1915 figures for the whole of the Commonwealth, 50.1, being almost identical with those of 1905, 50.3. The tables given in the succeeding paragraph shew that the comparatively high ratios for females have been due not so much to the incursion of female labour into what may be termed men's trades, as to the activity in those trades in which women are ordinarily engaged, more especially in dressmaking, millinery, etc.

**5. Employment of Females in Particular Industries, 1915.**—The employment of women in manufacturing industries in Australia is largely confined to a few trades, of which the more important are comprised in Classes VI., VII., and VIII., viz., in connection with food, drink, etc., clothing and textile fabrics, and books, paper, printing, etc. The following table shews the average number of females employed in each of these classes during the year 1915 in each State, and also shews the percentages of the average number so employed on the total average number of females employed in all classes of factories:—

**AVERAGE NUMBER OF FEMALES EMPLOYED IN PARTICULAR INDUSTRIES, AND  
PERCENTAGES ON AVERAGE TOTAL EMPLOYED, 1915.**

Class.	N.S.W.	Vict.	Q'land.	S. Aust.	W. Aust.	Tas.	Cwltth.
<b>AVERAGE NUMBER.</b>							
VI. Food, drink, etc. ...	3,705	3,603	853	442	176	215	8,994
VII. Clothing and textile fabrics ...	17,517	28,262	5,784	3,434	1,775	874	57,646
VIII. Books, paper, printing, etc. ...	2,419	2,378	642	525	259	84	6,287
All other classes ...	2,576	3,620	413	323	151	86	7,169
<b>Total ...</b>	<b>26,217</b>	<b>37,863</b>	<b>7,692</b>	<b>4,724</b>	<b>2,341</b>	<b>1,259</b>	<b>80,096</b>

**PERCENTAGES ON TOTAL AVERAGE FEMALE EMPLOYEES.**

Class.	N.S.W.	Vict.	Q'land.	S. Aust.	W. Aust.	Tas.	Cwltth.
VI. Food, drink, etc. ...	14.13	9.52	11.09	9.96	7.52	17.08	11.23
VII. Clothing and textile fabrics ...	66.82	74.64	75.19	72.69	75.82	69.42	71.97
VIII. Books, paper, printing, etc. ...	9.23	6.28	8.35	11.11	10.21	6.67	7.85
All other classes ...	9.82	9.56	5.37	6.84	6.45	6.83	8.95
<b>Total ...</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>

It will be seen that by far the greater part of the total number of females employed in factories work in one or other of the three classes of industry indicated, Class VII. being the most important. The classification of the employment of females in the several industries in that class, and the ratio they bore to males so employed, are shewn in the following table:—

## FEMALE EMPLOYMENT IN EACH INDUSTRY IN CLASS VII. DURING 1915.

Industry.	New South Wales.*			Victoria.			Other States.		
	Males.	Femls.	Femini- nity. †	Males.	Femls.	Femini- nity. †	Males.	Femls.	Femini- nity. †
Woolen & tweed mills	379	576	20.63	960	1,103	6.93	268	334	10.96
Boots and shoes ...	2,634	1,471	-28.33	4,317	2,530	-26.10	1,440	783	-29.55
Slop clothing	2,904	7,586	44.63	2,278	7,969	55.54	1,959	5,920	50.27
Clothing (tailoring)									
Dressmaking & millin'y	108	4,394	95.20	256	7,851	93.68	29	2,978	99.08
Dyeworks and cleaning	58	46	-11.54	79	86	4.24	24	14	-26.32
Furriers ...	35	39	5.41	65	147	38.68	1	3	50.00
Hats and caps ...	511	918	20.48	667	984	19.20	85	140	24.44
Waterproof and oilskin	21	68	52.80	52	170	53.15	...	...	...
Shirts, ties, and scarfs	239	2,168	80.14	423	6,795	88.28	91	1,544	88.87
Rope and cordage ...	275	7	-95.04	526	371	-17.28	155	73	-35.96
Tents and tarpaulins...	212	244	7.02	143	132	-4.00	99	71	-16.47
Other ...	...	...	...	13	124	81.02	...	7	100.00
Total Class VII....	7,376	17,517	40.74	9,779	28,262	48.59	4,151	11,867	48.17

\* Year ended 30th June, 1915. † Excess of females over males per 100 of both sexes combined.  
NOTE.—Minus sign (-) denotes excess of males over females.

## § 5. Child Labour in Factories.

1. **Conditions of Child Labour.**—The employment of young persons in factories in each State of the Commonwealth is regulated by Acts of Parliament in a similar manner to the employment of female labour. Excepting under special circumstances, children under a certain age may not be employed in factories. The minimum age in all the States is 14, with the exception of South Australia, where it is 13 years, and Victoria, where the minimum for females is 15 years. Other restrictions on the employment of young persons in factories are more particularly referred to in a later part of this book. (See Section XXVII. *Industrial Unionism and Industrial Legislation.*) The general object of the restrictions imposed is to assure that a proper period shall be devoted to primary education, and that the early years of toil shall not exhaust the worker before the attainment of full growth.

2. **Average Number of Children Employed in Factories, 1910 to 1915.**—In the statistical compilations of the various States the term "child" may be taken to denote any person under sixteen years of age. The following table shews the average number of children of each sex employed in manufacturing industries in each State during the years 1910 to 1915:—

## AVERAGE NUMBER OF CHILDREN EMPLOYED IN FACTORIES, 1910 to 1915.

State.	1910.	1911.	1912.	1913.	1914.	1915.
MALES.						
New South Wales	2,452	2,474	2,225	2,385	*2,437	*2,437
Victoria ...	2,753	2,623	2,652	2,743	2,898	3,355
Queensland ...	1,031	1,176	1,114	1,122	1,148	1,247
South Australia ...	1,082	999	1,078	1,122	1,064	1,068
Western Australia	340	368	356	346	381	414
Tasmania ...	282	280	322	283	213	262
Commonwealth ...	7,940	7,920	7,747	8,001	8,141	8,783

AVERAGE NUMBER OF CHILDREN EMPLOYED IN FACTORIES,  
1910 TO 1915.—Continued.

State.	1910.	1911.	1912.	1913.	1914.	1915.
<b>FEMALES.</b>						
New South Wales ...	2,025	2,267	2,093	2,086	*2,326	*2,326
Victoria ...	2,174	1,937	1,740	1,840	1,816	2,197
Queensland ...	733	818	764	701	713	835
South Australia ...	702	555	704	611	522	591
Western Australia ...	266	293	334	360	361	311
Tasmania ...	96	131	121	141	77	97
Commonwealth ...	5,996	6,001	5,756	5,739	5,815	6,357
<b>TOTAL.</b>						
New South Wales ...	4,477	4,741	4,318	4,471	*4,763	*4,763
Victoria ...	4,927	4,560	4,392	4,583	4,714	5,552
Queensland ...	1,764	1,994	1,878	1,823	1,861	2,082
South Australia ...	1,784	1,554	1,782	1,733	1,586	1,659
Western Australia ...	606	661	690	706	742	725
Tasmania ...	378	411	443	424	290	359
Commonwealth ...	13,936	13,921	13,503	13,740	13,956	15,140

\* Year ended 30th June, 1915.

**3. Percentage of Children to Total Persons Employed.**—The foregoing table shows a general increase in several of the States in the number of children employed in factories during the past quinquennial period. These increases for the first three years, however, when examined in conjunction with the total number of persons employed, shew a fairly regular decrease in the percentage of child labour. This decrease is particularly noticeable in Victoria, the percentage falling from 4.82 in 1910 to 3.86 in 1913. In 1914 there was both an actual and percentage increase in several of the States, and in all of them during 1915.

**PERCENTAGE OF CHILDREN IN FACTORIES TO TOTAL NUMBER OF EMPLOYEES,  
1910 TO 1915.**

State.	1910.	1911.	1912.	1913.	1914.	1915.
	%	%	%	%	%	%
New South Wales ...	4.49	4.36	3.74	3.71	*4.08	*4.08
Victoria ...	4.82	4.07	3.78	3.86	3.98	4.88
Queensland ...	5.20	5.37	4.59	4.30	4.30	4.95
South Australia ...	6.60	5.57	6.25	6.08	5.90	6.51
Western Australia ...	4.30	4.18	4.21	4.08	4.21	4.96
Tasmania ...	3.79	3.99	4.45	4.33	3.25	4.26
Commonwealth ...	4.86	4.47	4.12	4.08	4.21	4.72

\* Year ended 30th June, 1915.

**4. Industries Employing Child Labour, 1915.**—The employment of children is largely confined to a limited number of industries, the most important of which are specified in the table below, which shews the average number of children of each sex employed in the several industries indicated, in each State during the year 1915:—



NUMBER OF CHILDREN ENGAGED IN VARIOUS INDUSTRIES, 1915.

Class.	Industry.	N.S.W.*		Victoria.		Q'land.		S. Aust.		W.A.		Tas.		C'w'lth.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
III.	Bricks, tiles, pottery and earthenware ...	43	...	68	4	15	...	22	...	6	...	6	...	160	4
IV.	Joinery; boxes, cases, etc. ...	59	...	65	4	24	...	24	...	15	1	7	...	194	5
V.	Agricultural implement's	6	...	75	...	9	...	35	...	5	...	1	...	131	...
..	Engin'ring, ironworks, and foundries ...	261	4	353	1	91	1	92	...	61	...	8	...	866	6
..	Brass and copper ...	12	1	93	...	7	1	33	...	...	...	...	...	145	2
..	Galvanised iron-work- ing and tinsmithing	99	15	124	53	73	1	87	...	...	...	5	...	388	69
..	Railway carriages, rail- way & tramway work- shops ...	46	...	221	...	13	1	99	...	29	...	...	...	408	1
VI.	Biscuits, cakes, etc. ...	143	115	55	55	13	6	16	9	25	12	22	4	274	201
..	Confectionery ...	46	57	24	52	20	27	28	30	4	3	1	...	123	169
..	Meat & fish preserving	11	6	24	...	142	...	7	...	...	...	4	...	188	6
..	Jams, pickles, sauces, etc. ...	19	18	26	22	21	22	22	29	7	1	11	4	106	96
..	Aerated waters, cor- dial, etc. ...	16	1	53	2	82	16	11	1	8	...	7	...	177	20
..	Tobacco, cigars, etc. ...	83	100	33	8	3	4	2	1	2	8	...	...	123	121
VII.	Woollen, tweed, and cotton mills...	49	79	155	122	12	37	16	16	...	...	4	10	236	264
..	Boots and shoes ...	144	148	208	236	42	51	39	40	18	18	8	11	459	504
..	Clothing (tailoring and slop)...	79	550	103	310	44	294	23	135	14	52	9	16	272	1,357
..	Dressmaking and mil- linery ...	5	407	13	446	1	122	...	133	...	137	1	37	20	1,282
..	Hats and caps ...	34	99	54	30	1	8	6	5	...	1	...	...	95	143
..	Shirts, ties, scarfs, etc.	9	196	14	436	6	117	3	77	1	33	...	2	33	861
VIII.	Electrotyping, printing and binding...	318	152	432	120	224	83	81	21	62	27	50	5	1,167	408
..	Paper making, paper boxes, etc. ...	60	136	25	46	2	17	26	76	4	8	...	...	117	283
XI.	Coach & wagon build- ing, etc. ...	51	...	96	...	36	...	36	...	5	...	11	...	235	...
..	Cycles and motors ...	26	...	79	...	16	...	42	...	13	...	11	1	187	1
XIII.	Billiard tables, cabinet making and furniture	81	1	70	2	49	3	24	1	15	...	20	...	259	7

\* Year ended 30th June, 1915.

5. Apprenticeship.—It is obvious that the age of apprenticeship in each State must be limited by the conditions governing the employment of child labour in factories. The early Apprentices Acts in some of the States are apparently in conflict on this point with the Factories Acts. The statutes limiting the age at which children may begin to work may be regarded as applicable by way of preventing too early apprenticeship, as may also those directing that education be continued up to a certain age or standard.

Indentures must be entered into specifying the conditions of the employment. Apprenticeships may not exceed seven years in duration, and become inoperative at twenty-one years of age, or in the case of women, on marriage.

The Arbitration Courts and Wages Boards have power to limit the number of apprentices which may be taken into a factory and specify the term of apprenticeship. No general statistics of the number of apprentices in Australia have been collected up to the present time. Other enactments relating to child labour are referred to in Section XXVII. of this book, *Industrial Unionism and Industrial Legislation*.

§ 6. Amount of Wages Paid and Value of Production.

1. Introduction.—The importance of the manufacturing industries of the Common- wealth is indicated by the fact that the total value of the output for 1915 was £169,086,700, of which amount the sum of £102,776,082 represents the value of the raw materials used. The difference between these two amounts, viz., £66,310,618, represents the amount by which the value of the raw materials was enhanced in the process of manufacture. The total amount of salaries and wages paid in factories during 1915 was £33,210,654.

2. Amount of Salaries and Wages Paid, 1915.—The total amount of salaries and wages paid during the year 1915 in various classes of factories in the Commonwealth (excluding all sums drawn by working proprietors) is shewn in the following table.

It has been found impracticable to shew satisfactorily herein the rates of wages paid to employees in various classes of manufacturing industries in Australia, owing to the facts—firstly, that the rates in many industries vary very considerably in different parts of the country; and secondly, that the necessary particulars are not collected by the several States on a uniform basis; while for some of the States the information given is lacking in essential details.

**AMOUNT OF SALARIES AND WAGES PAID IN FACTORIES IN  
COMMONWEALTH, 1915.\***

Class of Industry.	N.S.W. †	Vict.	Q'land.	S. Aust.	W. Aust.	Tas.	C'with.
	£	£	£	£	£	£	£
I. Treating raw material, product of agriculture and pastoral pursuits, etc. ...	385,039	354,008	68,359	67,682	17,896	19,644	912,628
II. Treating oils and fats, animal, vegetable, etc. ...	101,859	82,628	16,341	26,088	33,500	3,093	263,509
III. Processes in stone, clay, glass, etc. ...	776,997	464,874	64,647	131,752	55,111	18,553	1,511,934
IV. Working in wood ...	895,202	710,957	537,833	140,698	476,605	147,061	2,908,356
V. Metal works, machinery, etc. ...	3,391,462	2,399,009	916,498	1,094,901	452,930	175,484	8,430,284
VI. Connected with food and drink, etc. ...	1,709,597	1,454,381	1,419,756	319,685	189,941	122,469	5,215,849
VII. Clothing and textile fabrics, etc. ...	1,786,584	2,449,548	463,723	277,858	155,550	84,860	5,218,123
VIII. Books, paper, printing and engraving ...	1,080,923	994,229	340,085	184,162	167,649	89,218	2,856,266
IX. Musical instruments, etc. ...	44,653	15,692	...	1,652	...	...	62,037
X. Arms and explosives ...	81,499	136,660	...	366	...	...	219,525
XI. Vehicles and fittings, saddlery and harness, etc. ...	433,016	443,661	126,721	121,839	56,577	37,174	1,218,988
XII. Ship and boat building and repairing... ..	669,916	143,261	12,528	18,100	2,134	4,084	850,023
XIII. Furniture, bedding and upholstery ...	389,634	254,626	108,256	76,656	49,272	24,964	903,408
XIV. Drugs, chemicals, and by-products ...	147,435	190,617	5,215	76,429	52,716	1,351	473,763
XV. Surgical and other scientific instruments ...	11,198	10,394	3,515	917	1,661	...	27,685
XVI. Jewellery, timepieces, and platedware ...	89,769	83,194	10,911	13,648	6,743	3,053	207,318
XVII. Heat, light, and power ...	523,234	553,368	111,610	134,427	61,071	50,231	1,433,941
XVIII. Leatherware, n.e.i. ...	46,886	46,091	10,425	2,126	1,713	...	107,241
XIX. Minor wares, n.e.i. ...	102,518	249,147	10,212	16,104	10,207	2,288	390,776
Total ... ..	12,667,721	11,036,345	4,226,635	2,705,130	1,791,276	783,547	33,210,654

\* Excluding all amounts drawn by working proprietors. † Year ended 30th June, 1915.

The maximum amount of salaries and wages paid in any particular class was in Class V., the amount being £8,430,284, or 25.38 per cent. on the total amount; the minimum amount was in Class XV., £27,685, or 0.08 per cent. on the total amount. The State in which the largest amount was paid was New South Wales. The following statement shews the total amount of salaries and wages paid, and the average amount paid per employee in each State, during each of the years 1910 to 1915; the figures are exclusive of the amounts drawn from the business by working proprietors:—

**AMOUNT OF SALARIES AND WAGES PAID AND AVERAGE AMOUNT PER ANNUM  
PAID PER EMPLOYEE, 1910 to 1915.**

Year.	Particulars.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	C'with.
		£	£	£	£	£	£	£
1910	Total amount paid ...	3,687,007	7,600,932	2,830,704	2,323,398	1,683,657	740,463	23,866,161
	Average per employee ...	90.78	78.18	86.79	90.44	123.93	78.81	87.04
1911	Total amount paid ...	10,047,656	8,911,019	3,113,835	2,645,386	1,982,883	827,592	27,528,371
	Average per employee ...	96.35	83.48	87.15	99.64	123.80	84.47	92.26
1912	Total amount paid ...	11,592,062	10,102,244	3,699,065	2,869,653	2,169,144	855,334	31,287,492
	Average per employee ...	104.44	91.19	93.88	105.62	136.67	90.41	99.74
1913	Total amount paid ...	12,688,384	10,714,336	4,075,191	3,034,537	2,215,187	883,452	33,606,067
	Average per employee ...	109.66	94.74	100.05	111.66	132.31	95.18	104.14
1914*	Total amount paid ...	12,667,721	11,099,940	4,211,489	2,945,296	2,342,428	835,829	34,103,703
	Average per employee ...	112.94	98.50	100.91	115.31	137.30	98.82	107.36
1915*	Total amount paid ...	12,667,721	11,036,345	4,226,635	2,705,130	1,791,276	783,547	33,210,654
	Average per employee ...	112.94	101.75	104.21	111.53	127.31	97.82	108.00

\* New South Wales figures for year ended 30th June, 1915.

In comparing the figures in the preceding table, regard should be paid to the nature of certain industries which are carried on to a greater extent in some States than in others (see § 2 hereof). In Victoria, for instance, there are a large number of hands employed in Class VII., of whom a large percentage are women and children. The position occupied by Western Australia is principally due to the high ratio of male to female employees in that State.

It will be noted that there has been a persistent increase in the average wage paid per employee in each of the States during the period under review, despite the tendency of the number of females employed in certain industries to increase at a higher ratio than males. Taking the Commonwealth as a whole, during the period 1910-15 there has been an increase of 39.15 per cent. on the total amount of wages paid, and 24.08 per cent. on the average paid per employee.

The following tables show the approximate amount paid in salaries and wages to males and females in each class of industry in each State during 1915, and the total amounts paid to each sex in New South Wales and Victorian factories during the last six years, in South Australia and Tasmania during the last five years, and in Queensland and Western Australia during the last four years :—

**AMOUNT\* OF SALARIES AND WAGES PAID TO MALE AND FEMALE HANDS EMPLOYED IN EACH CLASS OF INDUSTRY IN THE SEVERAL STATES OF THE COMMONWEALTH DURING 1915.**

Class of Industry.	N.S.W.	Vic.	Q'land.	S. Aust.	W. A.	Tas.	C'wealth.
<b>MALES.</b>							
	£	£	£	£	£	£	£
I. Treating raw material, product of agricultural and pastoral pursuits, etc. ...	380,368	353,137	68,140	66,834	17,896	19,605	905,980
II. Treating oils and fats, animal, vegetable, etc. ...	91,614	78,171	15,899	25,321	33,440	2,882	247,327
III. Processes in stone, clay, glass, etc. ...	774,099	460,568	64,409	131,461	54,510	18,523	1,503,570
IV. Working in wood ...	890,375	706,349	534,063	139,507	476,361	146,011	2,892,566
V. Metal works, machinery, etc. ...	3,371,877	2,382,244	913,085	1,091,705	451,216	174,986	8,385,113
VI. Connected with food and drink, etc. ...	1,521,275	1,269,686	1,382,247	304,182	180,936	113,806	4,772,132
VII. Clothing and textile fabrics, etc. ...	864,219	1,081,185	212,705	129,311	61,481	47,011	2,395,912
VIII. Books, paper, printing and engraving ...	956,762	874,728	309,498	165,073	155,398	79,629	2,541,088
IX. Musical instruments, etc. ...	42,934	15,397	...	1,692	...	...	60,023
X. Arms and explosives ...	81,281	83,599	...	366	...	...	165,246
XI. Vehicles and fittings, saddlery and harness, etc. ...	425,867	434,312	134,105	120,296	55,118	36,047	1,195,745
XII. Ship and boat building and repairing ...	669,773	143,261	12,528	18,100	2,134	4,084	849,880
XIII. Furniture, bedding and upholstery ...	365,692	239,247	103,542	75,522	47,868	23,993	855,864
XIV. Drugs, chemicals and by-products ...	118,466	171,964	3,812	73,461	50,902	1,329	419,934
XV. Surgical and other scientific instruments ...	10,055	9,863	3,416	917	1,566	...	25,817
XVI. Jewellery, timepieces and plated ware ...	84,409	79,178	10,135	13,255	6,743	3,053	196,773
XVII. Heat, light and power ...	520,855	524,570	110,537	133,050	61,040	49,995	1,400,047
XVIII. Leatherware, n.e.i. ...	40,190	35,242	8,862	1,656	1,483	...	87,433
XIX. Minor wares, n.e.i. ...	86,561	219,151	9,182	14,870	9,385	2,056	341,205
Total ...	11,296,572	9,161,852	3,886,165	2,506,579	1,667,477	723,010	29,241,655

\* Exclusive of amount drawn by working proprietors.

† Year ended 30th June, 1915.

## AMOUNT\* OF SALARIES AND WAGES PAID TO MALE AND FEMALE HANDS EMPLOYED IN EACH CLASS OF INDUSTRY. Etc.—Continued.

Class of Industry.	N.S.W. †	Vic.	Q'land.	S. Aust.	W. A.	Tas.	C'wealth.
FEMALES.							
	£	£	£	£	£	£	£
I. Treating raw material, product of agricultural & pastoral pursuits, etc.	4,671	871	219	846	...	39	6,648
II. Treating oils and fats, animal, vegetable, etc.	10,245	4,457	442	767	60	211	16,182
III. Processes in stone, clay, glass, etc.	2,898	4,306	238	291	601	30	8,364
IV. Working in wood	4,927	4,608	3,770	1,191	244	1,050	15,790
V. Metal works, machinery, etc.	19,585	16,765	3,413	3,196	1,714	498	45,171
VI. Connected with food and drink, etc.	188,322	184,695	37,509	15,503	9,005	8,683	443,717
VII. Clothing and textile fabrics, etc.	922,365	1,368,363	251,018	148,547	94,069	37,849	2,822,211
VIII. Books, paper, printing and engraving	124,161	119,501	30,587	19,089	12,251	9,589	315,178
IX. Musical instruments, etc.	1,719	295	...	...	...	...	2,014
X. Arms and explosives	218	53,061	...	...	...	...	53,276
XI. Vehicles and fittings, saddlery & harness, etc.	7,149	9,349	2,616	1,543	1,459	1,127	23,243
XII. Ship and boat building and repairing	143	...	...	...	...	...	143
XIII. Furniture, bedding, and upholstery	23,942	15,379	4,714	1,134	1,404	971	47,544
XIV. Drugs, chemicals, and by-products	28,969	18,653	1,403	2,968	1,814	22	53,829
XV. Surgical and other scientific instruments	1,143	531	99	...	95	...	1,868
XVI. Jewellery, timepieces and platedware	5,360	4,016	776	393	...	...	10,545
XVII. Heat, light, and power	2,372	28,798	1,073	1,377	31	236	33,894
XVIII. Leatherware, n.e.i.	6,696	10,849	1,563	470	230	...	19,808
XIX. Minor wares, n.e.i.	16,257	29,996	1,030	1,234	822	232	49,571
Total	1,371,149	1,874,493	340,470	198,551	123,799	60,537	3,968,999

\* Exclusive of amount drawn by working proprietors. † Year ended 30th June, 1915.

## AMOUNT\* OF SALARIES AND WAGES PAID TO MALES AND FEMALES IN FACTORIES IN CERTAIN STATES, 1911 to 1915.

Particulars.	N.S.W. †	Victoria.	Q'land.	S.A.	W.A.	Tas.	C'with.
MALES.							
1910. Amount paid	£ 7,724,310	6,273,921	...	...	...	...	...
Per cent. on total	88.92	82.54	...	...	...	...	...
Average per employee	£ 107.84	101.20	...	...	...	...	...
1911. Amount paid	£ 8,917,577	7,357,735	...	2,430,263	...	773,900	...
Per cent. on total	88.76	82.57	...	91.87	...	93.51	...
Average per employee	£ 114.22	106.62	...	113.66	...	93.67	...
1912. Amount paid	£ 10,283,733	8,368,613	3,366,191	2,647,842	2,024,318	798,098	27,528,795
Per cent. on total	88.71	83.04	91.54	92.25	93.34	93.31	87.99
Average per employee	£ 123.50	115.18	106.57	121.41	152.02	100.85	118.86
1913. Amount paid	£ 11,323,791	8,925,814	3,744,050	2,809,066	2,068,212	826,358	29,697,291
Per cent. on total	89.28	83.30	91.87	92.57	93.37	93.54	88.37
Average per employee	£ 127.76	118.94	113.95	127.43	146.79	105.09	123.32
1914. Amount paid	£ 11,296,572	9,252,336	3,880,472	2,734,603	2,199,961	782,300	30,146,244
Per cent. on total	89.18	83.35	92.14	92.81	93.92	93.60	88.40
Average per employee	£ 130.98	123.84	113.39	131.21	152.31	109.24	126.86
1915. Amount paid	£ 11,296,572	9,161,852	3,886,165	2,506,579	1,667,477	723,010	29,241,655
Per cent. on total	89.18	83.02	91.94	92.66	93.09	92.27	88.05
Average per employee	£ 130.98	123.76	118.03	128.03	141.93	106.97	128.02
FEMALES.							
1910. Amount paid	£ 962,697	1,327,011	...	...	...	...	...
Per cent. on total	11.08	17.46	...	...	...	...	...
Average per employee	£ 40.08	37.67	...	...	...	...	...
1911. Amount paid	£ 1,130,079	1,553,284	...	215,123	...	53,692	...
Per cent. on total	11.24	17.43	...	8.13	...	6.49	...
Average per employee	£ 43.10	41.16	...	41.44	...	34.98	...
1912. Amount paid	£ 1,308,319	1,713,631	312,974	222,123	144,514	57,236	3,758,697
Per cent. on total	11.29	16.96	8.46	7.75	6.66	6.69	12.10
Average per employee	£ 48.39	45.15	41.00	41.43	56.56	37.00	45.79
1913. Amount paid	£ 1,359,593	1,788,522	331,141	225,471	146,975	57,094	3,908,796
Per cent. on total	10.72	16.70	8.13	7.43	6.63	6.46	11.63
Average per employee	£ 50.29	47.01	43.66	43.94	55.42	40.24	47.74
1914. Amount paid	£ 1,371,149	1,847,604	331,017	211,693	142,467	53,529	3,957,459
Per cent. on total	10.82	16.65	7.86	7.19	6.08	6.40	11.60
Average per employee	£ 52.91	48.65	44.06	44.95	54.44	41.27	49.46
1915. Amount paid	£ 1,371,149	1,874,493	340,470	198,551	123,799	60,537	3,968,999
Per cent. on total	10.82	16.98	8.06	7.34	6.91	7.73	11.95
Average per employee	£ 52.91	50.24	44.62	42.47	53.34	48.39	50.18

\* Exclusive of amounts drawn by working proprietors. † Year ended 30th June, 1915.

A further analysis of salaries and wages paid during 1915 is given in the following table, the amounts paid to managers, overseers, etc., being differentiated from those paid to other employees. As previously mentioned, amounts drawn by working proprietors are excluded in all cases.

**DETAILS OF SALARIES AND WAGES PAID TO MANAGERS, OVERSEERS, Etc.,  
AND OTHER EMPLOYEES IN FACTORIES DURING 1915.**

Class of Industry.	Salaries and Wages Paid to—						
	Managers, Overseers, Accountants, and Clerks.		All Other Employees.		All Employees.		
	Males.	Females.	Males.	Females.	Males.	Females.	Total.
	£	£	£	£	£	£	£
I. Treating raw material, product of agricultural and pastoral pursuits, etc.	103,440	1,505	802,540	5,143	905,980	6,648	912,628
II. Treating oils and fats, animal, vegetable, etc.	51,544	3,634	195,783	12,548	247,327	16,182	263,509
III. Processes in stone, clay, glass, etc.	151,235	3,899	1,352,335	4,465	1,503,570	8,364	1,511,934
IV. Working in wood	324,796	13,558	2,567,770	2,332	2,892,566	15,790	2,908,356
V. Metal works, machinery, etc.	768,172	24,862	7,616,941	20,309	8,395,113	45,171	8,430,284
VI. Connected with food and drink, etc.	912,559	45,859	3,859,573	397,958	4,772,132	443,717	5,215,849
VII. Clothing and textile fabrics, etc.	382,173	162,844	2,013,739	2,659,367	2,395,912	2,822,211	5,218,123
VIII. Books, paper, printing and engraving	492,238	53,108	2,048,850	262,070	2,541,088	315,178	2,856,266
IX. Musical instruments, etc.	8,702	1,084	51,321	930	60,023	2,014	62,037
X. Arms and explosives	17,908	2,678	147,338	50,601	165,246	53,279	218,525
XI. Vehicles and fittings, saddlery and harness, etc.	116,183	10,332	1,079,562	12,911	1,195,745	23,243	1,218,988
XII. Ship and boat building and repairing	73,080	143	776,800	...	849,880	143	850,023
XIII. Furniture, bedding, & upholstery	68,448	8,059	787,416	39,485	855,864	47,544	903,408
XIV. Drugs, chemicals, and by-products	87,923	7,442	332,011	46,387	419,934	53,829	473,763
XV. Surgical & other scientific instruments	3,815	279	22,002	1,589	25,817	1,868	27,685
XVI. Jewellery, timepieces, and platedware	20,102	3,524	176,671	7,021	196,773	10,545	207,318
XVII. Heat, light, and power	243,849	6,961	1,158,198	26,933	1,400,047	33,894	1,433,941
XVIII. Leatherware, n.e.i.	11,866	1,102	75,567	18,706	87,433	19,808	107,241
XIX. Minor wares, n.e.i.	36,812	3,336	304,393	46,235	341,205	49,571	390,776
Total ...	3,874,845	354,209	25,366,810	3,614,790	29,241,655	3,968,999	33,210,654
Average paid per employee ...	204.52	89.92	121.09	48.10	128.01	50.13	108.00

3. Value of Fuel and Light used in Factories, 1915.—The amount expended in factories on fuel and light is of considerable importance; in 1915 it amounted to £3,197,523, being a decrease on the previous year's figures of £112,398. The classes of industry in which fuel was most extensively used were Class V., Metal Works, Machinery, etc., £943,917; Class VI., Connected with Food, Drink, etc., £660,021; Class XVII., Heat, Light, Power, etc., £554,164, of which amount £452,730 was expended on generating

electric light and power; and Class III., £403,539, of which £291,143 was represented in brick and pottery works, etc., and glass factories. The following tables shew the value of fuel and light used in the different classes of industry in the several States of the Commonwealth during 1915, and of the total used for each of the last six years:—

#### VALUE OF FUEL AND LIGHT USED IN FACTORIES IN COMMONWEALTH, 1915.

Class of Industry.	N.S.W.	Vic.	Q'land.	S.A.	W.A.	Tas.	C'wlth.
	£	£	£	£	£	£	£
I. Treating raw material, product of agricultural and pastoral pursuits, etc. ...	47,530	36,104	12,701	7,873	1,881	2,215	108,304
II. Treating oils and fats, animal, vegetable, etc. ...	21,239	14,945	2,606	6,596	1,151	330	46,867
III. Processes in stone, clay, glass, etc. ...	206,343	125,886	6,223	42,213	16,654	6,220	403,539
IV. Working in wood ...	22,744	17,161	8,780	3,893	2,635	2,133	57,346
V. Metal wks., machinery, etc. ...	410,267	173,972	47,881	217,212	31,308	63,277	943,917
VI. Connected with food and drink, etc. ...	216,154	186,341	166,701	51,297	25,432	14,096	660,021
VII. Clothing and textile fabrics, etc. ...	39,903	76,820	6,999	9,128	3,386	1,919	138,155
VIII. Books, paper, printing, and engraving ...	35,450	42,441	14,098	6,959	5,657	1,731	106,336
IX. Musical instruments, etc. ...	1,486	233	...	32	...	...	1,751
X. Arms and explosives ...	3,206	6,188	...	3	...	...	9,397
XI. Vehicles and fittings, saddlery and harness, etc. ...	16,367	14,414	2,009	5,365	2,536	1,128	41,819
XII. Ship and boat building and repairing ...	18,203	3,289	279	342	25	40	22,178
XIII. Furniture, bedding, and upholstery ...	8,511	7,569	2,780	2,025	1,498	870	23,273
XIV. Drugs, chemicals, and by-products ...	13,878	16,619	376	9,411	5,796	230	46,310
XV. Surgical and other scientific instruments ...	276	426	114	27	64	...	907
XVI. Jewellery, timepieces, and plated ware ...	1,812	2,751	448	506	156	68	5,741
XVII. Heat, light, and power ...	295,911	87,958	28,465	36,633	68,705	16,492	554,164
XVIII. Leatherware, n.e.l. ...	723	1,509	159	40	38	...	2,469
XIX. Minor wares, n.e.l. ...	4,183	20,320	97	176	199	54	25,029
Total ...	1,364,186	834,966	300,716	399,731	187,121	110,803	3,197,523

\* Year ended 30th June, 1915.

#### VALUE OF FUEL AND LIGHT USED IN FACTORIES IN COMMONWEALTH DURING THE YEARS 1910 to 1915.

Year.	N.S.W.	Victoria.	Q'land.	S.A.	W.A.	Tas.	C'wealth.
	£	£	£	£	£	£	£
1910 ...	1,184,282	639,135	216,890	313,731	150,311	130,962	2,635,311
1911 ...	1,242,613	637,497	222,560	338,565	176,659	140,816	2,758,710
1912 ...	1,360,141	683,376	261,978	363,403	191,025	187,461	3,047,384
1913 ...	1,371,425	739,835	328,519	417,280	193,161	185,631	3,240,901
1914 ...	1,364,186*	804,325	335,219	406,987	210,192	189,012	3,309,921
1915 ...	1,364,186*	834,966	300,716	399,731	187,121	110,803	3,197,523

\* Year ended 30th June, 1915.

4. Value of Raw Materials used in Factories, 1915.—The total value of raw materials worked up (i.e., exclusive of fuel, lubricants, etc.) in factories in the Commonwealth during 1915 was £102,776,082, which represents 60.78 per cent. of the total value of the finished products. (See next paragraph hereof.) The following table shews the value of the raw materials worked up in various classes of industry in each State during the year 1915:—

VALUE OF RAW MATERIALS WORKED UP IN FACTORIES IN COMMONWEALTH, 1915.

Class of Industry.	N.S.W.	Vic.	Q'land.	S.A.	W.A.	Tas.	C'wlth.
I. Treating raw material, product of agricultural and pastoral pursuits, etc.	£ 4,846,704	£ 3,606,032	£ 1,808,539	£ 668,712	£ 198,547	£ 320,505	£ 11,449,339
II. Treating oils and fats, animal, vegetable, etc.	861,539	559,419	77,115	131,746	178,715	9,841	1,818,375
III. Processes in stone, clay, glass, etc.	361,286	200,961	17,880	64,019	19,032	7,737	670,915
IV. Working in wood	2,121,979	1,105,174	842,283	519,249	82,431	129,082	4,800,198
V. Metal works, machinery, etc.	7,339,887	3,135,179	1,436,284	3,452,227	393,343	534,166	16,291,086
VI. Connected with food and drink, etc.	19,674,332	11,657,985	10,205,392	2,539,843	923,355	893,198	45,834,105
VII. Clothing and textile fabrics, etc.	3,196,161	5,710,117	965,501	480,030	311,125	128,065	10,790,999
VIII. Books, paper, printing, and engraving	983,370	1,026,496	203,824	198,859	111,629	60,343	2,584,531
IX. Musical instruments, etc.	58,722	10,343	...	659	...	...	69,723
X. Arms and explosives	23,813	338,875	...	701	...	...	363,369
XI. Vehicles and fittings, saddlery and harness, etc.	411,066	519,207	121,658	125,971	80,710	43,265	1,301,877
XII. Ship and boat building and repairing	247,469	98,730	8,509	9,591	1,664	3,014	368,977
XIII. Furniture, bedding, and upholstery	554,181	419,782	122,601	77,257	69,194	30,132	1,273,147
XIV. Drugs, chemicals, and by-products	737,464	789,583	13,186	341,455	213,359	11,896	2,106,943
XV. Surgical and other scientific instruments	5,878	9,796	2,591	590	783	...	19,638
XVI. Jewellery, timepieces, and platedware	112,097	156,433	12,359	16,601	8,997	1,785	308,272
XVII. Heat, light, and power	662,719	474,147	68,573	62,840	23,686	18,115	1,314,980
XVIII. Leatherware, n.e.i.	151,539	179,785	17,944	5,283	1,870	...	356,421
XIX. Minor wares, n.e.i.	209,164	730,699	15,044	24,804	11,360	2,106	993,177
Total	42,559,370	30,728,743	15,939,583	8,720,436	2,634,700	2,193,250	102,776,082

\* Year ended 30th June, 1915.

The class in which the maximum value of raw materials was used was Class VI., "Connected with Food and Drink, etc.," the value being £45,894,105. The next important class in order of value was Class V., "Metal Works, Machinery, etc.," in which raw materials to the value of £16,291,086 were used. The class in which the minimum value appears is Class XV., "Surgical and other Scientific Instruments," the value being only £19,638. The year 1910 was the first for which reliable and complete returns were collected in every State relating to the value of raw materials worked up in factories. The following table gives particulars for the six years ended 1915:—

VALUE OF RAW MATERIALS WORKED UP IN FACTORIES IN COMMONWEALTH DURING THE YEARS 1910 to 1915.

Year.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	C'wealth.
1910 ...	£ 31,379,604	£ 21,941,255	£ 9,476,819	£ 6,695,255	£ 1,809,959	£ 1,456,369	£ 72,759,261
1911 ...	33,670,951	25,029,525	8,788,335	7,503,979	2,059,346	1,952,240	79,004,376
1912 ...	37,122,441	27,002,392	11,078,954	8,199,110	2,586,195	2,286,618	88,275,620
1913 ...	40,537,476	28,465,699	14,183,539	8,354,258	2,782,839	2,083,666	96,407,477
1914 ...	42,559,370*	28,986,694	15,710,794	7,931,175	2,608,312	1,992,719	99,789,064
1915 ...	42,559,370*	30,728,743	15,939,583	8,720,436	2,634,700	2,193,250	102,776,082

\* Year ended 30th June, 1915.

5. Total Value of Output of Manufacturing Industries, 1915.—The value of the output of new goods manufactured and repairs effected in factories of various classes in each State during the year 1915 is shewn in the following table. The figures given represent not only the increased value due to the process of manufacture, but also include the value of the raw materials used. The difference between the value of the materials used and the total output (see paragraph 6 hereof) is the real value of production from manufactures:—

## TOTAL VALUE OF OUTPUT OF FACTORIES IN COMMONWEALTH, 1915.

Class of Industry.	N.S.W.	Victoria.	Q'land.	S.A.	W.A.	Tas.	C'w'lth.
	£	£	£	£	£	£	£
I. Treating raw material, product of agricultural & pastoral pursuits, etc.	5,642,150	4,503,751	2,405,919	838,118	244,434	371,192	13,705,564
II. Treating oils and fats, animal, vegetable, etc.	1,176,404	858,554	135,880	182,235	246,712	14,311	2,614,096
III. Processes in stone, clay, glass, etc.	1,891,733	1,060,652	132,855	301,247	108,736	45,878	3,541,101
IV. Working in wood	3,461,373	2,204,757	1,783,868	757,427	742,548	354,761	9,304,734
V. Metal works, mach'y, etc.	13,908,681	6,705,272	2,919,850	5,618,230	905,440	1,301,587	31,359,060
VI. Connected with food and drink, etc.	24,922,078	15,514,965	14,233,695	3,342,683	1,474,314	1,283,451	60,771,186
VII. Clothing and textile fabrics, etc.	6,049,263	9,906,499	1,848,038	911,646	544,048	276,412	19,535,906
VIII. Books, paper, printing, and engraving...	2,561,274	2,829,505	881,723	502,450	407,597	192,235	7,374,784
IX. Musical instruments, etc.	135,524	27,310	...	2,753	...	...	165,587
X. Arms and explosives	135,341	537,170	...	948	...	...	673,459
XI. Vehicles and fittings, saddlery and harness, etc.	1,061,414	1,188,035	342,256	313,293	165,153	102,379	3,172,530
XII. Ship and boat building and repairing...	1,034,070	296,995	27,559	35,218	5,331	8,227	1,407,400
XIII. Furniture, bedding, and upholstery	1,120,888	825,541	304,046	185,464	140,271	75,248	2,651,458
XIV. Drugs, chemicals, and by-products	1,239,934	1,333,729	42,396	546,145	346,126	15,230	3,523,560
XV. Surgical and other scientific instruments	24,730	29,498	9,371	2,240	3,299	...	69,138
XVI. Jewellery, timepieces, and platedware	241,561	313,990	31,202	40,794	18,619	6,952	656,118
XVII. Heat, light, and power	3,017,617	1,922,353	576,012	358,275	330,054	161,603	6,365,914
XVIII. Leatherware, n.e.i.	250,900	286,920	36,594	8,609	5,005	...	587,628
XIX. Minor wares, n.e.i.	375,797	1,120,597	33,548	46,448	25,106	5,981	1,607,477
Total	68,253,332	51,466,093	25,444,812	13,994,223	5,712,793	4,215,447	169,086,700

\* Year ended 30th June, 1915.

It will be seen that the State of New South Wales far outstrips the other States in the total value of the output of her factories, the value being £68,253,332, or 40.37 per cent. on the total for the Commonwealth. The next State in order of value is Victoria, which produced 30.44 per cent.; the value of the output of Queensland was 15.05 per cent.; of South Australia 8.27 per cent.; of Western Australia 3.38 per cent.; and of Tasmania 2.49 per cent. The two most important classes in order of value of output (Classes VI. and V.) are the same as in order of value of raw materials used. The following statement shews the value of output of factories, value per employee, and value per head of mean population in each State during the six years ended 1915:—

## TOTAL VALUE OF OUTPUT OF FACTORIES IN COMMONWEALTH DURING THE YEARS 1910 to 1915.

Year.	N.S.W.	Victoria.	Q'land.	S.A.	W.A.	Tas.	C'wealth.
	£	£	£	£	£	£	£
1910 ...	49,615,643	36,660,854	15,792,109	11,184,695	4,533,611	3,073,246	120,860,158
1911 ...	54,346,011	41,747,863	15,675,662	12,416,381	5,311,086	3,525,087	133,022,090
1912 ...	61,163,328	45,410,773	13,798,904	13,438,218	6,092,268	3,871,916	148,775,407
1913 ...	65,672,495	47,936,647	23,688,789	13,998,670	6,481,331	3,782,851	161,560,763
1914 ...	68,253,332*	49,439,985	25,491,955	13,215,970	6,381,512	3,667,754	166,450,508
1915 ...	68,253,332*	51,466,093	25,444,812	13,994,223	5,712,793	4,215,447	169,086,700

## PER EMPLOYEE.†

	£	£	£	£	£	£	£
1910 ...	496	359	465	414	321	308	421
1911 ...	500	373	422	445	336	342	427
1912 ...	529	391	459	472	372	389	454
1913 ...	545	404	559	491	375	367	479
1914 ...	585*	418	589	492	362	411	502
1915 ...	585*	452	605	549	390	501	527

## PER HEAD OF MEAN POPULATION.

	£	£	£	£	£	£	£
1910 ...	30.36	28.59	26.69	27.88	16.73	16.09	27.66
1911 ...	32.70	31.62	25.52	30.19	18.52	18.52	29.62
1912 ...	35.22	33.48	29.77	31.87	20.21	20.20	32.03
1913 ...	36.32	34.41	36.30	32.29	20.64	19.30	33.67
1914 ...	36.67*	34.73	37.77	30.04	19.73	18.49	33.78
1915 ...	33.67*	36.09	37.04	31.80	17.72	21.15	34.21

\* Year ended 30th June, 1915.

† Including working proprietors.



6. Value of Production of Manufacturing Industries, 1915.—The difference between the figures given in paragraph 5 and the corresponding figures in paragraph 4 hereof represents the amount added to the value of the raw materials by the process of manufacture. This is the real measure of the value of production of manufacturing industries. The following table shows the value added in this manner in each State during the year 1915 for the various classes of factories:—

**VALUE OF PRODUCTION OF MANUFACTURING INDUSTRIES IN COMMONWEALTH, 1915.**

Class of Industry.	N S.W.	Victoria.	Q'land.	S.A.	W.A.	Tas.	Cwealth.
	£	£	£	£	£	£	£
I. Treating raw material, product of agricultural and pastoral pursuits, etc. ....	795,446	897,719	297,030	169,406	45,897	50,687	2,256,225
II. Treating oils and fats, animal, vegetable, etc. ....	314,865	239,135	58,765	50,489	67,997	4,470	795,721
III. Processes in stone, clay, glass, etc. ....	1,530,447	859,691	114,975	237,228	89,704	38,141	2,870,166
IV. Working in wood....	1,339,394	1,099,583	941,585	238,178	660,117	225,679	4,504,536
V. Metal works, machinery, etc. ....	6,568,794	3,570,093	1,483,566	2,166,003	512,097	767,421	15,067,974
VI. Connected with food and drink, etc. ....	5,247,746	3,856,980	4,028,303	802,840	550,959	390,253	14,877,031
VII. Clothing and textile fabrics, etc. ....	2,853,102	4,196,382	882,537	431,616	232,923	148,347	8,744,907
VIII. Books, paper, printing, and engraving ....	1,577,904	1,803,009	677,899	303,591	295,968	131,892	4,790,263
IX. Musical instruments, etc. ....	76,802	16,987	...	2,095	...	...	95,864
X. Arms and explosives ....	111,528	198,295	...	247	...	...	310,070
XI. Vehicles and fittings, saddlery and harness, etc. ....	650,348	668,828	220,598	187,322	84,443	59,114	1,870,653
XII. Ship and boat building and repairing ....	786,601	198,265	19,050	25,627	3,667	5,213	1,038,423
XIII. Furniture, bedding, and upholstery ....	566,707	405,759	181,445	108,207	71,077	45,116	1,378,311
XIV. Drugs, chemicals, and by-products ....	502,470	544,146	29,210	204,690	132,767	3,334	1,416,617
XV. Surgical and other scientific instruments ....	18,852	19,702	6,780	1,650	2,516	...	49,500
XVI. Jewellery, timepieces, and plated ware ....	132,464	157,557	18,843	24,193	9,622	5,167	347,846
XVII. Heat, light, and power ....	2,354,898	1,448,206	507,439	295,435	301,463	143,488	5,050,934
XVIII. Leatherware, n.e.i. ....	98,961	107,135	18,650	3,326	3,135	...	231,207
XIX. Minor wares, n.e.i. ....	166,633	389,898	18,504	21,644	13,746	3,875	614,300
Total ...	25,693,962	20,737,350	9,505,229	5,273,787	3,078,093	2,022,197	66,310,618

\* Year ended 30th June, 1915.

The amount of the value added in each State is not in the same order as in the case of value of output, the four most important classes being V., VI., VII., and XVII., in the order named. The value added to raw material by process of manufacture and amount per employee and, per head of mean population are shown in the following statement for the years 1910 to 1915:—

**VALUE OF PRODUCTION OF MANUFACTURING INDUSTRIES IN COMMONWEALTH, 1910 to 1915.**

Year.	N.S.W.	Victoria.	Queensland.	S. Aust.	W. Aust.	Tas.	C'wealth.
VALUE.							
1910	£ 18,236,039	£ 14,719,599	£ 6,315,290	£ 4,469,440	£ 2,723,652	£ 1,616,877	£ 48,100,897
1911	20,675,060	16,718,338	6,887,327	4,912,402	3,251,740	1,572,847	54,017,714
1912	24,040,887	18,408,471	7,719,960	5,239,108	3,506,073	1,585,298	60,499,787
1913	25,135,019	19,470,948	9,505,250	5,644,412	3,698,432	1,699,165	65,153,286
1914	25,693,962*	20,453,291	9,781,161	5,284,795	3,773,203	1,675,035	66,661,444
1915	25,693,962*	20,737,350	9,505,229	5,273,787	3,078,093	2,022,197	66,310,618
PER EMPLOYEE.							
1910	£ 183	£ 144	£ 186	£ 166	£ 193	£ 169	£ 168
1911	190	149	185	176	206	153	173
1912	208	159	189	184	214	159	185
1913	209	164	224	198	214	174	193
1914	220*	173	226	197	214	188	201
1915	220*	182	226	207	210	240	207

\* Year ended 30th June, 1915.

VALUE OF PRODUCTION OF MANUFACTURING INDUSTRIES IN  
COMMONWEALTH, 1910 TO 1915—Continued.

Year.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	C'wealth.
PER HEAD OF MEAN POPULATION.							
	£	£	£	£	£	£	£
1910 ...	11.17	11.48	10.68	11.19	10.05	8.47	11.01
1911 ...	12.44	12.66	11.21	11.95	11.34	8.26	12.03
1912 ...	13.84	13.57	12.22	12.43	11.63	8.27	13.03
1913 ...	13.90	13.98	14.57	13.02	11.78	8.67	13.56
1914 ...	13.80	14.37	14.49	12.01	11.67	8.44	13.53
1915 ...	13.80	14.54	13.84	11.98	9.55	10.14	13.41

As the total value of the output for the Commonwealth was estimated at £169,086,700, there remained, after payment of £102,776,082, the value of the raw materials used, of £33,210,654 for salaries and wages, and of £3,197,523 for fuel, the sum of £29,902,441 to provide for all other expenditure and profits. The following table gives corresponding particulars for each State, expressed absolutely, and as percentages of the total value of the output:—

VALUE OF OUTPUT AND COST OF PRODUCTION IN COMMONWEALTH  
FACTORIES, 1915.

State.	Raw Materials Used.	Fuel and Light.	Salaries and Wages.	All other Expenditure, Interest, and Profits.	Total Value of Output.
VALUE AND COST, ETC.					
	£	£	£	£	£
New South Wales* ...	42,559,370	1,364,186	12,667,721	11,662,055	68,253,332
Victoria ...	30,728,743	834,966	11,036,345	8,866,039	51,466,093
Queensland ...	15,939,583	300,716	4,226,635	4,977,878	25,444,812
South Australia ...	8,720,436	399,731	2,705,130	2,168,926	13,994,223
Western Australia ...	2,634,700	187,121	1,791,276	1,099,696	5,712,793
Tasmania ...	2,193,250	110,803	783,547	1,127,847	4,215,447
Commonwealth ...	102,776,082	3,197,523	33,210,654	29,902,441	169,086,700
PERCENTAGE OF COSTS, ETC., ON TOTAL VALUE.					
	%	%	%	%	%
New South Wales* ...	62.35	2.00	18.56	17.09	100.00
Victoria ...	59.71	1.62	21.44	17.23	100.00
Queensland ...	62.65	1.18	16.61	19.56	100.00
South Australia ...	62.31	2.86	19.33	15.50	100.00
Western Australia ...	46.12	3.28	31.35	19.25	100.00
Tasmania ...	52.03	2.63	18.59	26.75	100.00
Commonwealth ...	60.78	1.89	19.64	17.69	100.00

\* Year ended 30th June, 1915.

§ 7. Land, Buildings, Plant and Machinery.

1. **General.**—As an indication of the permanent character and stability of the industries which have been established in the Commonwealth, it may be noted that the values of land and buildings and of plant and machinery used in the factories are rapidly increasing. Thus, for the whole Commonwealth the total value of land and buildings and plant and machinery has increased from 1910 to 1915 by £23,112,909, i.e., from £58,482,789 to £81,595,698, or at the rate of £4,622,582 per annum.

The following statement shews for the year 1915 the values of land and buildings and of plant and machinery used in connection with manufacturing industries in each State:—

**VALUE OF LAND, BUILDINGS, PLANT AND MACHINERY IN CONNECTION WITH MANUFACTURING INDUSTRIES, 1915.**

Value of—	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	C'wth.
	£	£	£	£	£	£	£
Land and buildings ...	16,843,698	11,460,123	4,446,405	3,072,784	2,363,262	1,132,424	39,318,696
Plant and machinery ...	16,866,982	11,068,949	7,051,113	3,421,538	2,640,168	1,228,252	42,277,002
Total ...	33,710,680	22,529,072	11,497,518	6,494,322	5,003,430	2,360,676	81,595,698

\* Year ended 30th June, 1915.

The total capital invested in land, buildings, plant and machinery in manufacturing industries in the Commonwealth during the year 1915 was approximately £81,595,698 (or £16 10s. 11d. per head of population); of that sum £39,318,696 was invested in land and buildings occupied as manufactories, the remaining £42,277,002 being the value of the plant and machinery used in connection therewith.

2. Value of Land and Buildings.—The value of the land and buildings occupied in connection with manufacturing industries may be conveniently classified according to the nature of the industry conducted therein.

(i.) Total Value in Commonwealth, 1910 to 1915. The following table shews for the whole Commonwealth the approximate values of land and buildings occupied in connection with manufacturing industries of various classes during each year from 1910 to 1915 inclusive:—

**VALUE OF LAND AND BUILDINGS OCCUPIED AS FACTORIES IN COMMONWEALTH, 1910 to 1915.**

Class of Industry.	1910.	1911.	1912.	1913.	1914.	1915.
	£	£	£	£	£	£
I. Treating raw material, product of agricultural and pastoral pursuits, etc. ...	921,785	978,978	1,004,221	1,014,783	1,063,549	1,069,890
II. Treating oils and fats, animal, vegetable, etc. ...	394,079	445,499	449,453	452,415	466,373	465,757
III. Processes in stone, clay, glass, etc.	1,073,612	1,223,889	1,382,062	1,593,769	1,679,050	1,666,037
IV. Working in wood ...	1,492,673	1,668,045	1,923,963	2,184,257	2,244,995	2,146,909
V. Metal works, machinery, etc. ...	4,554,693	5,000,274	5,437,718	5,846,225	6,242,968	6,370,355
VI. Connected with food & drink, etc.	7,399,625	8,167,496	8,259,066	8,656,547	9,800,457	9,852,479
VII. Clothing and textile fabrics, etc.	4,191,488	4,601,924	4,928,474	5,188,631	5,270,374	5,244,627
VIII. Books, paper, printing, and engraving ...	2,779,754	2,964,466	3,150,049	3,388,072	3,521,164	3,546,017
IX. Musical instruments, etc. ...	75,632	82,168	85,731	88,136	83,375	83,450
X. Arms and explosives ...	38,763	41,462	112,300	184,772	179,723	194,149
XI. Vehicles and fittings; saddlery and harness, etc. ...	1,325,152	1,453,077	1,654,488	1,835,221	1,824,018	1,825,999
XII. Ship & boat building & repairing	1,052,868	1,163,299	1,261,647	1,113,243	1,127,521	1,134,530
XIII. Furniture, bedding & upholstery	757,485	993,408	1,043,680	1,149,120	1,117,699	1,094,646
XIV. Drugs, chemicals & by-products	687,162	760,441	823,429	831,892	929,933	955,995
XV. Surgical and other scientific instruments ...	56,149	61,703	59,308	70,968	64,263	67,021
XVI. Jewellery, timepieces, & plated-ware ...	271,834	300,717	344,306	353,900	345,018	344,452
XVII. Heat, light, and power ...	2,112,220	2,320,348	2,511,317	2,517,179	2,717,502	2,775,148
XVIII. Leatherware, n.e.i. ...	100,066	111,506	120,646	133,283	132,777	137,666
XIX. Minor wares, n.e.i. ...	220,984	250,550	257,298	270,307	317,417	343,529
Total ...	29,506,054	32,494,250	34,809,156	36,872,720	39,128,176	39,318,696

As shewn in the above table, the total net increase during the five years was £9,812,642, or an annual average of £1,962,528. The largest increases were in Classes VI., V., and VII., and amounted to £2,452,854, £1,815,662, and £1,053,139 respectively.

(ii.) *Value in each State, 1915.* The following table gives similar information for each State up to the 31st December, 1915:—

**VALUE OF LAND AND BUILDINGS OCCUPIED AS FACTORIES IN EACH STATE, 1915.**

Class of Industry.	N.S.W.	Victoria.	Q'land.	S.A.	W.A.	Tas.	C'w'ith.
	£	£	£	£	£	£	£
I. Treating raw material, product of agricultural and pastoral pursuits, etc. ...	465,505	400,018	60,815	92,180	38,570	12,802	1,069,890.
II. Treating oils and fats, animal, vegetable, etc. ...	237,991	112,714	28,434	66,629	15,674	4,315	465,757
III. Processes in stone, clay, glass, etc. ...	950,702	459,673	52,581	113,171	62,642	27,328	1,666,097
IV. Working in wood ...	973,465	394,487	211,978	153,019	336,230	77,730	2,146,909.
V. Metal works, machinery, etc. ...	2,941,258	1,536,579	663,894	567,849	603,625	57,150	6,370,355.
VI. Connected with food and drink, etc. ...	3,381,299	2,720,587	1,966,126	747,649	437,529	599,289	9,852,479.
VII. Clothing and textile fabrics, etc. ...	2,204,549	2,012,234	414,093	286,294	196,412	131,045	5,244,627.
VIII. Books, paper, printing and engraving ...	1,454,142	975,545	484,607	334,840	248,316	48,557	3,546,017
IX. Musical instruments, etc. ...	57,335	24,395	...	1,700	...	...	83,430
X. Arms and explosives ...	70,926	119,723	...	3,500	...	...	194,149.
XI. Vehicles and fittings, saddlery and harness, etc. ...	706,151	559,343	176,897	200,886	118,064	64,658	1,825,999.
XII. Ship and boat building and repairing ...	833,804	220,383	10,913	60,705	3,490	5,235	1,194,530.
XIII. Furniture, bedding and upholstery ...	482,656	327,387	106,959	75,494	72,643	30,507	1,094,646.
XIV. Drugs, chemicals, and by-products ...	340,489	342,723	10,860	160,755	94,818	6,350	955,995.
XV. Surgical and other scientific instruments ...	32,040	20,151	8,214	2,416	4,200	...	67,021
XVI. Jewellery, timepieces, and plated ware ...	143,786	130,935	28,081	21,045	10,725	14,880	344,452.
XVII. Heat, light, and power ...	1,360,061	902,572	202,893	164,147	96,347	49,128	2,775,148.
XVIII. Leatherware, n.e.i. ...	62,921	58,115	10,600	2,190	3,840	...	137,666
XIX. Minor wares, n.e.i. ...	144,618	142,559	14,460	18,315	20,137	3,440	343,529.
<b>Total ...</b>	<b>16,843,698</b>	<b>11,460,123</b>	<b>4,446,405</b>	<b>3,072,784</b>	<b>2,363,252</b>	<b>1,132,424</b>	<b>39,318,696.</b>

\* Year ended 30th June, 1915.

The maximum value for the Commonwealth of land and buildings in any particular class was in Class VI., amounting to £9,852,479, or 25.06 per cent. on the total value. The next in order of importance were Classes V., VII., VIII., and XVII., in which the values were £6,370,355, £5,244,627, £3,546,017, and £2,775,148 respectively. The sum of the values for the five classes mentioned amounted to £27,788,626, or 70.68 per cent. on the total value for all classes.

(iii.) *Total Value in each State, 1910 to 1915.* The following table shews the total value of land and buildings occupied as manufactories in each State at the end of each year from 1910 to 1915 inclusive:—

**TOTAL VALUE OF LAND AND BUILDINGS OCCUPIED AS FACTORIES IN EACH STATE, 1910 to 1915.**

Year.	N.S.W.	Victoria.	Queensland.	S. Aust.	W. Aust.	Tasmania.	C'wealth.
	£	£	£	£	£	£	£
1910...	12,108,776	9,012,263	3,045,974	2,641,973	1,674,953	1,022,115	29,506,054
1911...	13,474,455	9,921,520	3,277,776	2,950,170	1,819,342	1,050,987	32,494,250.
1912...	14,765,810	10,362,661	3,524,991	3,150,834	1,910,372	1,094,488	34,809,156.
1913...	15,792,105	10,753,309	3,923,584	3,261,242	2,036,769	1,105,711	36,872,720.
1914...	16,843,698*	11,248,120	4,434,336	3,047,791	2,409,517	1,144,714	39,128,176.
1915...	16,843,698*	11,460,123	4,446,405	3,072,784	2,363,262	1,132,424	39,318,696.

\* Year ended 30th June, 1915.

It will be seen that since 1910 there has been a general increase throughout the Commonwealth. The States shewing the largest growth were New South Wales, £4,734,922, or 30.10 per cent., and Victoria £2,447,860, or 27.16 per cent. The highest percentage increases were in Queensland 45.98, and Western Australia 41.09.

3. Value of Plant and Machinery.—(i.) The following table shews for the whole Commonwealth the approximate value of plant and machinery used in factories at the end of each year from 1910 to 1915 inclusive:—

**VALUE OF PLANT AND MACHINERY USED IN FACTORIES IN COMMONWEALTH, 1910 to 1915.**

Class of Industry.	1910.	1911.	1912.	1913.	1914.	1915.
I. Treating raw material, product of agricultural and pastoral pursuits, etc. ...	£ 829,255	£ 877,820	£ 926,966	£ 985,619	£ 974,556	£ 971,841
II. Treating oils and fats, animal, vegetable, etc. ...	360,660	435,315	417,231	444,502	469,680	545,796
III. Processes in stone, clay, glass, etc. ...	1,109,139	1,299,774	1,491,383	1,717,544	1,869,446	1,900,086
IV. Working in wood ...	1,852,296	2,207,703	2,455,436	2,664,508	2,737,527	2,611,407
V. Metal works, machinery, etc. ...	5,255,575	5,722,956	6,308,356	6,879,461	7,630,150	7,651,160
VI. Connected with food and drink, etc. ...	8,212,440	8,570,565	9,029,735	9,650,298	10,782,825	10,914,862
VII. Clothing and textile fabrics, etc. ...	1,403,135	1,538,062	1,620,437	1,746,713	1,774,910	1,798,554
VIII. Books, paper, printing, and engraving ...	2,362,268	2,481,999	2,628,039	2,814,226	2,974,120	2,987,190
IX. Musical instruments, etc. ...	16,443	17,924	20,960	22,630	19,030	19,119
X. Arms and explosives ...	47,012	56,255	158,823	190,060	216,581	228,031
XI. Vehicles and fittings, saddlery and harness, etc. ...	249,973	283,470	329,933	374,371	395,463	411,295
XII. Ship and boat building, and repairing ...	443,429	478,012	597,783	725,934	764,782	768,159
XIII. Furniture, bedding, and upholstery ...	150,774	177,924	207,211	235,068	238,547	244,796
XIV. Drugs, chemicals, & by-products ...	517,781	602,276	629,402	650,185	832,686	916,136
XV. Surgical and other scientific instruments ...	9,929	11,158	11,615	13,121	13,758	13,955
XVI. Jewellery, timepieces, and platedware ...	49,490	61,765	61,791	68,186	69,724	72,988
XVII. Heat, light, and power ...	5,961,816	6,611,770	7,392,958	7,880,325	9,451,227	9,963,636
XVIII. Leatherware, n.e.i. ...	24,651	25,565	27,695	28,035	30,576	31,706
XIX. Minor wares, n.e.i. ...	120,669	138,896	145,141	166,172	199,343	226,285
<b>Total</b> ...	<b>28,976,735</b>	<b>31,599,209</b>	<b>34,460,895</b>	<b>37,256,958</b>	<b>41,444,931</b>	<b>42,277,002</b>

It will be seen that during the period in question there has been a steady and substantial net increase amounting in all to £13,300,267, or an annual average of £2,660,053. Development has occurred in all classes of industry, the largest increase being in Class XVII. "Heat, Light, and Power," where it amounted to £4,001,820, while the two next largest were in Class VI. "Connected with Food and Drink, etc.," with an increase of £2,702,422, and Class V., "Metal Works, Machinery, etc.," £2,395,585.

(ii.) Total Value in each State, 1910 to 1915. The figures which were given in the above table referred to the Commonwealth as a whole. In the following table they are shewn for each State, and it will be seen that the increase referred to above is general throughout the States. New South Wales shews by far the largest increase, viz., £5,288,362; while Victoria comes next with £3,467,864.

**VALUE OF PLANT AND MACHINERY IN FACTORIES, 1910 to 1915.**

Year.	N.S.W.	Victoria.	Queensland.	S. Aust.	W. Aust.	Tasmania.	C'wealth.
	£	£	£	£	£	£	£
1910	11,578,620	7,601,085	4,631,519	2,225,718	1,893,602	1,046,191	28,976,735
1911	12,510,600	8,336,373	4,947,259	2,506,600	2,082,777	1,216,200	31,599,209
1912	13,795,195	9,095,134	5,442,471	2,725,540	2,241,536	1,161,019	34,460,895
1913	14,861,676	10,022,429	5,877,387	2,982,323	2,264,455	1,248,688	37,256,958
1914	16,866,982*	10,727,526	6,898,673	3,275,579	2,484,793	1,191,378	41,444,931
1915	16,866,982*	11,068,949	7,051,113	3,421,538	2,640,168	1,228,252	42,277,002

\* Year ended 30th June, 1915.

(iii.) Classified Value in each State, 1915. The following table shews the value of plant and machinery used in factories in each State during the year 1915, classified according to the nature of the industry in which used:—

## VALUE OF PLANT AND MACHINERY USED IN FACTORIES IN EACH STATE, 1915.

Class of Industry.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	C'with.
	£	£	£	£	£	£	£
I. Treating raw material, product of agricultural and pastoral pursuits, etc. ...	394,005	318,759	129,539	63,646	24,843	41,049	971,841
II. Treating oils and fats, animal, vegetable, etc. ...	250,789	138,662	41,576	27,105	86,619	1,045	545,796
III. Processes in stone, clay, glass, etc. ...	1,114,406	439,356	91,600	163,853	69,489	21,382	1,900,086
IV. Working in wood ...	838,096	510,831	465,725	84,223	546,891	165,701	2,611,407
V. Metal wks., machinery, etc. ...	3,983,195	1,560,541	781,501	561,090	597,738	177,095	7,651,160
VI. Connected with food and drink, etc. ...	3,466,183	2,263,565	4,007,320	604,388	412,932	160,474	10,914,862
VII. Clothing and textile fabrics, etc. ...	588,448	890,009	131,498	100,690	36,477	51,432	1,798,554
VIII. Books, paper, printing, and engraving ...	1,217,331	1,010,984	312,043	225,598	167,654	53,580	2,987,190
IX. Musical instruments, etc. ...	11,794	6,725	...	600	...	...	19,119
X. Arms and explosives ...	100,372	127,259	...	400	...	...	228,031
XI. Vehicles and fittings, saddlery and harness, etc. ...	144,008	140,286	37,508	54,485	21,364	13,644	411,295
XII. Ship and boat building and repairing ...	659,228	84,765	8,883	11,240	1,510	2,533	768,159
XIII. Furniture, bedding, and upholstery ...	72,902	77,545	40,402	30,973	13,699	9,275	244,796
XIV. Drugs, chemicals, and by-products ...	283,967	272,545	5,085	177,253	176,676	660	916,136
XV. Surgical and other scientific instruments ...	4,894	4,731	2,228	650	1,252	...	13,955
XVI. Jewellery, timepieces, and plated ware ...	28,853	31,461	4,152	5,230	1,552	1,740	72,988
XVII. Heat, light, and power ...	3,612,157	3,041,942	986,809	1,306,976	487,592	528,160	9,963,636
XVIII. Leatherware, n.e.i. ...	12,485	14,672	3,370	317	862	...	31,706
XIX. Minor wares, n.e.i. ...	83,929	134,311	1,924	2,621	3,018	492	226,285
Total ...	16,866,982	11,068,949	7,051,113	3,421,538	2,640,168	1,228,252	42,277,002

The greatest value for any particular class of industry is for Class VI., "Connected with Food and Drink, etc.," and amounts to £10,914,862, or 25.82 per cent. on the total for all classes. The next in order of importance is Class XVII., "Heat, Light, and Power," which amounts to £9,963,636, or 23.57 per cent. on the total; followed by Class V., "Metal Works, Machinery, etc.," amounting to £7,651,160, or 18.09 per cent. on the total value. The total for these three classes amounts to £28,529,658, or 67.48 per cent. on the total value for all classes.

### § 8. Individual Industries.

1. **General.**—The preceding remarks and tables furnish a general view of the recent development of particular classes of industries in Australia treated under the nineteen categories referred to in § 1, 3 hereof. In order to make the information complete, it is necessary to furnish details of the development of individual industries. While it is not possible, within the limits of this article, to give a full and detailed account of all the manufacturing industries of the Commonwealth, it is proposed to deal herein with such particular industries as are of special importance by reason of the number of persons employed, the number of factories, the amount of capital invested therein, the value of the production, or other features of special interest. In cases where there are only one or two establishments of a particular class in any State, returns relative to output are not published, in order to avoid disclosing information as to the operations of individual factories.

2. **Tanning Industry.**—(i.) In Class I. (see § 1, 3 hereof) the most important industry is tanning. Until recent years, the production of tanneries in Australia was confined to the coarser class of leathers, but lately the tanning of the finer skins has been undertaken with satisfactory results. The position of the industry in the several States in 1915 was as follows:—

## TANNERIES, 1915.

Items.	N.S.W.	Vic.	Q'land.	S.A.	W.A.	Tas.	C'wth.
Number of factories ... ..	77	52	18	12	3	3	165
"    employees ... ..	1,109	1,720	213	206	62	66	3,376
Actual horse-power of engines employed...	1,269	1,883	518	275	93	61	3,899
Approx. value of lands and buildings £	142,608	185,753	12,463	26,233	15,535	7,332	389,924
Approx. value of plant and machinery £	92,910	138,043	22,600	14,163	11,750	8,390	287,856
Total amount of wages paid during year £	139,053	219,596	25,672	25,533	8,770	8,734	418,363
Value of fuel used ... ..	7,553	13,701	1,056	1,894	834	1,130	26,140
Value of raw material worked up £	1,054,887	1,606,586	228,232	150,811	78,409	65,892	3,188,817
Total value of output ... ..	£ 1,314,631	2,106,358	287,013	204,617	93,836	81,685	4,088,140
Value added in process of manufacture £	255,744	499,772	58,781	53,806	15,427	15,793	899,323

\* Year ended 30th June, 1915.

(ii.) *Raw Materials used in Tanneries, 1915.* The quantity of raw materials used in tanneries in each State during the year 1915 is shewn in the following table:—

## RAW MATERIALS USED IN TANNERIES, 1915.

Particulars.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	C'wealth.
RAW MATERIALS USED.							
Hides & calf skins ... No.	535,641	931,285	114,376	89,045	35,754	29,677	1,735,778
Sheep pelts ... ..	4,068,137	907,653	62,308	68,476	...	36,288	5,142,862
Other skins ... ..	166,700	242,795	104,925	17,751	8,953	...	541,125
Bark ... .. Tons	11,810	14,600	2,254	1,489	777	510	31,440

\* Year ended 30th June, 1915.

(iii.) *Progress of Tanning Industries, 1910 to 1915.* The development of the tanning industry during the period 1910 to 1915 is shewn in the following table:—

## DEVELOPMENT OF TANNING INDUSTRY IN THE COMMONWEALTH, 1910 to 1915.

Items.	1910.	1911.	1912.	1913.	1914.*	1915.
Number of factories ... ..	176	176	174	164	166	165
Number of employees ... ..	3,110	3,247	3,071	2,892	3,091	3,376
Actual horse-power of engines used ...	3,125	3,168	3,274	3,748	3,803	3,899
Approx. value of land and buildings £	301,500	313,914	366,898	366,696	392,420	389,924
Approx. value of plant and machinery £	212,253	241,245	250,495	276,610	283,499	287,856
Total amount of wages paid ... ..	£ 303,012	332,206	328,050	322,747	366,494	418,363
Value of fuel used ... ..	£ 23,644	21,711	21,341	19,642	22,573	26,140
Value of raw materials worked up £	1,998,512	2,099,034	2,216,705	2,428,003	2,732,525	3,188,817
Value of final output ... ..	£ 2,570,858	2,698,250	2,834,007	3,030,785	3,468,475	4,088,140
Value added in process of manufacture £	572,346	599,216	617,302	602,782	735,950	899,323

\* Including three bone milling establishments in Western Australia.

It will be seen from the above table that as regards the number of factories and of hands employed, the figures during the last five years have been almost stationary. The approximate amount of permanently invested capital, however, shews a very substantial increase, amounting to 29.3 per cent. in the value of land and buildings, and 35.6 per cent. in that of plant and machinery. The amount of wages paid, value of materials used, and of final output, shew the large increases of 38.1, 60.4 and 59.0 per cent. respectively during the same period.

3. *Fellmongering and Wool-scouring.*—(i.) The next industry in importance in Class I. is that of fellmongering and wool-scouring, one of the earliest industries established in Australia. The following table gives particulars of the industry in each State for the year 1915:—

## FELLMONGERING AND WOOL-SCOURING, 1915.

Items.	N.S.W.	Vic.	Qld.	S.A.	W.A.	Tas.	C'with.
Number of factories ... ..	54	30	19	3	...	...	106
Number of employees ... ..	1,451	445	370	71	...	...	2,337
Actual horse-power of engines used ... ..	2,398	627	636	93	...	...	3,754
Approx. value of land and buildings ... ..	£ 151,195	69,225	41,530	4,490	...	...	266,440
Approx. value of plant and machinery ... ..	£ 174,598	55,307	95,025	4,850	...	...	329,780
Total amount of wages paid ... ..	£ 149,830	49,268	39,056	7,218	...	...	245,362
Value of fuel used ... ..	£ 21,930	8,115	9,979	810	...	...	40,834
Value of raw material worked up ... ..	£ 2,552,400	939,524	1,573,254	158,053	...	...	5,223,231
Value of final output ... ..	£ 2,823,057	1,095,097	1,802,363	194,173	...	...	5,919,690
Value added in process of manufacture ... ..	£ 275,657	155,573	229,109	36,120	...	...	696,459

\* Year ended 30th June, 1915.

(ii.) *Development of Fellmongering and Wool-scouring, 1910 to 1915.*—The following return furnishes particulars of fellmongering and wool-scouring establishments in the Commonwealth for the last six years:—

## DEVELOPMENT OF FELLMONGERING AND WOOL-SCOURING IN THE COMMONWEALTH, 1910 to 1915.

Items.	1910.	1911.	1912.	1913.	1914.	1915.
Number of factories ... ..	122	112	120	119	108	106
Number of employees ... ..	2,674	2,590	2,544	2,375	2,298	2,337
Actual horse-power of engines used ... ..	2,696	3,230	3,831	3,966	3,772	3,754
Approx. value of land and buildings ... ..	£ 274,122	273,281	267,188	269,895	256,330	266,440
Approx. value of plant and machinery ... ..	£ 298,548	308,211	348,970	346,381	330,047	329,780
Total amount of wages paid ... ..	£ 217,919	208,627	209,352	230,445	226,509	245,362
Value of fuel used ... ..	£ 31,250	21,581	31,445	33,404	36,658	40,834
Value of raw materials worked up ... ..	£ 3,965,303	3,757,750	3,859,200	4,365,413	4,238,705	5,223,231
Value of final output ... ..	£ 4,655,517	4,343,690	4,444,938	4,940,410	4,742,531	5,919,690
Value added in process of manufacture ... ..	£ 690,214	585,940	585,738	574,997	503,626	696,459

A slight decline has taken place in this industry during the last five years as regards the number of establishments and of employees. On the other hand, the amount paid in wages, the value of plant and machinery, of materials used, and of the final output, all show substantial increases amounting to 12.6 per cent., 10.5 per cent., 31.7 per cent., and 27.2 per cent. respectively.

4. *Soap and Candle Factories.*—(i.) In Class II. (see § 1. 3 hereof) the manufactures of soap and candles are the most important industries. These two manufactures are frequently carried on in the same establishments, so that separate returns cannot be obtained; it may, however, be said generally that the manufacture of soap is the more important of the two. The following table gives particulars of soap and candle factories in each State during the year 1915:—

## SOAP AND CANDLE FACTORIES, 1915.

Items.	N.S.W.	Vic.	Qld.	S.A.	W.A.	Tas.	Cwith.
Number of factories ... ..	32	17	14	5	6	1	75
Number of employees ... ..	753	639	168	200	353	28	2,141
Actual horse-power of engines employed ... ..	548	464	145	177	84	2	1,420
Approximate value of land and buildings ... ..	£ 174,161	96,770	28,434	55,682	15,674	4,165	374,886
Approximate value of plant and machinery ... ..	£ 187,617	121,946	41,576	22,166	86,619	595	460,519
Total amount of wages paid during year ... ..	£ 71,350	71,282	16,341	24,715	33,500	2,677	219,665
Value of fuel used ... ..	£ 13,094	12,587	2,606	6,343	1,151	320	36,101
Value of raw material worked up ... ..	£ 432,508	457,900	77,115	130,021	178,715	9,691	1,285,950
Total value of output ... ..	£ 675,893	721,845	135,880	177,472	245,712	13,711	1,971,513
Value added in process of manufacture ... ..	£ 243,385	263,945	58,765	47,451	67,997	4,020	685,563

\* Year ended 30th June, 1915. † Including three oil establishments in order to avoid disclosing particulars of individual factories.

(ii.) *Development of Soap and Candle Factories, 1910 to 1915.* The following table gives similar particulars for the last six years as regards the Commonwealth as a whole:—



**DEVELOPMENT OF SOAP AND CANDLE FACTORIES IN THE COMMONWEALTH,  
1910 to 1915.**

Items.	1910.	1911.	1912.	1913.	1914.	1915.
Number of factories...	78	81	77	74	75	76
" employees	1,606	1,668	1,776	1,755	1,801	2,141
Actual horse-power of engines used...	1,002	1,266	1,274	1,314	1,434	1,420
Approximate value of land and buildings	£ 311,333	347,824	360,572	360,783	374,418	374,886
" plant and machinery	£ 305,693	326,273	348,365	364,357	385,744	460,519
Total amount of wages paid...	£ 140,423	148,592	162,551	172,247	190,349	219,865
Value of fuel used	£ 33,222	31,701	30,896	31,692	33,949	36,101
" of raw material worked up	£ 952,770	1,018,757	1,030,770	1,067,001	1,117,140	1,285,950
" of final output	£ 1,440,176	1,588,416	1,614,898	1,644,188	1,756,938	1,971,513
" added in process of manufacture	£ 497,406	569,659	584,128	577,187	639,798	685,563

\* Including three bark milling establishments in Western Australia 1914, three oil establishments 1915.

(iii.) *Production of Soap and Candles, 1910 to 1915.* The subjoined statement shows that, taking the Commonwealth as a whole, there has been a considerable increase in the output of soap during the past five years.

**PRODUCTION OF SOAP AND CANDLES IN THE COMMONWEALTH, 1910 to 1915.**

Particulars.	1910.	1911.	1912.	1913.	1914.	1915.
Soap ... .. cwt.	617,458	639,458	688,722	700,878	697,807	729,984
Candles ... .. "	144,621	130,122	130,785	129,877	110,734	104,986

\* Exclusive of Western Australia, for which State particulars are not available for publication.

(iv.) *Raw Materials Used, 1910 to 1915.* The following statement shows the quantity of certain raw materials used in soap and candle factories in the Commonwealth during the years 1910 to 1915:—

**RAW MATERIALS USED IN SOAP AND CANDLE FACTORIES, 1910 to 1915.**

Particulars.	1910.	1911.	1912.	1913.	1914.	1915.
Tallow ... .. cwt	349,035	356,471	411,701	391,133	410,235	439,402
Alkali ... .. "	131,010	133,675	135,643	135,231	153,824	159,344
Cocoanut oil ... .. gal.	355,802	505,612	489,329	457,693	460,561	485,851

\* Exclusive of Western Australia, for which State figures are not available for publication.

5. *Saw Mills, etc.*—The most important industry in Class IV. is that of saw-milling. As separate particulars of forest saw mills are not available for some of the States, both forest and other saw mills, as well as joinery, moulding, and box factories have been combined in the following table:—

**SAW MILLS, FOREST AND OTHER, JOINERY, Etc., 1915.**

Items.	N.S.W.	Vic.	Q'land.	S.A.	W.A.	Tas.	C'w'th.
Number of factories	610	360	306	87	71	133	1,567
" employees	7,736	5,828	5,022	1,213	3,472	1,576	24,847
Actual horse-power of engines employed	17,157	5,610	9,033	1,600	7,931	2,068	46,479
Approx. value of land and buildings	£ 872,636	341,623	200,589	143,800	336,230	74,880	1,969,758
" plant and machinery	£ 774,294	480,843	458,923	77,445	546,891	163,929	2,502,325
Total amount of wages paid during year	£ 838,642	658,931	527,097	133,195	476,605	146,520	2,780,990
Value of fuel used	£ 20,295	14,496	8,224	3,636	2,635	1,990	51,276
Value of raw material worked up	£ 2,024,512	1,045,278	820,477	501,992	82,431	128,173	4,602,863
Total value of output	£ 3,264,614	2,061,595	1,744,260	726,734	742,548	352,331	8,892,082
Value added in process of manufacture	£ 1,240,102	1,016,317	923,783	224,742	660,117	224,158	4,289,219

\* Year ended 30th June, 1915.

The development of forest and other saw mills, etc., since 1910, is shewn in the following table :—

**DEVELOPMENT OF SAW MILLS, FOREST AND OTHER, Etc., IN THE  
COMMONWEALTH, FROM 1910 to 1915.**

Items.	1910.	1911.	1912.	1913.	1914.	1915.
Number of establishments ... ..	1,350	1,494	1,609	1,670	1,623	1,567
employees ... ..	23,424	26,785	29,358	30,371	28,864	24,847
Actual horse-power of engines used... ..	30,520	34,540	40,256	45,684	47,341	46,479
Approximate value of land and buildings of plant and machinery	£ 1,363,927	1,532,620	1,754,241	2,006,035	2,063,437	1,969,758
Total amount of wages paid...	£ 2,290,059	2,749,209	3,211,625	3,383,907	3,401,045	2,780,990
Value of fuel used ... ..	£ 29,656	37,308	43,913	51,436	50,650	51,276
of raw material worked up ... ..	£ 3,372,421	4,203,333	4,900,612	5,273,688	5,012,211	4,602,663
of final output ... ..	£ 6,928,310	6,535,800	9,832,810	10,411,923	10,100,686	8,892,032
added in process of manufacture	£ 3,555,869	4,327,467	4,982,198	5,168,235	5,088,475	4,289,219

The great development in the building and other trades in Australia during the years immediately preceding the war is reflected in the very satisfactory progress of the timber industries, in which there were large increases in wages paid, value of materials used, and final output, as well as in capital invested in land and buildings, and plant and machinery. For the years 1914 and 1915, however, there was, as might have been expected, a fairly considerable decline on the returns for 1913.

**6. Agricultural Implement Factories.**—The manufacture of agricultural implements is an important industry in Australia, and is of particular interest owing to the fact that it is 'one of the first industries to which the so-called "New Protection" system was sought to be applied (see Section XXVII. hereof). The nature of the articles manufactured may be gathered from the machines scheduled in the Customs tariff, 1906-7, which includes stripper harvesters, strippers, stump-jump ploughs, disc cultivators, winnowers, corn-shellers and baggers, drills, and other implements usually employed in agriculture. The stripper-harvester, which combines the stripper with a mechanism for winnowing and bagging grain, is an Australian invention, and is exported to many countries.

The following table gives particulars of the agricultural implement works of Australia for the year 1915 :—

**AGRICULTURAL IMPLEMENT WORKS, 1915.**

Items.	N.S.W.	Victoria	Q'land.	S.Aust.	W.A.	Tas.	C'w'lth.
Number of factories ... ..	24	64	6	54	4	1	153
employees ... ..	599	1,678	96	912	317	4	3,606
Actual horse-power of engines employed	313	1,372	97	881	239	3	2,905
Approx. value of land and buildings	£ 100,235	159,942	6,172	67,093	29,624	100	363,166
plant and machinery	£ 36,494	188,492	7,530	79,585	25,088	270	337,459
Total amount of wages paid during year	£ 70,028	206,764	9,272	97,852	44,270	184	428,370
Value of fuel used ... ..	£ 2,812	15,337	638	6,142	4,218	20	29,167
Value of raw material worked up	£ 275,630	213,257	16,627	109,276	49,401	221	664,412
Total value of output ... ..	£ 387,974	526,756	33,812	258,911	91,218	637	1,299,308
Value added in process of manufacture	£ 112,344	313,499	17,165	149,635	41,817	416	634,896

\* Year ended 30th June, 1915.

*Development of Agricultural Implement Works.* The following table shews the progress of this industry during the years 1910 to 1915 to have been very satisfactory. A general decline has taken place during the latter part of the period, attributable to various causes, the recent drought and a reduction in the exports to other countries being the principal contributing factors:—

**DEVELOPMENT OF AGRICULTURAL IMPLEMENT WORKS IN THE COMMONWEALTH  
FROM 1910 to 1915.**

Items.	1910.	1911.	1912.	1913.	1914.	1915.
Number of factories ... ..	150	155	159	154	154	153
Number of employees ... ..	4,868	5,156	4,733	4,444	3,865	3,606
Actual horse-power of engines used ... ..	2,228	2,347	2,419	2,698	2,665	2,905
Approx. value of land and buildings ... ..	£ 227,936	284,469	331,348	348,666	360,916	363,166
Approx. value of plant and machinery ... ..	£ 208,185	245,025	281,923	309,015	324,292	337,459
Total amount of wages paid ... ..	£ 470,931	550,922	527,406	503,244	466,686	428,370
Value of fuel used ... ..	£ 35,070	32,342	30,961	30,408	29,592	29,167
Value of raw material worked up ... ..	£ 743,032	811,322	751,596	824,556	749,153	664,412
Value of final output ... ..	£ 1,560,880	1,656,364	1,539,421	1,536,378	1,413,789	1,299,308
Value added in process of manufacture ... ..	£ 817,848	845,042	786,825	711,822	664,636	634,896

**7. Engineering, Ironworks, and Foundries.**—The classification in these industries is not very satisfactory. Generally, engineering shops, ironworks, and foundries are included, as also are factories for making nails, safes, patterns, meters, and springs. Railway workshops, agricultural implement factories, cyanide, smelting, pyrites, and metallurgical works, galvanised iron, stoves and ovens, and wire working establishments are not included. The combination of industries is rendered necessary owing to the limited classification still adopted by some of the States.

**ENGINEERING, IRONWORKS, AND FOUNDRIES, 1915.**

Items.	N.S.W.	Vic.	Q'land.	S.A.	W.A.	Tas.	C'w'lth.
Number of factories ... ..	312	397	91	64	65	21	950
Number of employees ... ..	10,059	8,999	2,883	1,739	1,100	439	25,219
Actual horse-power of engines employed ... ..	20,239	8,744	2,034	1,406	1,334	293	34,049
Approx. value of land and buildings ... ..	£ 1,183,283	655,613	191,406	119,614	130,613	35,455	2,315,984
Approx. value of plant and machinery ... ..	£ 1,627,923	846,337	214,421	140,215	114,981	44,770	2,988,650
Total amount of wages paid during year ... ..	£ 1,258,032	1,105,931	360,004	207,132	151,744	52,031	3,134,873
Value of fuel used ... ..	£ 205,905	110,353	18,125	17,854	13,858	3,075	389,170
Value of raw materials worked up ... ..	£ 1,717,110	1,447,517	323,526	294,285	180,556	42,890	4,005,914
Total value of output ... ..	£ 3,671,429	3,221,994	943,255	598,853	388,204	120,861	8,944,601
Value added in process of manufacture ... ..	£ 1,954,319	1,774,447	619,729	304,573	207,648	77,971	4,938,687

In addition to engineering works which supply ordinary requirements, there are now a number of large and important establishments which engage in the manufacture of special classes of machinery and implements. The manufacture of mining and smelting machinery and apparatus forms an important section of this industry.

The development of engineering, ironworks, and foundries in the Commonwealth since 1910 is shewn in the following table:—

**DEVELOPMENT OF ENGINEERING, IRONWORKS, AND FOUNDRIES  
FROM 1910 to 1915.**

Items.	1910.	1911.	1912.	1913.	1914.	1915.
Number of factories ... ..	781	890	877	919	950	950
Number of employees ... ..	20,109	22,539	25,151	26,014	25,766	25,219
Actual horse-power of engines used ... ..	13,493	16,015	18,744	20,630	33,630	34,049
Approx. value of land and buildings ... ..	£ 1,382,872	1,579,925	1,792,169	1,980,453	2,264,869	2,315,984
Approx. value of plant and machinery ... ..	£ 1,541,107	1,706,405	1,953,478	2,188,935	2,946,347	2,988,650
Total amount of wages paid ... ..	£ 1,948,326	2,342,603	2,846,180	3,044,263	3,143,920	3,134,873
Value of fuel used ... ..	£ 166,449	178,546	195,789	217,173	357,071	369,170
Value of raw material worked up ... ..	£ 2,414,210	2,832,181	3,536,179	3,719,643	3,960,252	4,005,914
Value of final output ... ..	£ 5,636,046	6,614,535	7,930,060	8,315,320	8,881,777	8,944,601
Value added in process of manufacture ... ..	£ 3,221,838	3,782,354	4,393,681	4,595,677	4,921,525	4,938,687

The progress in these industries during late years has been very rapid. Since 1910 the number of establishments has increased over 21 per cent., the number of hands employed 25 per cent., the amount of wages paid 61 per cent., the amount of capital invested in land, buildings, plant and machinery, 81 per cent., and the output 59 per cent.

**8. Railway and Tramway Workshops.**—(i.) The railway workshops of Australia form an important item in the metal and machinery class, and are chiefly State institutions. The following table gives the details concerning them, but includes also private establishments manufacturing rolling stock:—

#### RAILWAY AND TRAMWAY WORKSHOPS, 1915.

Items.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	C'w'lth.
Number of factories ...	26	17	10	9	8	7	77
" employees ...	9,577	5,491	2,509	2,721	1,628	298	22,224
Actual h.p. of engines employed ...	5,493	1,503	2,660	596	2,164	155	12,571
Approx. value of land and buildings £	1,057,558	384,379	314,384	269,137	439,198	7,075	2,471,731
Approx. value of plant and mach'ny £	965,664	308,167	233,651	196,075	446,319	86,702	2,236,578
Total amt. of wages paid during year £	1,366,091	793,114	343,041	375,996	253,199	43,505	3,174,946
Value of fuel used ...	£ 31,503	28,621	6,734	8,701	13,100	1,831	90,490
Value of raw material worked up ...	£ 854,595	869,498	202,717	256,243	158,820	21,912	2,363,785
Total value of output ...	£2,426,094	1,828,874	589,742	710,737	415,126	75,948	6,046,521
Value added in process of manuf'ct're	£1,571,499	959,376	387,025	454,494	256,306	54,036	3,682,732

(ii.) *Northern Territory Railway Workshops.* In addition to the above, a railway workshop is in operation in the Northern Territory. The work is confined almost exclusively to repairs to rolling stock, etc., no new goods being manufactured. For the sake of convenience this establishment is not included in any of the tables in this publication.

(iii.) *Development of Railway and Tramway Workshops, 1910 to 1915.* The following table shews the development of railway and tramway workshops in the Commonwealth since 1910:—

#### DEVELOPMENT OF RAILWAY AND TRAMWAY WORKSHOPS, Etc., FROM 1910 to 1915.

Items.	1910.	1911.	1912.	1913.	1914.	1915.
Number of factories... ..	68	72	73	73	75	77
" employees ... ..	14,915	17,425	19,662	26,014	21,745	22,224
Actual horse-power of engines used ...	7,384	8,373	9,637	9,581	11,025	12,571
Approx. value of land and buildings	£ 1,939,092	2,036,178	2,128,273	2,213,697	2,378,764	2,471,731
" plant and machinery	£ 1,394,657	1,433,093	1,563,710	1,685,050	2,141,654	2,236,578
Total amount of wages paid... ..	£ 1,842,142	2,163,460	2,702,711	3,018,988	3,096,734	3,174,946
Value of fuel used ... ..	£ 57,777	69,919	75,476	77,155	90,332	90,490
" of raw material worked up ...	£ 1,558,698	1,939,477	2,574,737	2,874,535	2,492,217	2,363,785
" of final output ... ..	£ 3,648,168	4,468,096	5,695,221	6,435,823	6,134,588	6,046,521
" added in process of manufacture	£ 2,089,270	2,528,619	3,120,484	3,561,288	3,642,371	3,682,732

The growth of the railway and tramway systems conjointly with heavy increases in passenger and goods traffic throughout the Commonwealth during the past few years (see Section XVII., § 2 and 3) has resulted in corresponding activity in workshops engaged in the manufacture or repair of rolling stock, etc. The above table shews that the number of employees increased 49 per cent. during the last five years, the

amount of wages paid 72 per cent., the final output nearly 66 per cent., while the value added in process of manufacture shews an increase of over 76 per cent.

9. **Smelting Works, etc.**—The subjoined table gives particulars of metal smelting, cyanide, pyrites, and metallurgical works. The classification of these works does not appear to be carried out on a uniform basis in the several States, and the combination of industries is, therefore, somewhat unsatisfactory. The returns do not include particulars of plants used on mines.

### SMELTING, CYANIDE, PYRITES, Etc., WORKS, 1915.

Items.	N.S.W.	Vic.	Q'land.	S.A.	W.A. †	Tas.	C'w'lth.
Number of factories ... ..	26	52	12	6	...	2	98
" employees ... ..	2,909	272	408	1,730	...	521	5,840
Actual horse-power of engines employed	13,402	356	2,767	3,816	...	3,256	23,597
Approx. value of land and buildings	£ 212,398	10,076	36,935	19,748	...	7,000	286,157
" plant and machinery	£ 1,087,273	34,584	253,460	69,240	...	42,992	1,487,549
Total am't of wages paid during year	£ 342,958	24,322	78,788	320,437	...	69,562	836,067
Value of fuel used ... ..	£ 156,149	4,529	20,251	180,950	...	58,090	419,969
Value of raw material worked up	£ 3,624,155	79,674	626,537	2,600,977	...	458,522	7,389,865
Total value of output ... ..	£ 5,884,456	138,241	854,955	1,707,286	...	1,077,257	11,662,195
Value added in process of manufacture	£ 2,260,301	58,567	228,418	1,106,309	...	618,735	4,272,350

\* Year ended 30th June, 1915.

† See third\* paragraph below.

In New South Wales and Queensland the above figures represent smelting works; those for Victoria include forty-four cyanide works, two metallurgical, four pyrites, and two smelting works; South Australia four cyanide and two smelting; and Tasmania two smelting works.

The largest output for the year under review was in New South Wales, viz., £5,884,456, or 50.46 per cent. on the total output for the Commonwealth. South Australia came next with £3,707,286, or 31.79 per cent.; this amount is made up of £3,701,688 smelting and £5598 cyanide. For Tasmania, the output of smelting was £1,077,257. The output in Victoria was £53,828, £42,850, £40,595, and £968 from pyrites, smelting, cyanide, and metallurgical works in the order named.

In Western Australia all the plants are worked on the mines and are therefore not included.

10. **Bacon-curing Factories.**—(i.) The following table gives particulars of factories engaged in bacon-curing in each State during the year 1915 :—

### BACON-CURING FACTORIES, 1915.

Items.	N.S.W.	Vic.	Q'land.	S.A. †	W.A. ‡	Tas.	C'w'lth.
Number of factories ... ..	21	25	8	12	3	4	73
" employees ... ..	202	394	351	68	14	21	1,050
Actual horse-power of engines employed	315	933	682	81	44	43	2,098
Approx. value of land and buildings	£ 72,277	92,312	93,726	11,304	4,390	5,405	279,414
" plant and machinery	£ 27,314	60,567	54,842	5,350	1,100	2,451	151,624
Total amount of salaries and wages paid	£ 30,927	49,672	45,992	16,163	2,182	3,076	148,012
Value of fuel used ... ..	£ 4,174	5,488	4,179	2,195	282	351	16,669
Value of raw material worked up	£ 536,416	666,534	400,965	116,325	88,885	19,078	1,828,203
Total value of output ... ..	£ 617,406	767,778	674,820	149,035	96,241	26,675	2,331,955
Value added in process of manufacture	£ 80,990	101,244	273,855	32,710	7,356	7,597	503,752

\* Year ended 30th June, 1915. † Including two meat preserving establishments employing 110 hands. ‡ Two establishments, particulars not available for publication. ‡ Not including meat preserving.

(ii.) *Quantity and Value of Production, 1915.* The following table shews the number of pigs killed and the quantity and value of the production of bacon-curing factories in each State during the year 1915 :—

**PRODUCTION OF BACON-CURING FACTORIES, 1915.**

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.†	Tasmania.	C'wealth.
QUANTITY (,000 omitted).							
Bacon & ham lbs.	13,565	11,451	11,746	1,736	1,836	589	40,933
Lard ... lbs.	634	570	699	78	9	31	2,021
VALUE.							
Bacon & ham £	554,692	709,699	535,193	90,013	95,541	24,431	2,009,469
Lard ... £	18,999	21,367	26,043	3,034	300	984	70,727
Other products £	25,460	36,812	113,584	3,154	400	1,260	180,670
PIGS KILLED.							
Number ...	172,876	129,259	159,200	19,185	†	7,952	488,482

\* Year ended 30th June, 1915.

† In Western Australia, all bacon and hams treated in factories with the exception of one establishment, are imported and subsequently smoked in that State.

Bacon and ham and other pig products are dealt with more fully in Section IX., *Farmyard and Dairy Production.*

11. **Butter, Cheese, and Condensed Milk Factories.**—(i.) The subjoined table gives particulars of butter, cheese, and condensed milk factories in each State during the year 1915. The returns are exclusive of nine butterine and margarine factories, employing 121 hands, the value of the output being £267,043.

**BUTTER, CHEESE, AND CONDENSED MILK FACTORIES, 1915.**

Items.	N.S.W. *	Vic.	Q'land.	S.A.	W.A. †	Tas.	C'w'lth.
Number of factories ...	165	190	103	44	3	31	536
" employees ...	1,087	1,194	763	152	9	95	3,300
Actual horse-power of engines employed ...	2,892	2,921	1,504	387	28	216	7,948
Approximate value of land and buildings £	200,553	310,412	115,378	36,187	2,680	18,203	683,413
" plant & machinery £	286,323	334,548	183,156	27,049	2,435	13,745	852,260
Total amount of wages paid ...	£ 152,354	£ 139,543	£ 94,730	£ 12,153	£ 1,190	£ 7,611	£ 403,181
Value of fuel used ...	£ 32,109	£ 23,841	£ 12,603	£ 2,328	£ 35	£ 530	£ 71,796
Value of raw material worked up ...	£ 3,815,028	£ 3,361,314	£ 1,525,410	£ 275,209	£ 9,694	£ 90,671	£ 8,040,316
Total value of output ...	£ 4,187,034	£ 3,715,784	£ 1,913,045	£ 264,930	£ 11,033	£ 111,190	£ 9,203,041
Value added in process of manufacture £	£ 372,006	£ 351,470	£ 387,635	£ 29,721	£ 1,374	£ 20,519	£ 1,162,725

\* Year ended 30th June, 1915. † Including two bacon-curing establishments, in order to avoid disclosing particulars of individual establishments.

(ii.) *Development of Factories, 1910 to 1915.* The following table shows the progress of the factories in this industry during the past five years:—

**DEVELOPMENT OF BUTTER, CHEESE, AND CONDENSED MILK FACTORIES  
IN THE COMMONWEALTH, 1910 to 1915.**

Items.	1910.	1911.	1912.	1913.	1914.	1915.
Number of factories ...	548	540	530	531	528	536
" employees ...	3,479	3,730	3,518	3,507	3,568	3,300
Actual horse power of engines used ...	6,182	6,818	8,156	7,726	7,895	7,948
Approx. value of land and buildings £	576,644	677,139	659,673	664,735	664,999	683,413
" plant and machinery £	708,239	775,792	788,922	828,986	850,770	832,260
Total amount of wages paid ...	£ 324,505	£ 375,221	£ 385,793	£ 411,491	£ 439,121	£ 406,181
Value of fuel used ...	£ 59,616	£ 67,555	£ 70,155	£ 72,214	£ 81,809	£ 71,796
" raw material worked up ...	£ 7,378,146	£ 8,341,125	£ 8,676,946	£ 8,146,178	£ 8,709,372	£ 8,040,316
" final output ...	£ 8,230,782	£ 9,432,122	£ 9,760,205	£ 9,284,747	£ 9,898,398	£ 9,203,041
Value added in process of manufacture £	£ 852,636	£ 1,090,997	£ 1,083,859	£ 1,138,569	£ 1,169,126	£ 1,162,725

(iii.) *Quantity and Value of Production, 1915.* The following table shows the quantity and value of butter, cheese, and condensed milk produced, and the quantity of milk used in butter, cheese, and condensed milk factories in each State during 1915:—

## PRODUCTION OF BUTTER, CHEESE, AND CONDENSED MILK FACTORIES, 1915.

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	C'w'lth.
QUANTITY (,000 OMITTED).							
Butter ... .. lbs.	80,302	37,594	23,742	2,983	163	1,831	146,615
Cheese ... .. "	3,770	2,130	4,263	1,410	...	355	11,928
Condensed and concentrated milk ... lbs.	6,003	16,690	5,369	...	...	...	28,062
VALUE (,000 OMITTED).							
Butter ... .. £	3,594	2,245	1,627	212	11	101	8,090
Cheese ... .. £	105	79	164	52	...	10	410
Condensed and concentrated milk ... £	100	383	122	...	...	...	605
MILK USED (,000 OMITTED).							
Butter factories ... gals.	181,121	85,570	51,916	6,075	406	4,550	329,638
Cheese ... .. "	3,882	2,185	4,556	1,377	...	380	12,380
Condensed milk factories ... "	1,601	5,455	1,234	...	...	...	8,340

\* Year ended 30th June, 1915.

The butter, cheese and condensed milk industries are dealt with more fully in Section IX., *Farmyard and Dairy Production*.

12. **Meat and Fish Preserving, Ice and Refrigerating Works.**—These industries are now of considerable importance in Australia. The freezing of various kinds of produce for export has long been an established industry. Large freezing works have been installed at many ports in the Commonwealth for the purpose of freezing produce chiefly for export, while insulated space for the carriage of frozen produce is provided by a number of steamship companies trading between Australia and other parts of the world. Extensive meat freezing and canning works are being erected in the Northern Territory at Darwin at a cost which will reach, when completed, about £600,000. The Government have entered into an agreement with the proprietors in regard to full train-loads of cattle at special rates coincident with an arrangement that private owners of cattle may have their stock treated under reasonable terms and conditions. When the works are in full operation it is expected that from 400 to 500 head of stock will be treated daily. Particulars regarding the export of frozen beef and mutton may be found on pages 300 and 304 hereof respectively. Special terms have been made by the Commonwealth Government in its English mail contract for the provision by the contractors of ample cold-storage facilities.

The particulars given in the subjoined table include ice-making and freezing works, and also meat-canning factories, separate particulars for each item for all the States not being available.

## MEAT AND FISH-PRESERVING, ICE AND REFRIGERATING WORKS, 1915.

Items.	N.S.W.	Vic.	Q'land.	S.A.	W.A.	Tas.	C'w'lth.
Number of factories ... ..	102	34	53	18	15	7	229
" employees ... ..	2,610	1,008	4,925	310	116	63	9,032
Actual horse-power of engines employed	5,621	5,736	11,440	877	966	276	24,916
Approx. value of land and buildings	£ 611,458	416,499	919,386	158,851	50,974	11,200	2,168,367
" " plant and machinery	£ 516,434	240,878	980,170	86,198	58,437	6,036	1,888,153
Total amount of wages paid during year	£ 337,433	134,472	558,957	26,066	16,023	5,879	1,078,330
Value of fuel used ... ..	£ 55,973	27,222	62,254	7,368	5,713	1,192	159,722
Value of raw material worked up	£ 3,815,122	886,953	4,561,835	39,892	2,836	13,195	11,319,633
Total value of output ... ..	£ 3,805,729	1,136,622	5,855,598	71,207	34,992	24,118	13,928,266
Value added in process of manufacture	£ 990,607	249,669	1,293,763	31,315	32,156	10,923	2,608,433

\* Year ended 30th June, 1915.

† Excluding two-meat preserving establishments employing 110 hands.

The following table gives particulars, so far as available, of various classes of meat preserved during the year 1915:—

## MEAT-PRESERVING WORKS—OUTPUT, 1915.

Output.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	C'w'lt'h.
Tinned Meat ... .. Cwt.	243,585	40,927	255,298†	1,488	...	8,240	549,538

\* Year ended 30th June, 1915. † Also 2,266 cwt. salted meat.

Large quantities of rabbits, hares, and poultry, for which, however, complete returns are not available, were treated in freezing works. During 1915, over 3,300,000 rabbits and hares were treated in Victoria alone. Exclusive of Victoria, for which State particulars are not available, the returns shew that 93,172 tons of ice, valued at £178,287, were manufactured in the Commonwealth in 1915.

Full particulars of quantities and value of beef, mutton, and lamb preserved by cold process, exported from the Commonwealth during a series of years, will be found in Section VII., *Pastoral Production*.

13. **Biscuit Manufactories.**—The following table gives particulars regarding establishments at which the manufacture of biscuits, cakes, etc., was carried on in each State during the year 1915:—

## BISCUIT, Etc., MANUFACTORIES, 1915.

Items.	N.S.W.	Vic.	Q'land.	S.A.	W.A.	Tas.	C'w'lt'h.
Number of factories ... ..	7	7	20	3	5	4	46
" employees ... ..	1,410	1,361	575	127	139	125	3,737
Actual horse-power of engines employed	672	362	334	76	112	49	1,605
Approx. value of land and buildings	£ 117,291	72,750	58,309	18,350	14,000	23,200	303,900
Total amount of plant and machinery	£ 105,970	61,068	44,924	11,102	17,370	11,000	251,434
Value of raw material worked up	£ 78,010	111,794	56,897	9,860	10,604	8,643	274,808
Value of fuel used ... ..	£ 9,616	9,925	2,833	1,617	1,132	1,240	26,413
Total value of output	£ 428,520	424,234	163,973	33,665	34,496	33,250	1,118,138
Value added in process of manufacture	£ 681,142	669,841	302,709	61,114	59,947	50,815	1,625,568
Value added in process of manufacture	£ 252,622	245,607	138,736	27,449	25,451	17,565	707,430

\* Year ended 30th June, 1915.

14. **Jam and Fruit Preserving, Pickles, Sauces, and Vinegar Manufactories.**—The jam and fruit preserving industry has increased in importance of late years, consequent on the extension of fruit-growing. As an exporting industry it is comparatively recent, but is of increasing value, and is stated to be capable of considerable expansion. During the year ended 30th June, 1915, 4,770,017 lbs. of jams and jellies, valued at £90,909, were exported from the Commonwealth. The subjoined table gives particulars of factories at which these industries were carried on in each State during the year 1915. Separate returns for the individual industries are not available for most of the States.

## JAM AND FRUIT PRESERVING, PICKLES, SAUCES, AND VINEGAR MANUFACTORIES, 1915.

Items.	N.S.W.	Vic.	Q'land.	S.A.	W.A.	Tas.	C'w'lt'h.
Number of factories ... ..	36	30	11	26	8	17	128
" employees ... ..	1,074	1,689	325	422	70	813	4,393
Actual horse-power of engines employed	366	393	69	132	31	526	1,567
Approx. value of land and buildings	£ 114,333	126,875	18,326	34,160	5,550	58,900	358,144
" plant and machinery	£ 55,794	57,621	12,218	17,048	2,406	33,095	178,182
Total amount of wages paid during year	£ 88,512	135,768	20,061	25,441	3,907	52,753	326,442
Value of fuel used ... ..	£ 4,893	8,918	1,066	2,129	350	4,602	21,965
Value of raw material worked up	£ 464,530	666,122	56,985	131,845	10,422	272,561	1,602,465
Total value of output	£ 656,308	1,009,533	98,364	193,511	17,557	441,838	2,417,111
Value added in process of manufacture	£ 191,778	343,411	41,379	61,666	7,135	169,277	511,646

\* Year ended 30th June, 1915.



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*Quantity and Value of Production, 1915.* The following table shews the quantity and value of jams, pickles, and sauces manufactured in each State during the year 1915:—

QUANTITY AND VALUE OF JAMS, PICKLES, AND SAUCE MANUFACTURED, 1915.

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	C'wealth.
QUANTITY (,000 OMITTED).							
Jam ... .. lbs.	29,799	34,210	2,177	8,211	†	21,490	\$95,887
Fruit, preserved lbs.	2,136	5,929	3,381	1,852	...	†2,231	15,529
Pickles ... .. pints	2,626	1,286	*100	238	101	25	4,376
Sauce ... .. pints	2,952	5,827	286	928	317	62	10,372
VALUE.							
Jam ... .. £	429,896	697,854	38,939	128,679	†	337,650	\$1,633,018
Fruit, preserved £	33,049	95,925	45,794	29,140	...	39,000	242,708
Pickles ... .. £	49,778	38,009	2,377	4,571	2,162	520	97,417
Sauce ... .. £	63,885	177,745	7,961	17,691	5,919	1,329	274,530

\* Approximate. † Exclusive of 51,709 cwt. fruit pulped, value £61,905. ‡ Information not available for publication. § Exclusive of Western Australia.

**15. Confectionery.**—The following table shews the position of the confectionery industry in 1915, and its growth will be apparent when it is stated that at the close of 1900 there were in New South Wales only 16 establishments, with 706 employees, and in Victoria 16 establishments, employing 731 persons, the plant and machinery in the former State being valued at £2815, and in the latter at £19,070.

CONFECTIONERY FACTORIES, 1915.

Items.	N.S.W.	Vic.	Q'land.	S.A.	W.A.	Tas.	C'w'lh.
Number of factories ... ..	53	36	9	9	4	4	115
employees ... ..	1,534	1,987	458	285	123	24	4,411
Actual horse-power of engines employed	714	699	136	244	244	31	2,266
Approx. value of land and buildings	£ 249,878	112,041	29,712	31,339	23,752	11,360	457,882
plant and machinery	£ 95,512	113,320	22,405	33,228	16,918	3,533	294,916
Total amount of wages paid during year	£ 130,222	149,384	32,877	19,166	12,736	1,533	345,938
Value of fuel used ... ..	£ 8,650	12,638	1,740	2,351	974	190	26,543
Value of raw material worked up	£ 522,514	542,849	51,344	63,676	32,361	11,720	1,224,464
Total value of output ... ..	£ 816,389	851,817	117,390	104,560	54,736	18,407	1,963,299
Value added in process of manufacture	£ 293,875	308,968	66,046	40,884	22,375	6,687	738,835

\* Year ended 30th June, 1915.

**16. Flour Mills.**—(i.) The following table shews the position of the flour-milling industry in the year 1915:—

FLOUR MILLS, 1915.

Items.	N.S.W.	Vic.	Q'land.	S.A.	W.A.	Tas.	C'w'lh.
Number of factories ... ..	63	51	11	42	14	17	198
employees ... ..	931	651	182	469	246	130	2,579
Actual horse-power of engines employed	4,781	3,887	894	9,614	1,685	526	14,387
Approx. value of land and buildings	£ 363,641	211,615	70,986	117,077	86,737	62,575	902,631
plant and machinery	£ 334,602	250,186	72,816	141,861	75,692	27,845	903,002
Total am't of wages paid during year	£ 139,702	70,982	28,693	48,043	27,356	15,619	330,395
Value of fuel used ... ..	£ 22,687	15,029	2,941	8,469	3,926	2,623	55,675
Value of raw material worked up	£ 2,827,968	2,368,489	747,264	857,046	587,877	407,088	7,795,732
Total value of output ... ..	£ 3,311,289	2,739,730	863,046	969,937	676,058	464,502	9,064,562
Value added in process of manufacture	£ 523,321	371,241	115,782	112,891	88,181	37,414	1,268,830

\* Year ended 30th June, 1915. † The manufacture of cornflour, oatmeal, etc., was also carried on in these establishments.

(ii.) *Production of Flour Mills, 1910 to 1915.* The production of flour by the mills in each State of the Commonwealth in the years 1910 to 1915 was as follows:—

## FLOUR MILLS—PRODUCTION, 1910 to 1915.

Year.	N.S.W.	Victoria.	Q'land.	Sth. Aust.	West. Aust.	Tasmania.	C'wealth.
	Tons.*	Tons.*	Tons.*	Tons.*	Tons.*	Tons.*	Tons.*
1910	242,813	225,282	27,559	95,885	36,818	20,925	649,282
1911	253,556	247,434	27,960	100,374	40,642	21,335	691,301
1912	255,359	225,376	25,855	103,100	49,319	18,044	677,053
1913	285,425	252,763	33,889	107,994	61,997	18,545	760,613
1914	266,302†	246,136	35,402	84,701	61,922	19,382	713,845
1915	266,302†	134,401	39,734	49,404	32,396	19,573	541,810

\* Tons of 2000 lbs. † Year ended 30th June, 1915.

The total production of flour for the Commonwealth for 1915, viz., 541,810 tons, was valued at £7,117,002; in addition 241,830 tons of bran and pollard, valued at £1,781,479, were made. The total quantity of wheat ground in 1915 was 26,513,959 bushels.

17. Sugar Mills.—The following table shows the position of the cane-crushing branch of the sugar-making industry in 1915. This industry is carried on in Queensland and New South Wales, the only States of the Commonwealth in which the sugar-cane is grown.

## SUGAR MILLS, 1915.

Items.	N.S.W.	Queensland.	Total.
Number of factories	3	44	47
„ employees	437	4,220	4,657
Actual horse-power of engines employed	2,750	12,183	14,933
Approximate value of land and buildings	£ 54,000	319,448	373,448
„ „ plant and machinery	£ 478,927	2,167,128	2,646,055
Total amount of wages paid during year	£ 54,708	386,846	441,554
Value of fuel used	£ 5,507	45,588	51,095
Value of raw material worked up	£ 200,009	1,524,057	1,724,066
Total value of output	£ 332,290	2,477,233	2,809,523
Value added in course of manufacture	£ 132,281	953,176	1,085,457

\* Year ended 30th June, 1915.

The product of the sugar mill is raw sugar and molasses, the former being sent to the refineries in different parts of Australia for further treatment. Part of the molasses produced is used in distillation, part is turned into food cake for cattle, and part is used for manuring land, but a considerable quantity is run to waste. The following tables shew the progress of this industry in each State from the dates at which information is first obtainable:—

## SUGAR MILLS, NEW SOUTH WALES, 1870 to 1915.

Items.	1870.	1877.	1886.	1896.	1901.	1910.	1911.	1912.	1913.	1914-15. †
No. of factories	27	50	64	23	12	4	4	3	3	3
„ employees	...	1,065	2,259	1,475	695	506	469	469	486	437
Cane crushed tns	*	*	*	*	*	160,311	167,799	141,274	185,910	181,606
Sugar produced tons	677	7,537	13,750	28,557	19,519	20,115	17,299	16,817	22,192	20,029
Molasses pro- duced ...gals.	...	345,543	507,000	2,520,580	1,300,909	918,900	796,440	667,100	966,000	1,104,000

\* Not available. † Year ended 30th June, 1915.

The reduction in the number of New South Wales mills is due chiefly to the tendency towards concentration of cane-crushing in mills fitted with modern machinery, and the consequent closing of the small home mill. On the north coast of New South Wales some land formerly devoted to sugar-growing has been turned into pastures in connection with the dairying industry.

SUGAR MILLS, QUEENSLAND, 1868 to 1915.

Items.	1868.	1876.	1886.	1896.	1901.	1911.	1912.	1913.	1914.	1915.
No. of factories	10	70	118	63	52	49	47	48	47	44
" employees	...	*	*	3,796	*	4,295	3,891	4,524	4,835	4,220
Cane crushed	...	...	...	...	...	...	...	...	...	...
" tons	...	77,245	140,756	166,640	178,160	1,534,451	994,212	2,085,588†	1,922,633	1,152,516
Sugar produced	619	8,214	59,225	100,774	120,858	173,296	113,060	242,837	225,847	140,496
Molasses.—										
Sold to distillers	...	...	...	...	...	2,393,669	1,957,139	3,330,000	2,374,501‡	1,063,298
Used as fodder	...	...	...	...	...	789,564	768,187	1,000,000	898,693	1,847,112
Used as Manure	*	*	*	*	*	223,000	...	500,000	476,556	64,400
Run to waste or burnt	...	...	...	...	...	1,847,333	900,963	...	3,278,841	1,892,201
In stock	...	...	...	...	...	1,197,626	1,362,699	4,248,358	977,629	869,914
Total Molasses † gals	68,622	416,415	1,784,266	2,195,470	3,679,952	6,451,192	4,988,988	9,078,358	8,006,220	5,736,925

\* No record.    † Acres crushed.    ‡ Quantity recorded; large quantities run to waste for which no record is kept.    § Including 135,390 gallons syrup.

Information regarding the cultivation of sugar-cane and the bounties at one time payable on cane grown by white labour may be found in the section of this book dealing with *Agricultural Production*. (See pages 354 to 357.)

18. **Sugar Refineries.**—The establishment of the sugar-refining industry considerably antedates the establishment of the sugar-milling industry, the raw material operated upon being originally brought chiefly from Mauritius and the East. In 1915 there were two sugar refineries in each of the States of Victoria and Queensland, and one in each of the States of New South Wales and South Australia. The returns for the individual States cannot be disclosed.

In the six refineries in the Commonwealth, an average number of 1749 hands was employed during the year 1915. The approximate value of land and buildings was £450,071; of plant and machinery, £1,039,462; and the total amount of wages paid during the year was £225,305. The value of all materials used in sugar refineries during 1915 was £4,582,908, while the total output reached £5,150,106. The amount of crude sugar used was 267,487 tons, and of refined sugar produced 254,542 tons, valued at £5,126,536.

19. **Breweries.**—(i.) The following table gives particulars of breweries in each State during the year 1915:—

BREWERIES, 1915.

Items.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	C'w'lh.
Number of factories	27	22	10	11	15	5	90
" employees	1,045	903	424	348	450	125	3,295
Actual horse-power of engines employed	2,208	3,199	508	990	1,426	99	8,430
Approx. value of land and buildings	£ 620,102	434,295	132,865	99,985	188,838	396,450	1,872,535
Approx. value of plant and machinery	£ 564,327	419,896	116,243	106,561	201,887	43,725	1,452,639
Total amount of wages paid during year	£ 168,997	159,870	61,886	53,573	86,178	18,128	548,632
Value of fuel used	£ 23,096	23,692	7,597	8,198	11,255	2,414	81,252
Value of raw material worked up	£ 630,314	481,327	130,569	107,304	119,092	26,368	1,494,974
Total value of output	£ 1,533,435	1,061,196	442,048	309,526	421,587	101,994	3,869,766
Value added by process of manufacture	£ 903,121	579,869	311,479	202,222	302,495	75,626	2,374,812

\* Year ended 30th June, 1915.

(ii.) *Production and Materials Used, 1915.* The following table shews the quantity and value of ale and stout brewed and the quantity of raw materials used in each State during the year 1915:—

**PRODUCTION AND MATERIALS USED IN BREWERIES, 1915.**

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	C'wealth.
<b>ALE AND STOUT BREWED.</b>							
Quantity gallons	23,516,877	20,339,924	5,718,526	5,030,354	5,348,532	1,596,278	61,550,491
Value* ... £	1,148,945	1,061,196	442,048	304,398	409,870	101,634	3,468,091
<b>RAW MATERIALS USED.</b>							
Malt ... bush.	838,148	600,333	177,704	118,086	156,395	57,951	1,948,617
Hops ... lbs.	893,050	661,299	244,737	160,593	203,274	87,083	2,250,036
Sugar ... cwt.	103,848	111,363	38,446	31,774	26,665	6,780	318,876
<b>RAW MATERIALS USED PER 1000 GALLONS OF ALE AND STOUT PRODUCED.</b>							
Malt ... bush.	35.64	29.52	31.08	23.47	29.24	36.30	31.66
Hops ... lbs.	37.97	33.51	42.80	31.92	38.01	54.55	36.56
Sugar ... cwt.	4.42	5.48	6.72	6.32	4.99	4.25	5.18

\* Exclusive of excise duty.

† Year ended 30th June, 1915.

(iii.) *Development of Breweries, 1910 to 1915.* The following table shews the progress of this industry during the past six years:—

**DEVELOPMENT OF BREWERIES FROM 1910 to 1915.**

Items.	1910.	1911.	1912.	1913.	1914.	1915.
Number of factories ...	124	121	110	101	95	90
" employees ...	3,333	3,450	3,532	3,551	3,535	3,295
Actual horse-power of engines used ...	4,663	5,008	5,678	6,930	8,313	8,430
Approx. value of land and buildings ...	£ 1,453,696	1,469,449	1,526,629	1,554,187	1,860,584	1,872,535
" plant and machinery ...	£ 903,521	970,618	1,078,724	1,171,595	1,433,616	1,452,639
Total amount of wages paid ...	£ 445,342	483,393	523,812	552,843	575,446	548,632
Value of fuel used ...	£ 77,101	69,284	76,906	75,824	86,175	81,252
" raw material worked up ...	£ 1,138,145	1,273,522	1,494,070	1,568,620	1,534,656	1,494,974
" final output ...	£ 3,076,736	3,318,937	3,647,850	3,817,396	4,107,498	3,869,786
Value added in process of manufacture ...	£ 1,938,591	2,045,415	2,153,780	2,248,776	2,572,842	2,374,512

The main feature in the history of the brewing industry, which was established at an early date in Australia, has been the change from the small local brewery in every township of moderate size to the large centralised city brewery. This, however, has not been so much in evidence during the period embraced in the above table, the reduction of the number of establishments during recent years being mainly due to several large amalgamations. The total value of output of breweries in the Commonwealth increased from £3,076,736 in 1910 to £4,107,498 in 1914, and fell to £3,869,786 in 1915.

20. *Distilleries.*—The subjoined table gives particulars of distilleries in each State during the year 1915. There are no distilleries in either of the States of Western Australia or Tasmania.

**DISTILLERIES, 1915.**

Items.	N.S.W.	Vic.	Qld.	S.A.	W.A.	Tas.	C'wealth.
Number of factories ...	3	9	3	19	...	...	34
" employees ...	22	92	34	83	...	...	231
Actual horse-power of engines employed ...	124	217	47	222	...	...	610
Approximate value of land and buildings ...	£ 19,330	103,985	13,117	29,023	...	...	165,455
Approx. value of plant and machinery ...	£ 58,006	76,549	18,011	26,135	...	...	178,693
Total amount of wages paid during year ...	£ 5,513	10,853	4,950	6,690	...	...	28,036
Value of fuel used ...	£ 1,409	2,947	2,708	1,960	...	...	9,024
Value of raw materials worked up ...	£ 34,180	32,209	10,620	38,108	...	...	115,117
Total value of output ...	£ 53,079	61,604	48,674	57,657	...	...	221,014
Value added in process of manufacture ...	£ 18,699	29,395	38,064	19,549	...	...	105,897

\* Year ended 30th June, 1915.

*Production of Spirits and Materials Used, 1915.* The total quantity of rum distilled in 1915 was 537,196, of whisky 120,157, of brandy 111,213, and of other spirits 2,000,028 proof gallons. The materials used comprised 494,936 cwt. of molasses and sugar, and 2,123,836 gallons of wine. Particulars for the separate States are not available for publication.

21. **Tobacco, Cigars, and Cigarettes.**—(i.) During the year 1915 there were thirty-four establishments in which the manufacture of tobacco, cigars, and cigarettes was carried on. There were no factories engaged in this industry in Tasmania.

**TOBACCO, CIGAR AND CIGARETTE FACTORIES, 1915.**

Items.	N.S.W. *	Vic.	Qld.	S.A.	W.A. 	Tas.	C'w'lth.
Number of factories ... ..	11	13	2	2	6	...	34
"    employees ... ..	1,763	1,601	113	31	39	...	3,547
Actual horse-power of engines employed	413	375	20	...	18	...	826
Approx. value of land and buildings	£ 212,726	177,365	5,114	5,319	4,069	...	404,593
"    plant and machinery	£ 118,606	111,410	8,491	2,535	909	...	241,951
Total amount of wages paid during year	£ 173,440	185,889	9,148	†	1,750	...	1370,227
Value of fuel used ... ..	£ 4,451	2,916	208	†	32	...	17,607
Value of raw material worked up	£ 1,187,756	731,948	34,402	†	5,419	...	1,959,525
Total value of output ... ..	£ 1,767,898	1,199,660	64,366	†	9,126	...	13,041,050
Value added in process of manufacture	£ 580,142	467,712	29,964	†	3,707	...	1,081,525

\* Year ended 30th June, 1915. † Not available for publication. ‡ Exclusive of South Australia. || Including four condiment establishments.

(ii.) *Quantity of Goods Produced, and Tobacco Leaf Used, 1915.* The following table shews the quantity of goods produced in tobacco factories in each State, and the quantities of imported and Australian-grown leaf used during the year 1915 :—

**PRODUCTION OF TOBACCO FACTORIES AND QUANTITY OF LEAF USED, 1915:**

Particulars.	N.S.W.*	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	C'w'lth.
QUANTITY (,000 OMITTED).							
Manufact'ed tobacco lbs.	4,524	5,023	223	...	7	...	9,776
Cigars ... ..	102	263	...	†	†	...	365
"    No.	8,966	22,677	...	†	†	...	31,643
Cigarettes ... ..	2,866	308	...	...	1	...	3,175
"    No.	1,256,542	138,111	...	...	322	...	1,394,975
TOBACCO LEAF USED (,000 OMITTED).							
Australian leaf ... lbs.	925	516	235	†	...	...	1,676
Imported leaf ... lbs.	5,756	4,415	5	†	16	...	10,182

\* Year ended 30th June, 1915. † Not available for publication. ‡ For tobacco and cigarettes only. § Incomplete.

(iii.) *Development of Industry.* This industry was among the first to be established in Australia. In 1861 New South Wales had eleven factories, producing 177,744 lbs. of manufactured tobacco; in the same year there was one factory in Victoria, but the quantity of tobacco manufactured is not available. The Australian market has for many years been largely supplied with local manufactures. The quantities imported into Australia during 1915-16 were—manufactured tobacco 1,507,278 lbs., cigars 191,630 lbs., and cigarettes 160,880 lbs., while the quantities manufactured in Australian factories were respectively 9,774,779 lbs., 365,226 lbs., and 3,174,618 lbs. The following tables shew the development of the tobacco industry in the Commonwealth during recent years :—

**DEVELOPMENT OF TOBACCO, CIGAR, AND CIGARETTE FACTORIES IN THE COMMONWEALTH, 1910 to 1915.**

Items.	1910.	1911.	1912.	1913.	1914.	1915.
Number of factories ... ..	35	33	35	36	36	34
Number of employees ... ..	3,923	3,730	3,484	3,566	3,658	3,547
Actual horse-power of engines used ... ..	830	1,045	917	1,119	808	826
Approx. value of land and buildings ... ..	£ 379,866	373,895	349,022	353,447	402,462	404,593
Approx. value of plant and machinery ... ..	£ 250,351	214,576	227,294	231,547	248,532	241,591
Total amount of wages paid ... ..	£ 322,171	346,258	358,081	373,963	380,821	370,227
Value of fuel used ... ..	£ 4,535	4,488	4,267	4,053	7,365	7,607
Value of raw material worked up ... ..	£ 1,385,863	1,468,212	1,622,713	1,651,226	1,905,489	1,959,525
Value of final output ... ..	£ 2,332,986	2,518,946	2,596,157	2,713,363	3,006,482	3,041,050
Value added in process of manufacture ... ..	£ 947,123	1,050,734	1,073,444	1,062,137	1,100,993	1,081,825

**PRODUCTION.**

Items	1000 lbs.	1910.	1911.	1912.	1913.	1914.	1915.
Tobacco made ... ..	1000 lbs.	9,933	10,048	10,268	9,956	9,964	9,776
Cigars ... ..	"	320	356	389	406	401	1365
Cigarettes ... ..	"	1,862	2,164	2,606	2,768	3,197	3,175
Leaf used ... ..	"	10,951	10,993	11,827	11,677	12,091	11,858

\* Exclusive of two factories in South Australia. † See note (†) table prior.

**22 Woollen, Cotton, and Tweed Mills.**—(i.) The manufacture of woollens and tweeds was established in Australia at an early period in its history, and was under Government control, the first record in New South Wales dating back to 1801, when a few blankets were made by the convicts; the first record in Victoria was in 1867. The following table, which gives particulars of the mills in each State during the year 1915, shews that the industry is now well established:—

**WOOLLEN, COTTON, AND TWEED MILLS, 1915.**

Items.	N.S.W.	Vic.	Q'ld.	S.A.	W.A.	Tas.	C'wlth.
Number of factories ... ..	5	10	1	2	...	4	22
employees ... ..	955	2,063	153	216	...	233	3,620
Actual horse-power of engines employed ... ..	2,171	2,679	135	261	...	118	5,364
Approx. value of land and buildings ... ..	£ 127,040	136,395	7,879	16,900	...	21,900	310,114
plant and machinery ... ..	£ 185,767	265,267	18,192	29,523	...	39,100	537,849
Total amount of wages paid during year ... ..	£ 90,877	170,888	11,733	24,798	...	15,530	313,826
Value of fuel used ... ..	£ 9,424	21,962	†	†	...	1,275	36,275
Value of raw material worked up ... ..	£ 246,425	487,140	†	†	...	30,437	836,298
Total value of output ... ..	£ 459,150	931,774	†	†	...	75,727	1,615,223
Value added in process of manufacture ... ..	£ 212,725	444,634	†	†	...	45,290	778,925

\* Year ended 30th June, 1915.

† As there is only one factory in Queensland and two in South Australia, particulars of output, etc., are not disclosed; the amounts, however, are included in the totals for the Commonwealth.

(ii.) *Progress of Industry, 1910 to 1915.* The progress of woollen and tweed manufacturing in the Commonwealth during the last five years is shewn in the following table:—

**DEVELOPMENT OF WOOLLEN, COTTON AND TWEED MILLS IN THE COMMONWEALTH, FROM 1910 to 1915.**

Items.	1910.	1911.	1912.	1913.	1914.	1915.
Number of factories ... ..	25	32	32	22	22	22
employees ... ..	3,030	3,200	3,379	3,090	3,290	3,620
Actual horse-power of engines used ... ..	3,243	3,444	3,692	4,358	5,072	5,364
Approx. value of land and buildings ... ..	£ 249,787	293,115	307,049	299,306	311,391	310,114
plant and machinery ... ..	£ 436,921	478,859	497,837	516,659	532,084	537,849
Total amount of wages paid ... ..	£ 172,394	203,194	232,561	231,018	257,590	313,826
Value of fuel used ... ..	£ 90,033	202,863	22,709	21,778	27,306	36,275
Value of raw material worked up ... ..	£ 347,226	447,829	468,728	475,637	603,387	836,298
Value of final output ... ..	£ 693,297	860,789	930,485	925,602	1,152,657	1,615,223
Value added in process of manufacture ... ..	£ 346,071	412,960	461,757	449,965	549,270	778,925

\* Excluding the manufacture of hosiery and knitted goods, numbering 13 establishments in 1912, included in New South Wales returns previous to 1913.

(iii.) *Quantity and Value of Production, 1915.* The production of the woollen mills of Australia consists chiefly of tweed cloths, flannels, and blankets, all of which have acquired a reputation for purity and durability. Detailed particulars for the several States are not available for publication. The total length of tweed and cloth manufactured in the Commonwealth during 1915 was 3,753,848 yards. In New South Wales 1,718,903 yards of tweed and cloth, in Victoria\* 1,331,137 yards, and in Tasmania 15,000 yards were manufactured. The production of flannel in the Commonwealth in 1915—amounted to over 5,800,000 yards, while blankets, shawls, and rugs to the number of about 1,334,000 were manufactured.

No cotton spinning, or weaving, or linen weaving is carried on in Australia. Cotton ginning has been carried on intermittently in the northern States, and a mill was lately reopened at Ipswich in Queensland. For particulars of the quantity ginned on which bounties were paid, see page 369.

23. *Boots and Shoes.*—(i.) Among the manufactories of Australia the boot and shoe industry holds an important place both in respect to the employment afforded and the extent of its output. The following table shews particulars of this industry for each State during the year 1915:—

#### BOOT AND SHOE FACTORIES, 1915.

Items.	N.S.W. *	Vic.	Q'land.	S.A.	W.A.	Tas.	C'w'ith.
Number of factories ... ..	108	174	26	26	13	11	358
" employees ... ..	4,105	6,847	1,070	719	228	206	13,175
Actual horse-power of engines employed	1,114	1,362	291	167	44	51	3,029
Approx. value of land and buildings £	282,397	278,145	36,023	46,785	19,467	14,490	677,307
" plant and machinery £	143,619	205,538	26,617	25,969	9,461	7,325	418,529
Total amt. of wages paid during year £	398,404	625,886	97,682	62,907	20,781	15,327	1,220,987
Value of fuel used ... ..	6,046	11,742	965	1,356	498	106	20,713
Value of raw material worked up £	783,880	1,502,285	170,208	129,083	54,794	32,716	2,673,016
Total value of output ... ..	£1,355,896	2,436,673	336,883	213,398	86,641	57,394	4,486,885
Value added in process of manufacture £	572,016	934,368	166,675	84,315	31,847	24,628	1,813,869

\* Year ended 30th June, 1915.

(ii.) *Progress of Industry, 1910 to 1915.* The progress of the industry in the last five years is shewn in the following table:—

#### \*DEVELOPMENT OF BOOT AND SHOE FACTORIES IN THE COMMONWEALTH, 1910 to 1915.

Items.	1910.	1911.	1912.	1913.	1914.	1915.
Number of factories ... ..	337	341	332	346	357	358
Number of employees ... ..	13,810	13,772	13,341	13,456	13,192	13,175
Actual horse-power of engines used ... ..	2,248	2,405	2,646	2,823	3,091	3,029
Approx. value of land and buildings £	527,805	565,735	598,659	629,787	656,576	677,307
Approx. value of plant and machinery £	360,818	389,879	398,014	429,994	415,695	418,529
Total amount of wages paid ... ..	£ 968,375	1,096,575	1,144,465	1,154,658	1,193,900	1,220,987
Value of fuel used ... ..	£ 14,699	16,792	17,244	18,073	18,902	20,713
Value of raw material worked up ... ..	£ 2,000,704	2,151,101	2,184,750	2,308,194	2,437,169	2,673,016
Value of final output ... ..	£ 3,396,172	3,713,948	3,819,371	4,004,486	4,156,590	4,486,885
Value added in process of manufacture £	1,395,468	1,562,847	1,634,621	1,696,292	1,719,421	1,813,869

Although the average number of employees in boot and shoe factories shews a slight decline during the past five years, a substantial and consistent advance in the value of output is in evidence during the same period. This is doubtless partly attributable to the increase in mechanical power employed, and the introduction of improved plant and machinery, the value of which was £418,529 in 1915, as compared with £360,818 in 1910.

(iii.) *Value and Quantity of Production, 1915.* The number and value of boots, shoes and slippers made at factories in each State during the year 1915 are shewn in the following table:—

**PRODUCTION OF BOOT AND SHOE FACTORIES, 1915.**

Particulars.	N.S.W. †	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	C'wth.
QUANTITY (,000 OMITTED).							
Boots and shoes ... pairs	3,528	5,257	750	619	193	136	10,483
Slippers ... pairs	312	191	3	23	3	...	532
Uppers* ... pairs	55	14	51	16	...	6	142
VALUE.							
Boots and shoes ... £	1,263,771	2,414,123	301,837	197,116	79,196	54,655	4,310,700
Slippers ... £	31,802	19,000	583	4,019	801	20	56,225
Uppers* ... £	14,501	3,550	20,029	4,122	...	1,158	43,360

\* Made for other than factory use. † Year ended 30th June, 1915.

**24. Clothing (Tailoring and Slop) Factories.**—The importance of this industry in the several States and in the Commonwealth as a whole is shewn in the following table:—

**CLOTHING (TAILORING AND SLOP) FACTORIES, 1915.**

Items.	N.S.W. *	Vic.	Q'land.	S.A.	W.A.	Tas.	C'wth.
Number of factories ... ..	461	466	136	127	65	42	1,297
.. employees ... ..	10,490	10,247	3,972	2,254	1,058	595	28,616
Actual horse-power of engines employed	432	467	259	103	54	8	1,323
Approx. value of land and buildings	£1,018,718	£602,230	£250,197	£145,384	£105,335	£73,555	£2,195,419
.. plant and machinery	£63,852	£83,539	£40,679	£14,199	£9,178	£3,520	£214,967
Total amount of wages paid during year	£776,766	£633,545	£237,106	£129,068	£79,600	£39,061	£1,895,146
Value of fuel used...	£11,575	£13,398	£3,047	£3,139	£1,750	£403	£33,312
Value of raw material worked up	£1,034,936	£1,279,278	£427,206	£174,702	£134,676	£45,336	£3,096,134
Total value of output	£2,195,381	£2,315,842	£881,402	£367,223	£259,832	£105,592	£6,125,272
Value added in process of manufacture	£1,160,445	£1,036,564	£454,196	£192,521	£125,156	£60,256	£3,029,138

\* Year ended 30th June, 1915.

*Progress of Industry, 1910 to 1915.* The substantial development that has taken place in the tailoring and slop branch of this industry may be accepted as an indication of the general prosperity of the community. The amount of wages paid increased from £1,589,636 in 1910 to £1,895,146 in 1915, or nearly 20 per cent., while the output increased approximately 27½ per cent. during the same period.

**DEVELOPMENT OF CLOTHING (TAILORING AND SLOP) FACTORIES IN THE COMMONWEALTH, FROM 1910 TO 1915.**

Items.	1910.	1911.	1912.	1913.	1914.	1915.
Number of factories ... ..	1,111	1,182	1,238	1,342	1,340	1,297
.. employees ... ..	27,451	30,549	31,088	30,965	29,774	28,616
Actual horse-power of engines used	851	1,020	1,206	1,201	1,257	1,323
Approx. value of land and buildings	£1,778,985	£1,931,274	£2,155,643	£2,212,346	£2,219,346	£2,195,419
.. plant and machinery	£143,793	£160,935	£173,706	£191,752	£209,167	£214,967
Total amount of wages paid	£1,589,636	£1,854,135	£2,010,779	£2,075,916	£1,979,088	£1,895,146
Value of fuel used ... ..	£24,965	£26,561	£29,550	£31,219	£31,825	£33,312
.. raw material worked up	£2,304,362	£2,610,348	£2,696,987	£2,732,241	£2,864,893	£3,096,134
.. final output	£4,805,629	£5,486,368	£5,807,431	£5,878,119	£5,953,001	£6,125,272
Value added in process of manufacture	£2,501,267	£2,876,040	£3,110,444	£3,145,878	£3,088,108	£3,029,138



25. **Dressmaking and Millinery.**—Particulars of dressmaking and millinery establishments for the year 1915 are given in the following table:—

**DRESSMAKING AND MILLINERY ESTABLISHMENTS, 1915.**

Items.	N.S.W.	Vic.	Q'land.	S. Aust.	W. A.	Tas.	C'w'lth.
Number of factories ... ..	279	446	57	46	47	17	892
" employees ... ..	4,502	8,107	1,267	763	679	298	15,616
Actual horse-power of engines employed	93	291	12	13	12	7	428
Approx. value of land and buildings	£ 336,950	446,201	43,045	30,714	42,485	18,500	917,895
" plant and machinery	£ 19,250	45,829	5,596	3,575	4,131	976	79,357
Total amount of wages paid during year	£ 206,604	373,607	54,766	30,403	35,501	13,250	714,131
Value of fuel used	£ 1,429	6,879	169	409	437	117	9,440
Value of raw material worked up	£ 288,476	736,727	88,203	40,260	53,293	17,728	1,224,687
Total value of output	£ 605,913	1,348,923	191,140	91,888	94,435	32,563	2,364,562
Value added by process of manufacture	£ 317,437	612,196	102,937	51,628	41,142	14,835	1,140,175

\* Year ended 30th June, 1915.

*Progress of Industry, 1910 to 1915.* The development of dressmaking and millinery establishments in the Commonwealth during the past five years is shown in the following table:—

**DEVELOPMENT OF DRESSMAKING AND MILLINERY ESTABLISHMENTS IN THE COMMONWEALTH, FROM 1910 to 1915.**

Items.	1910.	1911.	1912.	1913.	1914.	1915.
Number of factories ... ..	1,056	1,050	994	995	991	892
" employees ... ..	18,040	18,803	18,476	18,217	17,318	15,616
Actual horse-power of engines used	264	319	371	376	410	428
Approx. value of land and buildings	£ 811,464	879,098	878,231	939,072	956,416	917,895
" plant and machinery	£ 60,937	67,307	74,466	72,257	79,182	79,357
Total amount of wages paid	£ 600,484	695,319	748,222	772,748	759,221	714,131
Value of fuel used	£ 8,185	8,722	9,143	9,238	9,164	9,440
Value of raw material worked up	£ 1,065,979	1,161,260	1,249,930	1,287,050	1,272,420	1,224,687
Value of final output	£ 2,046,931	2,280,553	2,429,315	2,492,105	2,429,133	2,364,862
Value added in process of manufacture	£ 980,952	1,119,293	1,179,385	1,205,055	1,156,713	1,140,175

The above table shows the amount of wages paid to have increased over 19 per cent. during the last five years, and the final output 15½ per cent. during the same period.

26. **Coach and Wagon Building Works.**—This industry forms the principal branch of manufacture in Class XI. (see § 1, 3 above). The subjoined table gives particulars of factories in this branch of industry in each State during the year 1915. The returns include establishments for the manufacture of wheels, spokes, etc.

**COACH AND WAGON BUILDING WORKS, 1915.**

Items.	N.S.W.	Vic.	Q'land.	S.A.	W.A.	Tas.	C'wlth.
Number of factories ... ..	233	310	84	89	38	22	776
" employees ... ..	2,436	2,381	682	697	260	177	6,633
Actual horse-power of engines employed	1,143	704	266	435	141	57	2,746
Approx. value of land and buildings	£ 333,585	258,883	66,694	96,831	43,644	20,850	820,487
" plant and machinery	£ 92,653	65,788	21,489	28,292	10,556	4,471	223,249
Total amount of wages paid during year	£ 251,304	207,276	59,423	58,994	24,659	13,742	615,398
Value of fuel used	£ 13,086	7,994	1,145	3,314	1,701	604	27,844
Value of raw material worked up	£ 235,480	228,739	57,570	57,755	31,224	16,428	627,196
Total value of output	£ 614,500	558,267	166,981	149,304	69,815	40,204	1,599,071
Value added in process of manufacture	£ 379,020	329,528	109,411	91,549	38,591	23,776	971,875

\* Year ended 30th June, 1915.

27. Furniture and Cabinet Making and Billiard Table Making.—These industries constitute the principal manufactures in Class XIII. (see § 1, 3 above). The following table gives particulars for 1915:—

FACTORIES FOR FURNITURE AND CABINET MAKING AND BILLIARD TABLE MAKING, 1915.

Items.	N.S.W. <sup>*</sup>	Vic.	Q'land.	S.A.	W.A.	Tas.	C'with.
Number of factories ... ..	173	187	62	31	29	13	495
" employees ... ..	2,502	1,755	1,026	692	334	230	6,539
Actual horse-power of engines employed	1,477	916	740	788	300	176	4,397
Approx. value of land and buildings	£ 346,120	221,820	92,709	59,729	57,917	23,750	802,045
" plant and machinery	£ 55,546	46,697	36,618	28,101	12,315	6,368	185,645
Total amount of wages paid during year	£ 286,698	168,399	101,165	66,918	43,660	19,374	686,214
Value of fuel used ... ..	£ 6,061	3,585	2,306	1,595	1,373	485	15,405
Value of raw material used ...	£ 287,119	217,306	107,009	57,453	56,855	19,728	745,470
Total value of output ... ..	£ 680,505	479,520	273,777	147,676	117,428	54,299	1,752,205
Value added in process of manufacture	£ 393,386	262,214	165,768	90,223	60,573	34,571	1,006,736

\* Year ended 30th June, 1915.

28. Electric Light and Power Works.—Particulars of the electric light and power works of the Commonwealth in the year 1915 are given in the subjoined table. In 1910 there were 151 establishments employing 2080 hands, whose salaries and wages amounted to £251,217; in 1915 these had increased to 247 establishments, 3131 hands, salaries and wages £484,799, while the value of output had increased during the five years from £1,409,152 to £2,746,374.

ELECTRIC LIGHT AND POWER WORKS, 1915.

Items.	N.S.W. <sup>*</sup>	Vic.	Q'land.	S.A.	W.A.	Tas. <sup>†</sup>	C'with.
Number of factories ... ..	129	63	10	7	23	15	247
" employees ... ..	1,161	957	194	388	245	186	3,131
Actual horse-power of engines employed	91,135	33,127	9,224	15,510	19,835	7,609	176,499
Approx. value of land and buildings	£ 593,514	319,472	35,593	143,850	76,903	18,328	1,193,660
" plant and machinery	£ 1,397,624	1,569,559	156,851	849,596	444,256	364,617	4,982,497
Total amount of wages paid during year	£ 178,248	135,045	32,878	61,569	48,122	27,937	454,799
Value of fuel used ... ..	£ 217,238	77,149	23,647	34,433	85,108	13,240	450,815
Total value of output ... ..	£ 1,367,742	536,251	90,628	155,766	277,619	104,368	2,746,374

\* Year ended 30th June, 1915. † Including manufacture of electric apparatus.

29. Gas and Coke Works.—There are gas works in operation in nearly all the chief towns in the Commonwealth. In New South Wales there are thirteen and in Queensland two coke factories which are worked as separate industries. The subjoined table gives particulars of gas and coke works in each State:—

GAS AND COKE WORKS, 1915.

Items.	N.S.W. <sup>*</sup>	Vic.	Q'land.	S.A.	W.A.	Tas.	C'with.
Number of factories ... ..	66	47	18	5	4	3	143
" employees ... ..	1,957	2,175	502	397	58	169	5,248
Actual horse-power of engines employed	4,461	1,686	191	562	39	32	6,971
Approx. value of land and buildings	£ 628,541	476,265	167,300	11,612	18,024	30,800	1,332,542
" plant and machinery	£ 191,337	1,343,392	829,958	455,036	42,659	163,543	4,775,925
Total amount of wages paid during year	£ 275,852	347,434	78,732	†	†	22,294	803,858†
Value of fuel used ... ..	£ 74,880	4,610	4,818	†	†	3,252	93,035†
Value of raw material used ...	£ 538,670	306,043	68,573	†	†	6,956	993,850†
Total value of output ... ..	£ 1,454,490	1,035,941	271,384	†	†	57,235	3,057,568†
Value added in process of manufacture	£ 915,820	729,898	202,811	†	†	50,279	2,063,718†

\* Year ended 30th June, 1915.

† Not available for publication.

‡ Including South Australia and Western Australia.

The following table gives particulars regarding the quantity and value of the production of gas and coke works in each State during the year 1915 :—

**PRODUCTION OF GAS AND COKE WORKS, 1915.**

Particulars.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	C'wth.
<b>QUANTITY.</b>							
Gas made ... 1000 cub. ft.	6,080,270	4,107,578	860,170	*	*	194,480	12,017,970†
Coke ... .. tons	543,769	204,957	56,930	*	*	8,284	845,398†
<b>VALUE.</b>							
Gas ... .. £	953,602	776,000	218,573	*	*	46,510	2,167,733†
Coke ... .. £	359,364	180,000	38,953	*	*	7,093	621,609†
<b>COAL USED.</b>							
Coal ... .. tons	854,339	307,902	102,759	*	*	15,581	1,341,888†

\* Not available for publication.

† Including South Australia and Western Australia.