

## SECTION XIII.

## MANUFACTURING INDUSTRIES.

## § 1. General.

1. **Industrial Progress.**—The statistics of manufactures in the Commonwealth during recent years shew that many industries have now been permanently established on a secure basis, and also indicate a fairly rapid, though in some cases a somewhat irregular, progress both in regard to the extension of existing industries and the establishment of new ones. The scale on which many manufactories are established in Australia, however, appears small in comparison with those established in older countries of the world; but it should be remembered that owing to the sparseness of its population Australia cannot at present maintain industries on a very extensive scale, and also that until the inauguration of the Commonwealth in 1901 the field was still further limited by intercolonial tariffs.

(i.) *The Gold Discoveries, 1851.* During the period prior to the gold discoveries (1851) little was done in regard to manufacturing industries in Australia. Such industries as had then been established were chiefly connected with the preparation of food-stuffs, and were to a large extent called into being by the isolated position of the country. It was found that, owing to the comparatively high prices which could be obtained for the products of the pastoral industry, those engaged in such pursuits in Australia could compete successfully in the world's markets. Owing to the sparseness of its population and to the distance of Australia from the world's centres of distribution, there was but little incentive towards any decided progress in agriculture, which was accordingly for many years almost entirely subsidiary to sheep and cattle raising. With the adoption of improved methods of agriculture, however, there were signs of an early extension in the cultivation of wheat, when the discovery of gold in 1851 completely changed the economic aspect in Australia and effected a revolution in all industrial relations. The large towns were practically depleted of their male able-bodied population, and the first effect of the gold rush upon manufacturing industries was disastrous. The supply of labour in many occupations was exhausted, and most branches of industry came to a standstill. There was, however, a rapid change. A decline in the activity of the gold-fields threw many immigrants, whose early lives had been passed in English cities, out of employment. The surplus of labour thus engendered accumulated in Melbourne and a few other large towns, establishing incipient artisan communities. This no doubt intensified the early impulses towards industrial employment. In the State of Victoria, in particular, it was sought to encourage the investment of capital in manufacturing enterprises by the establishment of protective Customs duties. Manufacturing industries were revived on a larger scale than formerly, and the population attracted by the discovery of gold remained in Australia and furnished the labour necessary to operate the factories thus established.

(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 industrial activity which commenced to appear. The States 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 (see Section VI., § 2) had a beneficial effect on the working classes, 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 since 1861 and in 1909, will serve to indicate generally the progress which has been made:—

**NUMBER OF FACTORIES AND EMPLOYEES IN EACH STATE, 1861 to 1909.**

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	4,003	2,110†	1,335†	662	420*	11,897‡
1909	4,581	4,755	1,420	1,265	632	544	13,197

**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	73,063	26,172†	19,283†	12,198	7,466*	204,317‡
1909	91,702	97,355	29,501	25,709	12,813	9,322	266,405

\* For 1902. † Not on same basis as other States. ‡ Not on same basis for some of States as in 1909.

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 resolutions 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 year 1909 are, however, in more complete co-ordination than those for previous years, and it is hoped that it will be possible to give particulars for future years for the several States in greater detail and on a perfectly uniform basis 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 below shows 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.

**CLASS I.—TREATING RAW MATERIALS, ETC.**  
Boiling-down, Tallow Refining, etc.  
Tanneries  
Woolscouring & Fellmong'ring  
Chaff-cutting, etc.

**CLASS II.—OILS AND FAT, ETC.**  
Oil and Grease  
Soap and Candles

**CLASS III.—STONE, CLAY, GLASS, ETC.**  
Bricks and Tiles  
Glass (including Bottles)  
Glass (Ornamental)  
Lime, Plaster, Cement and Asphalt  
Marble, Slate, etc.  
Modelling, etc.  
Pottery and Earthenware

**CLASS IV.—WORKING IN WOOD.**  
Boxes and Cases  
Cooperage  
Joinery  
Saw Mills  
Wood-turning, etc.

**CLASS V.—METAL WORKS, MACHINERY, ETC.**  
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

**CLASS VI.—FOOD AND DRINK, ETC.**  
Bacon Curing  
Butter Factories  
Butterine and Margarine  
Cheese Factories  
Condensed Milk  
Meat and Fish Preserving  
Biscuits  
Confectionery  
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.

**CLASS VII.—CLOTHING AND TEXTILE FABRICS.**  
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

**CLASS VIII.—BOOKS, PAPER, PRINTING, ETC.**  
Electrotyping & Stereotyping  
Paper-making, Paper Boxes, Bags, etc.  
Photo-engraving  
Printing and Binding

**CLASS IX.—MUSICAL INSTRUMENTS, ETC.**  
Musical Instruments and Sewing Machines

**CLASS X.—ARMS & EXPLOSIVES**  
Explosives

## CLASSIFICATION OF MANUFACTURING INDUSTRIES.—Continued.

## CLASS XI.—VEHICLES, SADDLERY, HARNESS, ETC.

Coach and Wagon Building  
Cycles  
Perambulators  
Saddlery, Harness, etc.  
Spokes, etc.

## CLASS XII.—SHIP AND BOAT BUILDING AND REPAIRING.

Docks and Slips  
Sailmaking  
Ship and Boat Building and Repairing

## CLASS XIII.—FURNITURE, BEDDING, ETC.

Bedding, Flock, & Upholstery  
Billiard Tables  
Furniture and Cabinet Making  
Picture Frames  
Window Blinds

## CLASS XIV.—DRUGS AND CHEMICALS, ETC.

Chemicals, Drugs, and Medicines  
Fertilisers  
Paints, Varnishes, and By-products

## CLASS XV.—SURGICAL AND OTHER SCIENTIFIC INSTRUMENTS.

Surgical, Optical, and other Scientific Instruments

## CLASS XVI.—TIMEPIECES, JEWELLERY, &amp; PLATED WARE.

Electro-plating  
Manufacturing Jewellery, etc.

## CLASS XVII.—HEAT, LIGHT, AND POWER.

Coke Works  
Electric Apparatus  
Electric Light and Power  
Gas Works and Kerosene Lamps and Fittings, etc.  
Hydraulic Power

## CLASS XVIII.—LEATHERWARE (N.E.I.)

Leather Belting, Fancy Leather, Portmanteaux & Bags

## CLASS XIX.—MINOR WARES.

Basket and Wickerware, Mattings, etc.  
Brooms and Brushware  
Rubber Goods  
Toys  
Umbrellas  
Other Industries

## § 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 1906 in Queensland, for example, 689 factories would have been added under the system previously adopted in that State. This would bring the total up to 1993 on the former basis. The factories excluded, however, are those employing only two hands and no power, and 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 to 1909, it should be noted that not only are the results affected by differences of classification, 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. Thus in Melbourne a number of breweries have been combined under a single company, and, of the number thus amalgamated, it is intended to keep only three breweries active.

## MANUFACTORIES OF THE COMMONWEALTH, 1903 to 1909.

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
1904 ...	3,632	4,208	1,909*	906*	672	444	11,771
1905 ...	3,700	4,264	1,911*	985	649	436	11,945
1906 ...	3,861	4,360	1,304	1,012	665	373	11,575
1907 ...	4,432	4,530	1,359	1,086	643	505	12,555
1908 ...	4,453	4,608	1,371	1,237	627	557	12,853
1909 ...	4,581	4,755	1,420	1,265	632	544	13,197

\* Not on same basis as other States. † 1904 results repeated.

(i.) *Classification of Factories in Commonwealth, 1905 to 1909.* The following table shews the total number of factories in the Commonwealth at the end of each year from 1905 to 1909, classified on the basis indicated in § 1.3 hereof:—

## CLASSIFICATION OF FACTORIES IN THE COMMONWEALTH, 1905 to 1909.

Class of Industry.	1905.	1906.	1907.	1908.	1909.
I. Treating raw material, product of agricultural and pastoral pursuits, etc. ....	751	742	807	812	823
II. Treating oils and fats, animal, vegetable, etc. ....	112	99	92	97	94
III. Processes in stone, clay, glass, etc. ....	625	610	626	627	645
IV. Working in wood ....	1,126	1,119	1,215	1,322	1,411
V. Metal works, machinery, etc. ....	1,528	1,394	1,504	1,548	1,588
VI. Connected with food and drink, etc. ....	2,253	2,177	2,250	2,253	2,258
VII. Clothing and textile fabrics, etc. ....	2,315	2,335	2,661	2,681	2,774
VIII. Books, paper, printing and engraving ....	907	919	964	993	1,011
IX. Musical instruments, etc. ....	10	10	16	17	18
X. Arms and explosives ....	8	8	8	8	9
XI. Vehicles and fittings, saddlery and harness, etc. ....	1,087	941	1,071	1,105	1,117
XII. Ship and boat building and repairing ....	95	83	70	76	84
XIII. Furniture, bedding, and upholstery ....	441	418	470	483	512
XIV. Drugs, chemicals, and by-products ....	150	156	144	153	164
XV. Surgical and other scientific instruments ....	23	26	26	28	30
XVI. Jewellery, timepieces, and platedware ....	110	121	142	153	150
XVII. Heat, light, and power ....	263	272	309	307	314
XVIII. Leatherware, n.e.i. ....	33	41	45	54	55
XIX. Minor wares, n.e.i. ....	108	104	135	136	140
Total ... ..	11,945	11,575	12,555	12,853	13,197

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 1905 to 1909 was 1252, or an average of 313 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, 1909.* The following table shews the number of factories in each State of the Commonwealth at the end of the year 1909, classified according to the nature of the industry. (See classification given in § 1. 3 hereof):—

## CLASSIFICATION OF FACTORIES IN EACH STATE, 1909.

Class of Industry.	N.S.W.	Vic.	Q'land.	S. Aus.	W. Aus.	Tas.	Cwth.
I. Treating raw material, product of agricul. and pastoral pursuits, etc. ....	283	327	41	128	26	18	823
II. Treating oils and fats, animal, vegetable, etc. ....	35	22	18	14	3	2	94
III. Processes in stone, clay, glass, etc. ....	274	198	38	75	35	25	645
IV. Working in wood ....	574	329	241	92	62	113	1,411
V. Metal works, machinery, etc. ....	449	652	204	173	62	48	1,588
VI. Connected with food and drink, etc. ....	761	639	364	256	145	93	2,258
VII. Clothing and textile fabrics, etc. ....	899	1,299	124	217	121	114	2,774
VIII. Books, paper, printing & engraving ....	381	355	128	67	54	26	1,011
IX. Musical instruments, etc. ....	12	4	...	2	...	...	18
X. Arms and explosives ....	3	6	...	...	...	...	9
XI. Vehicles and fittings, saddlery and harness, etc. ....	344	404	130	139	43	57	1,117
XII. Ship and boat building & repairing ....	39	13	12	7	5	8	84
XIII. Furniture, bedding, and upholstery ....	160	209	64	40	27	12	512
XIV. Drugs, chemicals, and by-products ....	69	70	3	11	9	2	164
XV. Surgical and other scientific instruments ....	11	10	5	2	2	...	30
XVI. Jewellery, timepieces, & platedware ....	42	64	13	15	4	12	150
XVII. Heat, light, and power ....	175	72	24	9	24	10	314
XVIII. Leatherware, n.e.i. ....	16	31	2	4	2	...	55
XIX. Minor wares, n.e.i....	54	51	9	14	8	4	140
Total ... ..	4,581	4,755	1,420	1,265	632	544	13,197

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 manufactories find it convenient to derive their motive power. The distinction between factories employing steam, gas, oil, or electric machinery, and those employing either other power or none at all, affords an opportunity of ascertaining how many factories there are in the ordinary sense of the word, that is, establishments which are not merely workshops. For instance, in the Victorian clothing trade, out of 374 factories only 66 employ mechanical power, the balance may consequently be regarded merely as workshops.

The following table shews 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 1909 :—

**UTILISATION OF MECHANICAL POWER IN FACTORIES IN EACH STATE, 1909.**

State.	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.
New South Wales	3,089	1,492	4,581	89,917	8,658	543	11,773	110,891
Victoria ...	2,959	1,796	4,755	47,403	8,446	1,166	6,746	63,761
Queensland ...	1,015	405	1,420	28,230	2,283	526	1,401	32,440
South Australia ...	863	403	1,265	17,126	3,445	1,525	2,317	24,413
Western Australia	459	173	632	20,364	713	702	2,588	24,367
Tasmania	321	223	544	15,784	204	68	5,036	21,092
Commonwealth	8,706	4,491	13,197	218,824	23,749	4,530	29,861	276,964

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 connected with heat, light, and power, wood-working, &c., viz., industries demanding a considerable amount of power.

The percentage for the Commonwealth of the number of establishments using machinery worked by steam, gas, oil, or electricity on the total number of establishments was 65.97. The total average horse-power in use was 276,964, of which engines in which the motive power was steam formed 79.01 per cent.; gas, 8.57 per cent.; oil, 1.64 per cent.; and electricity, 10.78 per cent.

**§ 3. Number 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, 1904 to 1909.* The following table shews, for each year from 1904 to 1909 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,  
1904 TO 1909.**

Year.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	C'wealth.
AVERAGE NUMBER.							
1904 ...	68,036	76,287	20,058	18,049	12,685	8,224	203,339
1905 ...	72,175	80,235	21,705	19,273	12,733	8,468	214,589
1906 ...	77,822	85,229	23,961	20,153	12,897	8,498	228,560
1907 ...	86,467	90,903	27,954	22,701	12,625	8,209	248,859
1908 ...	89,098	93,808	29,200	24,236	12,425	8,727	257,494
1909 ...	91,702	97,355	29,504	25,709	12,813	9,322	266,405

PERCENTAGE ON COMMONWEALTH TOTAL.

	%	%	%	%	%	%	%
1904 ...	33.44	37.49	9.86	8.94	6.23	4.04	100.00
1905 ...	33.62	37.37	10.11	9.03	5.93	3.94	100.00
1906 ...	34.03	37.26	10.47	8.88	5.64	3.72	100.00
1907 ...	34.75	36.53	11.23	9.12	5.07	3.30	100.00
1908 ...	34.60	36.42	11.34	9.42	4.83	3.39	100.00
1909 ...	34.42	36.54	11.08	9.65	4.81	3.50	100.00

PER 10,000 OF MEAN POPULATION.

1904 ...	472	632	386*	492	536	460	515
1905 ...	489	662	413*	518	509	472	534
1906 ...	515	696	450	534	496	475	560
1907 ...	558	734	519	589	481	458	599
1908 ...	563	745	531	609	469	480	608
1909 ...	571	758	513	626	473	506	616

\* Inclusive of factories with two persons.

(ii.) *Rates of Increase, 1904 to 1909.* From the preceding table it may be seen that, except in Western Australia, 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 during each year on the average number for the preceding year:—

**PERCENTAGES OF INCREASE IN AVERAGE NUMBER EMPLOYED, 1904 to 1909.**

Years.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	C'wealth.
1903-4 ...	3.66	4.18	4.15	...	7.24	5.64	3.84
1904-5 ...	6.08	5.18	8.21	6.67	0.38	3.61	5.52
1905-6 ...	7.82	6.22	10.38	4.70	1.29	0.45	6.52
1906-7 ...	11.11	6.66	16.67	11.80	— 2.25	— 3.49	8.80
1907-8 ...	3.04	2.75	4.46	6.90	— 1.44	6.31	3.49
1908-9 ...	2.92	3.78	1.04	5.94	3.12	6.82	3.45

Note.— (—) signifies a decrease.

**2. Classification of Numbers Employed in Factories in the Commonwealth, 1905 to 1909.**—The following table gives a classification of the average numbers of persons employed in factories of different descriptions in the Commonwealth during the years 1905 to 1909 inclusive:—

**AVERAGE NUMBER OF PERSONS EMPLOYED IN VARIOUS FACTORIES IN  
COMMONWEALTH, 1905 to 1909.**

Class of Industry.	1905.	1906.*	1907.	1908.	1909.
I. Treating raw material, product of agricultural and pastoral pursuits, etc. ....	7,460	7,809	8,956	9,042	9,306
II. Treating oils and fats, animal, vegetable, etc. ....	1,717	1,760	1,727	1,735	1,812
III. Processes in stone, clay, glass, etc. ....	8,285	8,779	8,909	9,420	9,605
IV. Working in wood ....	16,938	18,347	19,457	21,310	22,487
V. Metal works, machinery, etc. ....	40,061	43,431	47,060	48,505	49,753
VI. Connected with food and drink, etc. ....	35,026	36,720	40,328	40,652	41,006
VII. Clothing and textile fabrics, etc. ....	59,035	62,594	68,373	70,075	73,554
VIII. Books, paper, printing and engraving ....	18,441	19,565	20,733	21,448	21,943
IX. Musical instruments, etc. ....	364	386	430	444	433
X. Arms and explosives ....	280	347	323	339	377
XI. Vehicles and fittings, saddlery and harness, etc. ....	8,780	9,027	10,288	10,784	11,366
XII. Ship and boat building and repairing ....	1,964	2,124	2,049	2,278	2,220
XIII. Furniture, bedding and upholstery ....	5,422	5,890	6,819	7,117	7,638
XIV. Drugs, chemicals and by-products ....	2,373	2,800	2,895	3,086	3,391
XV. Surgical and other scientific instruments ....	146	178	170	176	173
XVI. Jewellery, timepieces, and platedware ....	1,237	1,397	1,700	1,771	1,800
XVII. Heat, light, and power ....	4,443	4,834	5,372	5,754	5,986
XVIII. Leatherware, n.e.i. ....	592	731	788	893	924
XIX. Minor wares, n.e.i. ....	1,945	2,041	2,564	2,665	2,631
<b>Total</b> ... ..	<b>214,589</b>	<b>228,560</b>	<b>248,841</b>	<b>257,494</b>	<b>266,405</b>

\* Excluding Queensland Government Railways. For preceding years the Queensland statistics include all establishments where two or more hands were employed except Government Railway workshops.

The total increase in the average number of hands employed from 1905 to 1909 was 51,816, or an annual average of 12,954. The increase was general throughout all the various classes of industry. The greatest development took place in Classes VII. and V., the increases being 14,459 and 9692 respectively.

**3. Classification of Numbers Employed in each State, according to Class of Industry, 1909.**—The following table shews a similar classification of employees in manufacturing industries in each State for the year 1909:—

**AVERAGE NUMBER OF PERSONS EMPLOYED IN VARIOUS FACTORIES IN  
EACH STATE, 1909.**

Class of Industry.	N.S.W.	Vic.	Q'land.	S. Aus.	W. Aus.	Tas.	C'with.
I. Treating raw material, product of agricul. and pastoral pursuits, etc. ....	3,800	3,329	692	1,103	256	126	9,306
II. Treating oils and fats, animal, vegetable, etc. ....	694	612	174	243	50	39	1,812
III. Processes in stone, clay, glass, etc. ....	4,135	3,306	484	1,094	977	207	9,605
IV. Working in wood ....	6,690	5,320	3,633	1,524	3,872	1,448	22,487
V. Metal works, machinery, etc. ....	18,755	14,153	5,220	6,927	2,150	2,518	49,753
VI. Connected with food and drink, etc. ....	12,331	13,333	8,915	3,461	1,494	1,542	41,006
VII. Clothing and textile fabrics, etc. ....	23,161	36,176	4,880	5,384	2,285	1,668	73,554
VIII. Books, paper, printing & engraving ....	8,045	7,983	2,479	1,739	1,026	671	21,943
IX. Musical instruments, etc. ....	370	40	...	23	...	...	433
X. Arms and explosives ....	31	346	...	...	...	...	377
XI. Vehicles and fittings, saddlery, and harness, etc. ....	3,683	3,998	1,145	1,656	473	411	11,366
XII. Ship and boat building & repairing ....	1,796	128	104	104	41	47	2,220
XIII. Furniture, bedding, and upholstery ....	2,846	2,462	887	884	293	266	7,638
XIV. Drugs, chemicals, and by-products ....	1,202	1,427	54	621	71	16	3,391
XV. Surgical and other scientific instruments ....	84	50	22	8	9	...	173
XVI. Jewellery, timepieces, & platedware ....	608	797	137	168	39	51	1,800
XVII. Heat, light, and power ....	2,332	2,076	470	513	303	292	5,986
XVIII. Leatherware, n.e.i. ....	322	497	59	30	16	...	924
XIX. Minor wares, n.e.i. ....	817	1,320	149	227	98	20	2,631
<b>Total</b> ... ..	<b>91,702</b>	<b>97,355</b>	<b>29,504</b>	<b>25,709</b>	<b>12,813</b>	<b>9,322</b>	<b>266,405</b>

The largest number employed in any particular class in the Commonwealth was in Class VII., in which there were 73,554 employees, or 27.69 per cent. on the whole number. The class affording employment to the smallest number of hands was Class XV., in which there were 173 hands, or 0.06 per cent. on the total number of employees. Classes VI., VII., and VIII. comprise those industries in which female labour is largely employed. (See § 4 hereof.)

4. **Classification of Numbers Employed in each State according to Nature of Employment, 1909.**—In the following table the average numbers of persons employed in each State during the year 1909 are classified according to the nature of their employment:—

**AVERAGE NUMBER OF PERSONS EMPLOYED IN EACH STATE, CLASSIFIED  
ACCORDING TO NATURE OF EMPLOYMENT, 1909.**

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 ...	3,868	3,043	3,218	2,390	77,235	1,948	91,702
Victoria ...	4,815	2,744	3,071	1,560	81,244	3,921	97,355
Queensland ...	1,194	985	1,178	1,235	23,009	1,903	29,504
South Australia ...	1,291	584	902	504	21,352	1,076	25,709
Western Australia ...	487	477	480	380	9,894	1,095	12,813
Tasmania ...	511*	342*	364	359	7,341	405	9,322
Commonwealth ...	12,166	8,175	9,213	6,428	220,075	10,348	266,405

\* Estimated.

5. **Classification of Factories according to Number of Hands Employed, 1909.**—The number of factories in each State classified according to the number of hands employed, and the total number of hands employed in each class of factory, are shewn in the following table:—

**CLASSIFICATION OF FACTORIES ACCORDING TO NUMBER OF HANDS EMPLOYED,**

1909.

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 ...	712	689	180	140	107	143	1,971
4 ...	481	579	168	133	52	60	1,473
5 to 10 ...	1,644	1,710	511	499	213	168	4,745
11 to 20 ...	831	843	244	237	133	92	2,380
21 to 50 ...	558	577	181	160	83	50	1,609
51 to 100 ...	202	197	79	55	28	16	577
Over 100 ...	153	160	57	41	16	15	442
Total ...	4,581	4,755	1,420	1,265	632	544	13,197

## CLASSIFICATION OF FACTORIES ACCORDING TO NUMBER OF HANDS—Continued.

No. of Persons Employed in each Factory.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	C'wealth.
TOTAL AVERAGE NUMBER OF HANDS EMPLOYED.							
Under 4 ...	1,622	1,671	421	357	233	340	4,644
4 ...	1,924	2,316	672	532	208	240	5,892
5 to 10 ...	11,425	11,905	3,478	3,454	1,470	1,169	32,901
11 to 20 ...	12,170	12,247	3,582	3,404	1,891	1,314	34,608
21 to 50 ...	17,206	17,754	5,744	4,977	2,676	1,615	49,972
51 to 100 ...	14,104	13,465	5,711	3,853	1,813	1,066	40,012
Over 100 ...	33,251	37,997	9,896	9,132	4,522	3,578	98,376
Total ...	91,702	97,355	29,504	25,709	12,813	9,322	266,405

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 their own homes. Individuals working for themselves are not included. The following table gives particulars, so far as available, of the average number of outworkers connected with factories in each State during each year from 1904 to 1909 inclusive :—

## NUMBER OF OUTWORKERS CONNECTED WITH FACTORIES, 1904 to 1909.

Year.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	C'wealth.
1904 ...	439	991	*	*	*	42	*
1905 ...	374	1,186	*	*	*	86	*
1906 ...	501	1,431	*	*	*	57	*
1907 ...	592	1,429	264	66	18	60	2,429
1908 ...	596	1,457	171	74	11	11	2,320
1909 ...	630	1,695	144	65	13	...	2,547

\* Not available.

Although the figures from 1904 to 1909, for the States of New South Wales and Victoria, shew generally a fairly steady increase in the number of outworkers, they are considerably smaller than the figures for early years. For example, in 1897 there were 2332 outworkers registered in Victoria in the clothing trades, while the number of employees in factories for those trades was 14,293. The corresponding figures for the same year in New South Wales were 546 outworkers and 8602 factory employees. Thus it will be seen that the number of employees in factories has largely increased, while the increase in the number of outworkers has been relatively small.

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 except Tasmania, where the maximum number of working hours is ten per day. 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, 1905 to 1909.**—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 rather 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 about one to two. 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. Large numbers are occupied in tailoring and dress making, in wholesale manufactories, in tobacco factories, and preserving works. 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 typewriters in factories.

(i.) *Average Number of Males and Females Employed, 1905 to 1909.* The following table shews the average number of male and female employees, so far as available, in factories in each State from 1905 to 1909:—

**AVERAGE NUMBER OF MALES AND FEMALES EMPLOYED IN MANUFACTURING INDUSTRIES, 1905 to 1909.**

State.	1905.	1906.	1907.	1908.	1909.
<b>MALES.</b>					
New South Wales ...	56,111	59,979	65,953	67,616	69,184
Victoria ...	52,925	56,339	59,691	60,873	62,822
Queensland ...	*18,105	*19,961	23,191	24,639	24,877
South Australia ...	15,832	16,451	18,423	19,640	20,753
Western Australia ...	11,091	11,015	10,671	10,453	10,701
Tasmania ...	7,105	7,220	6,972	7,334	7,889
Commonwealth ...	161,169	170,965	184,901	190,555	196,226
<b>FEMALES.</b>					
New South Wales ...	16,064	17,843	20,514	21,482	22,518
Victoria ...	27,310	28,890	31,212	32,935	34,533
Queensland ...	*3,600	*4,000	4,763	4,561	4,627
South Australia ...	3,441	3,702	4,278	4,596	4,956
Western Australia ...	1,642	1,882	1,954	1,972	2,112
Tasmania ...	1,363	1,278	1,237	1,393	1,433
Commonwealth ...	53,420	57,595	63,958	66,939	70,179

\* Estimated.

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 35,057, or an annual average of 8764, and in the number of female employees a total increase of 16,759, or an annual average of 4190.

(ii.) *Average Number of Males and Females Employed per 10,000 of Mean Population, 1905 to 1909.* The following table shows the average number of male and female employees per 10,000 of the mean male and female population respectively in each State from 1905 to 1909 :—

**AVERAGE NUMBER OF MALE AND FEMALE FACTORY EMPLOYEES PER 10,000 OF MEAN MALE AND FEMALE POPULATION RESPECTIVELY, 1905 to 1909.**

State.	1905.	1906.	1907.	1908.	1909.
<b>MALES.</b>					
New South Wales ... ..	717	746	796	801	809
Victoria ... ..	871	919	963	969	976
Queensland ... ..	*624	*682	789	823	808
South Australia ... ..	815	821	902	929	946
Western Australia ... ..	752	724	696	679	683
Tasmania ... ..	762	.775	753	785	834
Commonwealth ... ..	755	787	844	854	862
<b>FEMALES.</b>					
New South Wales ... ..	232	253	284	292	300
Victoria ... ..	450	471	503	522	539
Queensland ... ..	*151	*165	194	182	180
South Australia ... ..	210	213	235	246	259
Western Australia ... ..	162	177	179	177	185
Tasmania ... ..	158	146	143	157	160
Commonwealth ... ..	278	296	326	334	343

\* Estimated.

3. **Rate of Increase for each Sex.**—The percentages of annual increase during the years 1905 to 1909 in the average number of males and females employed in manufacturing industries, are shewn below for the whole Commonwealth.

**PERCENTAGES OF ANNUAL INCREASE IN NUMBERS OF MALE AND FEMALE EMPLOYEES, COMMONWEALTH, 1905 to 1909.**

Particulars.	1904-5.	1905-6.	1906-7.	1907-8.	1908-9.
Males... .. %	5.25	6.08	8.15	3.06	2.98
Females ... .. %	6.40	7.81	11.05	4.66	4.84

The above table shews that there has been relatively a larger increase in the number of female than in the number of male employees. This matter is referred to further in the following paragraph hereof. The subjoined statement shews the percentages of annual increase in each State during the last year (1908-9) :—

**PERCENTAGES OF INCREASE IN AVERAGE NUMBER OF MALE AND FEMALE EMPLOYEES, 1908-9.**

Particulars.			N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	C'wealth.
Males	...	%	2.32	3.20	0.97	5.67	2.37	7.57	2.98
Females	...	%	4.82	4.85	1.45	7.83	7.10	2.87	4.84

**4. Increasing Ratio of Female Employment in Factories.**—The increasing extent to which females are employed in the factories of the Commonwealth may perhaps be best shewn by giving the number of females to every 100 male employees for each State for each year and from 1904 to 1909, inclusive:—

**NUMBER OF FEMALES PER 100 MALES IN AUSTRALIAN FACTORIES, 1904 to 1909.**

Year.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	C'wealth.
1904	27.27	50.90	*19.89	26.07	14.51	19.53	32.78
1905	28.63	51.60	*19.89	22.35	14.80	19.46	33.15
1906	29.75	51.28	*20.04	23.31	17.09	17.68	33.69
1907	31.10	52.29	20.53	23.22	18.19	17.74	34.58
1908	31.77	54.10	18.51	23.36	18.86	18.99	35.12
1909	32.55	54.97	18.60	23.88	19.74	18.16	35.76

\* Estimated.

Although this table shews that from 1904 to 1909 there has been an increase in the percentage specified from 32.78 to 35.76, the tables given in the next succeeding paragraph shew that this increase has not been due 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, 1909.**—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. (see § 1. 3 above), 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 1909 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, 1909.**

Class.	N.S.W.	Vict.	Q'land.	S. Aust.	W.Aust.	Tas.	Cwlth.
<b>AVERAGE NUMBER.</b>							
VI. Food, drink, etc. ...	2,831	3,731	511	474	121	261	7,929
VII. Clothing and textile fabrics ...	16,169	26,984	3,446	3,837	1,768	1,059	53,263
VIII. Books, paper, printing, etc. ...	1,909	2,083	417	461	151	66	5,087
Total ...	20,909	32,798	4,374	4,772	2,040	1,386	66,279
<b>PERCENTAGES ON TOTAL AVERAGE FEMALE EMPLOYEES.</b>							
VI. Food, drink, etc. ...	12.57	10.80	11.04	9.56	5.73	18.21	11.30
VII. Clothing and textile fabrics ...	71.80	78.14	74.48	77.42	83.71	73.90	75.89
VIII. Books, paper, printing, etc. ...	8.48	6.03	9.01	9.30	7.15	4.61	7.25
Total ...	92.85	94.97	94.53	96.28	96.59	96.72	94.44

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 women in Class VII. in the two States of largest population is of interest. . The following table shews, also, for the sake of comparison, the number of males employed:—

**NEW SOUTH WALES AND VICTORIA.—EMPLOYMENT IN CLASS VII., 1909.**

Class VII.	New South Wales.		Victoria.	
	Males.	Females.	Males.	Females.
Woollen and tweed mills ... ..	283	345	794	923
Boots and shoes ... ..	2,854	1,606	4,423	2,471
Slop clothing ... ..	2,868	7,175	2,083	6,833
Clothing (tailoring) ... ..				
Dressmaking and millinery ... ..	56	4,399	230	9,092
Dyeworks and cleaning ... ..	36	25	51	75
Furriers ... ..	16	22	28	74
Hats and caps ... ..	398	951	642	1,046
Waterproof and oilskin ... ..	28	124	43	134
Shirts, ties, and scarves ... ..	103	1,315	301	5,820
Rope and cordage ... ..	209	3	501	367
Tents and tarpaulins ... ..	141	204	87	49
Other ... ..	...	...	9	100
<b>Total ... ..</b>	<b>6,992</b>	<b>16,169</b>	<b>9,192</b>	<b>26,984</b>

**§ 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 New South Wales, Queensland, and Western Australia is fourteen, and in the other States is thirteen 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, 1905 to 1909.**—In the statistical compilations of the various States the term "child" may be taken to denote any person under sixteen years of age, excepting in New South Wales, where it denoted, for years prior to 1907, any person under fifteen. The following table shews the average number of children of each sex employed in manufacturing industries in each State during the years 1905 to 1909. It will be seen that the Commonwealth figures for years prior to 1907 are incomplete. There have been increases in the average number employed in New South Wales and Western Australia during the period under review; Victoria, South Australia and Tasmania, however, shew slight decreases; this also obtains in the case of Queensland for the years for which information is available.

## AVERAGE NUMBER OF CHILDREN EMPLOYED IN FACTORIES, 1905 to 1909.

State.	1905.	1906.	1907.	1908.	1909.
<b>MALES.</b>					
New South Wales ...	668	881	2,406	2,475	2,433
Victoria ...	3,261	3,213	3,253	3,049	2,817
Queensland ...	*	*	1,119	1,034	1,001
South Australia ...	1,362	1,166	1,127	1,179	1,094
Western Australia ...	197	203	216	289	289
Tasmania ...	284	251	214	239	257
Commonwealth ...	†5,772	†5,714	8,335	8,265	7,891
<b>FEMALES.</b>					
New South Wales ...	473	579	1,880	1,859	1,973
Victoria ...	3,034	2,997	3,095	3,065	2,496
Queensland ...	*	*	576	583	556
South Australia ...	324	400	480	568	577
Western Australia ...	81	126	159	251	242
Tasmania ...	128	99	97	135	128
Commonwealth ...	†4,040	†4,201	6,287	6,461	5,972
<b>TOTAL.</b>					
New South Wales ...	1,141	1,460	4,286	4,334	4,406
Victoria ...	6,295	6,210	6,348	6,114	5,313
Queensland ...	*	*	1,695	1,617	1,557
South Australia ...	1,686	1,566	1,607	1,747	1,671
Western Australia ...	278	329	375	540	531
Tasmania ...	412	350	311	374	385
Commonwealth ...	†9,812	†9,915	14,622	14,726	13,863

\* Not available. † Incomplete.

The relatively large increase in the figures for the Commonwealth for the year 1907 is accounted for largely by the fact that in New South Wales, the term "child" denoted any person under the age of fifteen years, which, in 1907, was raised to sixteen years in order to come into line with the other States of the Commonwealth. It should be noted also that the Commonwealth figures for the years 1905 and 1906 are exclusive of returns for Queensland.

**3. Industries Employing Child Labour, 1909.**—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 shows the average number of children of each sex, employed in the several industries indicated, in each State during the year 1909:—

NUMBER OF CHILDREN ENGAGED IN VARIOUS INDUSTRIES, 1909.

Class.	Industry.	N.S.W.		Victoria.		Q'land.		S. Aust.		W.A.		Tas.		Cwlth.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
III.	Bricks, tiles, pottery and earthenware ...	66	8	58	3	8	...	26	...	5	...	6	...	169	11
IV.	Joinery, boxes, cases, etc. ...	74	...	63	...	21	...	53	...	16	...	8	...	235	...
V.	Engineering, ironworks, and foundries	190	1	205	...	61	...	101	...	55	...	6	...	618	1
..	Galvanised iron-working and tinsmithing	98	...	125	5	62	5	104	...	...	...	9	...	398	10
..	Railway carriages, railway & tramway workshops ...	97	...	44	...	...	...	27	...	5	...	...	...	173	...
VI.	Biscuits, cakes, etc. ...	117	96	59	20	31	25	7	6	8	4	4	...	226	151
..	Confectionery	66	106	30	58	24	26	26	19	...	4	...	...	146	213
..	Jams, pickles, sauces, etc. ...	61	17	31	31	29	...	8	4	2	...	72	40	203	92
..	Aerated waters, cordials, etc. ...	47	8	52	1	47	4	4	...	8	...	1	...	159	13
..	Tobacco, cigars, etc. ...	33	90	28	58	5	8	5	...	2	2	...	...	72	158
VII.	Boots and shoes	184	221	289	308	68	71	55	72	8	9	10	6	614	687
..	Clothing (tailoring and slop) ...	80	456	92	345	13	130	28	123	9	58	7	15	229	1,127
..	Dressmaking and millinery ...	2	356	12	671	...	37	...	48	...	96	...	49	14	1,257
..	Hats and caps	34	78	36	88	4	11	6	14	...	...	...	...	80	191
..	Shirts, ties, scarves, etc.	4	132	16	432	9	138	1	87	...	39	...	10	30	838
..	Woollen, tweed, and cotton mills ...	14	30	110	29	15	12	3	25	...	...	2	3	144	159
VIII.	Electrotyping, printing and binding ...	377	110	488	144	208	53	85	18	71	20	34	5	1,263	350
..	Paper making, paper boxes, etc. ...	56	108	18	75	3	12	30	92	...	4	...	...	107	291
XI.	Coach & wagon building, etc. ...	64	1	104	...	27	...	55	...	12	...	11	...	273	1
XIII.	Billiard tables, cabinet making and furniture	72	2	53	1	42	1	36	...	8	...	8	...	219	4

4. Apprenticeship.—The apprenticeship systems of the several States may be summarised as follows :—

In New South Wales, no child may be apprenticed until the attainment of the age of fourteen years, in Victoria and Queensland, twelve years. There is no limitation in the case of the other States, nor any regulating Acts except as applying to charity apprentices. The statutes limiting the age at which children may begin to work may be regarded as applicable by way of preventing too early apprenticeship, so also may 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. 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 elsewhere.

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

1. Introduction.—The importance of the manufacturing industries of the Commonwealth is indicated by the fact that the total value of the output for 1909 was £107,409,733, of which amount the sum of £65,193,240 represents the value of the raw materials used. The difference between these two amounts, viz., £42,216,493, 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 1909 was £21,105,456.

2. Amounts of Salaries and Wages Paid, 1909.—The total amounts of salaries and wages paid during the year 1909 in various classes of factories in the Commonwealth (excluding all sums drawn by working proprietors) are shewn in the following table.

It has been found that it is not practicable to shew satisfactorily in this book 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 meagre and unsatisfactory.

**AMOUNT OF SALARIES AND WAGES PAID IN FACTORIES IN COMMONWEALTH,  
1909.\***

Class of Industry.	N.S.W.	Vict	Q'land	S. Aust	W. Aust.	Tas.	Cwltth.
	£	£	£	£	£	£	£
I. Treating raw material, product of agricultural and pastoral pursuits, etc. ...	270,969	231,801	77,857	74,967	20,467	8,716	684,777
II. Treating oils and fats, animal, vegetable, etc. ...	54,305	60,479	14,593	20,913	4,783	3,330	158,403
III. Processes in stone, clay, glass, etc. ...	390,533	296,172	37,282	85,257	34,728	18,215	871,187
IV. Working in wood ...	558,168	441,862	287,069	124,974	554,097	118,997	2,088,167
V. Metal works, machinery, etc. ...	2,086,717	1,349,190	526,895	680,432	273,229	277,913	5,194,376
VI. Connected with food and drink, etc. ...	1,014,262	1,026,602	671,583	275,676	167,857	98,482	3,254,392
VII. Clothing and textile fabrics, etc. ...	1,239,156	1,631,049	230,602	264,245	148,298	85,828	3,599,178
VIII. Books, paper, printing and engraving ...	732,359	697,083	238,898	152,714	148,582	71,943	2,041,579
IX. Musical instruments, etc. ...	37,897	3,237	...	1,887	...	...	43,021
X. Arms and explosives ...	2,363	20,943	...	...	...	...	23,306
XI. Vehicles and fittings, saddlery and harness, etc. ...	285,935	266,195	83,793	128,592	49,569	25,289	839,373
XII. Ship and boat building and repairing... ..	222,076	11,393	9,890	14,897	2,223	3,675	264,154
XIII. Furniture, bedding and upholstery ...	250,319	197,681	64,714	72,784	29,557	18,928	633,983
XIV. Drugs, chemicals, and by-products ...	91,922	117,797	3,762	43,223	5,230	1,668	263,602
XV. Surgical and other scientific instruments ...	6,977	3,577	2,339	851	703	...	14,447
XVI. Jewellery, timepieces, and plated ware ...	53,743	69,968	10,085	15,456	3,991	4,154	157,397
XVII. Heat, light, and power ...	283,420	253,937	54,370	58,368	56,022	35,016	741,133
XVIII. Leatherware, n.e.i. ...	21,521	31,234	3,100	1,918	1,137	...	58,910
XIX. Minor wares, n.e.i....	53,483	94,651	7,173	11,607	5,887	1,270	174,071
Total ... ..	7,665,125	6,807,851	2,324,005	2,028,691	1,506,360	773,424	21,105,456

\* Excluding all amounts drawn by working proprietors.

The maximum amount of salaries and wages paid in any particular class was in Class V., the amount being £5,194,376, or 24.61 per cent. on the total amount; the minimum amount was in Class XV., £14,447, or 0.07 per cent. on the total amount. The State in which the largest amount was paid was New South Wales, where the amount paid was nearly ten times as much as was paid in Tasmania. The following statement shews the average amount paid per employee in each State respectively; the figures are exclusive of working proprietors:—

**AVERAGE AMOUNT OF SALARIES AND WAGES PAID PER EMPLOYEE, 1909.**

Particulars.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	C'wealth.
Amount paid ... £	87.27	73.57	82.09	83.08	122.21	87.78	83.01

In comparing the figures in the above 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, where the average is lowest, there are a large

number of factories and hands employed in Class VII., and in that class wages are low, a great many women and children being employed. The position occupied by Western Australia is no doubt partly due to the higher cost of living in that State.

From information now collected for the first time, it is estimated that of the total amounts paid in salaries and wages in each State during 1909—the males in New South Wales factories received £6,823,732, or 89.02 per cent., and the females £841,393, or 10.98 per cent.; while in Victoria the former were paid £5,607,703, or 82.37 per cent., and the latter £1,200,148, or 17.63 per cent. Similar information for the other States is not available.

**3. Value of Raw Materials used in Factories, 1909.**—The total value of raw materials worked up (*i.e.*, exclusive of fuel, lubricants, etc.) in factories in the Commonwealth during 1909, was £65,193,240, which represents 60.70 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 factories in each State during the year 1909:—

**VALUE OF RAW MATERIALS WORKED UP IN FACTORIES IN COMMONWEALTH.  
1909.**

Class of Industry.	N.S.W.	Vic.	Q'land.	S.A.	W.A.	Tas.	Cwth.
	£	£	£	£	£	£	£
I. Treating raw material, product of agricultural and pastoral pursuits, etc. ....	3,547,598	1,008,334	1,263,230	505,289	146,338	67,950	7,438,739
II. Treating oils and fats, animal, vegetable, etc. ....	506,981	357,719	44,992	101,968	54,414	19,460	1,085,534
III. Processes in stone, clay, glass, etc. ....	206,914	149,900	6,999	26,025	8,101	7,400	404,039
IV. Working in wood... ..	1,288,739	662,416	430,449	597,848	75,707	31,880	3,087,039
V. Metal wks., machinery, etc. ....	4,980,272	1,824,657	789,987	1,196,019	246,590	1,529,079	10,566,604
VI. Connected with food and drink, etc. ....	12,005,543	8,588,744	4,330,405	2,386,409	568,154	985,140	28,864,395
VII. Clothing and textile fabrics, etc. ....	2,162,124	3,336,228	447,741	478,693	214,566	170,730	6,810,082
VIII. Books, paper, printing, and engraving ....	639,910	687,916	108,934	140,238	72,752	68,400	1,718,150
IX. Musical instruments, etc. ....	66,890	1,688	...	1,783	...	...	70,361
X. Arms and explosives ....	7,450	61,598	...	...	...	...	69,048
XI. Vehicles and fittings, saddlery and harness, etc. ....	342,265	322,615	91,500	190,639	50,899	33,080	1,030,998
XII. Ship and boat building and repairing ....	126,598	6,529	5,319	8,723	2,875	3,810	153,854
XIII. Furniture, bedding, and upholstery ....	369,130	328,646	68,015	62,529	36,356	26,850	891,526
XIV. Drugs, chemicals, and by-products ....	403,539	597,729	11,176	223,231	21,555	4,660	1,266,881
XV. Surgical and other scientific instruments ....	6,155	2,910	2,536	500	94	...	12,195
XVI. Jewellery, timepieces, and plated ware ....	69,666	132,490	17,742	19,292	5,752	8,440	253,382
XVII. Heat, light, and power ....	369,221	247,553	22,141	42,222	15,120	19,560	715,817
XVIII. Leatherware, n.e.i. ....	82,783	146,420	8,300	3,059	2,770	...	243,332
XIX. Minor wares, n.e.i. ....	132,708	343,047	9,429	14,992	7,168	3,920	511,264
<b>Total ... ..</b>	<b>27,314,486</b>	<b>19,706,530</b>	<b>7,658,195</b>	<b>6,004,459</b>	<b>1,529,211</b>	<b>2,980,359</b>	<b>65,193,240</b>

The class in which the maximum value of raw materials was used was Class VI., "Connected with Food and Drink, etc.," the value being £28,864,395, or nearly three times the value of any other class. The next important class in order of value was Class V., "Metal Works, Machinery, etc.," in which raw materials to the value of £10,566,604 were used. The class in which the minimum value appears is Class XV., "Surgical and other Scientific Instruments," the value being only £12,195.

**4. Total Value of Output of Manufacturing Industries, 1909.**—The value of the output of new goods manufactured and repairs effected in factories of various classes in each State during the year 1909 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 5 hereof) is the real value of production from manufactories.

### TOTAL VALUE OF OUTPUT OF FACTORIES IN COMMONWEALTH, 1909.

Class of Industry.	N.S.W.	Victoria.	Q'land.	S.A.	W.A.	Tas.	Cwth.
I. Treating raw material, product of agricultural & pastoral pursuits, etc.	£ 4,230,922	£ 2,402,171	1,698,734	638,345	201,329	87,350	9,258,911
II. Treating oils and fats, animal, vegetable, etc. ...	754,982	522,282	93,674	167,022	68,443	28,660	1,635,063
III. Processes in stone, clay, glass, etc. ...	1,003,226	731,467	79,879	186,733	72,990	44,310	2,118,605
IV. Working in wood ...	2,201,867	1,361,212	940,364	797,750	799,326	243,500	6,344,019
V. Metal works, machinery, etc. ...	8,756,007	4,044,353	1,552,564	2,522,064	552,822	2,264,735	19,692,545
VI. Connected with food and drink, etc. ...	15,048,893	11,340,911	6,394,794	3,185,970	1,065,189	1,301,340	38,337,097
VII. Clothing and textile fabrics, etc. ...	4,140,266	5,983,708	817,675	900,104	423,076	307,480	12,572,309
VIII. Books, paper, printing, and engraving ...	1,861,917	2,037,384	538,779	338,232	315,995	207,300	5,299,607
IX. Musical instruments, etc. ...	129,598	6,920	...	4,486	...	...	141,304
X. Arms and explosives ...	10,287	112,074	...	...	...	...	122,361
XI. Vehicles and fittings, saddlery and harness, etc. ...	794,487	763,979	228,352	393,157	119,319	76,680	2,375,974
XII. Ship and boat building and repairing ...	391,437	26,375	18,644	27,732	5,868	9,590	479,646
XIII. Furniture, bedding, and upholstery ...	740,502	630,213	161,718	174,426	74,602	54,850	1,836,311
XIV. Drugs, chemicals, and by-products ...	733,685	961,657	20,640	328,525	34,970	10,270	2,089,747
XV. Surgical and other scientific instruments ...	22,609	9,292	6,772	2,050	1,242	...	41,965
XVI. Jewellery, timepieces, and plated ware ...	157,762	266,706	33,478	47,637	12,811	16,410	534,804
XVII. Heat, light, and power ...	1,614,430	992,737	206,253	175,555	241,453	131,700	3,362,428
XVIII. Leatherware, n.e.i. ...	126,545	202,072	13,561	6,035	4,677	...	352,890
XIX. Minor wares, n.e.i. ...	240,967	502,722	17,754	31,982	14,492	6,250	814,147
<b>Total ...</b>	<b>42,960,689</b>	<b>32,898,235</b>	<b>12,823,695</b>	<b>9,928,105</b>	<b>4,008,604</b>	<b>4,790,405</b>	<b>107,409,733.</b>

It may 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 £42,960,689, or 40.00 per cent. on the total value for the Commonwealth. The next State in order of value is Victoria, which produced 30.63 per cent.; the value of the output of Queensland was 11.94 per cent.; of South Australia 9.24 per cent.; of Western Australia 3.73 per cent.; and of Tasmania 4.46 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. As regards output the next class is Class VII., and as regards raw materials used Class I. The following statement shews the value of output per head of mean population during 1909:—

### VALUE OF OUTPUT OF FACTORIES PER HEAD OF MEAN POPULATION, 1909.

Particulars.	N.S.W.	Victoria.	Q'land.	S.A.	W.A.	Tas.	Cwth.
Amount per head ... £	26.75	25.61	22.69	24.17	14.79	26.01	24.85

5. Value of Production of Manufacturing Industries, 1909.—The difference between the figures given in paragraph 4 and the corresponding figures in paragraph 3 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 from manufacturing industries. The following table shews the value added in this manner in each State during the year 1909 for the various classes of factories:—

**VALUE OF PRODUCTION FROM MANUFACTURING INDUSTRIES IN COMMON-WEALTH, 1909.**

Class of Industry.	N.S.W.	Victoria.	Q'land.	S.A.	W.A.	Tas.	Cwlth.
	£	£	£	£	£	£	£
I. Treating raw material, product of agricultural and pastoral pursuits, etc. ...	683,324	493,837	435,564	133,056	54,991	19,400	1,820,172
II. Treating oils and fats, animal, vegetable, etc. ...	248,001	164,563	48,682	65,054	14,029	9,200	549,529
III. Processes in stone, clay, glass, etc. ...	796,312	582,167	73,580	160,708	64,889	36,910	1,714,566
IV. Working in wood... ..	913,128	698,796	509,915	199,902	733,619	211,620	3,256,980
V. Metal works, machinery, etc. ...	3,775,735	2,219,636	762,577	1,326,045	306,232	735,656	9,125,941
VI. Connected with food and drink, etc. ...	3,043,350	2,752,167	2,064,389	799,561	497,035	316,200	9,472,702
VII. Clothing and textile fabrics, etc. ...	1,978,142	2,647,480	369,934	421,411	208,510	136,750	5,762,227
VIII. Books, paper, printing, and engraving ...	1,222,007	1,349,468	429,845	197,994	243,243	138,900	3,581,457
IX. Musical instruments, etc. ...	63,008	5,232	...	2,703	...	...	70,943
X. Arms and explosives ...	2,837	50,476	...	...	...	...	53,313
XI. Vehicles and fittings, saddlery and harness, etc. ...	452,222	441,364	136,852	202,518	68,420	43,600	1,344,976
XII. Ship and boat building and repairing ...	264,839	19,846	13,325	19,009	2,993	5,780	325,792
XIII. Furniture, bedding, and upholstery ...	371,372	301,567	93,703	111,897	38,246	28,000	944,785
XIV. Drugs, chemicals, and by-products ...	330,146	363,937	9,464	100,294	13,415	5,610	822,866
XV. Surgical and other scientific instruments ...	16,454	6,382	4,236	1,550	1,148	...	29,770
XVI. Jewellery, timepieces, and plated ware ...	88,096	134,216	15,736	28,345	7,059	7,970	281,422
XVII. Heat, light, and power ...	1,245,209	745,184	184,112	133,633	226,333	112,140	2,646,611
XVIII. Leatherware, n.e.i. ...	43,762	55,652	5,261	2,976	1,907	...	109,558
XIX. Minor wares, n.e.i. ...	108,259	159,675	8,325	16,990	7,324	2,310	302,883
Total ... ..	15,646,203	13,191,705	5,165,500	3,923,646	2,479,333	1,810,046	42,216,493

It may be seen that as regards the amount of the value added the classes are approximately in the same order as in the case of value of output, and that the States are also in the same order, except that the positions of Western Australia and Tasmania are reversed. The value added to raw material by process of manufacture per head of mean population is shewn in the following statement :—

**VALUE OF PRODUCTION OF MANUFACTURING INDUSTRIES PER HEAD OF MEAN POPULATION, 1909.**

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Cwlth.
Value ... ..	£ 9.74	10.27	9.14	9.55	9.15	9.83	9.77

It may thus be seen that the positions of the two leading States, New South Wales and Victoria, as also of that of Queensland and Western Australia, in regard to total value of output of factories per head of mean population, are reversed in regard to value added per head. The other two States retain their relative positions.

As the total value of the output for the Commonwealth was estimated at £107,409,733, there remained, after payment of £65,193,240, the value of the raw materials used, of £21,105,456 for salaries and wages, and of £2,227,505 for fuel, the sum of £18,883,532 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, 1909.**

State.	Raw Materials Used.	Fuel.	Salaries and Wages.	All other Expenditure Interest, and Profits.	Total Value of Output.
VALUE AND COST, ETC.					
	£	£	£	£	£
New South Wales ...	27,314,486	940,840	7,665,125	7,040,238	42,960,689
Victoria ...	19,706,530	566,768	6,807,851	5,817,086	32,898,235
Queensland ...	7,658,195	194,776	2,324,005	2,646,719	12,823,695
South Australia ...	6,004,459	269,646	2,028,691	1,625,309	9,928,105
Western Australia ...	1,529,211	140,111	1,506,360	832,922	4,008,604
Tasmania ...	2,980,359	115,364	773,424	921,258	4,790,405
Commonwealth ...	65,193,240	2,227,505	21,105,456	18,883,532	107,409,733

PERCENTAGE OF COSTS, ETC., ON TOTAL VALUE.

	%	%	%	%	%
New South Wales ...	63.58	2.19	17.84	16.39	100.00
Victoria ...	59.90	1.72	20.70	17.68	100.00
Queensland ...	59.72	1.52	18.12	20.64	100.00
South Australia ...	60.48	2.72	20.43	16.37	100.00
Western Australia ...	38.15	3.49	37.58	20.78	100.00
Tasmania ...	62.22	2.41	16.14	19.23	100.00
Commonwealth ...	60.70	2.07	19.65	17.58	100.00

For every hundred pounds worth of goods manufactured in each State and in the Commonwealth the percentages given in the above table represent the proportions of the various elements included in the price of the goods as they left the factories.

### § 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 both 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 1905 to 1909 by £8,557,439, from £45,997,398 to £54,554,837, that is, at the rate of £2,139,360 per annum.

The following statement shews for the year 1909 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, 1909.**

Value of—	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Cwlth.
	£	£	£	£	£	£	£
Land and buildings ...	11,014,362	8,642,344	2,888,923	2,433,655	1,522,692	1,176,619	27,677,595
Plant and machinery	10,330,724	7,140,304	4,457,314	2,185,203	1,728,207	1,035,490	26,877,242
<b>Total</b> ...	<b>21,345,086</b>	<b>15,782,648</b>	<b>7,346,237</b>	<b>4,617,858</b>	<b>3,250,899</b>	<b>2,212,109</b>	<b>54,554,837</b>

It may be seen from the above table that the total capital invested in land, buildings, plant, and machinery in the manufacturing industry in the Commonwealth during the year 1909 was approximately £54,554,837, or £12.62 per head of mean population; of that sum £27,677,595 was invested in land and buildings occupied as manufactories, the remaining £26,877,242 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, 1905 to 1909.* 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 1905 to 1909 inclusive:—

**VALUE OF LAND AND BUILDINGS OCCUPIED AS FACTORIES IN COMMONWEALTH,  
1905 TO 1909.**

Class of Industry.	1905.	1906.	1907.	1908.	1909.
I. Treating raw material, product of agricultural and pastoral pursuits, etc. ...	£ 791,535	£ 777,871	£ 781,733	£ 847,113	£ 869,488
II. Treating oils & fats, animal, vegetable, etc. ...	375,097	363,622	343,424	359,624	376,681
III. Processes in stone, clay, glass, etc. ...	741,110	738,995	820,333	937,753	956,733
IV. Working in wood ...	1,132,615	1,219,155	1,090,551	1,195,581	1,285,267
V. Metal works, machinery, etc. ...	3,231,594	3,313,200	3,709,314	4,378,755	4,415,525
VI. Connected with food and drink, etc. ...	6,956,539	6,638,474	6,708,611	7,161,845	7,191,976
VII. Clothing and textile fabrics, etc. ...	2,931,080	2,919,301	3,396,599	3,377,905	3,809,148
VIII. Books, paper, printing, and engraving ...	2,155,476	2,134,021	2,357,799	2,483,693	2,642,029
IX. Musical instruments, etc. ...	26,041	27,741	27,405	31,054	33,314
X. Arms and explosives ...	29,233	30,314	31,152	34,586	33,016
XI. Vehicles & fittings, saddlery & harness, etc. ...	980,989	951,288	1,079,859	1,172,556	1,186,750
XII. Ship and boat building and repairing ...	1,102,918	1,111,752	991,907	988,141	1,033,513
XIII. Furniture, bedding, and upholstery ...	652,976	618,422	633,237	666,289	697,273
XIV. Drugs, chemicals, and by-products ...	307,593	335,393	444,060	531,765	543,507
XV. Surgical and other scientific instruments ...	32,736	37,197	31,779	33,054	56,378
XVI. Jewellery, timepieces, and platedware ...	140,535	159,356	204,734	226,352	232,483
XVII. Heat, light, and power ...	1,511,504	1,510,520	1,855,438	1,928,734	2,026,611
XVIII. Leatherware, n.e.i. ...	61,472	60,365	57,043	91,086	83,578
XIX. Minor wares, n.e.i. ...	139,666	143,204	193,797	218,840	210,325
<b>Total</b> ...	<b>23,300,709</b>	<b>23,080,191</b>	<b>24,758,774</b>	<b>26,664,676</b>	<b>27,677,595</b>

The figures in the above table for the years 1905 and 1906 are subject to the limitations that the actual returns for these years for the States of New South Wales and South Australia are not available. In order to present an approximate total for the Commonwealth, however, 1901 figures for New South Wales, and 1907 figures for South Australia are included for the years specified. It may be seen that the total net increase was £4,376,886, or an annual average of £1,094,221. In two classes, viz., Classes II. and XII., there were comparatively small decreases, the total of which amounted to £73,821. The largest increases were in Classes V. and VII., and amounted to 1,183,931 and £878,068 respectively.

(ii.) *Value in each State, 1909.* The following table gives similar information for each State up to the 31st December, 1909 :—

**VALUE OF LAND AND BUILDINGS OCCUPIED AS FACTORIES IN EACH STATE,  
1909.**

Class of Industry.	N.S.W.	Victoria.	Q'land.	S.A.	W.A.	Tas.	Cwltth.
	£	£	£	£	£	£	£
I. Treating raw material, product of agricultural and pastoral pursuits, etc. ...	348,114	342,488	49,471	86,293	28,040	15,082	869,488
II. Treating oils and fats, animal, vegetable, etc. ...	166,072	110,874	28,385	55,680	5,670	4,000	370,681
III. Processes in stone, clay, glass, etc. ...	480,668	323,029	31,177	61,571	39,418	20,870	956,733
IV. Working in wood ...	544,166	265,856	147,877	107,879	152,240	67,249	1,285,267
V. Metal works, machinery, etc. ...	1,938,683	1,035,526	481,465	430,134	405,935	123,782	4,415,525
VI. Connected with food and drink, etc. ...	2,359,155	2,104,402	1,151,112	653,293	378,173	545,841	7,191,976
VII. Clothing and textile fabrics, etc. ...	1,533,557	1,446,255	221,292	349,950	131,131	126,963	3,809,148
VIII. Books, paper, printing and engraving ...	1,033,002	788,447	381,748	249,904	152,078	36,850	2,642,029
IX. Musical instruments, etc. ...	24,906	5,308	...	3,100	...	...	33,314
X. Arms and explosives ...	2,487	30,529	...	...	...	...	33,016
XI. Vehicles and fittings, saddlery and harness, etc. ...	420,160	360,469	123,108	170,056	64,710	48,247	1,186,750
XII. Ship and boat building and repairing ...	590,631	417,246	8,876	11,000	2,860	2,900	1,033,513
XIII. Furniture, bedding and upholstery ...	254,219	243,698	73,403	69,633	36,245	20,075	697,273
XIV. Drugs, chemicals, and by-products ...	165,985	266,843	10,250	83,717	16,537	175	543,507
XV. Surgical and other scientific instruments ...	27,909	8,257	11,752	4,270	4,190	...	56,378
XVI. Jewellery, timepieces, and platedware ...	66,186	97,615	22,312	23,540	3,620	19,210	232,483
XVII. Heat, light, and power ...	934,044	674,818	141,638	41,760	91,726	142,625	2,026,611
XVIII. Leatherware, n.e.i. ...	32,286	41,717	675	6,620	2,280	...	83,578
XIX. Minor wares, n.e.i. ...	92,132	78,967	4,382	24,255	7,839	2,750	210,325
<b>Total ...</b>	<b>11,014,362</b>	<b>8,642,344</b>	<b>2,888,923</b>	<b>2,432,655</b>	<b>1,522,692</b>	<b>1,176,619</b>	<b>27,677,595</b>

The maximum value for the Commonwealth of land and buildings in any particular class was in Class VI., amounting to £7,191,976, or 25.98 per cent. on the total value. The next classes in importance were Classes V., VII., VIII., and XVII., in which the values were £4,415,525, £3,809,148, £2,642,029, and £2,026,611 respectively. The sum of the values for the five classes mentioned amounted to £20,085,289, or 72.57 per cent. on the total value for all classes.

(iii.) *Total Value in each State, 1904 to 1909.* The following table shows the total value, so far as returns are available, of land and buildings occupied as manufactories in each State at the end of each year from 1904 to 1909 inclusive :—

**TOTAL VALUE OF LAND AND BUILDINGS OCCUPIED AS FACTORIES IN EACH  
STATE, 1904 to 1909.**

Year.	N.S.W.	Victoria.	Queensland.	S. Aust.	W. Aust.	Tasmania.	C'wealth.
	£	£	£	£	£	£	£
1904	*8,029,890	7,641,051	2,699,191	2,140,516†	1,731,233	1,000,481	23,242,362
1905	*8,029,890	7,771,238	2,709,951	2,140,516†	1,685,597	963,517	23,300,709
1906	*8,029,890	8,062,110	2,405,559	2,140,516†	1,775,279	666,837	23,080,191
1907	9,508,259	8,376,642	2,261,539	2,140,516	1,637,207	834,611	24,758,774
1908	10,390,260	8,589,027	2,763,085	2,311,650	1,565,756	1,044,898	26,664,676
1909	11,014,362	8,642,344	2,888,923	2,432,655	1,522,692	1,176,619	27,677,595

\* 1901 figures. † 1907 figures, those for previous years not being available.

It may be seen that, so far as returns are available, there has been a general though irregular increase in all the States with the exception of Western Australia, which State shews a decided fall; this is probably due to a general reduction in values of real estate in that State during the past few years. The irregularities in some of the States are probably due partly to the returns having been made on different bases for the succeeding years in carrying into effect the resolutions passed at the Conferences of Statisticians (see § 1. 2 hereof).

**3. Value of Plant and Machinery.**—The following table shews for the whole Commonwealth the approximate value of plant and machinery used in connection with factories at the end of each year from 1905 to 1909 inclusive. The figures, however, are subject to certain limitations, inasmuch as returns for South Australia for the years 1905 and 1906 are not available; South Australian figures for 1907 have therefore been taken for these years.

**VALUE OF PLANT AND MACHINERY USED IN FACTORIES IN COMMONWEALTH, 1905 TO 1909.**

Class of Industry.	1905.	1906.	1907.	1908.	1909.
	£	£	£	£	£
I. Treating raw material, product of agricultural and pastoral pursuits, etc.	578,982	618,891	644,597	671,015	726,786
II. Treating oils & fats, animal, vegetable, etc.	327,182	328,484	331,595	349,997	349,479
III. Processes in stone, clay, glass, etc.	734,285	745,504	752,084	833,809	901,193
IV. Working in wood...	1,490,402	1,422,545	1,506,933	1,583,496	1,623,297
V. Metal works, machinery, etc.	3,657,936	3,749,781	4,237,810	4,633,656	4,941,632
VI. Connected with food and drink, etc.	7,177,535	7,436,091	7,340,941	7,744,682	7,772,770
VII. Clothing and textile fabrics, etc.	962,164	1,177,456	1,132,083	1,158,698	1,280,102
VIII. Books, paper, printing, and engraving	1,824,315	1,889,705	1,993,135	2,091,168	2,207,930
IX. Musical instruments, etc.	6,750	6,327	7,829	9,124	11,263
X. Arms and explosives	44,037	44,476	45,613	46,113	45,940
XI. Vehicles & fittings, saddlery & harness, etc.	161,479	194,136	195,271	204,138	220,746
XII. Ship and boat building, and repairing	368,340	353,371	352,486	432,803	434,905
XIII. Furniture, bedding, and upholstery	94,768	97,392	106,613	117,481	126,000
XIV. Drugs, chemicals, and by-products	282,293	306,285	332,349	398,028	435,019
XV. Surgical and other scientific instruments	5,013	7,329	6,340	8,144	9,215
XVI. Jewellery, timepieces, and platedware	32,972	38,796	45,927	46,160	43,980
XVII. Heat, light, and power	4,871,562	5,242,509	5,555,544	5,481,759	5,611,333
XVIII. Leatherware, n.e.i.	11,887	15,489	16,523	18,989	19,555
XIX. Minor wares, n.e.i.	65,407	68,831	82,435	96,503	116,097
<b>Total ...</b>	<b>22,696,689</b>	<b>23,744,298</b>	<b>24,686,108</b>	<b>25,927,763</b>	<b>26,877,242</b>

It may be seen that during the period in question there has been a steady and substantial net increase amounting in all to £4,180,553, or an annual average of £1,045,138. The increase has occurred in all classes of industry, the largest increase being in Class V., "Metal Works, Machinery, etc.," amounting to £1,283,696, while the next largest was in Class XVII., "Heat, Light, and Power," and amounted to £739,771.

(i.) *Total Value in each State, 1904 to 1909.* The classified figures in the preceding table for the whole Commonwealth are shewn below for each State. It will be seen that the increase in value referred to is general throughout the States, with the exception of Western Australia, where there is a small decrease. New South Wales shews by far the largest increase, viz., £2,681,821; while Victoria comes next with £1,113,170.

**VALUE OF PLANT AND MACHINERY IN FACTORIES, 1904 to 1909.**

Year.	N.S.W.	Victoria.	Queensland.	S. Aust.	W. Aust.	Tasmania.	C'wealth.
	£	£	£	£	£	£	£
1904	7,648,903	6,027,134	4,200,303	1,900,744*	1,776,481	753,967	22,307,532
1905	8,031,948	6,187,919	3,988,056	1,900,744*	1,834,098	753,924	22,696,689
1906	8,407,337	6,450,355	4,282,502	1,900,744*	1,861,477	841,883	23,744,298
1907	9,155,772	6,771,458	3,989,679	1,900,744	1,893,351	975,104	24,686,108
1908	9,718,842	6,957,606	4,470,145	2,064,097	1,744,652	972,421	25,927,763
1909	10,330,724	7,140,304	4,457,314	2,185,203	1,728,207	1,035,490	26,877,242

\* Figures for 1907, previous years not being available.

(ii.) *Classified Value in each State, 1909.* The following table shews the value of plant and machinery used in factories in each State during the year 1909, classified according to the nature of the industry in which used:—

**VALUE OF PLANT AND MACHINERY USED IN FACTORIES IN EACH STATE, 1909.**

Class of Industry.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Cwealth.
I. Treating raw material, product of agricultural and pastoral pursuits, etc. ...	£ 262,339	£ 248,053	£ 94,980	£ 67,161	£ 21,393	£ 12,860	£ 726,786
II. Treating oils and fats, animal, vegetable, etc. ...	165,071	117,542	40,102	19,764	3,200	3,800	349,479
III. Processes in stone, clay, glass, etc. ...	534,216	226,169	44,577	52,587	32,488	11,156	901,193
IV. Working in wood ...	497,215	258,860	353,296	53,670	350,405	129,851	1,623,297
V. Metal wks., machinery, etc. ...	2,309,064	989,296	530,237	407,391	306,946	396,698	4,941,632
VI. Connected with food and drink, etc. ...	2,714,561	1,543,172	2,565,032	542,279	279,315	128,411	7,772,770
VII. Clothing and textile fabrics, etc. ...	378,979	660,887	99,530	71,979	22,823	45,904	1,280,102
VIII. Books, paper, printing, and engraving ...	839,097	749,583	214,048	174,370	169,895	60,937	2,207,930
IX. Musical instruments, etc. ...	9,250	1,463	...	550	...	...	11,263
X. Arms and explosives ...	684	45,256	...	...	...	...	45,940
XI. Vehicles and fittings, saddlery and harness, etc. ...	70,455	69,030	25,970	36,665	10,996	7,630	220,746
XII. Ship and boat building and repairing ...	355,088	59,105	11,410	6,420	1,020	1,862	434,905
XIII. Furniture, bedding, and upholstery ...	37,382	43,585	17,944	17,543	5,646	3,900	126,000
XIV. Drugs, chemicals, and by-products ...	165,329	164,283	3,950	91,286	9,321	850	435,019
XV. Surgical and other scientific instruments ...	3,931	2,001	1,288	900	1,095	...	9,215
XVI. Jewellery, timepieces, and platedware ...	16,513	19,159	2,809	3,814	900	785	43,980
XVII. Heat, light, and power ...	1,895,991	1,869,320	470,479	635,399	511,308	228,636	5,611,333
XVIII. Leatherware, n.e.i. ...	6,604	11,560	711	380	300	...	19,555
XIX. Minor wares, n.e.i. ...	48,955	61,980	951	3,045	1,156	10	116,097
Total ...	10,330,724	7,140,304	4,457,314	2,185,203	1,728,207	1,035,490	26,877,242

The greatest value for any particular class of industry is for Class VI., "Connected with Food and Drink, etc.," and amounts to £7,772,770, or 28.92 per cent. on the total value for all classes. The next greatest value is for Class XVII., "Heat, Light, and Power," and amounts to £5,611,333, or 20.88 per cent. on the total. The next greatest is for Class V., "Metal Works, Machinery, etc.," amounting to £4,941,632, or 18.38 per cent. on the total value. The total for the three classes just specified amounts to £18,325,735, or 68.18 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 must necessarily be supplemented by details exhibiting the development of individual industries. This alone will furnish adequate information as to the channels into which the main efforts of Australian manufacture flow. While it is not possible, within the limits of this article, to give anything like a detailed account of the manufacturing industries of the Commonwealth, it is proposed to deal herein with such particular industries as are of special importance by reason either 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 either 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.**—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 leathers has been undertaken with satisfactory results. The position of the industry in the several States in 1909 was as follows:—

## TANNERIES, 1909.

Items.	N.S.W.	Vic.	Q'land.	S.A.	W.A.	Tas.	C'wlth.
Number of factories ... ..	79	58	17	13	4	8	179
" employees ... ..	933	1,502	171	237	69	68	2,980
Actual horse-power of engines employed ...	942	1,361	156	220	95	72	2,846
Approx. value of lands and buildings ...	£ 99,296	119,420	17,123	26,757	10,020	9,282	281,898
Approx. value of plant and machinery ...	£ 76,781	90,833	10,193	12,046	5,508	7,600	202,961
Total amount of wages paid during year ...	£ 84,021	129,902	15,468	24,151	7,504	5,751	266,797
Value of raw material worked up ...	£ 710,348	826,821	110,954	113,497	34,129	36,560	1,832,309
Total value of output ... ..	£ 867,344	1,059,120	142,510	156,827	47,519	46,870	2,320,190
Value added in process of manufacture ...	£ 156,996	232,299	31,556	43,330	13,390	10,310	487,881

(i.) *Progress of Tanning, etc., Industries, 1906 to 1909.* For years prior to 1908 returns for tanneries are not generally available separately, but are grouped with the wool-scouring and fellmongering industries. The development of the tanning, fellmongering, and wool-scouring industries during the period 1906 to 1909 is shewn in the following table, from which it will be seen that though the number of factories is almost stationary, the number of employees shews a satisfactory increase, amounting to 11.40 per cent. during the period under consideration.

## DEVELOPMENT OF TANNING, ETC., INDUSTRIES, 1906 to 1909.

State.	Number of Factories.				Number of Employees.				Approximate Value of Plant and Machinery.			
	1906.	1907.	1908.	1909.	1906.	1907.	1908.	1909.	1906.	1907.	1908.	1909.
New South Wales	154	152	146	147	2,427	2,507	2,396	2,544	£ 172,553	£ 159,850	£ 167,071	£ 188,820
Victoria ...	84	90	92	93	1,657	1,893	2,001	1,999	114,961	124,064	133,376	142,429
Queensland ...	40	37	39	36	513	615	685	667	84,750	81,225	91,492	88,337
South Australia ...	14	12	14	15	344	294	341	288	*	9,197	11,991	14,161
Western Australia	2	3	3	4	61	64	69	69	5,500	5,500	5,640	5,508
Tasmania ...	3	6	9	8	56	67	78	68	6,600	6,550	7,476	7,600
Commonwealth ...	297	300	303	303	5,058	5,440	5,570	5,635	384,354†	386,386	417,046	446,855

\* No information available. † Exclusive of South Australia.

(ii.) *Production of Tanneries, 1909.* The quantity of raw materials used and the quantity and value of leather produced in tanneries in each State during the year 1909 are shewn in the following table:—

## RAW MATERIALS USED AND LEATHER PRODUCED IN TANNERIES, 1909.

Particulars.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	C'wealth.
RAW MATERIALS USED.							
Hides' ... No. (,000 omitted)	455	496	71	84	25	17	1,148
Pelts treated No. ...	4,793	705	45	*	...	*	*
Bark ... .. Tons	9,380	10,018	1,763	1,682	689	519	24,051
LEATHER AND BASILS PRODUCED.							
LEATHER—							
Quantity lbs. (,000 omitted)	13,038	20,129	2,250	2,511	993	893	39,814†
Value ... .. £	640,675	990,000	134,670	147,607	47,126	37,360	1,997,438†
BASILS—							
Quantity lbs. (,000 omitted)	3,182	643	*	98	...	*	*
Value ... .. £	135,210	28,000	*	*	...	*	*

\* Not available. † Incomplete.

3. Soap and Candle Factories.—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 1909:—

## SOAP AND CANDLE FACTORIES, 1909.

Items.	N.S.W.	Vic.	Qld.	S.A.	W.A.	Tas.	Cwth.
Number of factories ... ..	26	17	18	7	3	2	73
employees ... ..	571	563	174	185	50	39	1,582
Actual horse-power of engines employed	364	276	144	93	25	18	920
Approximate value of land and buildings	£ 116,718	99,594	28,385	41,945	5,670	4,000	296,312
"    plant and machinery	£ 127,437	111,252	40,102	14,924	3,200	3,800	300,015
Total amount of wages paid during year	£ 42,079	56,382	14,593	18,792	4,783	3,330	139,959
Value of raw material worked up ...	£ 288,125	329,513	44,992	95,759	54,414	*	†121,803
Total value of output ... ..	£ 472,628	485,954	93,674	155,124	68,443	*	†1,275,823
Value added in process of manufacture	£ 184,503	156,441	48,682	59,365	14,029	*	†463,020

\* As there are only two soap and candle factories in this State, returns relative to output, etc. are not disclosed. † Exclusive of Tasmania.

(i.) *Development of Soap and Candle Factories, 1906 to 1909.* The following table gives particulars for the last four years regarding the numbers of factories and employees and the value of plant and machinery in these industries in each State:—

## DEVELOPMENT OF SOAP AND CANDLE FACTORIES, 1906 to 1909.

State.	Number of Factories.				Average Number of Employees.				Approximate Value of Plant and Machinery.			
	1906.	1907.	1908.	1909.	1906.	1907.	1908.	1909.	1906.	1907.	1908.	1909.
									£	£	£	£
New South Wales	41	34	29	26	602	553	553	571	121,313	137,311	135,786	127,437
Victoria ... ..	15	15	17	17	523	510	535	563	104,244	106,326	109,768	111,252
Queensland ...	14	15	16	18	142	142	159	174	33,599	35,562	35,794	40,102
South Australia ...	8	7	6	7	207	166	164	185	*	11,896	12,484	14,224
Western Australia ...	3	3	3	3	61	57	50	58	8,216	6,938	4,910	3,200
Tasmania ... ..	2	2	2	2	35	35	35	39	4,300	3,600	4,000	3,800
Commonwealth	83	76	73	73	1,570	1,463	1,496	1,582	†271,672	291,633	302,742	300,015

\* Information not available. † Exclusive of South Australia.

(ii.) *Production of Soap and Candles, 1906 to 1909.* The subjoined statement shews that there has been a considerable increase in the output of both of these products. As regards the production of soap an increase is shewn in all the States with the exception of New South Wales, which shews a slight decrease. The returns as to the production of candles are incomplete for 1906 and 1907; it may be seen, however, that there has been a considerable increase in New South Wales during the four years, and that the production in the whole of the Commonwealth during 1909 shews an increase of 1,765,051 lbs. over that for 1908.

## PRODUCTION OF SOAP AND CANDLES, 1906 to 1909.

State.	Soap.				Candles.			
	1906.	1907.	1908.	1909.	1906.	1907.	1908.	1909.
	cwt.	cwt.	cwt.	cwt.	lbs.	lbs.	lbs.	lbs.
New South Wales	221,834	225,217	217,321	206,678	4,799,898	5,656,354	5,566,776	6,922,488
Victoria ... ..	154,570	153,478	162,757	176,162	4,826,528	5,341,056	4,222,960	5,091,520
Queensland ...	64,130	59,900	67,755	73,446	*	*	1,023,160	557,312
South Australia ...	*	56,745	61,614	66,043	*	1,975,075	1,806,725	1,678,930
Western Australia ...	26,960	31,774	29,767	35,419	1,567,768	1,300,825	1,259,214	1,309,066
Tasmania ... ..	7,360	9,679	10,500	9,900	703,360	672,000	448,000	537,600
Commonwealth	†474,854	536,793	549,714	567,648	†11,897,554	14,945,110	14,331,835	16,096,886

\* Not available. † Incomplete.

(iii.) *Raw Material Used, 1909.* The following statement shows the quantity of certain raw materials used in soap and candle factories in each State during the year 1909 :—

**RAW MATERIAL USED IN SOAP AND CANDLE FACTORIES, 1909.**

Particulars.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	Cwth.
Tallow ... .. cwt.	104,633	140,195	30,328	43,605	13,830	14,000	346,591
Alkali ... .. lbs.	50,152	33,278	10,654	7,841	5,300	...	107,225

4. *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, for the sake of comparison, both forest and other saw mills as well as joinery, moulding and box factories have had to be combined in the following table.

**SAW MILLS, FOREST AND OTHER, 1909.**

Items.	N.S.W.	Vic.	Q'land.	S.A.	W.A.	Tas.	Cwth.
Number of factories ... ..	523	273	228	80	62	113	1,284
" employees ... ..	6,253	4,370	3,552	1,421	3,372	1,448	21,416
Actual horse-power of engines employed	10,521	5,006	5,447	1,206	2,974	1,987	27,141
Approx. value of land and buildings	£ 492,530	212,791	135,869	100,034	152,240	67,249	1,160,713
" plant and machinery	£ 469,457	239,226	321,762	51,229	350,405	129,851	1,561,930
Total amount of wages paid during year	£ 522,944	413,152	281,167	116,941	554,097	118,997	2,007,298
Value of raw material worked up	£ 1,243,491	619,072	422,593	584,476	75,707	31,880	2,977,219
Total value of output ... ..	£ 2,102,030	1,259,410	923,326	771,347	799,326	243,500	6,098,939
Value added in process of manufacture	£ 858,539	640,338	500,733	186,871	723,619	211,620	3,121,720

5. *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 what has been called the "New Protection" system was sought to be applied (see Section XXVII. hereof). The nature of the machines 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 1909 :—

**AGRICULTURAL IMPLEMENT WORKS, 1909.**

Items.	N.S.W.	Victoria	Q'land.	S.Aust.	W.A.	Tas.	Cwth.
Number of factories ... ..	21	52	4	59	5	7	148
" employees ... ..	481	1,892	284	1,346	49	29	4,061
Actual horse-power of engines employed	171	677	63	728	68	6	1,713
Approx. value of land and buildings	£ 55,658	82,443	4,938	50,772	3,843	1,890	199,544
" plant and machinery	£ 18,063	84,067	12,121	49,405	5,277	845	169,778
Total amount of wages paid during year	£ 38,813	181,391	92,443	107,015	5,568	1,480	356,710
Value of raw material worked up	£ 146,675	242,322	32,734	129,344	5,496	1,970	559,141
Total value of output ... ..	£ 211,139	611,293	63,588	321,956	14,373	4,990	1,227,339
Value added in process of manufacture	£ 64,464	368,371	30,854	192,612	8,877	3,020	668,198

(i.) *Development of Agricultural Implement Works.* The following table shows the progress of this industry during the years 1906 to 1909 :—

## AGRICULTURAL IMPLEMENT WORKS, 1906 to 1909.

State.	Number of Factories.				Number of Employees.				Approximate Value of Plant and Machinery.			
	1906.	1907.	1908.	1909.	1906.	1907.	1908.	1909.	1906.	1907.	1908.	1909.
									£	£	£	£
New South Wales	17	21	20	21	440	499	434	481	12,850	16,426	16,008	18,063
Victoria ...	53	55	52	52	1,747	1,618	1,441	1,892	62,808	66,492	69,335	84,067
Queensland ...	8	4	2	4	117	142	108	284	11,470	9,444	8,244	12,121
South Australia ...	49	49	54	59	874	827	1,092	1,346	*	34,034	38,157	49,405
Western Australia	6	2	3	5	56	15	25	49	2,470	3,450	4,259	5,277
Tasmania ...	...	13	9	7	...	45	34	29	...	796	235	845
Commonwealth	133	144	140	148	3,234	3,146	3,134	4,081	†89,598	130,642	136,238	169,778

\* Not available. † Exclusive of South Australia.

6. **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 by the limited classification still adopted by some of the States.

## ENGINEERING, IRONWORKS, AND FOUNDRIES, 1909.

Items.	N.S.W.	Vic.	Q'land.	S.A.	W.A.	Tas.	Cwth.
Number of factories ...	229	321	97	51	48	18	764
" employees ...	6,725	6,196	2,035	1,890	791	303	17,882
Actual horse-power of engines employed	5,053	3,673	696	1,096	616	269	11,403
Approx. value of land and buildings £	579,556	432,594	121,157	84,606	76,035	41,915	1,335,863
" plant and machinery £	516,700	535,652	143,190	110,799	83,342	39,504	1,414,187
Total amount of wages paid during year £	645,986	578,233	195,767	175,286	86,847	33,173	1,715,292
Value of raw materials worked up £	854,377	727,184	126,192	229,156	97,682	41,700	2,076,291
Total value of output ...	1,868,924	1,701,542	451,911	490,622	222,120	97,050	4,822,169
Value added in process of manufacture £	1,004,547	974,358	325,719	261,466	124,438	55,350	2,745,878

In addition to engineering works which supply local domestic 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, and many Australian mines have been locally equipped.

7. **Railway Carriages and Rolling Stock, Railway and Tramway Workshops.**—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 CARRIAGES AND ROLLING STOCK, RAILWAY AND TRAMWAY WORKSHOPS, 1909.

Items.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	Cwth.
Number of factories ...	26	15	8	6	7	6	68
" employees ...	5,929	2,877	1,197	1,375	1,327	471	13,176
Actual h.p. of engines employed	5,196	699	1,415	301	1,548	1,252	10,711
Approx. value of land and buildings £	778,891	276,305	275,153	203,890	322,837	27,275	1,884,351
Approx. value of plant and mach'ny £	473,934	194,990	171,760	141,167	232,902	70,011	1,284,764
Total amt. of wages paid during year £	723,796	360,679	143,075	163,634	179,718	57,477	1,628,379
Value of raw material worked up £	508,631	396,695	190,977	125,392	141,747	63,100	1,426,542
Total value of output ...	1,331,405	833,111	330,661	293,810	312,768	133,200	3,234,955
Value added in process of manuf'ct're £	822,774	436,416	139,684	168,418	171,021	70,100	1,808,413

8. **Smelting Works.**—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 an uniform basis in the several States, and the combination of industries is somewhat unsatisfactory. The returns do not include particulars of plants used on mines.

## SMELTING, CYANIDE, PYRITES, ETC., WORKS, 1909.

Items.	N. S. W.	Vic.	Q'land.	S. A.	W. A.	Tas.	Cwth.
Number of factories ... ..	38	101	10	7	...	7	163
" employees ... ..	3,175	809	762	1,280	...	1,619	7,645
Actual horse-power of engines employed	7,807	409	1,127	4,507	...	6,297	20,147
Approx. value of land and buildings £	250,938	16,478	14,959	19,240	...	46,802	348,417
" plant and machinery £	1,156,379	55,643	163,933	59,036	...	286,638	1,721,689
Total am't of wages paid during year £	477,352	59,172	99,831	149,077	...	176,917	962,349
Value of raw material worked up	£2,993,178	123,542	310,890	523,977	...	1,404,839	5,356,426
Total value of output ... ..	£4,521,463	262,358	460,784	1,108,437	...	1,997,085	8,350,127
Value added in process of manufact're £	1,528,285	138,816	149,894	584,460	...	592,246	2,993,701

In New South Wales and Queensland the above figures represent smelting works; those in Victoria—ninety cyanide works and five, four, and two for metallurgical, pyrites, and smelting respectively; South Australia five cyanide and two smelting; while those in Tasmania represent four cyanide and three smelting works.

The largest output for the year under review was in New South Wales, viz., £4,521,463, or 54.15 per cent. on the total output for the Commonwealth. Tasmania came second with £1,997,085, or 23.92 per cent.; this amount is made up of £1,233,300 smelting and £763,785 pyrites. Of the total for South Australia the output of smelting was £1,099,010, the balance £9427 representing that obtained from cyanide works. The output in Victoria was £142,966, £24,106, £62,229, and £33,057 from cyanide, metallurgical, pyrites, and smelting works in the order named.

In Western Australia all the plants are worked on the mines and are therefore not collected. Further reference to this industry is made in Section XII. of this book (see page 518).

9. **Bacon-curing Factories.**—The following table gives particulars of factories engaged in bacon-curing in each State during the year 1909:—

## BACON-CURING FACTORIES, 1909.

Items.	N. S. W.	Vic.	Q'land.	S. A.	W. A.	Tas.	Cwth.
Number of factories ... ..	17	26	7	11	3	6	70
" employees ... ..	131	337	229	73	18	33	821
Actual horse-power of engines employed	217	252	219	42	22	49	801
Approx. value of land and buildings £	43,771	33,840	13,600	10,752	5,860	5,050	112,893
" plant and machinery £	16,719	26,092	48,100	3,748	1,138	2,690	98,487
Total amount of salaries and wages paid £	15,382	28,454	19,718	5,709	2,750	2,812	74,825
Value of raw material worked up	£240,124	388,665	210,000	73,934	74,550	33,390	1,025,863
Total value of output ... ..	£276,459	443,277	340,308	85,101	79,496	43,800	1,268,441
Value added in process of manufacture £	36,335	54,412	130,306	11,167	4,946	5,410	242,578

Further information regarding the bacon-curing industry may be found in Section IX., *Farmyard and Dairy Production*.

(i.) *Quantity and Value of Production, 1909.* The following table shows the number of pigs killed and the quantity and value of the production of bacon-curing factories in each State during the year 1909:—

## PRODUCTION OF BACON-CURING FACTORIES, 1909.

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.*	Tasmania.	C'wealth.
QUANTITY. (,000 omitted).							
Bacon & ham lbs.	7,856	11,245	8,331	2,347	...	671	30,450
Lard ... lbs.	344	555	591	83	...	38	1,611
VALUE.							
Bacon & ham £	956,473	415,000	250,000	82,849	...	21,066	1,025,398
Lard ... £	8,017	13,000	14,743	2,135	...	880	38,775
Other products £	9,376	15,000	23,440	117	...	...	47,933
PIGS KILLED.							
Number ...	87,267	123,067	115,075	27,282	...	9,987	362,678

\* In Western Australia all bacon and hams are imported and some are subsequently smoked in that State.

10. **Butter, Cheese, and Condensed Milk Factories.**—The subjoined table gives particulars of butter, cheese, and condensed milk factories in each State during the year 1909. The returns are exclusive of butterine and margarine factories.

## BUTTER, CHEESE, AND CONDENSED MILK FACTORIES, 1909.

Items.	N.S.W.	Vic.	Q'land.	S.A.	W.A.	Tas.	Cw'lh.
Number of factories ...	181	211	80	53	3	22	550
" employees ...	1,014	1,190	760	216	10	93	3,283
Actual horse-power of engines employed	2,136	2,538	860	355	30	126	6,045
Approximate value of land and buildings £	173,628	234,336	79,865	36,685	2,696	17,935	545,145
" plant & machinery £	229,940	261,630	138,049	29,353	4,117	11,040	694,129
Total amount of wages paid ...	£ 100,302	109,412	67,466	12,849	976	4,821	295,826
Value of raw material worked up	£ 2,563,760	2,147,515	962,500	238,324	7,695	92,300	6,012,094
Total value of output ...	£ 2,759,603	2,391,893	1,189,921	272,084	8,874	104,950	6,727,324
Value added in process of manufacture £	195,842	244,378	227,421	33,760	1,179	12,650	715,230

(i.) *Development of Factories, 1906 to 1909.* The following table shews the progress of the factories in this industry from 1906 to 1909:—

## DEVELOPMENT OF BUTTER, ETC., FACTORIES, 1906 to 1909.

State.	Number of Factories.				Number of Persons Employed.				Approximate Value of Plant and Machinery.			
	1906.	1907.	1908.	1909.	1906.	1907.	1908.	1909.	1906.	1907.	1908.	1909.
									£	£	£	£
New South Wales	179	188	183	181	1,045	1,023	979	1,014	218,566	244,438	247,678	229,940
Victoria ...	221	223	215	211	1,482	1,449	1,294	1,190	307,635	311,241	282,012	281,630
Queensland ...	81	83	82	80	1,333	1,376	1,238	760	104,157	133,861	145,531	138,049
South Australia ...	55	57	54	53	141	213	212	216	†	25,224	27,539	29,353
Western Australia ...	2	2	2	3	5	5	6	10	2,300	2,300	2,300	4,117
Tasmania ...	20	23	24	22	76	81	95	93	13,351	8,199	11,618	11,040
Commonwealth	558	576	560	550	4,082	4,147	3,824	3,283	646,009†	725,263	716,678	694,129

† Not available. ‡ Exclusive of South Australia.

(ii.) *Quantity and Value of Production, 1909.* The following table shews 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 1909:—

## PRODUCTION OF BUTTER, CHEESE, AND CONDENSED MILK FACTORIES, 1909.

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Cwlth.
--------------	--------	-----------	---------	----------	----------	------	--------

## QUANTITY (,000 OMITTED).

Butter ... .. lbs.	57,846	49,555	22,385	4,815	154	1,227	135,982
Cheese ... .. "	2,749	3,168	3,524	1,573	...	342	11,356
Condensed and concentrated milk ... lbs.	2,401	3,487	7,038	...	...	...	12,926

## VALUE (£,000 OMITTED).

Butter ... .. £	2,562	2,195	994	232	9	56	6,048
Cheese ... .. "	74	88	74	40	...	7	283
Condensed and concentrated milk ... .. £	35	57	122	...	...	...	214

## MILK USED (,000 OMITTED).

Butter factories ... gals.	149,463	111,711	51,997	10,300	381	2,550	326,402
Cheese ... .. "	2,958	3,202	3,342	1,564	...	329	11,395
Condensed milk factories ... .. gals.	678	1,121	1,830	...	...	...	3,629

11. **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 now been installed at many ports in the Commonwealth for the purpose of freezing produce chiefly for export, and 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. Particulars regarding the export of frozen beef and mutton may be found on pages 345 and 349 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 export of frozen produce is stated to be capable of considerable expansion. 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, 1909.

Items.	N.S.W.	Vic.	Q'land.	S.A.	W.A.	Tas.	Cwlth.
Number of factories ... ..	77	29	35	16	6	4	167
" employees ... ..	1,617	832	1,379	289	79	20	4,216
Actual horse-power of engines employed	3,115	2,856	2,896	711	576	10	10,164
Approx. value of land and buildings £	425,651	266,752	413,220	146,724	51,920	1,500	1,305,767
" plant and machinery £	415,070	152,548	231,676	97,637	32,310	400	929,641
Total amount of wages paid during year £	147,160	67,926	133,360	28,405	11,449	956	389,256
Value of raw material worked up	£3,130,643	410,316	1,185,000	173,071	2,152	7,210	4,908,392
Total value of output ... ..	3,567,850	557,187	1,456,605	219,967	27,329	9,220	5,838,158
Value added in process of manufacture...	437,207	146,871	271,605	46,896	25,177	2,010	929,766

The following table gives particulars, so far as available, of various classes of meat preserved during the year 1909 :—

## MEAT PRESERVING WORKS—PARTICULARS OF ANIMALS TREATED, 1909.

Particulars.	N.S.W.	Vict.	Q'land.	S. Aust.*	W. Aust.*	Tas.*	Cwlth.†
Sheep treated ... No.	1,061,276	941,309	510,858	...	...	...	2,513,443
Cattle " ... No.	18,468	7,399	110,290	...	...	...	136,157
Pigs " ... No.	232	225	3,407	...	...	...	3,884

\* Not available. † Exclusive of South Australia, Western Australia, and Tasmania.

Large quantities of rabbits, hares, and poultry were treated in freezing works, for which, however, complete returns are not available. Exclusive of Victoria and Tasmania, for which States particulars are not available, the returns show that 49,728 tons of ice, valued at £100,540, were manufactured in the Commonwealth in 1909.

12. **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 1909:—

## BISCUIT MANUFACTORIES, 1909.

Items.	N.S.W.	Vic.	Q'land.	S.A.	W.A.	Tas.†	Cwlth.
Number of factories ... ..	6	4	8	2	3	8	31
" employees ... ..	1,154	1,191	305	96	127	151	3,026
Actual horse-power of engines employed	334	148	79	35	65	63	724
Approx. value of land and buildings	£ 85,747	51,850	20,628	9,050	8,719	26,750	202,744
" plant and machinery	76,950	44,800	17,969	4,600	10,655	10,921	165,895
Total amount of wages paid during year	£ 65,439	57,980	21,507	6,782	9,905	9,105	170,718
Value of raw material worked up	£ 260,183	230,735	45,040	*	35,600	35,200	604,758†
Total value of output ... ..	£ 421,640	373,679	91,607	*	60,382	55,100	1,002,408†
Value added in process of manufacture	£ 161,457	142,944	46,567	*	24,782	21,900	397,650†

\* As there are only two factories in this State particulars are not disclosed. † Exclusive of South Australia. ‡ Including confectionery.

13. **Jam and Fruit Preserving, Pickles, Sauces, and Vinegar Manufactories.**—The jam and fruit-preserving industry has increased in importance of late years with the extension of orcharding and fruit-growing. As an exporting industry it is comparatively young, but is of increasing value, and is stated to be capable of considerable expansion. The subjoined table gives particulars of factories at which these industries were carried on in each State during the year 1909. Separate returns for the individual industries are not available for most of the States.

## JAM AND FRUIT PRESERVING, PICKLES, SAUCES, AND VINEGAR MANUFACTORIES, 1909.

Items.	N.S.W.	Vic.	Q'land.	S.A.	W.A.	Tas.	Cwlth.
Number of factories ... ..	35	24	12	26	4	15	116
" employees ... ..	1,061	1,409	196	465	62	888	4,081
Actual horse-power of engines employed	194	388	82	51	63	269	1,047
Approx. value of land and buildings	£ 77,056	97,096	9,600	19,087	4,910	29,250	236,999
" plant and machinery	29,569	42,312	6,993	10,923	2,299	15,778	107,874
Total amount of wages paid during year	£ 56,779	81,958	9,109	16,987	4,342	34,884	204,059
Value of raw material worked up	£ 252,354	369,162	33,047	78,217	10,132	157,050	899,962
Total value of output ... ..	£ 401,506	573,849	49,354	128,282	15,271	244,250	1,412,512
Value added in process of manufacture	£ 149,152	204,687	16,307	50,065	5,139	87,200	512,550

(i.) *Quantity and Value of Production, 1909.* The following table shews the quantity and value of jams, pickles, and sauces manufactured in each State during the year 1909:—

## QUANTITY AND VALUE OF JAMS, PICKLES, AND SAUCES MANUFACTURED, 1909.

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	C'wealth.
QUANTITY (,000 OMITTED).							
Jam ... .. lbs.	23,416	30,120	3,426	4,549	330	13,855	75,696
Pickles ... .. pints	1,416	1,324	205	322	197	24	3,488
Sauce ... .. pints	1,541	3,608	163	1,074	236	105	6,727
VALUE.							
Jam ... .. £	320,926	470,000	41,900	55,764	4,117	223,592	1,116,299
Pickles ... .. £	26,741	28,000	3,404	8,435	3,378	474	70,432
Sauce ... .. £	25,149	68,000	3,043	18,230	5,070	1,926	121,418

14. **Confectionery.**—The following table shows the position of the confectionery industry in 1909, and it will be seen how it has expanded in nine years when it is stated that at the close of 1900 there were in New South Wales 16 establishments, with 706 employees, and in Victoria 16 establishments, employing 731 persons, using plant and machinery, valued at £2815 in the former and £19,070 in the latter State.

## CONFECTIONERY FACTORIES, 1909.

Items.	N.S.W.	Vic.	Q'land.	S.A.	W.A.	Tas.*	Cwth.
Number of factories ... ..	37	26	11	5	4	...	83
" employees ... ..	1,106	1,426	348	254	89	...	3,223
Actual horse-power of engines employed	290	266	62	80	29	...	727
Approx. value of land and buildings	£ 181,102	56,804	17,586	24,014	11,060	...	290,566
" plant and machinery	£ 46,472	45,241	16,241	21,892	6,650	...	136,496
Total amount of wages paid during year	£ 70,437	78,844	16,975	14,234	6,708	...	187,198
Value of raw material worked up	£ 301,314	268,591	35,205	39,203	16,803	...	661,116
Total value of output ... ..	£ 466,481	455,353	102,072	93,069	27,595	...	1,114,570
Value added in process of manufacture	£ 165,167	186,762	66,867	53,866	10,792	...	463,454

\* Included with biscuit factories.

15. **Flour Mills.**—The following table describes the position of the flour-milling industry in the year 1909:—

## FLOUR MILLS, 1909.

Items.	N.S.W.	Vic.	Q'land.	S.A.	W.A.	Tas.	Cwth.
Number of factories ... ..	71	59	14	54	18	15	231
" employees ... ..	860	734	195	574	187	126	2,676
Actual horse-power of engines employed	4,542	4,112	752	3,108	827	701	13,842
Approx. value of land and buildings	£ 402,088	206,529	65,188	119,859	64,259	44,650	902,673
" plant and machinery	£ 307,321	226,571	65,820	145,076	53,123	36,810	834,721
Total amt of wages paid during year	£ 97,147	79,547	20,044	59,069	17,333	21,419	294,559
Value of raw material worked up	£ 2,223,121	2,227,439	330,861	1,001,520	240,933	599,700	6,623,634
Total value of output ... ..	£ 2,609,268	2,639,519	383,097	1,169,817	309,736	710,700	7,822,137
Value added in process of manufacture	£ 386,147	412,080	52,236	168,297	68,743	111,000	1,198,503

(i.) *Production of Flour Mills, 1904 to 1909.* The production of flour by the mills in each State of the Commonwealth in the years 1904 to 1909 was as follows:—

**· FLOUR MILLS—PRODUCTION, 1904 to 1909.**

Year.	N.S.W.	Victoria.	Q'land.	Sth. Aust.	West. Aust.	Tasmania.	C'wealth.
	Tons.*	Tons.*	Tons.*	Tons.*	Tons.*	Tons.*	Tons.*
1904	210,137	202,314	34,211	†	20,185	19,822	486,669†
1905	205,805	209,058	37,505	†	26,420	18,325	497,113†
1906	225,995	219,166	24,219	†	26,977	17,692	514,049†
1907	237,442	235,185	28,532	105,395	28,353	17,056	651,963
1908	180,843	192,687	22,266	107,742	31,424	17,426	552,388
1909	214,426	215,547	29,451	97,967	24,878	21,419	603,688

\* Tons of 2000 lbs. † Exclusive of South Australia. ‡ Not available.

The total production of flour for the Commonwealth for 1909, viz., 603,688 tons, was valued at £5,979,157; in addition 259,646 tons of bran and pollard, valued at £1,277,102, were made. The total quantity of wheat ground in 1909 was 29,537,348 bushels.

16. **Sugar Mills.**—The following table shews the position of the cane-crushing branch of the sugar-making industry in 1909. This industry is carried on in Queensland and New South Wales, the only States of the Commonwealth in which the sugar-cane is grown. Reference to the other States is therefore omitted from the table.

**SUGAR MILLS, 1909.**

Items.	N.S.W.	Queensland.	Total.
Number of factories ... ..	4	46	50
„ employees ... ..	529	3,848	4,377
Actual horse-power of engines employed ...	2,578	8,936	11,514
Approximate value of land and buildings £	12,177	241,772	253,949
„ „ plant and machinery £	509,242	1,615,963	2,125,205
Total amount of wages paid during year £	31,764	251,928	283,692
Value of raw material worked up ... £	95,394	829,556	924,950
Total value of output ... .. £	197,137	1,461,033	1,658,170
Value added in course of manufacture £	101,743	631,477	733,220

The first crushing of sugar for commercial use is said to have taken place in New South Wales about 1850 on the plantation of Mr. Thomas Scott; the planting-out of cane was not, however, taken up by settlers, notwithstanding Mr. Scott's earnest advocacy of the industry, until 1862, when a small growth resulted in the establishment of a mill in Queensland; the appliances were rude, but the result satisfactory. In April, 1864, a mill with a modern crushing and boiling plant was opened at Cleveland (Q.) by Hon. Lionel Hope, but his success was only partial, and he closed down his works till 1867. In 1866 the Pampania Company opened a small factory in Queensland, and in the following year two other mills started work. Two factories were erected in the Maryborough district, and in 1868 others were working in the Mackay, Bowen and other districts. The industry was by the end of 1870 firmly established.

An unfortunate feature of the industry is that large quantities of molasses have been and still are allowed to run to waste. 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 the greatest part produced is put to no use whatever.

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. The following tables shew the progress of this industry from the dates at which information is first obtainable :—

## SUGAR MILLS, NEW SOUTH WALES, 1870 to 1909.

Items.	1870.	1877.	1886.	1891.	1896.	1901.	1908.	1909.
Number of factories ...	27	50	64	33	23	12	4	4
" employees ...	...	1,065	2,259	1,621	1,475	695	543	529
Sugar produced ... Tons	677	7,537	13,750	16,033	28,557	19,519	14,996	14,810
Molasses produced ... gals.	...	345,543	507,000	1,074,080	2,520,580	1,300,909	922,549	1,072,400

During the year 1909, 131,083 tons of cane were crushed in sugar mills in New South Wales. 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 1909.

Items.	1868.	1876.	1886.	1891.	1896.	1901.	1908.	1909.
Number of factories ...	10	70	118	68	63	52	51	46
" employees ...	...	*	*	*	3,796	*	3,964	3,848
" acres crushed ...	...	7,245	40,756	36,821	66,640	78,160	1433,315†	1163,569†
Sugar produced ... Tons	...	8,214	59,225	51,219	100,774	120,858	151,098	134,584
Molasses produced ... gals.	68,622	416,415	1,784,266	1,640,662†	2,195,470	3,679,952	5,980,433	4,763,635

\* Not available. † 1890. ‡ Tons of cane crushed.

Information regarding the cultivation of sugar-cane and the bounties payable on cane grown by white labour may be found in the section of this book dealing with *Agricultural Production*. (See pages 396 to 401.)

**17. 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 1909 there were two sugar refineries in Queensland; and one in each of the States of New South Wales, Victoria and South Australia; but there were none in either of the other States. The returns for the individual States cannot be disclosed.

In the five refineries in the Commonwealth an average number of 1470 hands were employed during the year 1909. The approximate value of land and buildings was £252,479; of plant and machinery, £860,793; and the total amount of wages paid during the year was £155,602.

As regards production, the amount of crude sugar used was 185,487 tons, and of refined sugar produced 178,135 tons, valued at £2,519,984, both these amounts being exclusive of the two refineries in Queensland, for which returns are not available.

**18. Breweries.**—Established at an early date in Australia, the main feature of the history of the brewing industry has been the change from the small local brewery in every township of moderate size to the large centralised city brewery. A recent amalgamation in Melbourne resulted in the closing of several large breweries. A workmen's co-operative brewery has been opened in Sydney and a co-operative brewery has been opened in Melbourne by a number of "free" hotelkeepers.

The following table gives particulars of breweries in each State during the year 1909:—

## BREWERIES, 1909.

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Cwlth.
Number of factories ...	37	32	11	15	24	6	125
" employees ...	831	1,022	419	326	492	148	3,238
Actual horse-power of engines employed ...	687	1,876	219	232	576	114	3,704
Approx. value of land and buildings ... £	330,879	297,321	96,509	99,722	170,102	403,750	1,398,283
Approx. value of plant and machinery ... £	277,736	245,606	73,720	62,945	114,034	43,630	817,671
Total amount of wages paid during year ... £	104,564	130,906	48,032	38,035	79,492	19,003	420,032
Value of raw material worked up ... £	436,939	343,022	136,022	66,452	125,502	49,770	1,157,707
Total value of output ... £	967,914	771,779	375,059	238,302	399,919	111,950	2,864,923
Value added by process of manufacture ... £	530,975	428,757	239,037	171,850	274,417	62,180	1,707,216

(i.) *Production and Materials Used, 1909.* The following table shows the quantity and value of ale and stout brewed and the quantity of raw materials used in each State during the year 1909:—

## PRODUCTION AND MATERIALS USED IN BREWERIES, 1909.

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	C'wealth.
ALE AND STOUT BREWED.							
Quantity gallons (,000 omitted)	16,155	16,552	5,246	3,719	4,600	1,890	48,162
Value ... £	761,998	770,000	375,059	234,761	386,978	124,297	2,653,093
RAW MATERIALS USED. (,000 OMITTED.)							
Malt ... bush.	571	504	182	102	137	77	1,573
Hops ... lbs.	682	632	283	141	226	114	2,078
Sugar ... cwt.	77	103	45	19	25	8	277

19. *Distilleries.*—The subjoined table gives particulars of distilleries in each State during the year 1909. There are no distilleries in either of the States of Western Australia or Tasmania.

## DISTILLERIES, 1909.

Particulars.	N.S.W.	Vic.	Qld.	S.A.	W.A.	Tas.	Cwlth.
Number of factories ...	3	7	3	19	...	...	32
" employees ...	29	99	26	79	...	...	233
Actual horse-power of engines employed ...	80	165	66	155	...	...	466
Approximate value of land and buildings ... £	4,730	79,905	6,277	23,799	...	...	114,711
Approx. value of plant and machinery ... £	38,394	61,500	6,807	20,724	...	...	127,425
Total amount of wages paid during year ... £	2,415	11,414	3,526	5,928	...	...	23,283
Value of raw materials worked up ... £	39,573	28,351	5,465	44,795	...	...	118,184
Total value of output ... £	59,825	50,657	39,458	86,666	...	...	236,606
Value added in process of manufacture ... £	20,252	22,306	33,993	41,871	...	...	118,422

(i.) *Production of Spirits and Materials Used, 1909.* The total quantity of brandy distilled in 1909 was 208,380 proof gallons, and of other spirits was 2,156,577 proof gallons. The materials used comprised 348,411 cwt. of molasses and 2,199,326 gallons of wine. Particulars for the separate States are not available for publication.

20. *Tobacco, Cigars and Cigarettes.*—During the year 1909 there were thirty-seven establishments in which the manufacture of tobacco, cigars, and cigarettes was carried on. In Queensland there were only two such establishments, and particulars as to output etc. are therefore not disclosed. In Tasmania there were no factories engaged in this industry.

## TOBACCO, CIGAR, AND CIGARETTE FACTORIES, 1909.

Items.	N.S.W.	Vic.	Q'land.	S.A.	W.A.	Tas.	Cwth.
Number of factories ...	15	14	2	3	3	...	37
"    employees ...	1,250	2,449	90	180	22	...	3,991
Actual horse-power of engines employed ...	312	415	12	24	1	...	764
Approx. value of land and buildings ...	£ 175,824	174,354	2,200	10,484	3,640	...	366,502
"    plant and machinery ...	£ 119,676	104,973	4,350	12,084	291	...	241,374
Total amount of wages paid during year ...	£ 102,629	171,435	4,774	15,733	2,007	...	296,638
Value of raw material worked up ...	£ 609,653	592,807	*	49,337	3,040	...	1,254,837†
Total value of output ...	£ 857,937	963,660	*	80,306	5,489	...	1,907,292†
Value added in process of manufacture ...	£ 248,184	370,853	*	30,969	2,449	...	652,455†

\* As there are only two factories in this State, particulars of output etc. are not disclosed.  
† Exclusive of Queensland.

(i.) *Development of Industry.* This industry was early established in Australia, and the figures given in the subjoined table shew its progress during recent years. In 1896 there were in New South Wales eight establishments employing 641 persons, of whom 471 were males and 170 females. The plant and machinery employed were valued at £55,700. In Victoria, in this same year, there were twelve establishments employing 650 persons, of whom 424 were males and 226 were females. The value of the plant and machinery employed was £42,410. The Australian market is now largely supplied with local manufactures.

## DEVELOPMENT OF TOBACCO, CIGAR, AND CIGARETTE FACTORIES, 1906 to 1909.

State.	Number of Factories.				Number of Persons Employed.				Approximate Value of Plant and Machinery.			
	1906.	1907.	1908.	1909.	1906.	1907.	1908.	1909.	1906.	1907.	1908.	1909.
N.S. Wales ...	13	11	12	15	1,016	1,108	1,309	1,250	£ 104,051	£ 111,296	£ 119,012	£ 119,676
Victoria ...	12	13	13	14	1,846	2,019	2,542	2,449	78,522	88,341	100,880	104,973
Queensland ...	2	2	2	2	63	71	79	90	4,684	2,020	2,300	4,350
South Australia...†	2	3	3	3	135	174	175	180	*	12,716	12,084	12,084
West Australia ...	3	3	3	3	30	30	32	22	235	265	297	291
Tasmania ...	...	...	...	...	...	...	...	...	...	...	...	...
Commonwealth	32	32	33	37	3,090	3,390	4,137	3,991	187,492†	214,636	234,573	241,374

\* Not available. † Exclusive of South Australia.

(ii.) *Quantity and Value of Production, and Tobacco Leaf Used, 1909.* The following table shews the quantity and value of the production of tobacco factories in each State, and the quantities of imported and Australian-grown leaf used during the year 1909:—

## PRODUCTION OF TOBACCO FACTORIES, AND QUANTITY OF LEAF USED, 1909.

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Cwth.
QUANTITY (,000 OMITTED).							
Manufact'd tobacco lbs.	3,695	5,161	187	394	4	...	9,441
Cigars ...	57	211	...	10	7	...	285
Cigarettes ...	No. 5,070	17,893	...	858	510	...	24,331
	lbs. 1,300	323	...	...	1	...	1,624
	No. 572,372	137,847	...	...	209	...	710,428

## TOBACCO LEAF USED (,000 OMITTED).

Australian leaf...	lbs.	847	200	227	144	3	...	1,421
Imported leaf ...	lbs.	3,570	4,734	...	219	15	...	8,538

21. **Woollen and Tweed Mills.**—The manufacture of woollens and tweeds was established in Australia at a comparatively early period in its industrial history, the first record in Victoria dating back to 1867. The following table, which gives particulars of the mills in each State during the year 1909, shews that the industry is now well established:—

**WOOLLEN AND TWEED MILLS, 1909.**

Items.	N.S.W.	Vic.	Q'ld.†	S.A.	W.A.	Tas.	Cwth.
Number of factories ... ..	7	9	2	2	...	4	24
" employés ... ..	628	1,717	165	177	...	278	2,965
Actual horse-power of engines employed ...	703	2,443	131	111	...	134	3,522
Approx. value of land and buildings £	63,752	118,777	9,499	6,000	...	24,900	222,928
" " plant and machinery £	82,117	265,008	28,634	10,763	...	37,250	423,772
Total amount of wages paid during year £	28,744	100,140	7,781	7,380	...	11,630	155,675
Value of raw material worked up £	51,863	202,059	*	*	...	23,450	303,283
Total value of output ... ..	£ 97,051	403,106	*	*	...	46,100	596,665
Value added in process of manufacture £	45,188	201,047	*	*	...	22,650	293,382

\* As there are only two factories each in Queensland and South Australia particulars of output, etc., are not disclosed but are added in with the total for the Commonwealth. † One woollen and tweed mill, and one cotton ginning establishment.

(i.) *Progress of Industry, 1906 to 1909.* The progress of the woollen and tweed cloths manufacturing industry during the last four years is shewn in the following table for each State in which mills were in operation:—

**DEVELOPMENT OF WOOLLEN MILLS IN AUSTRALIA, 1906 to 1909.**

State.	Number of Factories.				Number of Persons Employed.				Approximate Value of Plant and Machinery.			
	1906.	1907.	1908.	1909.	1906.	1907.	1908.	1909.	1906.	1907.	1908.	1909.
N.S.W. ...	5	5	5	7	338	395	455	623	£ 36,400	£ 39,433	£ 43,933	£ 82,117
Victoria ...	9	9	9	9	1,434	1,589	1,757	1,717	236,988	259,740	263,100	265,008
Q'land ...	1	1	1	2*	117	119	97	165*	24,500	19,364	19,364	28,634*
S. Aust. ...	2	2	2	2	155	149	145	177	†	13,850	11,200	10,763
W. Aust. ...	...	...	...	...	...	...	...	...	...	...	...	...
Tasmania ...	4	4	4	4	274	257	263	278	42,200	45,413	33,250	37,250
C'wealth	21	21	21	24	2,318	2,509	2,717	2,965	†	377,800	370,847	423,772

\* Including one cotton ginning establishment. † Not available.

(ii.) *Quantity and Value of Production, 1909.* 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 generally available for publication. The total length of tweed and cloth manufactured was about 1,700,000 yards, valued at about £190,000. In New South Wales 594,512 yards of tweed and cloth, in Victoria 949,674 yards, and in Tasmania 57,010 yards were manufactured. The production of flannel in the Commonwealth in 1909 amounted to about 5,135,000 yards, valued at £650,000, and of blankets, shawls, and rugs to 650,000, valued at £150,000.

No cotton spinning or weaving or linen weaving is carried on in Australia. Cotton ginning has been carried on at periods far apart in the northern States, and a mill was lately reopened at Ipswich in Queensland.

22. **Boots and Shoes.**—Among the manufactories of Australia the boot and shoe industry holds an important place both in respect to the employment afforded by it and the range of its output. The following table shews particulars of this industry for each State during the year 1909:—

## BOOT AND SHOE FACTORIES, 1909.

Items.	N.S.W.	Vic.	Q'land.	S.A.	W.A.	Tas.	Cwltth.
Number of factories ... ..	102	136	25	23	11	18	315
" employees ... ..	4,460	6,894	1,135	1,069	204	261	14,023
Actual horse-power of engines employed	717	835	222	172	24	38	2,008
Approx. value of land and buildings	£ 204,253	164,756	38,556	60,870	9,615	22,468	500,518
" plant and machinery	£ 141,822	129,411	25,712	29,644	6,735	4,410	337,734
Total amt. of wages paid during year	£ 308,293	415,011	69,715	73,617	17,197	16,989	900,812
Value of raw material worked up	£ 601,586	884,329	121,389	127,262	33,688	36,190	1,804,444
Total value of output ... ..	£ 1,060,348	1,487,789	217,361	229,386	59,728	57,600	3,112,212
Value added in process of manufacture	£ 458,762	603,460	95,972	102,124	26,040	21,410	1,307,768

(i.) *Progress of Industry, 1906 to 1909.* The progress of the industry in the last four years is shewn in the following table :—

## DEVELOPMENT OF BOOT AND SHOE FACTORIES, 1906 to 1909.

State.	No. of Factories.				No. of Persons Employed.				Approximate Value of Plant and Machinery.			
	1906.	1907.	1908.	1909.	1906.	1907.	1908.	1909.	1906.	1907.	1908.	1909.
N.S.W. ...	102	102	105	102	4,767	4,786	4,650	4,460	£ 122,580	£ 131,884	£ 134,575	£ 141,822
Victoria ...	134	139	139	136	5,703	6,303	6,348	6,894	99,042	122,347	123,204	129,411
Q'land. ...	29	32	27	25	1,015	1,134	1,094	1,135	20,592	22,078	26,652	25,712
S. Aust. ...	17	21	24	23	1,212	1,162	1,077	1,069	*	28,352	30,748	29,644
W. Aust. ...	12	12	10	11	236	249	185	204	6,626	7,232	5,967	6,735
Tasmania	15	23	23	18	323	261	252	261	6,713	4,859	3,185	4,410
C'wealth	309	329	328	315	13,256	13,915	13,606	14,023	255,553†	316,752	324,331	337,734

\* Information not available. † Exclusive of South Australia.

(ii.) *Value and Quantity of Production, 1909.* The number and value of boots and shoes, and slippers made at factories in each State during the year 1909, are shewn in the following table :—

## PRODUCTION OF BOOT AND SHOE FACTORIES, 1909.

Particulars.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	Cwltth.
--------------	--------	------	---------	----------	----------	------	---------

## QUANTITY (,000 OMITTED).

Boots and shoes ... Pairs	3,596	4,649	762	819	190	142	10,158
Slippers ... Pairs	409	232	46	21	...	2	710
Uppers ... Pairs	104	23	7	11	4	12	161

## VALUE.

Boots and shoes ... £	981,391	1,420,000	212,397	213,795	56,343	43,807	2,927,733
Slippers ... £	39,873	35,000	2,556	5,520	25	238	83,272
Uppers ... £	21,794	5,000	1,822	1,835	1,320	1,836	33,607

23. *Hats and Caps.*—The manufacture of hats and caps is now well established in the Commonwealth. The position of the industry in the several States in 1909 is shewn in the following table :—

## HAT AND CAP FACTORIES, 1909.

Items.	N.S.W.	Vic.	Q'land.	S.A.	W.A.	Tas.	Cwth.
Number of factories ... ..	30	35	5	2	1	...	73
" employees ... ..	1,349	1,688	173	144	7	...	3,361
Actual horse-power of engines employed	210	319	12	38	...	...	579
Approx. value of land and buildings £	79,906	68,967	15,240	3,656	720	...	168,489
" " plant and machinery £	39,966	35,427	7,420	5,182	50	...	88,045
Total amount of wages paid during year £	65,444	104,424	7,410	7,627	100	...	185,005
Value of raw material worked up £	125,845	140,298	8,966	*	*	...	285,310
Total value of output ... ..	£ 233,135	296,524	21,533	*	*	...	573,744
Value added in process of manufacture £	107,290	156,226	12,567	*	*	...	288,434

\* As there are only two factories in South Australia and one in Western Australia, details relating to output, etc., are not available for separate publication; the amounts, however, are included in the totals for the Commonwealth.

(i.) *Progress of Industry, 1906 to 1909.* As appears from the following table, which shows the progress of this industry in the States in which it was carried on during the years 1906 to 1909, there has been a considerable investment of capital in this industry in New South Wales and Victoria during recent years, and the industry is now in a flourishing condition in both these States.

## DEVELOPMENT OF HAT AND CAP FACTORIES, 1906 to 1909.

State.	Number of Factories.				No. of Persons employed				Approximate Value of Plant and Machinery.			
	1906.	1907.	1908.	1909.	1906.	1907.	1908.	1909.	1906.	1907.	1908.	1909.
New South Wales	23	22	26	30	1,035	1,094	1,221	1,349	£ 32,750	£ 35,653	£ 34,315	£ 39,966
Victoria ... ..	32	33	34	35	1,319	1,404	1,520	1,688	24,588	28,452	29,650	35,427
Queensland ... ..	4	3	4	5	122	140	129	173	6,083	7,142	7,662	7,420
South Australia ...	*	*	1	2	50	*	...	144	*	*	...	5,182
Western Australia ...	...	...	...	1	...	...	...	7	...	...	...	50
Commonwealth	59	58	65	73	2,527	2,638	2,870	3,361	63,421	71,247	71,627	88,045

(ii.) *Quantity and Value of Production, 1909.* Particulars regarding the quantity and value of the production of hat and cap factories in each State are not available for separate publication. The total value of hats and caps made in Australia in 1909 was £565,742.

24. **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 1909. The returns include establishments for the manufacture of wheels, spokes, etc.

## COACH AND WAGON BUILDING WORKS, 1909.

Items.	N.S.W.	Vic.	Q'land.	S.A.	W.A.	Tas.	Cwth.
Number of factories ... ..	234	265	70	95	29	27	720
" employees ... ..	2,304	2,684	594	1,074	268	177	7,101
Actual horse-power of engines employed	406	307	93	246	56	...	1,108
Approx. value of land and buildings £	238,340	208,202	50,644	88,751	24,690	16,183	626,810
" " plant and machinery £	50,366	47,697	18,801	23,736	7,460	1,812	149,872
Total amount of wages paid during year £	175,833	174,393	46,665	82,599	29,593	9,875	518,958
Value of raw material worked up £	186,049	186,658	41,919	95,554	30,973	10,560	551,713
Total value of output ... ..	£ 461,293	474,715	120,559	222,449	72,273	26,860	1,378,169
Value added in process of manufacture £	275,244	288,157	78,640	126,895	41,300	16,320	826,456

25. **Furniture and Cabinet Making and Billiard Table Making.**—These industries constitute the principal manufactures in Class XIII. (see § 1, 4, above). The following table gives particulars for 1909:—

**FACTORIES FOR FURNITURE AND CABINET MAKING AND BILLIARD TABLE MAKING, 1909.**

Items.	N.S.W.	Vic.	Q'land.	S.A.	W.A.	Tas.	Cwlth.
Number of factories ... ..	110	140	48	22	18	7	345
" employees ... ..	2,080	1,574	797	754	230	210	5,645
Actual horse-power of engines employed	468	294	259	419	69	63	1,572
Approx. value of land and buildings	£ 170,088	170,121	60,471	39,540	28,170	17,500	485,890
" plant and machinery	£ 27,284	23,245	16,027	14,890	2,995	2,540	86,981
Total amount of wages paid during year	£ 190,753	136,957	60,274	63,846	23,745	16,918	492,493
Value of raw material used ... ..	£ 177,061	169,533	57,929	47,019	25,153	20,940	497,635
Total value of output ... ..	£ 439,544	368,935	143,067	141,673	54,518	45,570	1,193,308
Value added in process of manufacture	£ 262,483	199,403	85,138	94,654	29,365	24,630	695,673

26. **Electric Light and Power Works.**—Particulars of the electric light and power works of the Commonwealth in the year 1909 are given in the subjoined table. In South Australia there is only one electric light and power station. Particulars for that State are therefore not disclosed in regard to output.

**ELECTRIC LIGHT AND POWER WORKS, 1909.**

Items.	N.S.W.	Vic.	Q'land.	S.A.	W.A.	Tas.	Cwlth.
Number of factories ... ..	103	13	6	1	18	7	148
" employees ... ..	769	442	90	149	218	159	1,827
Actual horse-power of engines employed	40,479	13,233	4,517	5,068	14,632	8,594	86,593
Approx. value of land and buildings	£ 349,663	161,911	15,423	28,000	64,586	7,825	627,414
" plant and machinery	£ 1,047,680	577,403	74,797	262,710	452,280	106,984	2,521,804
Total amount of wages paid during year	£ 100,906	54,621	9,865	17,175	42,198	17,180	241,945
Total value of output ... ..	£ 620,478	207,959	44,149	*	205,215	65,400	1,143,201†

\* As there is only one electric light and power station in South Australia, particulars of value of output are not disclosed. † Exclusive of South Australia.

27. **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 four 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, 1909.**

Items.	N.S.W.	Vic.	Q'land.	S.A.	W.A.	Tas.	Cwlth.
Number of factories ... ..	*52	47	†18	3	3	3	126
" employees ... ..	1,277	1,390	380	307	77	133	3,564
Actual horse-power of engines employed	2,104	1,038	147	82	30	375	3,776
Approx. value of land and buildings	£ 525,166	468,588	126,209	7,290	25,290	134,800	1,287,343
" plant and machinery	£ 814,263	1,241,906	395,682	370,986	58,700	121,852	3,003,389
Total amount of wages paid during year	£ 157,886	181,965	44,505	37,218	12,956	17,836	452,366
Value of raw material used ... ..	£ 288,172	197,373	22,141	39,200	11,241	19,340	577,467
Total value of output ... ..	£ 886,814	676,528	162,104	125,440	33,057	66,300	1,950,243
Value added in process of manufacture	£ 598,642	479,155	139,963	86,240	21,816	46,960	1,372,776

\* Including 13 coke factories. † Including 4 coke factories.

The following table gives particulars regarding the quantity and value of the production of gas and coke works in each State during the year 1909 :—

**PRODUCTION OF GAS AND COKE WORKS, 1909.**

Particulars.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	Cwlth.
QUANTITY.							
Gas made ... 1000 cub. ft.	3,481	2,293	472	345	82	141	6,814
Coke ... ..Tons	351,215	131,695	37,660	15,000	4,321	5,902	545,793
VALUE.							
Gas ... .. £	558,025	577,000	137,004	95,400	23,823	38,922	1,430,174
Coke ... .. £	221,595	79,000	19,700	14,300	8,384	4,116	347,095
COAL USED.							
Coal ... ..Tons	*583,181	217,473	61,524	34,300	7,426	20,231	924,135

\* Also 33,708 tons shale.