

## Part 8

### MANUFACTURING INDUSTRY

#### *Victoria's Industrial Development in the Post-war Period*

Victoria has been one of the fastest growing of the Australian States in the post-war period. Mean population increased from 2,015,197 persons for the financial year ended June, 1946, to 2,851,130 persons for year ended June, 1960—an increase of 41·48 per cent. compared with an increase for the whole of Australia of 38·39 per cent. in the same period.

The absorption of this high rate of population growth has been possible largely because of the extensive growth of manufacturing industry, and of the necessary tertiary industries, that has taken place in Victoria since the end of the Second World War.

The number of factories operating in Victoria has risen from 10,195 in 1945-46 to 16,979 in 1959-60. These extra 6,784 factories, together with the expansion of existing factories, have provided employment for an additional 125,265 workers, the total numbers increasing from 256,249 in 1945-46 to 381,514 in 1959-60. During this period the value of production from Victorian factories rose from £120 mill. to £687 mill.

Many notable new enterprises have been set up in Victoria since the end of the Second World War.

The automotive industry, which has grown from assembly of imported parts into manufacture of motor vehicles of substantially all-Australian content, has been one of the major post-war growth industries (see pages 591 to 594). Although the industry is represented in each State, most of the main chassis-manufacturing plants are located in Victoria. Employment recorded in manufacture, assembly and repair of motor vehicles in Australia grew from 39,706 in 1945-46 to 120,231 in 1959-60, and of these 14,304 in 1945-46 and 40,548 in 1959-60 were employed in Victorian establishments.

The growth of the motor vehicle manufacturing industry has also, naturally, stimulated production in other industries, e.g., petro-chemical and rubber, and the range of new products is still being extended.

The petroleum refining industry developed rapidly during the 1950's, increasing its capacity from about 800,000 tons of crude oil a year in 1953 to an annual crude oil capacity of 12 mill. tons in June, 1960. Two of the six Australian refineries are located in Victoria—one at Geelong, with a capacity of 2·4 mill. tons of crude oil a year, and one at Altona, with a capacity of 2·1 mill. tons of crude oil a year.

The growth of the petroleum refining industry, with its catalytic cracking and reforming units, has also made possible the development of the allied petro-chemicals industry. Production of carbon black, an essential commodity for the manufacture of tyres, has already commenced at Altona in Victoria. Five other inter-related projects, also located at Altona, are in hand to produce styrene monomer, polyethylene, synthetic rubber, polyvinyl chloride resins, &c. Total costs of these plants will be about £27·5 mill., which are to come into production during 1961. A £1 mill. plant to make detergent alkylate has been erected at Geelong.

The chemical industry proper has also grown remarkably in Victoria since the war. As well as expanding the production of established products to keep pace with the demands of industry and the growing population, many new products have been introduced. With the rapid growth of the plastics products industries and extension of the use of plastics to many new products, the chemical industry's production of plastic-moulding powders and resins has developed into a major activity. Other notable developments have included industrial gases, chemicals for the paper industry, chlorine, surface coating emulsions, polystyrene, tri-cresyl phosphate (a plasticiser and additive for petrol), polyester resins for bonding, phenothiazine (an anthelmintic for sheep), as well as an extensive range of new paints, resins and varnishes—to mention only a few. On the medicinal side, production of life-saving drugs such as penicillin (first made by the Commonwealth Serum Laboratories in 1944), A.C.T.H., Salk Vaccine, streptomycin and other antibiotics have been important recent developments.

The textile industries have always been an important part of Victoria's industrial structure, and many new projects have come into production in recent years.

The manufacture of man-made yarns and fabrics is almost an entirely new industry to Australia in the post-war period, and the majority of producers in this industry are located in Victoria. The only producer of nylon filament yarn in Australia commenced production at its factory at Bayswater, Victoria, in 1958. A majority of the Australian processors of filament yarns and producers of spun man-made fibre yarns are located in Victoria, which also leads in the production of pure man-made fibre piece goods.

Other sections of the textile industry have continued steady growth to keep pace with demands of the increasing population, but the emphasis has been more on modernization and extension of existing establishments rather than outstanding new developments. An exception has been the manufacture of carpets and carpeting which has grown largely in the post-war period, with several new factories being built in Victoria.

In all, employment in the Victorian textile and textile goods industries (excluding clothing), rose from 29,889 in 1945-46 to 41,073 in 1959-60, representing over 56 per cent. of total Australian employment in these industries.

The pulp, paper, and paper board industry has grown substantially since the war and the range of types of paper and board made has been extended considerably. Employment in this industry in Victoria increased from 2,039 in 1945-46 to 3,084 in 1959-60, which represented more than one-third of total employment in the industry in Australia. Big expansion plans continue to be implemented. One of the newest projects is a mill to make tissue paper (to date mainly imported) at Box Hill, Victoria.

These are some of the major developments that have taken place in Victorian manufacturing industries since the war. Many more, perhaps of a smaller scale but none the less important, could be enumerated.

The following table gives an indication of the growth of employment in the main industrial groups between 1945-46 and 1959-60:—

**VICTORIA—EMPLOYMENT IN MANUFACTURING :  
INDUSTRY GROUPS**

Class of Industry	1945-46	1959-60	Increase
			%
1. Treatment of Non-metalliferous Mine and Quarry Products .. .. .	2,659	6,564	+ 147
2. Bricks, Pottery, Glass, &c. .. .. .	3,574	6,460	+ 81
3. Chemicals, Dyes, Explosives, Paints, Oils, Grease .. .. .	11,961	16,231	+ 36
4. Industrial Metals, Machines, Conveyances .. .. .	88,421	150,843	+ 71
5. Precious Metals, Jewellery, Plate .. .. .	1,602	1,980	+ 24
6. Textiles and Textile Goods (Not Dress) .. .. .	29,889	41,073	+ 37
7. Skins and Leather (Not Clothing or Footwear) .. .. .	4,884	4,413	— 10
8. Clothing (Except Knitted) .. .. .	38,552	45,260	+ 17
9. Food, Drink, and Tobacco .. .. .	33,811	38,830	+ 15
10. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving .. .. .	10,139	15,759	+ 55
11. Furniture of Wood, Bedding, &c. .. .. .	3,724	6,531	+ 75
12. Paper Stationery, Printing, Bookbinding, &c. .. .. .	13,723	24,305	+ 77
13. Rubber .. .. .	3,644	7,282	+ 100
14. Musical Instruments .... .. .	83	233	+ 181
15. Miscellaneous Products .. .. .	6,570	10,767	+ 64
16. Heat, Light, and Power .. .. .	3,013	4,983	+ 65
Total .. .. .	256,249	381,514	+ 49

One notable major project, whose growth is a direct consequence of the increased demand from growing industry and population, is the development of the open cut brown coal deposits in the Latrobe Valley, at Yallourn and Morwell, and the manufacture of briquettes for industrial and commercial fuel, electricity generation, and town gas. The installed capacity of the Morwell generating plant is now 110,000 kilowatts and when completed in 1963 will be 170,000 kilowatts and for Yallourn 402,500 kilowatts. During the year ended June, 1960, Yallourn produced 655,788 tons of briquettes and Morwell 318,882 tons of briquettes. The capacity of the Morwell briquette works (now completed), is 1.3 mill. tons of briquettes a year.

Total installed electricity generating capacity in Victoria has increased from 509,285 kilowatts at June, 1946, to 1,509,133 kilowatts at 30th June, 1960. Included above are 25,000 kilowatts from the Hume Dam hydro-electric station and 93,000 kilowatts (Victoria's entitlement for June, 1960) from the Snowy Mountains hydro-electric scheme.

Demand for electric power is increasing at a compound rate of 8 per cent. a year—a large part of this increase is due to the growth of industry and increasing use of electric power per person employed as industry becomes more highly mechanized.

The pattern of development in recent years has been for industry to move towards the perimeter of the city. New industrial areas have grown up, for example, around Dandenong, Clayton, Altona, Broadmeadows, Preston and Bayswater.

The country areas, however, have not been overlooked. Important and well-based industries have been set up in numerous country centres. For example, twist drills are being made at Maryborough and Hamilton, rayon weaving mills are operating at Wangaratta and Ararat, hypodermic needles are made at Portland, chain-making at Benalla, hardboard at Bacchus Marsh, cotton fabrics, knitwear and nylon yarns at Bendigo, anti-biotics at Port Fairy, pumps at Castlemaine, general engineering at Eildon, forging at Wonthaggi, roller bearings at Echuca, paper treating, roller bearings and other precision engineering articles at Ballarat, petroleum refining, wire-drawing, automotive engine blocks, and carpets at Geelong, and cement in the Latrobe Valley.

In the post-war period direct overseas investment in Australian industry has made an important contribution to our industrial maturity and technological progress. Although the bulk of capital has been raised internally, the establishment of new industries or expansion of existing industries by overseas companies (alone or in partnership with local interests), the granting of manufacturing rights and patents, and the supply of techniques, &c., by overseas manufacturers have helped to fill in the gaps in our manufacturing structure and have enabled local industries to keep abreast of latest overseas methods and products. Victoria has attracted capital from the U.S.A., Canada, United Kingdom, Sweden, Germany, France, Holland, Belgium, Switzerland and Italy.

In a few cases, overseas companies dominate their particular industry. This occurs especially where the technical problems of the industry are complex, the capital needs especially large, or the product is associated with a particular brand name or tied up throughout the world with patents or other manufacturing rights—for example, petroleum refining, motor vehicles, nylon yarn. In most cases, however, overseas participation has taken the form of adding to the range and variety of products made and has provided healthy competition with local establishments. Products made cover a very wide range from shoes to tractors, from textile fabrics to industrial machines.

The growth of manufacturing has brought with it the expansion of service industries. It has created demand for more transport facilities, more gas and electricity, more technological education, banking, insurance, retail stores and wholesale merchandising facilities, and other services.

Victoria's industrial growth has made a valuable contribution to the remarkable development of the Australian economy in the post-war period. With its many natural resources, and the skill and enterprise of its work force, this growth should continue in the future.

The table below shows at intervals between 1901 and 1959-60 the development of manufacturing industry:—

### VICTORIA—SUMMARY OF FACTORY DEVELOPMENT

Year	Factories	Employment*	Salaries and Wages Paid†	Value of—			
				Materials and Fuel Used	Output	Production‡	Land, Buildings, Plant and Machinery
	No.	No.	£'000	£'000	£'000	£'000	£'000
1901 ..	3,249	66,529	£	£	£	£	12,298
1920-21 ..	6,532	140,743	21,377	67,585	106,008	38,423	35,493
1940-41 ..	9,121	237,636	52,295	120,348	209,349	89,001	92,050
1950-51 ..	13,504	316,792	163,207	399,373	675,033	275,660	207,587
1951-52 ..	14,758	324,143	202,586	499,607	833,967	334,360	248,399
1952-53 ..	15,154	310,759	210,878	502,113	860,146	358,033	282,690
1953-54 ..	15,533	331,277	236,036	577,190	985,505	408,315	339,268
1954-55 ..	15,861	346,648	262,750	648,433	1,100,656	452,223	412,671
1955-56 ..	16,053	355,185	286,944	709,444	1,201,392	491,948	473,216
1956-57 ..	16,232	355,204	296,608	748,110	1,276,141	528,031	542,809
1957-58 ..	16,426	357,143	310,540	811,221	1,377,697	566,476	591,086
1958-59 ..	16,527	362,979	324,336	822,094	1,431,041	608,947	660,659
1959-60 ..	16,979	381,514	370,181	923,113	1,609,614	686,501	730,827

\* Average employment over whole year, including working proprietors.

† Excludes drawings of working proprietors.

‡ Value of output less value of materials, &c.

§ Not available.

## Manufacturing Activity

### General

#### Factory and Wages Board Legislation

The first Factories Act in Victoria was passed in 1873. Since then many other Acts dealing with the subject have been placed upon the statute-book. They have been consolidated in the *Labour and Industry Act* 1958. Under the Act registration of factories is compulsory and certain conditions relating to lighting, ventilation, fire escape, and sanitation must be fulfilled before registration is granted. The Act requires that departmental approval of plans be obtained before the commencement of the building of any factory premises or alteration or addition to it.

The general provisions of factory legislation, including Wages Boards, are further referred to on pages 426 to 428, 438, and 445-446.

*Decentralization of Manufacturing Industries: Division of State Development*

Early in the Second World War, steps were taken by State Governments to encourage the establishment of new manufacturing industries in country towns in Victoria and to develop existing country secondary industries. Legislation was passed in 1944 to enable Crown lands to be made available to industries, both for the erection of new factories and for the provision of housing for their employees.

A Decentralization Fund was established from which advances have been made to finance new industries. Assistance was granted in meeting freight charges on raw materials and finished goods, as well as in other ways. In 1949, a war-time explosives factory at Ballarat was purchased and the buildings were either leased or sold to individual industries, some of which have since purchased additional Crown land in the area on which to extend their plants.

Prior to 1950, many of the plants established throughout the State were of the annexe type or branches of existing metropolitan industries. However, more recently, greater success has been achieved in the development of complete units in country centres based on suitable sites for permanent operation.

The promotion and assistance of this development is one of the functions of the Division of State Development of the Premier's Department, further reference to which is made on page 419.

In addition, the Rural Finance Corporation was constituted by Parliament in 1950, to make advances for the development of both primary and secondary industry in rural areas. Loans made by the Corporation to secondary industries as at 30th June, 1960, amounted to £3,084,733.

*Commonwealth Department of Trade*

The functions of this Department include the development of secondary industries, the protection of secondary industry (including tariff protection which is administered through the Tariff Board) and as part of its policy of promoting external trade, the promotion of exports of the products of secondary industry.

*Customs and Excise Tariffs and Bounties on Manufacture*

The Tariff Board, appointed by the Commonwealth Government, examines proposals for amending the tariff and makes recommendations relating to the necessity for new, increased, or reduced duties and, where necessary, advises regarding the necessity for granting bounties. It takes into consideration the effect of any changes on manufacturing industry in Australia.

Bounties are paid by the Commonwealth Government to encourage local manufacture of certain products. The statutory provisions usually fix a term of operation of the bounty, provide for payment at a rate varying according to changes in the corresponding customs duty, specify the annual maximum amount of bounty payable, and require the bounty

to be withheld or reduced if a manufacturer's net profit in production of the commodity exceeds a certain rate or if rates of wages and conditions of employment in production of the commodity do not conform to prescribed standards.

### **Scientific Research and Standardization**

#### *Commonwealth Scientific and Industrial Research Organization*

The function of this Organization is to initiate and conduct research in connexion with industries in Australia, to train research workers, to establish industrial research studentships and fellowships, to make grants in aid of pure scientific research, to establish industrial research associations in various industries, to provide for testing and standardization of scientific equipment, to conduct an information service relating to scientific and industrial matters, and to act for Australia in liaison with other countries in matters of scientific research. (See also pages 184 to 189.)

#### *Standards Association of Australia*

This Association acts as the national standardizing organization of Australia and issues standard specifications for materials and codes of practice. Specifications and codes are prepared and revised periodically in accordance with the needs of industry and standards are evolved and accepted by general consent.

#### *National Association of Testing Authorities*

This Association organizes national testing facilities throughout Australia to serve private and governmental needs. Laboratories may register voluntarily for tests within their competence and the Association ensures the maintenance of their standards of testing. It is expected that there will be general acceptance of certificates of tests issued in the name of the Association by the registered laboratories.

### **Definitions in Factory Statistics**

The statistics dealing with factories have been compiled from returns supplied annually by manufacturers under the authority of the Commonwealth Census and Statistics Act and the Victorian Statistics Act. A return must be supplied for every factory, which is defined for this purpose as an establishment where four or more persons are employed or where power (other than manual) is used in any manufacturing process.

If a manufacturing business is conducted in conjunction with any other activity, particulars relating to the manufacturing section only are included in the statistics. Where two or more industries are conducted in the same establishment, a separate return is obtained for each industry, if practicable.

Manufacturers are requested to state in their returns particulars about the number, age, wages, &c., of their employees, the value of premises and equipment and of factory stocks, the horse-power of machinery, the value, and, in most cases, the quantities of raw materials and fuel used, and quantities and values of principal materials and articles produced. The returns obtained from manufacturers are not

intended to show a complete record of the income and expenditure of factories nor to show the profits or losses of factories collectively or individually.

The *average number of persons* employed is quoted on two different bases : the average during the period of operation and the average over the whole year. Of these, the former is simply the aggregate of the average number of persons employed in each factory during its period of operation (whether the whole or only part of the year). This average is used only for details dealing with the classification according to the number of persons employed. The latter, which is used in all other instances, is calculated by reducing the average number working in the factories (irrespective of period of operation) to the equivalent number working for a full year.

*Working proprietors* are included in all employment figures other than those dealing with monthly employment and age dissections, but salaries and wages paid in all cases exclude drawings by working proprietors.

The *value of factory output* is the value of the goods manufactured or their value after passing through the particular process of manufacture and includes the amount received for repair work, work done on commission and receipts for other factory work. The basis of valuation of the output is the selling value of the goods at the factory, exclusive of all delivery costs and charges and excise duties, but inclusive of bounty and subsidy payments to the manufacturer of the finished article.

The *value of production* is the value added to raw materials by the process of manufacture. It is calculated by deducting from the value of factory output the value (at the factory) of those items of cost specified on the factory statistical collection form, namely, materials used, containers and packing, power, fuel and light used, tools replaced, and materials used in repairs to plant (but not depreciation charges) ; the remainder constitutes the value added to raw materials in the process of manufacture, and represents the fund available for the payment of wages, taxation, rent, interest, insurance, &c., and profit.

It is considered that, because of the duplication of materials used, (which means that the finished produce of one process of manufacture often forms the raw material for another) an inaccurate impression would be obtained by using the total value of output of manufacturing industries in year to year comparisons. Woollen manufactures might be cited as an example. Greasy wool forms the raw material for the woolscouring industry, the product of which is scoured wool. This is afterwards combed into wool tops which are used in the spinning mills for the manufacture of yarn. In due course the yarn is woven into cloth, the raw material for the clothing industry. If these processes are carried out separately in different factories, it is evident that the value of the wool would be counted five times by using value of output as the basis for annual comparisons of manufacturing production.

The concept of value added prevents this double counting, gives a truer picture of the relative economic importance of industries, and also provides a good basis for estimating and comparing productive efficiency in manufacturing.

## Classification of Factories

### General

In the compilation of statistical data dealing with factories in Australia, a standard classification of manufacturing industries, formulated at a conference of Australian statisticians in 1902 and revised from time to time, was used until the year 1929–30. A new classification based on that used in Great Britain for census purposes was introduced in 1930–31, and this, revised and extended to a minor degree in regard to sub-classes of industry in accordance with decisions of the Statisticians' Conference, 1945, still obtains.

It should be noted that where a factory, engaged in the production of such goods as would entitle it to classification in more than one sub-class of industry, is unable to give separate production costs, &c., for such sub-classes, it is classified to the predominant activity of such factory.

The classes and sub-classes in the current classification of factories are as follows :—

### CLASSIFICATION OF FACTORIES

#### CLASS I.—TREATMENT OF NON-METALLIFEROUS MINE AND QUARRY PRODUCTS

Coke Works  
Briquetting and Pulverized Coal  
Carbide  
Lime, Plaster of Paris, and Asphalt  
Fibrous Plaster and Products  
Marble, Slate, &c.  
Cement, Portland  
Asbestos Cement Sheets and Mouldings  
Other Cement Goods  
Other

#### CLASS II.—BRICKS, POTTERY, GLASS, ETC.

Bricks and Tiles  
Earthenware, China, Porcelain, and Terracotta  
Glass (Other than Bottles)  
Glass Bottles  
Other

#### CLASS III.—CHEMICALS, DYES, EXPLOSIVES, PAINTS, OILS, GREASE

Industrial and Heavy Chemicals and Acids  
Pharmaceutical and Toilet Preparations  
Explosives (Including Fireworks)  
White Lead, Paints, and Varnish  
Oils, Vegetable  
Oils, Mineral  
Oils, Animal  
Boiling-down, Tallow-refining  
Soap and Candles  
Chemical Fertilizers  
Inks, Polishes, &c.  
Matches  
Other

#### CLASS IV.—INDUSTRIAL METALS, MACHINES, CONVEYANCES

Smelting, Converting, Refining, Rolling of Iron and Steel  
Foundries (Ferrous)  
Plant, Equipment, and Machinery, &c.  
Other Engineering  
Extracting and Refining of Other Metals; Alloys  
Electrical Machinery, Cables, and Apparatus  
Construction and Repair of Vehicles (10 groups)  
Ship and Boat Building and Repairing, Marine Engineering (Government and Other)  
Cutlery and Small Hand Tools  
Agricultural Machines and Implements  
Non-Ferrous Metals—  
Rolling and Extrusion  
Founding, Casting, &c.  
Iron and Steel Sheets  
Sheet Metal Working, Pressing, and Stamping  
Pipes, Tubes, and Fittings—Ferrous  
Wire and Wire Netting (Including Nails)  
Stoves, Ovens, and Ranges  
Gas Fittings and Meters  
Lead Mills  
Sewing Machines  
Arms and Ammunition (Excluding Explosives)  
Wireless and Amplifying Apparatus  
Other Metal Works

#### CLASS V.—PRECIOUS METALS, JEWELLERY, PLATE

Jewellery  
Watches and Clocks (Including Repairs)  
Electroplating (Gold, Silver, Chromium, &c.)

CLASS VI.—TEXTILES AND TEXTILE  
GOODS (NOT DRESS)

Cotton Ginning  
Cotton Spinning and Weaving  
Wool—Carding, Spinning, Weaving  
Hosiery and Other Knitted Goods  
Silk, Natural  
Rayon, Nylon, and Other Synthetic  
Fibres.  
Flax Mills  
Rope and Cordage  
Canvas Goods, Tents, Tarpaulins, &c.  
Bags and Sacks  
Textile Dyeing, Printing, and Finishing  
Other

CLASS VII.—SKINS AND LEATHER (NOT  
CLOTHING OR FOOTWEAR)

Furriers and Fur-dressing  
Woolscouring and Fellmongery  
Tanning, Currying, and Leather-dressing  
Saddlery, Harness, and Whips  
Machine Belting (Leather or Other)  
Bags, Trunks, &c.

CLASS VIII.—CLOTHING (EXCEPT  
KNITTED)

Tailoring and Ready-made Clothing  
Waterproof and Oilskin Clothing  
Dressmaking, Hemstitching  
Millinery  
Shirts, Collars, and Underclothing  
Foundation Garments  
Handkerchiefs, Ties, and Scarves  
Hats and Caps  
Gloves  
Boots and Shoes (Not Rubber)  
Boot and Shoe Repairing  
Boot and Shoe Accessories  
Umbrellas and Walking Sticks  
Dyeworks and Cleaning, &c.  
Other

CLASS IX.—FOOD, DRINK, AND  
TOBACCO

Flour-milling  
Cereal Foods and Starch  
Animal and Bird Foods  
Chaffcutting and Corncrushing  
Bakeries (Including Cakes and Pastry)  
Biscuits  
Sugar-mills  
Sugar-refining  
Confectionery (Including Chocolate  
and Icing Sugar)  
Jam, Fruit, and Vegetable Canning  
Pickles, Sauces, and Vinegar  
Bacon Curing  
Butter Factories  
Cheese Factories  
Condensed and Dried Milk Factories  
Margarine  
Meat and Fish Preserving  
Condiments, Coffee, and Spices  
Ice and Refrigerating

CLASS IX.—FOOD, DRINK, AND  
TOBACCO—*continued*

Salt  
Aerated Waters, Cordials, &c.  
Breweries  
Distilleries  
Wine-making  
Cider and Perry  
Malting  
Bottling  
Tobacco, Cigars, Cigarettes, and Snuff  
Dehydrated Fruit and Vegetables  
Ice Cream  
Sausage Casings  
Arrowroot  
Other

CLASS X.—SAWMILLS, JOINERY, BOXES,  
ETC., WOOD TURNING AND CARVING

Sawmills  
Plywood Mills (Including Veneers)  
Bark Mills  
Joinery  
Cooperage  
Boxes and Cases  
Woodturning, Woodcarving, &c.  
Basketware and Wickerware (Including  
Sea-grass and Bamboo Furniture)  
Perambulators (Including Pushers and  
Strollers)  
Wall and Ceiling Boards (Not Plaster  
or Cement)  
Other

CLASS XI.—FURNITURE OF WOOD,  
BEDDING, ETC.

Cabinet and Furniture Making (Includ-  
ing Billiard Tables and Upholstery)  
Bedding and Mattresses (Not Wire)  
Furnishing Drapery  
Picture Frames  
Blinds

CLASS XII.—PAPER, STATIONERY,  
PRINTING, BOOKBINDING, ETC.

Newspapers and Periodicals  
Printing—  
Government  
General, Including Bookbinding  
Manufactured Stationery  
Stereotyping, Electrotyping  
Process and Photo Engraving  
Cardboard Boxes, Cartons, and Con-  
tainers  
Paper Bags  
Paper-making  
Pencils, Penholders, Chalks, and Crayons  
Other

## CLASS XIII.—RUBBER

Rubber Goods (Including Tyres Made)  
Tyre Retreading and Repairing

CLASS XIV.—MUSICAL INSTRUMENTS  
Gramophones and Gramophone Records  
Pianos, Piano-Players, and Organs  
Other

CLASS XV.—MISCELLANEOUS PRODUCTS  
Linoleum, Leather-cloth, Oil-cloth, &c.  
Bone, Horn, Ivory, and Shell  
Plastic Moulding and Products  
Brooms and Brushes  
Optical Instruments and Appliances  
Surgical and Other Scientific Instruments and Appliances

CLASS XV.—MISCELLANEOUS  
PRODUCTS—*continued*

Photographic Material (Including  
Developing and Printing)  
Toys, Games, and Sports Requisites  
Artificial Flowers  
Other

CLASS XVI.—HEAT, LIGHT, AND POWER  
Electric Light and Power  
Gas Works

### *Factories According to Class of Industry*

The following table contains a summary of factories by class of industry in Victoria during the year ended 30th June, 1960:—

#### VICTORIA—FACTORIES BY CLASSES, 1959–60

Class of Industry	Factories	Employment*	Rated Horse-power of Engines in Use	Salaries and Wages Paid†	Value of—	
					Production	Output
	No.	No.	h.p.	£'000	£'000	£'000
I. Treatment of Non-metalliciferous Mine and Quarry Products ..	449	6,564	122,823	7,332	15,674	34,055
II. Bricks, Pottery, Glass, &c. ..	176	6,460	37,346	6,746	11,879	21,149
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease ..	367	16,231	139,220	18,366	58,467	170,424
IV. Industrial Metals, Machines, Conveyances ..	6,414	150,843	482,797	157,826	252,757	511,662
V. Precious Metals, Jewellery, Plate ..	248	1,980	4,105	1,840	3,127	5,268
VI. Textiles and Textile Goods (Not Dress) ..	811	41,073	104,543	34,836	60,602	146,274
VII. Skins and Leather (Not Clothing or Footwear)	272	4,413	22,187	3,944	6,425	18,971
VIII. Clothing (Except Knitted)	2,416	45,260	30,538	32,556	52,600	106,650
IX. Food, Drink, and Tobacco	2,104	38,830	213,013	36,064	81,612	282,559
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving ..	1,404	15,759	133,245	14,486	24,995	57,492
XI. Furniture of Wood, Bedding, &c. ..	664	6,531	14,999	5,655	10,205	21,973
XII. Paper, Stationery, Printing, Bookbinding, &c. ..	948	24,305	131,092	26,087	52,767	112,965
XIII. Rubber ..	164	7,282	63,945	8,075	14,617	38,010
XIV. Musical Instruments ..	25	233	312	218	325	533
XV. Miscellaneous Products	446	10,767	31,275	10,143	18,665	42,699
Total, Classes I. to XV. ..	16,908	376,531	1,531,440	364,174	664,717	1,570,684
XVI. Heat, Light, and Power	71	4,983	1,848,980	6,007	21,784	38,930
GRAND TOTAL ..	16,979	381,514	3,380,420	370,181	686,501	1,609,614

\* Average employment over whole year, includes working proprietors.

† Excludes drawings of working proprietors.

“Industrial Metals, Machines, and Conveyances” with 150,843 or 39 per cent. of the total employment in factories during 1959–60, employed considerably more persons than any other class of industry. Next in order of employment was “Clothing” with 45,260 or 12 per cent., followed by “Textiles and Textile Goods” and “Food, Drink, and Tobacco” with 41,073 and 38,830 respectively or 11 and 10 per cent. of the total.

The total value of production (added value) in 1959-60 was £686,501,000. Of this amount the metals group contributed £252,757,000 which represented 37 per cent. of the total. The food group followed with £81,612,000 or 12 per cent., and next in order were textiles with £60,602,000 or 9 per cent., chemicals, dyes, &c., with £58,467,000 or 9 per cent., paper with £52,767,000 or 8 per cent., and clothing with £52,600,000 or 8 per cent.

The next table shows the number of factories in Victoria during the years 1955-56 to 1959-60 classified according to industry :—

### VICTORIA—NUMBER OF FACTORIES IN INDUSTRIAL CLASSES

Class of Industry	1955-56	1956-57	1957-58	1958-59	1959-60
I. Treatment of Non-metalliferous Mine and Quarry Products ..	447	445	442	450	449
II. Bricks, Pottery, Glass, &c. ..	151	161	159	160	176
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease ..	344	345	350	361	367
IV. Industrial Metals, Machines, Conveyances ..	5,573	5,818	5,971	6,018	6,414
V. Precious Metals, Jewellery, Plate ..	255	273	266	265	248
VI. Textiles and Textile Goods (Not Dress) ..	738	740	748	754	811
VII. Skins and Leather (Not Clothing or Footwear) ..	293	297	289	275	272
VIII. Clothing (Except Knitted) ..	2,528	2,512	2,516	2,442	2,416
IX. Food, Drink, and Tobacco ..	2,043	1,999	2,022	2,178	2,104
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving ..	1,431	1,387	1,407	1,382	1,404
XI. Furniture of Wood, Bedding, &c. ..	691	700	704	665	664
XII. Paper, Stationery, Printing, Book-binding, &c. ..	838	864	884	892	948
XIII. Rubber ..	146	146	151	158	164
XIV. Musical Instruments ..	31	30	28	25	25
XV. Miscellaneous Products ..	455	430	411	431	446
Total, Classes I. to XV. ..	15,964	16,147	16,348	16,456	16,908
XVI. Heat, Light, and Power ..	89	85	78	71	71
GRAND TOTAL	16,053	16,232	16,426	16,527	16,979

The size classification of factories is based on the average weekly number of persons employed during the period of operation (including working proprietors). The following tables show the number of factories classified on this basis for each of the years 1950-51 to 1959-60 :—

### VICTORIA—FACTORIES CLASSIFIED ACCORDING TO NUMBER OF PERSONS EMPLOYED DURING PERIOD OF OPERATION

Year	Number of Factories Employing, on the Average, Persons Numbering—							Total
	Under 4	4	5 to 10	11 to 20	21 to 50	51 to 100	Over 100	
1950-51 .. ..	4,087	1,159	3,372	2,020	1,723	593	550	13,504
1951-52 .. ..	4,789	1,267	3,714	2,141	1,720	585	542	14,758
1952-53 .. ..	5,325	1,292	3,699	2,156	1,613	556	513	15,154
1953-54 .. ..	5,474	1,251	3,841	2,179	1,660	572	556	15,533
1954-55 .. ..	5,672	1,250	3,826	2,206	1,717	600	590	15,861
1955-56 .. ..	5,693	1,229	3,915	2,260	1,754	608	594	16,053
1956-57 .. ..	5,854	1,247	3,918	2,252	1,705	638	618	16,232
1957-58 .. ..	6,077	1,254	3,862	2,268	1,721	621	623	16,426
1958-59 .. ..	6,062	1,320	3,876	2,261	1,725	643	640	16,527
1959-60 .. ..	6,030	1,403	4,003	2,401	1,816	659	667	16,979

# VICTORIA—AVERAGE NUMBER OF PERSONS EMPLOYED ACCORDING TO SIZE OF FACTORY DURING PERIOD OF OPERATION

Year	Average Number Employed (Including Working Proprietors)—							
	Under 4	4	5 to 10	11 to 20	21 to 50	51 to 100	Over 100	Total
1950-51 .. ..	8,346	4,636	23,615	29,567	53,883	42,202	155,765	318,014
1951-52 .. ..	9,640	5,068	25,739	31,472	53,922	41,016	158,701	325,558
1952-53 .. ..	10,478	5,168	25,691	31,718	50,820	39,165	149,348	312,388
1953-54 .. ..	10,725	5,004	26,824	32,035	52,602	40,617	165,447	333,254
1954-55 .. ..	11,070	5,000	26,885	32,151	53,410	41,620	178,132	348,268
1955-56 .. ..	11,116	4,916	27,408	33,006	55,581	42,758	181,907	356,692
1956-57 .. ..	11,730	4,988	27,444	33,219	53,729	44,427	180,976	356,513
1957-58 .. ..	11,748	5,016	27,252	33,341	54,254	43,358	183,921	358,890
1958-59 .. ..	12,314	5,280	27,604	33,184	54,311	44,817	187,467	364,977
1959-60 .. ..	12,005	5,612	27,991	35,216	57,905	45,866	198,664	383,259

The relative importance of large and small factories is illustrated in the above table. In 1959-60, 7,433 factories employing four or less employees had a total employment of 17,617 persons. Expressed in terms of percentages, 44 per cent. of factories—those employing four or less persons—employed 5 per cent. of the persons engaged in factories. The most numerous of the factories with less than four persons were Motor Repair Workshops with 1,135 such Motor Repair Workshops and 2,396 persons out of a total of 2,313 establishments employing 16,545 persons; and Bakeries (including cakes and pastry) with 677 Bakeries, &c. employing 1,384 persons out of a total of 1,146 Bakeries with 6,032 persons. Other small factories worthy of note are classified under the "Other Engineering" sub-class—407 establishments with 796 persons out of a total of 902 "Other Engineering" establishments with 10,423 persons; and "Boot Repairing"—325 establishments employing 475 persons out of a total of 370 "Boot Repairing" establishments employing 852 persons.

A general indication of the geographical disposition of factories in the State is shown in the next table where secondary industry in Victoria for 1959-60 is classified according to statistical divisions :—

## VICTORIA—FACTORIES IN STATISTICAL DIVISIONS, 1959-60

Statistical Division	Factories	Employment*	Salaries and Wages Paid†	Value of—			
				Materials and Fuel Used	Output	Production	Land, Buildings, Plant and Machinery
	No.	No.	£'000	£'000	£'000	£'000	£'000
Metropolitan ..	12,068	306,236	300,494	696,629	1,240,522	543,893	484,484
Central ..	1,125	25,782	25,624	88,177	140,511	52,334	68,602
North-Central ..	380	5,111	4,171	7,578	15,636	8,058	10,218
Western ..	986	14,403	12,413	35,105	57,170	22,065	22,986
Wimmera ..	386	2,295	1,659	4,561	7,556	2,995	2,633
Mallee ..	294	2,295	1,739	3,565	6,348	2,783	5,807
Northern ..	751	10,345	8,974	39,050	54,730	15,680	20,743
North-Eastern ..	441	5,063	4,295	11,582	19,801	8,219	36,187
Gippsland ..	548	9,984	10,812	36,866	67,340	30,474	79,167
<b>Total ..</b>	<b>16,979</b>	<b>381,514</b>	<b>370,181</b>	<b>923,113</b>	<b>1,609,614</b>	<b>686,501</b>	<b>730,827</b>

\* Average employment over the whole year, includes working proprietors.

† Excludes drawings of working proprietors.

Factories in the Metropolitan Area constituted 71 per cent. of the total number in Victoria in 1959-60, 80 per cent. of the persons employed, and 79 per cent. of the value of production.

For information regarding the actual location of the statistical divisions named in the table, reference should be made to the map opposite page 120.

The number of factories and persons employed in these in each statistical division are shown in the following table :—

**VICTORIA—NUMBER OF FACTORIES AND PERSONS  
EMPLOYED IN EACH STATISTICAL DIVISION: CLASSIFIED  
ACCORDING TO SIZE OF FACTORY, 1959-60**

Size of Factory (Persons)	Statistical Division									
	Metro- politan	Central	North- Central	West- ern	Wim- mera	Mallee	North- ern	North- Eastern	Gipps- land	Total
NUMBER OF FACTORIES										
Under 5 ..	4,715	641	229	518	261	170	435	241	223	7,433
5-10 ..	2,860	236	72	263	84	73	160	99	156	4,003
11-20 ..	1,871	115	37	106	27	27	68	60	90	2,401
21-50 ..	1,497	72	30	53	10	17	54	31	52	1,816
51-100 ..	557	27	6	20	3	7	19	6	14	659
101-500 ..	496	24	5	22	1	..	13	3	10	574
501 and over	72	10	1	4	..	..	2	1	3	93
Total ..	12,068	1,125	380	986	386	294	751	441	548	16,979
NUMBER OF PERSONS EMPLOYED										
Under 5 ..	11,051	1,505	517	1,228	585	398	1,029	545	541	17,399
5-10 ..	20,069	1,623	491	1,774	562	479	1,028	689	1,065	27,780
11-20 ..	27,545	1,572	531	1,478	384	368	946	854	1,253	34,931
21-50 ..	47,622	2,342	917	1,644	286	588	1,702	952	1,487	57,540
51-100 ..	38,405	1,874	*	1,508	*	462	*	*	1,002	45,626
101-500 ..	95,554	5,530	1,683	4,260	*	..	2,864	*	2,120	113,094
501 and over	65,990	11,336	*	2,511	..	..	*	*	2,516	85,144
Total ..	306,236	25,782	5,111	14,403	2,295	2,295	10,345	5,063	9,984	381,514

\* Not available for publication.

The above table shows that in 1959-60 there were 667 factories each employing more than 101 persons with a total employment of 198,238 persons in Victoria. Of these 568 (161,544 persons) were located in the Metropolitan Area and 34 (16,866 persons) in the Central Statistical Division which includes Geelong and Berwick Shire. The balance, 65 factories (19,828 persons) were scattered over the remainder of the State, principally in the Western (26 factories and 6,771 persons) and Gippsland (13 factories and 4,636 persons) Statistical Divisions.

It should be noted that Castlemaine and Maryborough are included in the North-Central Statistical Division; Ballarat and Warrnambool in the Western Statistical Division; Bendigo and Shepparton in the

Northern Statistical Division; Wangaratta in the North-Eastern Statistical Division and Morwell and Yallourn in the Gippsland Statistical Division.

A map showing statistical divisions is shown opposite page 120.

### Employment in Factories

All persons employed in the manufacturing activities of a factory, including proprietors working in their own businesses and persons working regularly at home are counted as factory employees while those engaged in selling and distributing, such as salesmen, travellers, and carters employed on outward delivery of manufactured goods, are excluded. The grouping of occupations comprises (i) working proprietors; (ii) managerial and clerical staff including salaried managers and working directors; (iii) chemists, draftsmen, and other laboratory and research staff; (iv) foremen and overseers; (v) skilled and unskilled workers; and (vi) carters (excluding delivery), messengers, and persons working regularly at home.

The figures showing average employment in factories since 1928–29 represent the equivalent average number of persons employed, including working proprietors, over a full year of 52 weeks. This method is used for all purposes except where factories are classified according to size (see pages 564–565), where the average number of persons employed is the average over the period of operation.

The following table shows the average number of persons employed in factories in each industrial class in Victoria for the years 1955–56 to 1959–60 :—

#### VICTORIA—PERSONS EMPLOYED IN FACTORIES

Class of Industry	1955–56	1956–57	1957–58	1958–59	1959–60		
					Males	Females	Persons
I. Treatment of Non-metallic ferous Mine and Quarry Products .. .. .	6,492	6,398	6,341	6,522	6,247	317	6,564
II. Bricks, Pottery, Glass, &c. ..	5,893	5,652	5,660	5,846	5,761	699	6,460
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease .. .	16,577	16,653	16,996	17,392	17,698	3,533	16,231
IV. Industrial Metals, Machines, Conveyances .. .. .	132,270	131,299	134,221	139,115	131,515	19,328	150,843
V. Precious Metals, Jewellery, Plate .. .. .	2,562	2,605	2,469	2,150	1,628	352	1,980
VI. Textiles and Textile Goods (Not Dress) .. .. .	36,895	37,945	38,078	37,500	17,104	23,969	41,073
VII. Skins and Leather (Not Clothing or Footwear) ..	4,941	4,724	4,649	4,559	3,266	1,147	4,413
VIII. Clothing (Except Knitted)	46,889	47,093	45,764	45,783	13,504	31,756	45,260
IX. Food, Drink, and Tobacco	38,427	37,542	37,310	37,383	27,587	11,243	38,830
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving .. .. .	15,428	15,093	14,815	15,092	14,899	860	15,759
XI. Furniture of Wood, Bedding, &c. .. .. .	6,263	6,312	6,550	6,492	5,249	1,282	6,531
XII. Paper, Stationery, Printing, Bookbinding, &c. .. .	21,111	21,619	22,113	22,846	18,010	6,295	24,305
XIII. Rubber .. .. .	6,771	6,848	6,932	7,207	5,754	1,528	7,282
XIV. Musical Instruments ..	303	293	269	247	200	33	233
XV. Miscellaneous Products ..	9,827	10,313	10,357	9,863	6,952	3,815	10,767
Total, Classes I. to XV. .. .. .	350,649	350,389	352,524	357,997	270,374	106,157	376,531
XVI. Heat, Light, and Power ..	4,536	4,815	4,619	4,982	4,941	42	4,983
GRAND TOTAL .. .. .	355,185	355,204	357,143	362,979	275,315	106,199	381,514

The dominance of four classes, namely, Class IV.—Industrial Metals, Machines, and Conveyances; Class VI.—Textiles and Textile Goods (Not Dress); Class VIII.—Clothing (Except Knitted); and Class IX.—Food, Drink, and Tobacco with 72 per cent. of factory employment, should be noted.

27 per cent. of factory workers in 1959–60 were females. They exceeded males in Class VI.—Textiles and Textile Goods (Not Dress) with 58 per cent. and Class VIII.—Clothing (Except Knitted), with 70 per cent. of the Class total. Of the total females employed, 30 per cent. were in Class VIII.; 22 per cent. in Class VI.; 18 per cent. in Class IV.—Industrial Metals, Machines, and Conveyances; and 10 per cent. in Class IX.—Food, Drink, and Tobacco.

In the following table, the average number of persons employed in Victoria is classified according to the nature of their employment for the years 1950–51 to 1959–60 :—

#### VICTORIA—NATURE OF EMPLOYMENT IN FACTORIES

Year	Working Proprietors	Managerial and Clerical Staff	Chemists, Draftsmen, &c.	Foremen and Overseers	Workers in Factories (Skilled and Unskilled)	Carters (Excluding Delivery Only) and Messengers, &c.	Total
1950–51.. ..	11,526	31,089	3,745	13,343	254,555	2,534	316,792
1951–52.. ..	12,851	32,846	4,019	13,866	258,251	2,310	324,143
1952–53.. ..	13,392	32,722	4,098	13,639	244,866	2,042	310,759
1953–54.. ..	13,722	33,789	4,299	14,193	262,916	2,358	331,277
1954–55.. ..	14,053	36,262	4,590	14,862	274,741	2,140	346,648
1955–56.. ..	14,056	38,287	5,511	15,262	279,848	2,221	355,185
1956–57.. ..	13,967	40,279	5,585	15,498	277,507	2,368	355,204
1957–58.. ..	13,934	40,951	5,751	16,262	278,110	2,135	357,143
1958–59.. ..	13,704	42,960	6,152	17,264	280,772	2,127	362,979
1959–60.. ..	13,401	45,913	6,677	18,060	295,423	2,040	381,514

During the ten years reviewed in the previous table, the proportion of skilled and unskilled workers in factories declined from 80 per cent. to 77 per cent., managerial and clerical staffs increased from 10 per cent. to 12 per cent., chemists, draftsmen, &c., increased from 1 per cent. to 2 per cent., and foremen increased from 4 per cent. to 5 per cent.

In 1959–60 there was an average of 381,514 persons employed in factories and of these 3·5 per cent. were working proprietors; 13·8 per cent. comprised managerial, clerical, and professional staff; and the balance, 82·7 per cent., consisted of persons engaged as foremen, workers in the processes of manufacture, sorting, and packing.

The following table shows the nature of employment in factories in 1959-60, according to the class of industry:—

VICTORIA—NATURE OF EMPLOYMENT IN FACTORIES BY CLASSES OF INDUSTRY, 1959-60

Class of Industry	Working Proprietors	Managerial and Clerical Staff	Chemists, Draftsmen, &c.	Foremen and Overseers	Workers in Factories (Skilled and Unskilled)	Carters and Messengers	Total
I. Treatment of Non-metallic Mine and Quarry Products ..	280	747	98	392	5,024	23	6,564
II. Bricks, Pottery, Glass, &c. ..	82	548	42	249	5,532	7	6,460
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease ..	112	2,679	1,153	810	11,321	156	16,231
IV. Industrial Metals, Machines, Conveyances ..	4,882	21,377	3,702	7,399	113,176	307	150,843
V. Precious Metals, Jewellery, Plate ..	227	198	7	98	1,449	1	1,980
VI. Textiles and Textile Goods (Not Dress) ..	594	3,595	250	1,941	34,559	134	41,073
VII. Skins and Leather (Not Clothing or Footwear) ..	265	398	22	230	3,476	22	4,413
VIII. Clothing (Except Knitted) ..	2,397	2,755	22	1,489	38,371	226	45,260
IX. Food, Drink, and Tobacco ..	1,908	4,920	499	1,956	28,709	838	38,830
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving ..	1,039	1,687	36	772	12,113	112	15,759
XI. Furniture of Wood, Bedding, &c. ..	596	691	4	300	4,908	32	6,531
XII. Paper, Stationery, Printing, Bookbinding, &c. ..	659	3,397	236	1,087	18,821	105	24,305
XIII. Rubber ..	68	1,073	194	413	5,510	24	7,282
XIV. Musical Instruments ..	10	34	2	8	179	..	233
XV. Miscellaneous Products ..	266	1,490	268	611	8,095	37	10,767
Total, Classes I. to XV. ..	13,385	45,589	6,535	17,755	291,243	2,024	376,531
XVI. Heat, Light, and Power ..	16	324	142	305	4,180	16	4,983
GRAND TOTAL ..	13,401	45,913	6,677	18,060	295,423	2,040	381,514

It should be noted that while workers (skilled or unskilled) constitute 77 per cent. of the total numbers employed in factories, the percentage varies from 72 per cent. in Class III. to 86 per cent. in Class II. Class III. also has the highest percentage of managerial and clerical and research workers, 22 per cent., compared with the Victorian average of 14 per cent.

Where small factories predominate, there is usually a higher proportion of working proprietors than on the average and, as a working proprietor does much, or all, of the managerial and clerical work, a smaller than average managerial and clerical staff. This is particularly evident in Class V.—Precious Metals and Jewellery, where working proprietors comprise 12 per cent. of the total number employed; Class X.—Sawmills, Joinery, &c., 7 per cent.; and Class XI.—Furniture of Wood, Bedding, &c., 9 per cent. The average for Victoria is 4 per cent.

The following table shows the age distribution of male and female factory employees on the last pay day in June in each of the years 1951 to 1960:—

**VICTORIA—DISTRIBUTION OF EMPLOYEES ACCORDING  
TO AGE  
(Excluding Working Proprietors)**

Last Pay Day in June—	Males				Females			
	Under 16 Years	16 and under 21 Years	21 Years and over	Total	Under 16 Years	16 and under 21 Years	21 Years and over	Total
1951.. ..	2,790	16,274	198,053	217,117	2,139	14,550	75,508	92,197
1952.. ..	2,981	16,417	199,303	218,701	1,911	13,051	65,530	80,492
1953.. ..	2,972	17,890	200,533	221,395	2,432	13,546	67,056	83,034
1954.. ..	3,093	18,778	211,311	233,182	2,527	14,180	74,260	90,967
1955.. ..	2,908	19,417	220,582	242,907	2,381	14,316	76,863	93,560
1956.. ..	2,888	19,815	223,462	246,165	2,338	14,549	78,054	94,941
1957.. ..	2,966	20,446	222,402	245,814	2,480	14,571	77,282	94,333
1958.. ..	2,705	21,584	223,776	248,065	2,408	14,900	77,392	94,700
1959.. ..	2,595	22,203	229,285	254,083	2,535	15,774	79,213	97,522
1960.. ..	2,573	23,013	242,436	268,022	2,664	16,449	87,003	106,116

**VICTORIA—DISTRIBUTION OF EMPLOYEES ACCORDING  
TO AGE AT JUNE, 1960  
(Excluding Working Proprietors)**

Age Group				Males	Females	Persons
Under 16 Years	..	..	..	2,573	2,664	5,237
16 Years	..	..	..	3,833	3,089	6,922
17 Years	..	..	..	4,534	3,367	7,901
18 Years	..	..	..	5,083	3,417	8,500
19 Years	..	..	..	4,893	3,332	8,225
20 Years	..	..	..	4,670	3,244	7,914
21 Years and over	..	..	..	242,436	87,003	329,439
Total	..	..	..	268,022	106,116	374,138

The numbers of males and females employed in factories, and the proportions of the mean male and female population working in factories in 1959-60 and earlier years are shown in the following table :—

**VICTORIA—EMPLOYMENT OF MALES AND FEMALES IN  
FACTORIES**

Year Ended 30th June—	Males		Females		Total	
	Number	Average per 10,000 of Male Population	Number	Average per 10,000 of Female Population	Number	Average per 10,000 of Total Population
1919 ..	81,357	1,188	40,992	550	122,349	855
1929 ..	104,648	1,195	51,920	586	156,568	889
1939 ..	136,218	1,470	65,613	692	201,831	1,076
1949 ..	208,184	1,996	83,822	781	292,006	1,380
1955 ..	251,675	2,012	94,973	767	346,648	1,393
1956 ..	258,006	1,995	97,179	764	355,185	1,385
1957 ..	258,119	1,937	97,085	743	355,204	1,345
1958 ..	259,404	1,901	97,739	728	357,143	1,319
1959 ..	263,847	1,888	99,132	720	362,979	1,308
1960 ..	275,315	1,918	106,199	750	381,514	1,338

The numbers of females employed in each industrial class and in certain significant sub-classes, and the percentage that such female employment bears to total class or sub-class employment, are shown in the following table :—

## VICTORIA—FEMALE EMPLOYMENT IN FACTORIES

Class of Industry	Females Employed					
	Number			Percentage of Total Employment in Each Class of Industry		
	1957-58	1958-59	1959-60	1957-58	1958-59	1959-60
I. Treatment of Non-metalliferous Mine and Quarry Products ..	353	323	317	5.6	5.0	4.8
II. Bricks, Pottery, Glass, &c. ..	505	553	699	8.9	9.5	10.8
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease ..	3,978	3,983	3,533	23.4	22.9	21.8
IV. Industrial Metals, Machines, Conveyances—	15,446	16,732	19,328	11.5	12.0	12.8
Plant Equipment and Machinery	2,609	2,548	3,107	10.7	10.3	11.2
Electrical Machinery, Cables, and Apparatus ..	3,055	3,499	3,878	25.5	25.5	25.8
Sheet Metal Working ..	1,737	2,069	2,290	20.4	20.5	21.2
Wireless and Amplifying Apparatus ..	1,400	1,459	1,545	40.9	40.2	40.3
V. Precious Metals, Jewellery, Plate ..	408	364	352	16.5	16.9	17.8
VI. Textiles and Textile Goods (Not Dress)—	21,289	21,314	23,969	55.9	56.8	58.4
Cotton Spinning and Weaving	1,958	2,021	2,053	50.5	51.9	52.7
Wool-Carding, Spinning, Weaving	6,430	5,916	6,399	53.3	53.8	54.7
Hosiery and Other Knitted Goods	10,483	10,790	12,411	69.7	70.6	73.3
VII. Skins and Leather (Not Clothing or Footwear) ..	1,055	1,090	1,147	22.7	23.9	26.0
VIII. Clothing (Except Knitted)—	31,780	31,755	31,756	69.4	69.4	70.2
Tailoring and Ready-Made Clothing ..	6,914	6,963	7,592	70.7	86.1	73.0
Dressmaking, Hemstitching ..	7,528	7,280	7,535	86.1	88.5	87.1
Boots and Shoes (Not Rubber)	5,721	5,769	5,896	51.6	51.4	53.4
Dyeworks and Cleaning, &c. ..	2,054	1,970	1,599	53.9	52.7	50.0
IX. Food, Drink, and Tobacco—	10,329	10,395	11,243	27.7	27.8	29.0
Bakeries (Including Cakes and Pastry) ..	1,287	1,458	1,510	23.5	24.1	25.1
Confectionery (Including Chocolate and Icing Sugar)	1,607	1,673	1,700	52.8	54.7	54.8
Jam, Fruit, and Vegetable Canning	1,817	1,549	1,723	43.1	40.7	42.0
Tobacco, Cigars, Cigarettes ..	959	943	976	49.2	49.2	47.4
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving ..	759	823	860	5.1	5.5	5.5
XI. Furniture of Wood, Bedding, &c. ..	1,078	1,116	1,282	16.5	17.2	19.6
XII. Paper, Stationery, Printing, Book-binding, &c. ..	5,504	5,712	6,295	24.9	25.0	25.9
XIII. Rubber ..	1,409	1,469	1,528	20.3	20.4	21.0
XIV. Musical Instruments ..	41	38	33	15.2	15.4	14.2
XV. Miscellaneous Products ..	3,769	3,431	3,815	36.4	34.8	35.4
XVI. Heat, Light, and Power ..	36	34	42	0.8	0.7	0.8
Total Classes Only ..	97,739	99,132	106,199	27.4	27.3	27.8

In Class XVI.—Heat, Light and Power, the percentage of females to total persons employed is at its lowest, 0.8 per cent. In Class VIII.—Clothing (Except Knitted) females predominate and comprise 70 per cent. of the total number of persons employed. Within Class VIII., in the Dressmaking sub-class, nine out of every ten persons engaged are females. In Class IV.—Industrial Metals, Machines, and Conveyances, females constitute 13 per cent. of the persons employed. In 1938-39 only 6 per cent. of the persons employed in Class IV. were females.

*Child Labour in Factories*

The Labour and Industry Act of Victoria debarb the employment of female children under the age of fifteen years unless special permission is granted by the Chief Inspector of Factories on the grounds of poverty or hardship.

The Victorian Education Act makes daily attendance at school compulsory between the ages of six and fourteen years.

These provisos contribute to the very low incidence of child labour in this State.

**Salaries, Wages, and Other Costs***Salaries and Wages*

The next table gives comprehensive information regarding salaries and wages paid in the various classes of industry in Victoria in 1959-60. Amounts paid to managers, clerical staff, chemists, and draftsmen, &c., are shown separately from those paid to foremen, overseers, workers in the factory, &c. There is also a dissection within these categories of the amounts paid to male and female employees.

It should be noted that in all tables of salaries and wages paid the amounts drawn by working proprietors are excluded.

**VICTORIA—SALARIES AND WAGES PAID IN FACTORIES,  
1959-60**

(Excludes Drawings of Working Proprietors)  
(£'000)

Class of Industry	Managers, Clerical Staff, Chemists, Draftsmen, &c.		All Other Employees		Total		
	Males	Females	Males	Females	Males	Females	Persons
I. Treatment of Non-metalliferous Mine and Quarry Products ..	938	155	6,189	50	7,127	205	7,332
II. Bricks, Pottery, Glass, &c. ..	684	120	5,653	289	6,337	409	6,746
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease ..	4,463	843	11,519	1,541	15,982	2,384	18,366
IV. Industrial Metals, Machines, Conveyances ..	26,788	5,030	118,504	7,504	145,292	12,534	157,826
V. Precious Metals, Jewellery, Plate ..	213	59	1,393	175	1,606	234	1,840
VI. Textiles and Textile Goods (Not Dress) ..	3,219	1,403	16,178	14,036	19,397	15,439	34,836
VII. Skins and Leather (Not Clothing or Footwear) ..	476	101	2,771	596	3,247	697	3,944
VIII. Clothing (Except Knitted) ..	2,254	1,162	10,530	18,610	12,784	19,772	32,556
IX. Food, Drink, and Tobacco ..	5,029	1,527	23,939	5,569	28,968	7,096	36,064
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving ..	1,771	371	12,195	149	13,966	520	14,486
XI. Furniture of Wood, Bedding, &c. ..	650	211	4,254	540	4,904	751	5,655
XII. Paper, Stationery, Printing, Bookbinding, &c. ..	3,740	1,027	18,331	2,989	22,071	4,016	26,087

VICTORIA—SALARIES AND WAGES PAID IN FACTORIES  
1959-60—*continued*  
(Excludes Drawings of Working Proprietors)  
(£'000)

Class of Industry	Managers, Clerical Staff, Chemists, Draftsmen, &c.		All Other Employees		Total		
	Males	Females	Males	Females	Males	Females	Persons
XIII. Rubber .. ..	1,221	275	5,836	743	7,057	1,018	8,075
XIV. Musical Instruments ..	29	8	168	13	197	21	218
XV. Miscellaneous Products ..	1,659	516	6,110	1,858	7,769	2,374	10,143
Total, Classes I. to XV. ..	53,134	12,808	243,570	54,662	296,704	67,470	364,174
XVI. Heat, Light, and Power ..	659	20	5,315	13	5,974	33	6,007
GRAND TOTAL ..	53,793	12,828	248,885	54,675	302,678	67,503	370,181

Of the total amount of salaries and wages paid in Victoria in 1959-60—£370,181,000—the Industrial Metals, &c., group was responsible for £157,826,000 or 43 per cent., Food, Drink, &c., £36,064,000 or 10 per cent., and Clothing, &c., £32,556,000 or 9 per cent.

The total amount of salaries and wages paid in industry in Victoria in each of the years 1950-51 to 1959-60 is shown below under similar headings to those in the preceding table. The amount of salaries paid to each employee is also shown.

VICTORIA—SALARIES AND WAGES PAID IN FACTORIES  
(Excludes Drawings by Working Proprietors)

Year	Salaries and Wages Paid to—				Total Salaries and Wages Paid to—		
	Managers, Clerical Staff, Chemists, Draftsmen, &c.		All Other Employees				
	Males	Females	Males	Females	Males	Females	Persons
TOTAL AMOUNT PAID (£'000)							
1950-51 .. ..	18,505	4,559	112,418	27,725	130,923	32,284	163,207
1951-52 .. ..	23,286	5,833	140,402	33,065	163,688	38,898	202,586
1952-53 .. ..	25,725	6,343	146,172	32,638	171,897	38,981	210,878
1953-54 .. ..	27,875	6,877	162,698	38,586	190,573	45,463	236,036
1954-55 .. ..	31,735	7,836	181,642	41,537	213,377	49,373	262,750
1955-56 .. ..	37,312	8,946	197,472	43,214	234,784	52,160	286,944
1956-57 .. ..	40,159	9,963	201,428	45,058	241,587	55,021	296,608
1957-58 .. ..	43,363	10,347	209,979	46,851	253,342	57,198	310,540
1958-59 .. ..	46,587	11,190	219,028	47,531	265,615	58,721	324,336
1959-60 .. ..	53,793	12,828	248,885	54,675	302,678	67,503	370,181
AVERAGE PER EMPLOYEE (£)							
1950-51 .. ..	817	374	586	353	610	356	535
1951-52 .. ..	962	461	709	433	737	437	651
1952-53 .. ..	1,052	513	760	478	793	483	679
1953-54 .. ..	1,108	532	800	507	834	511	713
1954-55 .. ..	1,178	563	855	524	891	530	790
1955-56 .. ..	1,292	570	910	538	955	547	841
1956-57 .. ..	1,326	640	934	566	982	578	869
1957-58 .. ..	1,405	654	969	586	1,023	598	905
1958-59 .. ..	1,439	668	996	593	1,053	606	929
1959-60 .. ..	1,177	632	1,084	637	1,099	636	970

*Power, Fuel, and Light Used*

The following table shows the cost of power, fuel, and light used during the five years 1955-56 to 1959-60 :—

**VICTORIA—COST OF POWER, FUEL, AND LIGHT USED IN  
FACTORIES**

(£'000)

Class of Industry	1955-56	1956-57	1957-58	1958-59	1959-60
I. Treatment of Non-metalliferous Mine and Quarry Products .. ..	1,785	1,991	2,028	2,236	2,710
II. Bricks, Pottery, Glass, &c. .. ..	1,997	1,961	1,974	2,043	2,215
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease .. ..	3,530	6,196	6,355	6,384	6,642
IV. Industrial Metals, Machines, Conveyances .. ..	5,525	6,212	6,963	7,742	8,950
V. Precious Metals, Jewellery, Plate .. ..	112	136	142	143	146
VI. Textiles and Textile Goods (Not Dress) .. ..	1,848	2,158	2,367	2,424	2,668
VII. Skins and Leather (Not Clothing or Footwear) .. ..	411	469	469	495	457
VIII. Clothing (Except Knitted) .. ..	786	933	905	967	937
IX. Food, Drink, and Tobacco .. ..	5,208	5,651	5,747	5,951	6,126
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving .. ..	607	649	663	782	850
XI. Furniture of Wood, Bedding, &c. .. ..	93	111	121	133	136
XII. Paper, Stationery, Printing, Bookbinding, &c. .. ..	1,502	1,705	1,792	1,927	2,141
XIII. Rubber .. ..	888	983	1,088	1,166	1,265
XIV. Musical Instruments .. ..	12	13	11	11	9
XV. Miscellaneous Products .. ..	421	506	568	606	913
Total Classes I. to XV. .. ..	24,725	29,674	31,193	33,010	36,165
XVI. Heat, Light, and Power .. ..	9,873	10,707	11,569	10,368	10,975
GRAND TOTAL .. ..	34,598	40,381	42,762	43,378	47,140

The next table gives in detail for each of the years 1955-56 to 1959-60 information dealing with the cost of each type of fuel used. The cost of water and lubricating oil is also included.

**VICTORIA—COST OF ITEMS OF POWER, FUEL, AND LIGHT  
USED IN FACTORIES**

(£'000)

Commodity	1955-56	1956-57	1957-58	1958-59	1959-60
Coal—					
Black .. ..	2,713	2,738	2,834	3,009	2,678
Brown .. ..	7,025	7,540	7,882	7,582	7,805
Brown Coal Briquettes .. ..	2,347	1,696	1,737	1,464	2,356
Coke .. ..	1,137	1,121	1,012	842	977
Wood .. ..	680	637	563	560	609
Fuel Oil .. ..	7,704	11,616	12,201	11,272	11,544
Tar (Fuel) .. ..	238	257	255	164	179
Electricity .. ..	9,122	10,841	11,970	13,910	15,827
Gas .. ..	911	986	1,082	1,120	1,848
Other (Charcoal, &c.) .. ..	789	833	878	1,061	648
Water .. ..	1,172	1,314	1,485	1,543	1,725
Lubricating Oils .. ..	760	802	863	851	944
Total .. ..	34,598	40,381	42,762	43,378	47,140

Over the five years shown in the above table, the cost of fuel oil, electricity, and gas, respectively, showed the largest proportionate increases in that order. In 1959-60 electricity, fuel oil, and brown coal represented 34, 24, and 17 per cent. respectively of the total cost of power, fuel, and light.

Particulars of the quantities of the various fuels used in factories over the five year period 1955-56 to 1959-60 are given below :—

### VICTORIA—COST OF MATERIALS USED IN FACTORIES

Commodity	Unit of Quantity	1955-56	1956-57	1957-58	1958-59	1959-60
Coal—						
Black .. ..	'000 tons	411	408	453	483	427
Brown .. ..	'000 tons	8,551	9,058	9,127	10,576	11,746
Brown Coal						
Briquettes ..	'000 tons	487	347	357	305	510
Coke .. ..	'000 tons	142	131	111	86	89
Wood .. ..	'000 tons	377	324	266	275	352
Fuel Oil ..	'000 gall.	132,901	212,291	222,813	204,068	218,670
Tar Fuel.. ..	'000 gall.	4,893	4,985	4,550	2,996	3,412

### Cost of Materials Used

The cost of materials used in factories is shown by classes for the last five years in the next table. "Materials Used" include the value of containers, &c., the cost of tools replaced, and repairs to plant.

### VICTORIA—COST OF MATERIALS USED IN FACTORIES (£'000)

Class of Industry	1955-56	1956-57	1957-58	1958-59	1959-60
I. Treatment of Non-metalliferous Mine and Quarry Products ..	10,984	11,639	12,370	13,800	15,671
II. Bricks, Pottery, Glass, &c. ..	5,216	5,054	5,102	5,254	7,055
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease ..	77,018	90,825	98,261	100,164	105,314
IV. Industrial Metals, Machines, Conveyances ..	182,134	175,401	202,772	213,429	249,955
V. Precious Metals, Jewellery, Plate..	2,660	3,156	2,871	1,984	1,995
VI. Textiles and Textile Goods (Not Dress) ..	61,582	71,068	77,985	67,531	83,004
VII. Skins and Leather (Not Clothing or Footwear) ..	11,092	12,570	11,129	10,649	12,089
VIII. Clothing (Except Knitted) ..	47,467	47,648	48,160	49,765	53,113
IX. Food, Drink, and Tobacco ..	165,265	174,978	183,714	182,920	194,821
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving ..	24,671	24,513	26,946	27,430	31,647
XI. Furniture of Wood, Bedding, &c. ..	8,634	8,974	10,123	10,133	11,632
XII. Paper, Stationery, Printing, Book-binding, &c. ..	38,803	42,933	46,425	51,225	58,057
XIII. Rubber ..	17,457	15,455	17,415	17,876	22,128
XIV. Musical Instruments ..	262	305	251	226	199
XV. Miscellaneous Products ..	15,378	16,815	18,556	19,930	23,121
Total, Classes I. to XV. ..	668,623	701,334	762,080	772,316	869,801
XVI. Heat, Light, and Power ..	6,223	6,395	6,379	6,400	6,172
GRAND TOTAL .. ..	674,846	707,729	768,459	778,716	875,973

### Value of Output and Production

Value of factory output by classes of industry in each of the years 1955-56 to 1959-60 is shown in the following table :—

#### VICTORIA—VALUE OF FACTORY OUTPUT (£'000)

Class of Industry	1955-56	1956-57	1957-58	1958-59	1959-60
I. Treatment of Non-metalliferous Mine and Quarry Products ..	23,176	24,734	26,220	29,341	34,055
II. Bricks, Pottery, Glass, &c. ..	15,075	14,750	15,844	16,946	21,149
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease ..	120,507	144,750	153,180	161,712	170,424
IV. Industrial Metals, Machines, Conveyances ..	361,813	361,874	408,199	435,371	511,662
V. Precious Metals, Jewellery, Plate ..	6,148	6,314	6,436	5,290	5,268
VI. Textiles and Textile Goods (Not Dress) ..	108,719	123,493	130,872	123,508	146,274
VII. Skins and Leather (Not Clothing or Footwear) ..	17,942	19,007	17,607	17,344	18,971
VIII. Clothing (Except Knitted) ..	93,070	95,936	97,411	100,813	106,650
IX. Food, Drink, and Tobacco ..	230,694	245,863	260,893	259,773	282,559
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving ..	45,143	45,216	49,640	50,860	57,492
XI. Furniture of Wood, Bedding, &c. ..	16,648	17,224	19,308	19,837	21,973
XII. Paper, Stationery, Printing, Book-binding, &c. ..	72,606	80,931	90,058	99,012	112,965
XIII. Rubber ..	29,771	29,035	31,959	34,582	38,010
XIV. Musical Instruments ..	651	651	699	596	533
XV. Miscellaneous Products ..	29,132	32,643	35,107	37,440	42,699
Total, Classes I. to XV. ..	1,171,095	1,242,421	1,343,433	1,392,425	1,570,684
XVI. Heat, Light, and Power ..	30,297	33,720	34,264	38,616	38,930
GRAND TOTAL ..	1,201,392	1,276,141	1,377,697	1,431,041	1,609,614

In the next table the value of production in Victoria is given according to the various classes of industry for each of the last five years :—

#### VICTORIA—VALUE OF PRODUCTION OF FACTORIES (£'000)

Class of Industry	1955-56	1956-57	1957-58	1958-59	1959-60
I. Treatment of Non-metalliferous Mine and Quarry Products ..	10,407	11,104	11,822	13,305	15,674
II. Bricks, Pottery, Glass, &c. ..	7,862	7,735	8,768	9,649	11,879
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease ..	39,959	47,729	48,563	55,164	58,467
IV. Industrial Metals, Machines, Conveyances ..	174,154	180,261	198,464	214,200	252,757
V. Precious Metals, Jewellery, Plate ..	3,376	3,022	3,423	3,163	3,127
VI. Textiles and Textile Goods (Not Dress) ..	45,289	50,267	50,520	53,553	60,602
VII. Skins and Leather (Not Clothing or Footwear) ..	6,439	5,968	6,009	6,200	6,425
VIII. Clothing (Except Knitted) ..	44,817	47,355	48,347	50,081	52,600
IX. Food, Drink, and Tobacco ..	60,221	65,234	71,433	70,902	81,612
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving ..	19,865	20,054	22,031	22,648	24,995
XI. Furniture of Wood, Bedding, &c. ..	7,921	8,139	9,063	9,571	10,205
XII. Paper, Stationery, Printing, Book-binding, &c. ..	32,301	36,293	41,841	45,860	52,767
XIII. Rubber ..	11,426	12,597	13,457	15,540	14,617
XIV. Musical Instruments ..	377	333	437	359	325
XV. Miscellaneous Products ..	13,333	15,322	15,983	16,904	18,665
Total, Classes I. to XV. ..	477,747	511,413	550,161	587,099	664,717
XVI. Heat, Light, and Power ..	14,201	16,618	16,315	21,848	21,784
GRAND TOTAL ..	491,948	528,031	566,476	608,947	686,501

Value of production—the value added to raw materials by the process of manufacture—and not the value of output, is used in measuring the relative importance of various industries or the value of the manufacturing industries as a whole. A definition of “value of production” will be found on page 549.

### Relation of Costs to Output and Production

Certain costs of production, the value of output, and the balance available for profit, interest, rent, taxation, and depreciation, &c., in each class of manufacturing industry during the year 1959–60 are given in the following tables :—

#### VICTORIA—FACTORY COSTS AND OUTPUT, 1959–60 (£'000)

Class of Industry	Costs of—			Balance between Value of Output and Specified Costs‡	Value of Output
	Materials Used*	Fuel, Light, and Power Used†	Salaries and Wages Paid		
I. Treatment of Non-metalliferous Mine and Quarry Products .. ..	15,671	2,710	7,332	8,342	34,055
II. Bricks, Pottery, Glass, &c. ..	7,055	2,215	6,746	5,133	21,149
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease .. ..	105,314	6,643	18,366	40,101	170,424
IV. Industrial Metals, Machines, Conveyances .. ..	249,955	8,950	157,826	94,931	511,662
V. Precious Metals, Jewellery, Plate ..	1,995	146	1,840	1,287	5,268
VI. Textile and Textile Goods (Not Dress)	83,004	2,668	34,836	25,766	146,274
VII. Skins and Leather (Not Clothing or Footwear) .. ..	12,089	457	3,944	2,481	18,971
VIII. Clothing (Except Knitted) ..	53,113	937	32,556	20,044	106,650
IX. Food, Drink, and Tobacco ..	194,821	6,126	36,064	45,548	282,559
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving .. ..	31,647	850	14,486	10,509	57,492
XI. Furniture of Wood, Bedding, &c. ..	11,632	136	5,655	4,550	21,973
XII. Paper, Stationery, Printing, Book-binding, &c. .. ..	58,057	2,141	26,087	26,680	112,965
XIII. Rubber .. ..	22,128	1,265	8,075	6,542	38,010
XIV. Musical Instruments .. ..	199	9	218	107	533
XV. Miscellaneous Products .. ..	23,121	913	10,143	8,522	42,699
Total, Classes I. to XV. ..	869,801	36,166	364,174	300,543	1,570,684
XVI. Heat, Light, and Power .. ..	6,172	10,974	6,007	15,777	38,930
GRAND TOTAL .. ..	875,973	47,140	370,181	316,320	1,609,614

\* Includes containers, tools replaced, and material used in repairs to plant.

† Includes cost of lubricants and water.

‡ Balance available to provide for all other costs and overhead expenses such as rent, interest, insurance, pay-roll tax, income tax, depreciation, &c., as well as drawings by working proprietors and profit.

# VICTORIA—PROPORTIONATE VALUE OF COSTS, ETC., TO PRODUCTION IN FACTORIES, 1959-60

(Per Cent.)

Class of Industry	Proportion of Costs, &c., to Total Value of Output				
	Materials Used*	Fuel, Light, and Power Used†	Salaries and Wages Paid	Balance between Value of Output and Specified Costs‡	Total
I. Treatment of Non-metalliferous Mine and Quarry Products .. ..	46·0	8·0	21·5	24·5	100·0
II. Bricks, Pottery, Glass, &c. ..	33·3	10·5	31·9	24·3	100·0
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease .. ..	61·8	3·9	10·8	23·5	100·0
IV. Industrial Metals, Machines, Conveyances .. ..	48·9	1·7	30·8	18·6	100·0
V. Precious Metals, Jewellery, Plate ..	37·9	2·8	34·9	24·4	100·0
VI. Textiles and Textile Goods (Not Dress) .. ..	56·8	1·8	23·8	17·6	100·0
VII. Skins and Leather (Not Clothing or Footwear) .. ..	63·7	2·4	20·8	13·1	100·0
VIII. Clothing (Except Knitted) ..	49·8	0·9	30·5	18·8	100·0
IX. Food, Drink, and Tobacco ..	68·9	2·2	12·8	16·1	100·0
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving ..	55·0	1·5	25·2	18·3	100·0
XI. Furniture of Wood, Bedding, &c.	53·0	0·6	25·7	20·7	100·0
XII. Paper, Stationery, Printing, Book-binding, &c. .. ..	51·4	1·9	23·1	23·6	100·0
XIII. Rubber .. ..	58·2	3·3	21·3	17·2	100·0
XIV. Musical Instruments .. ..	37·3	1·7	40·9	20·1	100·0
XV. Miscellaneous Products .. ..	54·1	2·1	23·8	20·0	100·0
Total, Classes I. to XV. ..	55·4	2·3	23·2	19·1	100·0
XVI. Heat, Light, and Power .. ..	15·9	28·2	15·4	40·5	100·0
GRAND TOTAL .. ..	54·4	2·9	23·0	19·7	100·0

For footnotes see page 577.

There are considerable variations in the proportions which the cost of materials and the expenditure on wages bear to the value of the output in the different classes of industries. These are, of course, due to the difference in the treatment required to convert the materials to their final form. Thus, in Class II., the sum paid in wages represents 31·9 per cent. and the cost of raw materials 33·3 per cent. of the values of the finished articles, whilst, in Class IX., the expenditure on wages amounts to 12·8 per cent. and that on raw materials to 68·9 per cent. of the value of the output.

In the next table specified costs of production, the value of the output of factories, and the balance available for profit and miscellaneous expenses are compared for each of the years 1950-51 to 1959-60 :—

**VICTORIA—SPECIFIED COSTS OF PRODUCTION, ETC., AND  
VALUE OF OUTPUT OF FACTORIES**

(£'000)

Year Ended 30th June—	Specified Costs of Production			Balance between Value of Output and Specified Costs‡	Total Value of Output
	Materials Used*	Fuel, Light, and Power Used†	Salaries and Wages		
1951.. ..	382,002	17,371	163,207	112,453	675,033
1952.. ..	477,617	21,990	202,586	131,774	833,967
1953.. ..	476,487	25,626	210,878	147,155	860,146
1954.. ..	548,111	29,080	236,036	172,278	985,505
1955.. ..	616,665	31,768	262,750	189,473	1,100,656
1956.. ..	674,846	34,598	286,944	205,004	1,201,392
1957.. ..	707,729	40,381	296,608	231,423	1,276,141
1958.. ..	768,459	42,762	310,540	255,936	1,377,697
1959.. ..	778,716	43,378	324,336	284,611	1,431,041
1960.. ..	875,973	47,140	370,181	316,320	1,609,614

For footnotes see page 577.

In the following table these figures are converted to their respective percentages of the value of output :—

**VICTORIA—PERCENTAGE OF SPECIFIED COSTS OF  
PRODUCTION, ETC., TO VALUE OF OUTPUT OF FACTORIES**

(Per Cent.)

Year Ended 30th June—	Specified Costs of Production			Balance between Value of Output and Specified Costs‡	Total
	Materials Used*	Fuel, Light, and Power Used†	Salaries and Wages		
1951.. ..	56.6	2.6	24.2	16.6	100.0
1952.. ..	57.3	2.6	24.3	15.8	100.0
1953.. ..	55.4	3.0	24.5	17.1	100.0
1954.. ..	55.6	2.9	24.0	17.5	100.0
1955.. ..	56.0	2.9	23.9	17.2	100.0
1956.. ..	56.2	2.9	23.9	17.0	100.0
1957.. ..	55.5	3.2	23.2	18.1	100.0
1958.. ..	55.8	3.1	22.5	18.6	100.0
1959.. ..	54.4	3.0	22.7	19.9	100.0
1960.. ..	54.4	2.9	23.0	19.7	100.0

For footnotes see page 577.

### Land, Buildings, Plant, and Machinery

The following statement shows the value of land and buildings used in connexion with the various classes of manufacturing industries for the years 1955-56 to 1959-60 :—

#### VICTORIA—FACTORIES : VALUE OF LAND AND BUILDINGS (£'000)

Class of Industry	1955-56	1956-57	1957-58	1958-59	1959-60
I. Treatment of Non-metalliferous Mine and Quarry Products .. ..	3,309	3,937	4,365	5,212	9,743
II. Bricks, Pottery, Glass, &c. ..	2,624	3,401	3,603	4,051	5,018
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease .. ..	21,737	24,964	28,851	29,873	28,094
IV. Industrial Metals, Machines, Conveyances .. ..	70,716	85,848	95,603	106,642	126,411
V. Precious Metals, Jewellery, Plate ..	1,538	1,704	1,721	1,581	1 551
VI. Textiles and Textile Goods (Not Dress) .. ..	18,079	20,803	22,475	26,671	28,657
VII. Skins and Leather (Not Clothing or Footwear) .. ..	2,468	2,859	2,806	3,001	3,821
VIII. Clothing (Except Knitted) ..	13,239	15,329	16,516	18,609	20,391
IX. Food, Drink, and Tobacco ..	35,345	39,343	43,318	46,878	52,057
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving .. ..	6,154	6,976	7,590	8,379	10,482
XI. Furniture of Wood, Bedding, &c. ..	3,367	3,709	4,490	4,818	5,306
XII. Paper, Stationery, Printing, Book-binding, &c. .. ..	14,462	15,578	17,362	19,696	23,801
XIII. Rubber .. ..	3,570	3,927	4,680	4,979	5,171
XIV. Musical Instruments .. ..	166	150	183	229	283
XV. Miscellaneous Products .. ..	4,644	5,372	5,851	6,378	8,734
Total, Classes I. to XV. ..	201,418	233,900	259,414	286,997	329,520
XVI. Heat, Light, and Power .. ..	13,503	18,124	20,793	26,233	24,215
GRAND TOTAL .. ..	214,921	252,024	280,207	313,230	353,735

The values recorded in the above table and in the table which follows are generally the values shown in the books of the individual firms after allowance has been made for depreciation, but they include estimates of the capital value of premises and plant rented. The totals shown in the tables consequently do not represent the actual amount of capital invested in industry.

Where land and buildings, &c., and plant and machinery, &c., are rented by the occupiers of factories, their capital value has been computed by capitalizing the rent paid at fifteen years' and ten years' purchase respectively.

In the following table the depreciated book values of machinery and plant used in the various classes of manufacturing industries is shown for each of the years 1955-56 to 1959-60 :—

**VICTORIA—FACTORIES : VALUE OF PLANT AND MACHINERY**  
(£'000)

Class of Industry	1955-56	1956-57	1957-58	1958-59	1959-60
I. Treatment of Non-metalliferous Mine and Quarry Products ..	4,586	6,174	6,569	8,315	16,976
II. Bricks, Pottery, Glass, &c. ..	2,854	3,054	3,005	3,286	3,888
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease ..	46,930	48,540	51,435	58,002	54,094
IV. Industrial Metals, Machines, Conveyances ..	53,270	62,505	69,561	83,490	89,797
V. Precious Metals, Jewellery, Plate ..	544	625	588	540	490
VI. Textiles and Textile Goods (Not Dress) ..	17,951	17,948	19,420	21,696	23,278
VII. Skins and Leather (Not Clothing or Footwear) ..	1,469	1,479	1,407	1,490	1,476
VIII. Clothing (Except Knitted) ..	6,165	7,234	6,850	7,501	7,840
IX. Food, Drink, and Tobacco ..	32,253	35,587	38,525	39,848	43,938
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving ..	5,228	5,401	5,237	6,684	7,000
XI. Furniture of Wood, Bedding, &c. ..	1,056	1,129	1,189	1,271	1,276
XII. Paper, Stationery, Printing, Book-binding, &c. ..	20,581	21,124	20,925	22,064	25,146
XIII. Rubber ..	4,846	4,202	4,603	4,529	6,598
XIV. Musical Instruments ..	89	114	106	72	73
XV. Miscellaneous Products ..	4,045	4,510	5,246	5,064	6,973
Total, Classes I. to XV. ..	201,867	219,626	234,666	263,852	288,843
XVI. Heat, Light, and Power ..	56,428	71,159	76,213	83,577	88,249
GRAND TOTAL ..	258,295	290,785	310,879	347,429	377,092

Motive power classified in the tables which follow relates to the "rated horse-power" of engines used. Engines in reserve or idle are the subject of a separate table, but obsolete engines are completely excluded from any information shown.

**VICTORIA—TOTAL RATED HORSE-POWER OF ENGINES AND ELECTRIC MOTORS ORDINARILY IN USE IN FACTORIES\*, 1959-60**

Class of Industry	Steam		Internal Combustion			Water	Motors Driven by Electricity		Total without Duplication
	Reciprocating	Turbine	Gas	Petrol or Other Light Oils	Heavy Oils		Purchased	Own Generation	
I. Treatment of Non-metalliferous Mine and Quarry Products ..	1,249	53,500	..	923	..	..	32,763	34,388	88,435
II. Bricks, Pottery, Glass, &c. ..	1,045	..	..	197	..	..	36,094	10	37,336
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease ..	7,204	14,045	1,680	2,002	..	50	104,288	9,951	129,269
IV. Industrial Metals, Machines, Conveyances ..	1,747	12	..	5,713	..	..	473,459	1,866	480,931
V. Precious Metals, Jewellery, Plate ..	30	..	..	..	..	..	4,075	..	4,105
VI. Textiles and Textile Goods (Not Dress) ..	103	15	..	391	..	..	104,034	..	104,543

For footnote see next page.

**VICTORIA—TOTAL RATED HORSE-POWER OF ENGINES AND ELECTRIC MOTORS ORDINARILY IN USE IN FACTORIES\*, 1959-60—continued**

Class of Industry	Steam		Internal Combustion			Water	Motors Driven by Electricity		Total without Duplication
	Reciprocating	Turbine	Gas	Petrol or Other Light Oils	Heavy Oils		Purchased	Own Generation	
VII. Skins and Leather (Not Clothing or Footwear) ..	825	95	..	316	..	..	20,281	670	21,517
VIII. Clothing (Except Knitted) ..	132	..	..	434	..	..	29,972	..	30,538
IX. Food, Drink, and Tobacco ..	4,221	1,515	..	4,890	..	830	197,215	4,342	208,671
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving ..	6,799	146	64	25,827	..	10	98,032	2,367	130,878
XI. Furniture of Wood, Bedding, &c. ..	..	..	..	40	..	..	14,959	..	14,999
XII. Paper, Stationery, Printing, &c., Book-binding, &c. ..	650	23,500	..	313	..	..	81,787	24,842	106,250
XIII. Rubber ..	..	..	..	320	..	..	63,595	30	63,915
XIV. Musical Instruments ..	..	..	..	..	..	..	312	..	312
XV. Miscellaneous Products ..	225	..	..	128	..	..	30,922	..	31,275
Total, Classes I. to XV. ..	24,230	92,828	1,744	41,494	..	890	1,291,788	78,466	1,452,974
XVI. Gas Works ..	2,870	1,232	12	1,160	..	..	11,443	80	16,717
GRAND TOTAL	27,100	94,060	1,756	42,654	..	890	1,303,231	78,546	1,469,691

\* Includes gas works, but excludes central electric stations.

The total rated horse-power in reserve or idle during 1959-60 and not included above was 191,835.

Motors driven by purchased electricity comprised approximately 94 per cent. of the total horse-power used in factories other than central electric stations in 1959-60, while steam turbines were next in demand with 6 per cent.

A comparison over the ten year period 1950-51 to 1959-60 of the total rated horse-power used to drive engines and electric motors ordinarily in use in factories is given in the table which follows :—

**VICTORIA—TOTAL RATED HORSE-POWER OF ENGINES AND ELECTRIC MOTORS ORDINARILY IN USE IN FACTORIES\***

Year	Steam		Internal Combustion			Water	Motors Driven by Electricity		Total without Duplication
	Reciprocating	Turbine	Gas	Petrol or Other Light Oils	Heavy Oils		Purchased	Own Generation	
1950-51 ..	23,210	39,442	1,959	13,661	17,096	1,508	835,755	34,541	932,631
1951-52 ..	24,929	41,149	1,642	17,544	20,922	1,261	891,480	39,184	998,927
1952-53 ..	23,626	41,224	1,616	18,807	22,318	1,269	933,703	38,616	1,042,563
1953-54 ..	24,516	42,467	1,680	23,950	19,629	1,317	976,138	75,070	1,089,697
1954-55 ..	23,983	49,397	2,084	24,849	17,985	1,241	1,045,472	46,739	1,165,011
1955-56 ..	24,757	57,185	1,864	27,650	18,428	1,288	1,122,883	54,145	1,254,055
1956-57 ..	22,905	67,270	1,764	27,750	14,330	1,079	1,190,000	60,433	1,325,098
1957-58 ..	21,749	60,317	3,508	30,453	12,721	1,118	1,195,521	67,246	1,325,387
1958-59 ..	21,332	71,394	2,857	31,677	9,627	919	1,251,303	53,810	1,389,109
1959-60 ..	27,100	94,060	1,756	42,654	..	890	1,303,231	78,546	1,469,691

\* Includes gas works, but excludes central electric stations

The following table shows the total rated horse-power for each year from 1950-51 to 1959-60 for engines and electric motors in reserve or idle. It includes engines which are used only occasionally, or during periods of breakdown to own engines or power supply.

**VICTORIA—TOTAL RATED HORSE-POWER OF ENGINES AND ELECTRIC MOTORS IN RESERVE OR IDLE IN FACTORIES\***

Year	Rated Horse-power of Engines, &c., in Reserve or Idle			Year	Rated Horse-power of Engines, &c., in Reserve or Idle		
	Purchased Electricity	All Other Types	Total		Purchased Electricity	All Other Types	Total
1950-51	73,667	46,220	119,887	1955-56	98,660	59,227	157,887
1951-52	84,760	57,480	142,240	1956-57	111,049	63,011	174,060
1952-53	86,488	62,723	149,211	1957-58	117,976	72,190	190,166
1953-54	90,317	64,998	155,315	1958-59	123,644	76,888	200,532
1954-55	96,493	67,787	164,280	1959-60	115,721	76,109	191,830

\* Includes gas works, but excludes central electric stations.

Particulars of the type and capacity of engines and generators installed in central electric stations in Victoria during 1959-60 are given in the following table :—

**VICTORIA—POWER EQUIPMENT INSTALLED IN CENTRAL ELECTRIC STATIONS, 1959-60**

Particulars		Capacity of Engines and Generators					
		Steam Turbine	Internal Combustion			Water	Total
			Gas	Petrol or Other Light Oils	Heavy Oils		
Engines Installed	Rated H.P.	1,403,429	236	19,584	41,984	366,950	1,832,183
Generators Installed—							
Kilowatt Capacity—							
Total Installed	.. kW.	1,054,725	155	13,279	29,681	268,515	1,366,355
Effective Capacity	.. kW.	1,025,600	135	12,085	28,106	254,515	1,320,441
Horse-power Equivalent—							
Total Installed	.. H.P.	1,413,332	207	17,794	39,773	359,810	1,830,916
Effective Capacity	.. H.P.	1,374,799	181	16,200	37,675	341,173	1,770,028

Similar information to that shown in the preceding table, but giving a comparison over the years 1955-56 to 1959-60 is shown below :—

**VICTORIA—POWER EQUIPMENT INSTALLED IN CENTRAL ELECTRIC STATIONS**

Particulars			1955-56	1956-57	1957-58	1958-59	1959-60
Central Electric Stations..	.. No.		57	53	51	44	44
Engines Installed	.. Rated H.P.		1,332,095	1,568,721	1,565,409	1,786,817	1,832,183
Generators Installed—							
Kilowatt Capacity—							
Total Installed	.. kW.		988,712	1,163,030	1,160,196	1,309,751	1,366,355
Effective Capacity	.. kW.		966,218	1,093,568	1,087,053	1,276,788	1,320,441
Horse-power Equivalent—							
Total Installed	.. H.P.		1,324,874	1,558,460	1,554,663	1,755,066	1,830,916
Effective Capacity	.. H.P.		1,294,732	1,465,381	1,456,651	1,710,896	1,770,028

## Principal Factory Products

## Annual Quantity and Value

The next table lists the principal articles of manufacture in Victoria during 1959-60, irrespective of the sub-class of industry in which production took place. Due to the limited number of producers it is not permissible under statute to publish particulars regarding some articles of manufacture which would otherwise appear below.

VICTORIA—PRINCIPAL ARTICLES MANUFACTURED,  
1959-60

Article	Unit of Quantity	Quantity	Value
			£'000
Acid—Sulphuric .. ..	ton	323,141	*
Aerated and Carbonated Waters	'000 gall.	19,321	5,265
Beer† (Excluding Waste) ..	'000 gall.	74,154	*
Biscuits .. ..	'000 lb.	57,199	6,018
Blankets .. ..	pair	498,731	3,098
Bolts and Nuts .. ..	..	..	3,612
Paperboard Boxes and Cartons†	..	..	15,213
Boxes and Cases—Wooden ..	..	..	1,722
Bread—2 lb. Loaves .. ..	'000	209,495	14,434
Bricks—Clay .. ..	'000	283,208	6,011
Briquettes—Brown Coal ..	ton	974,670	2,810
Butter .. ..	ton	89,388	36,539
Cakes, Pastry, Pies, &c. ..	..	..	9,788
Cans, Canisters, Containers—			
Metal .. ..	..	..	15,284
Plastic .. ..	..	..	886
Cheese .. ..	ton	19,217	4,577
Cigarettes .. ..	'000,000	6,883	16,014
Cloth Piece Goods Woven—			
Woollen or Predominantly			
Woollen .. ..	'000 sq. yd.	9,784	6,085
Worsted or Predominantly			
Worsted .. ..	'000 sq. yd.	7,096	*
Confectionery—			
Chocolate Base .. ..	'000 lb.	27,650	6,251
Other without Chocolate ..	'000 lb.	37,258	4,601
Electrical Appliances—			
Portable Tools .. ..	..	..	871
Regulating, Starting, and			
Controlling .. ..	..	..	4,733
Electricity Generated .. ..	mill. kWh.	6,142	*
Fibrous Plaster Sheets .. ..	'000 sq. yd.	8,199	2,632
Flour, Plain—Wheaten .. ..	short ton	419,079	*
Footwear : Boots, Shoes, and			
Sandals§—			
Men's and Youths' ..	'000 pair	3,195	7,419
Women's and Maids' ..	'000 pair	8,022	15,534
Children's .. ..	'000 pair	2,791	2,019
Slippers .. ..	'000 pair	7,072	3,536
Fruit : Preserved—			
Peaches .. ..	'000 lb.	54,398	3,158
Pears .. ..	'000 lb.	100,096	6,087
Furniture and Office Equipment—			
Metal .. ..	..	..	4,665
Wooden .. ..	..	..	11,436
Gas—Town .. ..	mill. cu. ft.	17,992	13,101
Ice .. ..	ton	99,298	381
Ice Cream .. ..	'000 gall.	3,689	1,995
Jams, Fruit Spreads, Fruit Butters,			
&c... ..	'000 lb.	39,584	2,700

For footnotes see page 585.

VICTORIA—PRINCIPAL ARTICLES MANUFACTURED,  
1959-60—*continued*

Article	Unit of Quantity	Quantity	Value
			£'000
Leather—			
Dressed and Upper from Hides	..	..	4,085
Sole and Belting .. ..	..	..	2,274
Machinery : Industrial—			
Conveyor (and Appliances)	..	..	3,006
Hoists, Cranes, Lifting ..	..	..	2,309
Food Processing and Canning	..	..	2,122
Metal Working .. ..	..	..	3,561
Mining .. ..	..	..	2,149
Pumping (Including Pumps) ..	..	..	3,473
Malt—Barley .. ..	'000 bushels.	5,790	6,014
Mattresses—All Types .. ..	No.	427,339	2,910
Meat—Canned .. ..	'000 lb.	83,518	10,038
Medicines, &c. (Proprietary) ..	..	..	4,677
Milk—			
Condensed .. ..	'000 lb.	100,512	6,860
Powdered : Full Cream ..	'000 lb.	23,823	*
Paints (Not Water) and Enamels	'000 gall.	3,605	6,485
Pipes—Concrete (Excluding Agriculture)	..	..	2,429
Pollard .. ..	short ton	88,488	*
Ropes and Cables (Excluding Wire)	cwt.	76,606	1,202
Sauce—Tomato .. ..	'000 pint	14,680	1,682
Sausage Casings—Sheep and Lamb	..	..	1,495
Shirts (Men's and Boys') ..	doz.	834,651	*
Sinks—Stainless Steel .. ..	No.	88,399	1,118
Soap and Detergents—			
Household and General			
Washing .. ..	cwt.	921,672	7,802
Personal Toilet .. ..	cwt.	78,479	1,090
Socks and Stockings—Men's and			
Children's .. ..	'000 doz. pair	2,104	*
Stockings—Women's .. ..	'000 doz. pair	1,999	7,530
Soup—Tomato .. ..	'000 pint	20,095	1,454
Steam, Gas, and Water Fittings,			
Valves, &c. (Non-Ferrous) ..	..	..	5,677
Steel : Structural—Fabricated ..	ton	83,773	11,358
Tiles : Roofing—			
Cement .. ..	'000	21,172	816
Terra Cotta .. ..	'000	16,010	767
Timber Produced from Logs—			
Australian .. ..	'000 sup. ft.	350,314	*
Trailers and Semi-trailers ..	No.	3,002	*
Transformers, Chokes, &c. ..	No.	276,337	2,451
Tyres Retreaded and Recapped ..	No.	672,717	*
Underwear : Knitted Garments—			
Men's and Boys' .. ..	'000 doz.	765	*
Women's and Girls' .. ..	'000 doz.	1,451	*
Vegetables Canned or Bottled† ..	'000 lb.	31,969	2,479
Window Frames—Metal .. ..	..	..	3,455
Wool—Scoured or Carbonized ..	'000 lb.	62,049	*
Wool Tops .. ..	'000 lb.	20,458	*

\* Quantity only available.

† As recorded by Department of Customs and Excise.

‡ Includes composite wood and paperboard butter boxes.

§ Excluding wholly of rubber.

|| Value of gas sold.

¶ Excludes pickles and pickled vegetables.

*Monthly Production Statistics*

Statistics of monthly production had their origin in the wartime controls of rationed goods when details of piece goods, footwear, and foodstuffs were collected by the Departments immediately concerned with the war effort. In 1948, the Commonwealth Bureau of Census and Statistics opened a permanent Branch Office in Victoria and transferred certain monthly collections taken over from other departments to the Victorian Branch. By arrangement, as collections were abandoned by wartime and building control authorities, they were modified and taken over by the Bureau to provide statistics of value to government as indicators of business activity. The process of taking over collections commenced by other governmental authorities is continuing. The most recent action was in July, 1960, when monthly collections previously undertaken by the Wheat Board and the Meat Board, respectively, were taken over by the Bureau's State branches. The various monthly production series derived from the collections were also found to be of value to the business community and requests were made for dissections of existing collections and the introduction of new items. The forms used are subject to annual review to keep abreast of technical developments and new demands.

At present, although the list of items published includes only a small proportion of all the items produced in factories, it nevertheless relates directly to items accounting for possibly up to 35 per cent. of the total value of factory output.

A service is provided to persons who complete monthly production returns and to others interested in monthly production. Australian totals of commodities which they produce are made available to them within a few weeks of the month to which they relate. A list of the subjects included in these "Production Summaries" follows :—

## AUSTRALIA—PRODUCTION SUMMARIES

Ref. No.	Subject	Ref. No.	Subject
2	Chemicals, &c.	22	Floor Coverings
3	Plastics and Synthetic Resins and Plasticisers	24	Men's, Youths', and Boys' Outer Clothing
4	Paints and Pigments	25	Foundation Garments
6	Soap, Detergents, and Glycerine	27	Gloves (Other than Rubber) and Felt Hats
7	Internal Combustion Engines	28	Footwear (Excluding Sandshoes, Goloshes, and Gum, &c., Boots of Rubber)
8	Lawn Mowers	29	Biscuits, Ice Cream, and Confectionery
8A	Storage Batteries	32	Perambulators (Including Pushers and Strollers)
9	Electric Motors, Electrical Appliances, Wireless, Television, &c.	34	Radios, Television, and Cabinets
10	Motor Bodies and Trailers	35	Mattresses
10A	Assembly of Motor Vehicle Chassis	36	Preserved Milk Products
11	Pedal Cycles	38	Preserved Fish
12	Meters	39	Jams and Preserved Fruit and Vegetables
13	Building Fittings	40	Cereal Breakfast Foods, Other Cereal Products, and Flour Milling
14	Cotton Goods	41	Margarine
15	Woolscouring, Carbonizing, and Felt-mongering	42	Malt and Beer
16	Woollen and Worsted Carding, Combing, and Spinning	43	Stock and Poultry Meals (Other than Cereal)
17	Wool Weaving	45	Gramophone Records
18	Hosiery	47	Aerated Waters, Cordials and Syrups, and Concentrated Cordial Extract
19	Men's and Youths', Boys', Women's and Maids', Girls', Infants' and Babies' Wear, Shirts, Cardigans, Pyjamas, Underclothing &c.	48	Sports Goods
20	Rayon and Synthetic Fibre Woven Fabrics	49	Building Materials
21	Paper and Paper Board	51	Hides and Skins Used in Tanneries
		54	Flour Milling
		55	Butter and Cheese
		56	Canned Meat

In addition, Australian totals for a greater range of commodities than that issued in the Production Summaries are published in the monthly Bulletin of Production Statistics. Victorian figures are published in the Victorian Monthly Production Bulletin.

## Individual Industries

### Introductory

Particulars on pages 564–565 give a general view of the size of industries in the sixteen groups adopted by the Conference of Statisticians in 1930. While it is not possible, within the limits of this book, to give a detailed account of each industry, particular industries dealt with are of special importance because of the employment they provide for labour and capital or for other features of special interest. Where there are only one or two establishments in a particular industry in the State, details of activities are not published, but are combined with some other factory group so that operations of individual concerns will not be disclosed.

### Details of Industries

The industrial and heavy chemical industry expanded considerably during the five year period 1955–56 to 1959–60 as the particulars below indicate :—

#### VICTORIA—INDUSTRIAL AND HEAVY CHEMICALS AND ACIDS

Particulars	1955–56	1956–57	1957–58	1958–59	1959–60
Number of Factories .. ..	69	69	74	79	83
Number of Persons Employed ..	2,270	2,308	2,723	3,035	3,276
Salaries and Wages Paid £'000	2,370	2,754	3,171	3,554	4,105
Value of Power, Fuel, &c., Used £'000	463	640	706	826	949
Value of Materials Used £'000	7,514	9,408	10,104	10,115	11,119
Value of Production .. £'000	5,164	6,925	6,873	9,269	11,948
Value of Output .. £'000	13,141	16,973	17,683	20,210	24,016
Value of Land and Buildings £'000	1,954	2,127	4,333	4,679	4,848
Value of Plant and Machinery £'000	3,128	3,781	6,344	7,103	7,794
Horse-power of Engines Ordinarily in Use .. H.P.	18,274	19,296	22,531	26,834	26,596

Particulars of the pharmaceutical and toilet preparation industry are given below :—

### VICTORIA—PHARMACEUTICAL AND TOILET PREPARATIONS

Particulars	1955-56	1956-57	1957-58	1958-59	1959-60
Number of Factories .. ..	61	59	59	57	58
Number of Persons Employed ..	2,435	2,537	2,665	2,748	3,026
Salaries and Wages Paid £'000	1,937	2,202	2,376	2,577	3,058
Value of Power, Fuel, &c., Used £'000	145	192	241	601	606
Value of Materials Used £'000	4,936	6,006	6,499	6,591	7,912
Value of Production .. ..	4,229	5,468	5,945	6,786	7,722
Value of Output .. ..	9,310	11,666	12,685	13,978	16,240
Value of Land and Buildings £'000	3,476	3,881	5,224	4,780	5,457
Value of Plant and Machinery £'000	1,453	1,432	1,706	2,811	2,999
Horse-power of Engines Ordinarily in Use .. H.P.	8,981	9,234	8,738	9,504	9,863

Production in this sub-class of industry includes proprietary medicines, cosmetics, creams and lotions, hair preparations, &c.

Mineral oil treatment has now become a most important industry in Victoria particularly in relation to the refining of petroleum. Details of the industry for years 1955-56 to 1959-60 are shown below :—

### VICTORIA—MINERAL OILS

Particulars	1955-56	1956-57	1957-58	1958-59	1959-60
Number of Factories .. ..	17	19	18	18	17
Number of Persons Employed ..	1,734	1,485	1,443	1,459	1,476
Salaries and Wages Paid £'000	1,893	1,762	1,799	1,863	2,099
Value of Power, Fuel, &c., Used £'000	1,781	4,163	4,058	3,476	3,776
Value of Materials Used £'000	35,985	45,835	46,129	45,732	51,482
Value of Production .. ..	11,708	15,537	15,235	17,254	18,000
Value of Output .. ..	49,474	65,535	65,422	66,462	73,258
Value of Land and Buildings £'000	6,832	7,171	7,263	7,635	5,576
Value of Plant and Machinery £'000	30,311	30,310	28,999	32,691	31,717
Horse-power of Engines Ordinarily in Use .. H.P.	47,110	53,258	49,029	44,799	47,233

The growth of this industry can be appreciated from the fact that in 1938-39 it gave employment to only 164 persons and the total horse-power of engines used was 817, while 1,476 persons were employed in 1959-60 and the horse-power of engines used totalled 47,233.

Outstanding expansion has taken place in Industrial Metals, Machines, and Conveyances, &c., which is by far the largest of the sixteen classes into which secondary industry is divided. This development was accelerated by the necessity of meeting war requirements. Victoria now produces a very wide field of goods including motor vehicles, construction and earth-moving equipment, precision instruments, aircraft, &c., and many other types of manufactures which in earlier years were not attempted.

The relative importance of the principal sub-classes within this industry is shown in the following table :—

VICTORIA—CLASS IV : INDUSTRIAL METALS, MACHINES,  
AND CONVEYANCES: INDIVIDUAL INDUSTRIES, 1959-60  
(£'000)

Particulars	Number of Factories	Persons Employed	Salaries and Wages Paid	Value of—						Horse-power of Engines Ordinarily in Use
				Power, Fuel, and Light	Materials Used	Production	Output	Land and Buildings	Plant and Machinery	
Foundries (Ferrous) ..	165	2,951	3,337	472	3,370	5,005	8,847	2,344	1,802	12,153
Plant, Equipment and Machinery, &c. ..	758	27,645	30,597	1,342	51,529	51,908	104,779	22,265	16,003	98,477
Other Engineer- ing ..	902	10,370	10,711	466	13,355	18,086	31,907	8,014	6,359	34,898
Electrical Machinery, Cables, and Apparatus ..	430	15,027	15,303	862	31,113	23,761	55,736	13,232	10,892	37,456
Tramcars and Railway Rolling Stock	22	7,214	6,862	221	6,136	8,706	15,063	2,215	1,426	24,104
Motor Vehicle Construction and Assembly	16	13,332	16,335	1,181	18,455	29,210	48,846	13,882	11,073	43,120
Motor Repairs	2,313	16,472	13,597	436	13,644	20,969	35,049	20,877	3,904	16,571
Motor Bodies ..	481	7,561	8,271	295	8,165	11,339	19,799	5,349	2,151	13,782
Motor										
Accessories ..	89	3,183	3,042	183	4,428	5,552	10,163	2,038	1,665	8,463
Aircraft ..	18	6,640	7,828	289	4,176	9,289	13,754	5,553	2,639	17,231
Agricultural Machines and Implements ..	108	5,910	6,246	437	10,596	8,851	19,884	2,869	2,797	20,537
Non-ferrous Metals— Founding, &c.	178	3,989	4,054	309	7,343	6,778	14,430	2,582	1,687	10,927
Sheet Metal Working— Pressing and Stamping ..	427	10,802	10,887	705	24,964	20,108	45,777	9,791	6,466	32,414
Wire and Wire Working (In- cluding Nails)	70	2,678	2,809	214	10,006	6,519	16,739	2,700	1,824	8,417
Wireless and Amplifying Apparatus ..	68	3,835	3,529	122	10,363	4,847	15,332	1,864	1,341	2,883
Other Sub-classes	369	13,234	14,418	1,416	32,312	21,829	55,557	10,836	17,768	101,364
Total, Class IV.	6,414	150,843	157,826	8,950	249,955	252,757	511,662	126,411	89,797	482,797

Further particulars of certain of the industries listed in the table above are given on pages 590 and 594-595.

As production in some factories in this class is variable, their classification may vary from year to year, since each factory is classified according to the predominant item of production. Under these circumstances comparability may be disturbed.

The table which follows combines particulars appertaining to two sub-classes of manufacture: Electrical Machinery, Cables, &c., and Wireless and Amplifying Apparatus respectively :—

### VICTORIA—ELECTRICAL MACHINERY, CABLES, AND APPARATUS

Particulars	1955-56	1956-57	1957-58	1958-59	1959-60
Number of Factories .. ..	379	417	409	439	498
Number of Persons Employed ..	12,131	13,562	15,394	17,361	18,862
Salaries and Wages Paid £'000	10,237	11,357	13,639	16,239	18,832
Value of Power, Fuel, &c., Used £'000	385	504	672	903	984
Value of Materials Used £'000	20,198	22,255	31,765	37,696	41,476
Value of Production .. £'000	14,011	16,657	20,827	24,432	28,608
Value of Output .. £'000	34,594	39,416	53,264	63,031	71,068
Value of Land and Buildings £'000	5,795	8,856	10,084	12,543	15,096
Value of Plant and Machinery £'000	3,601	5,405	7,326	9,612	12,233
Horse-power of Engines Ordinarily in Use .. H.P.	20,050	24,743	30,993	40,213	40,339

The principal items of production in these industries were : electric and telephone cables, electric apparatus and equipment, and domestic appliances such as refrigerators, washing machines, wireless and television sets, and parts for these.

The next table represents the activities of government controlled railways and tramways workshops :—

### VICTORIA—TRAMCARS AND RAILWAY ROLLING STOCK

Particulars	1955-56	1956-57	1957-58	1958-59	1959-60
Number of Factories .. ..	22	22	22	22	22
Number of Persons Employed ..	7,363	7,580	7,554	7,391	7,214
Salaries and Wages Paid £'000	6,581	6,554	6,487	6,429	6,862
Value of Power, Fuel, &c., Used £'000	207	204	229	222	221
Value of Materials Used £'000	4,946	5,417	5,168	5,479	6,136
Value of Production .. £'000	8,835	8,878	8,603	8,683	8,706
Value of Output .. £'000	13,988	14,499	14,000	14,384	15,063
Value of Land and Buildings £'000	1,883	1,918	2,064	2,138	2,215
Value of Plant and Machinery £'000	1,115	1,075	1,108	1,429	1,426
Horse-power of Engines Ordinarily in Use .. H.P.	21,391	23,005	23,416	22,881	24,104

The work performed in this sub-class of industry was for the most part in maintenance and replacement of rolling stock.

*Motor Vehicle Industry*

The first motor vehicles produced in Victoria were almost all imported in a completely "knocked-down" condition, and assembled by local motor firms. Manufacture of Australian-built motor bodies was first encouraged by an Act passed during the First World War stipulating that two out of every three cars were to be imported without bodies. Later, tariff action was taken to protect local production. In 1925, automotive assembly was undertaken in Victoria for the first time by a major overseas manufacturer, when Ford (Canada) established a primitive assembly line in a disused wool store at Geelong. The following year General Motors commenced operations at Melbourne. These pioneers of the Victorian automotive industry were assemblers of components imported from the parent companies overseas. However, by 1934, local body building facilities were such that designers and craftsmen at Geelong were able to produce the first coupé utility style body, subsequently copied throughout the world, and within the next three years, a steel body with a fabric top and the first Australian turret-top all-steel body.

The Second World War necessitated the adaptation of all automotive facilities to meet military commitments. After an initial period of recovery, post-war development of the motor trade, encouraged as a matter of government policy, has been very rapid and it is now one of the largest industries in the State. Great progress was made in 1948, when General Motors in association with the old-established firm of South Australian motor body builders, Holdens, began mass production of the first vehicle to be almost wholly Australian in content, and the only volume-produced vehicle to originate in this country. The General Motors-Holden's plant at Fishermen's Bend in Melbourne was re-constructed to manufacture Holden engines and assemble the complete vehicle. The venture has been a great success capturing a large part of the Australian market.

Development by the other overseas companies now operating has been on a step-by-step basis. Initially, only assembly of imported components was possible, using a few standardized Australian parts, e.g., tyres and batteries. Gradually, additional materials such as springs, shock absorbers, horns, wheels, radiators, &c., became available. Further progress made possible the use of locally assembled engines, with body panels pressed in Australia and embodying additional locally made parts. This has resulted in the substantial production in Victoria of models already proven overseas. Although many of these are now almost entirely Australian-built, they are practically identical with European and American models, with some modifications made necessary by conditions encountered in this country.

There are now sixteen manufacturing or assembling companies in Victoria and production for 1959-60 exceeded 125,000 vehicles. The General Motors plant at Fishermen's Bend occupies 50 acres and has

over 5,700 employees concerned with the manufacture, assembly, and testing of engines, transmissions and other parts. The engineering department occupies 100,000 square feet, where styling, mechanical design, and body styling originate. A mechanical foundry 147,000 square feet in area with a daily pouring capacity of 340 tons moulds all the grey-iron castings for cylinder blocks and heads and transmissions. Modern machine shops installed at a cost of £10 mill., cut, mill, bore, hone and finish the castings and forgings, accuracy being maintained by progressive inspection, while finished precision is checked by air-pressure gauging. Transmissions from clutch housing to differential are made here, but axle units bring together pressed metal parts from Adelaide.

Final assembly of components from Fishermen's Bend and body panels from Adelaide is carried out in a 12½ acre building at Dandenong, completed in 1956, and involving an initial expenditure of £4½ mill. It has an annual capacity of almost 50,000 units. Main departments in the plant are body welding, metal finishing, paint shop, trim and upholstery, body wiring, vehicle assembly and inspection. This is the headquarters of the company's national spare parts and accessories division, selling more than 22 million items annually. A proving ground near Lang Lang, 56 miles from Melbourne, has recently been constructed, covering 2,167 acres with 12·6 miles of test roads, and a 3 mile speed loop. Vehicles are driven continuously over various types of road surface, and "horror" sections of potholes, crushed rock, irregular concrete, &c., with the object of testing and improving durability and performance of current models.

The largest building under one roof in Australia houses the new Ford project at Broadmeadows, 10 miles from the Melbourne G.P.O. A single story, steel-framed structure covering 17½ acres, it can produce 50,000 vehicles a year. Two-mile assembly lines permit complete construction under the one roof, while a modern conveyor system automatically transfers units from one line to another. Noteworthy features include electrostatic filtering of air in the paint booths, the system employed being the most advanced known in the motor industry ; a five-stage fully automatic bonderite system which phosphatizes inner and outer body panels, improving the holding qualities of body enamels ; stock handling by trailer trains and fork lifts, equipped with two-way radio ; a specially equipped laboratory for checking and inspection of all components ; water testing to ensure effective body sealing against rain and dust ; and a test track for final proving of completed vehicles.

Materials are supplied by the company's headquarters at Geelong, where former body assembly facilities have been converted into an engine machining and assembly shop. Chassis machining, and stamping plant have been re-organized, with the construction of a new building, installation of 33 new presses, and the building of an underground conveyor system to remove scrap metals. Provision of new machinery in the toolroom, already one of the largest in Australia, increased its

capacity by 50 per cent. Australian manufacturers have supplied much of the capital equipment including grinders, assembly presses, industrial washing machines, gauges and power tools. This large-scale expansion will entail an expenditure of £9 mill. A works at Ballarat has been converted to enable engines to be re-built.

To consolidate and expand activities in Australia, Volkswagen Australia, have increased the assembly plant area, and erected a press shop on their Clayton property. The purchasing of an adjoining 30 acre lot has provided over 1,000,000 square feet of plant, warehouse, and administrative buildings. A new paint shop constructed to bake enamel with radiant heat is the second of its kind in the world. These innovations have resulted in production becoming, to an increasing degree, Australian in content, and with 1,800 employees, working on a single shift basis, the plant has a capacity of 150 vehicles per day.

International Harvester motor truck construction began at Geelong in 1939. The factory was adapted in 1948 for the manufacture of tractors, power units, engine blocks, and major castings, producing the first Australian-made truck two years later. Subsequently, this company completed another establishment at Dandenong for the assembly of over 100 varieties of 15 basic models, ranging from 12-15 cwt. pick-up units to 7-8 ton heavy duty trucks. Larger models are imported in part, and assembled at the works incorporating a large percentage of locally made materials. The growing demand for construction equipment led to the building of a works at Port Melbourne, and to-day the three International Harvester plants provide essential equipment for transportation, agriculture and industry.

Australian Motor Industries assembling imported components, operates a 33-acre plant at Fishermen's Bend. Unlike any of the other leading motor firms they are predominantly owned and operated by Australians, as 81 per cent. of the shareholding is held in this country. With a production potential of 25,000 vehicles annually, a broad range is distributed, from popular family sedans and commercial units to continental "prestige" cars, plus a number of tractors.

A subsidiary of the Rootes Group maintains a factory at Port Melbourne producing several thousand vehicles a year. Following the general trend, this organization is steadily increasing local content in its products.

Thus, from small beginnings the motor industry has developed into a major industrial activity. The demand for transportation has grown in Australia as a natural result of the high standard of living, the great increase in population during the past 40 years, and the necessity to transport men and materials for considerable distances in as short a time as possible. Apart from a few special types of vehicles, local industry is now able to meet the nation-wide demand, and exports an increasing number of its products, principally to New Zealand, South Africa, and Asia.

In the following table the particulars of the motor industry as a whole have been presented by aggregating the following sub-classes : Motor Vehicle Construction and Assembly, Motor Bodies, Motor Repairs, and Motor Accessories. It should be noted, however, that the manufacture of particular parts may be included in other sub-classes of industry.

## VICTORIA—MOTOR VEHICLES

Particulars	1955-56	1956-57	1957-58	1958-59	1959-60
Number of Factories .. ..	2,476	2,656	2,751	2,756	2,899
Number of Persons Employed ..	35,176	36,406	37,080	38,212	40,548
Salaries and Wages Paid £'000	29,850	30,520	32,502	34,762	41,245
Value of Power, Fuel, &c., Used £'000	1,197	1,513	1,744	1,920	2,095
Value of Materials Used £'000	46,422	39,308	43,829	42,450	44,692
Value of Production .. £'000	41,462	45,270	52,454	59,182	67,070
Value of Output .. £'000	89,081	86,091	98,027	103,552	113,857
Value of Land and Buildings £'000	21,840	21,198	31,851	36,325	42,146
Value of Plant and Machinery £'000	11,530	16,539	17,222	17,311	18,793
Horse-power of Engines Ordinarily in Use .. H.P.	65,577	76,472	79,776	87,777	81,936

The relative importance of each sub-class of the motor vehicle industry is shown in the following table for 1959-60 :—

## VICTORIA—MOTOR VEHICLES : SUB-CLASSES, 1959-60

Particulars	Motor Vehicle Construction and Assembly	Motor Repairs	Motor Bodies	Motor Accessories	Total
Number of Factories .. ..	16	2,313	481	89	2,899
Number of Persons Employed ..	13,332	16,472	7,561	3,183	40,548
Salaries and Wages Paid £'000	16,335	13,597	8,271	3,042	41,245
Value of Power, Fuel, &c., Used £'000	1,181	436	295	183	2,095
Value of Materials Used £'000	18,455	13,644	8,165	4,428	44,692
Value of Production .. £'000	29,210	20,969	11,339	5,552	67,070
Value of Output .. £'000	48,846	35,049	19,799	10,163	113,857
Value of Land and Buildings £'000	13,882	20,877	5,349	2,038	42,146
Value of Plant and Machinery £'000	11,073	3,904	2,151	1,665	18,793
Horse-power of Engines Ordinarily in Use .. H.P.	43,120	16,571	13,782	8,463	81,936

The information in the above table indicates that while motor repair workshops accounted for 80 per cent. of the number of factories and 40 per cent. of the persons employed, in the case of horse-power in use, factories engaged in construction and assembly predominated with 53 per cent. of the total.

Agricultural Machinery and Implements are the subject of the next table :—

### VICTORIA—AGRICULTURAL MACHINES AND IMPLEMENTS

Particulars	1955-56	1956-57	1957-58	1958-59	1959-60
Number of Factories .. ..	84	97	100	91	108
Number of Persons Employed ..	6,338	5,060	5,299	5,761	5,910
Salaries and Wages Paid £'000	5,868	4,668	5,085	5,802	6,246
Value of Power, Fuel, &c., Used £'000	430	345	385	422	437
Value of Materials Used £'000	8,404	6,447	7,742	8,892	10,596
Value of Production .. £'000	8,280	7,622	8,672	8,992	8,851
Value of Output .. £'000	17,114	14,414	16,799	18,306	19,884
Value of Land and Buildings £'000	2,313	2,454	2,731	2,709	2,869
Value of Plant and Machinery £'000	2,689	2,726	2,649	2,525	2,797
Horse-power of Engines Ordinarily in Use .. H.P.	20,361	20,970	20,821	20,399	20,537

Particulars relating to founding and casting of non-ferrous metals are shown in the next table :—

### VICTORIA—NON-FERROUS METALS: FOUNDED, CASTING, ETC.

Particulars	1955-56	1956-57	1957-58	1958-59	1959-60
Number of Factories .. ..	153	155	153	178	178
Number of Persons Employed ..	3,261	3,359	3,430	3,959	3,989
Salaries and Wages Paid £'000	2,768	2,895	3,113	3,661	4,054
Value of Power, Fuel, &c., Used £'000	197	222	249	290	309
Value of Materials Used £'000	4,706	4,378	4,816	6,171	7,343
Value of Production .. £'000	4,425	4,974	4,920	6,483	6,778
Value of Output .. £'000	9,328	9,574	9,985	12,944	14,430
Value of Land and Buildings £'000	1,797	2,005	2,187	2,142	2,582
Value of Plant and Machinery £'000	1,397	1,492	1,378	1,548	1,687
Horse-power of Engines Ordinarily in Use .. H.P.	8,696	9,449	9,372	10,789	10,927

Articles produced in this industry include steam, gas and water fittings, aluminium window frames, slide fasteners, and furniture fittings, &c.

Sheet metal working and allied manufacturing activities are the subject of the table which follows :—

### VICTORIA—SHEET METAL WORKING, PRESSING, AND STAMPING

Particulars	1955-56	1956-57	1957-58	1958-59	1959-60
Number of Factories .. ..	332	359	363	396	427
Number of Persons Employed ..	7,663	8,022	8,493	10,098	10,802
Salaries and Wages Paid £'000	6,225	7,066	7,825	9,380	10,887
Value of Power, Fuel, &c., Used £'000	247	344	405	544	705
Value of Materials Used £'000	14,635	16,639	20,051	22,287	24,964
Value of Production .. £'000	10,991	12,413	12,931	15,828	20,108
Value of Output .. £'000	25,873	29,396	33,387	38,659	45,777
Value of Land and Buildings £'000	4,372	5,744	5,916	8,018	9,791
Value of Plant and Machinery £'000	3,203	3,945	5,062	5,673	6,466
Horse-power of Engines Ordinarily in Use .. H.P.	16,486	20,420	23,700	30,688	32,414

Packers' cans, canisters and containers, building fittings, namely, baths, sinks, hot water services, and refrigeration and air-conditioning equipment are amongst the items produced in this sub-class of industry.

Wool carding, spinning, and weaving is the subject of the next table :—

#### VICTORIA—WOOL CARDING, SPINNING, AND WEAVING

Particulars	1955-56	1956-57	1957-58	1958-59	1959-60
Number of Factories .. ..	81	84	88	87	81
Number of Persons Employed ..	11,273	12,013	12,055	10,995	11,691
Salaries and Wages Paid £'000	7,634	8,925	9,065	8,475	9,604
Value of Power, Fuel, &c., Used £'000	716	812	811	798	858
Value of Materials Used £'000	20,364	24,716	25,218	20,295	25,506
Value of Production .. £'000	12,643	14,674	13,432	14,047	14,508
Value of Output .. £'000	33,723	40,202	39,461	35,140	40,872
Value of Land and Buildings £'000	4,363	5,533	5,543	6,579	6,509
Value of Plant and Machinery £'000	6,287	6,264	6,583	6,386	6,679
Horse-power of Engines Ordinarily in Use .. H.P.	42,123	42,803	41,081	43,084	42,117

Victorian woollen mills are responsible for more than half the total Australian woollen mill production. The full range of activities in these factories is covered from the scouring of greasy wool to the weaving of cloth.

Particulars of the hosiery, &c., industry for the last five years are given below :—

#### VICTORIA—HOSIERY AND OTHER KNITTED GOODS

Particulars	1955-56	1956-57	1957-58	1958-59	1959-60
Number of Factories .. ..	429	429	427	438	482
Number of Persons Employed ..	15,105	15,224	15,039	15,285	16,938
Salaries and Wages Paid £'000	9,883	10,521	10,658	10,979	13,146
Value of Power, Fuel, &c., Used £'000	452	491	514	549	573
Value of Materials Used £'000	19,680	22,112	24,541	21,820	27,695
Value of Production .. £'000	17,695	18,997	17,969	20,846	23,798
Value of Output .. £'000	37,827	41,600	43,024	43,215	52,066
Value of Land and Buildings £'000	6,257	6,666	7,320	8,240	9,486
Value of Plant and Machinery £'000	5,612	5,504	5,766	6,529	6,581
Horse-power of Engines Ordinarily in Use .. H.P.	13,272	13,555	14,227	15,560	15,643

Factories in Victoria contribute more than two-thirds of the total production of knitted goods in Australia. Amongst the more important articles produced are socks and stockings, knitted underwear, cardigans and pullovers.

Information in the next table deals with industries associated with the manufacture of clothing, except waterproof clothing, knitted goods, and boots and shoes. The figures shown represent for each of the past five years the sum of the statistical sub-classes of industry mentioned below—tailoring and ready-made clothing, dressmaking, millinery, shirts, underclothing, foundation garments, handkerchiefs, ties, scarves, hats and caps, and gloves.

**VICTORIA—CLOTHING (DRESS), EXCLUDING WATERPROOF CLOTHING, KNITTED GOODS, AND BOOTS AND SHOES**

Particulars	1955-56	1956-57	1957-58	1958-59	1959-60
Number of Factories .. ..	1,591	1,565	1,569	1,481	1,455
Number of Persons Employed ..	29,828	29,358	28,496	28,310	28,456
Salaries and Wages Paid £'000	17,255	17,946	18,002	18,127	19,664
Value of Power, Fuel, &c., Used £'000	326	358	362	389	392
Value of Materials Used £'000	32,173	31,918	32,084	31,257	32,712
Value of Production .. £'000	27,715	28,606	29,058	29,472	31,416
Value of Output .. £'000	60,214	60,882	61,504	61,118	64,520
Value of Land and Buildings £'000	8,554	9,651	10,515	11,769	13,072
Value of Plant and Machinery £'000	2,594	2,725	2,791	2,906	2,752
Horse-power of Engines Ordinarily in Use .. H.P.	11,217	10,840	11,008	11,599	10,629

In the following table the industries combined in the preceding table are shown in detail for 1959-60 :—

**VICTORIA—CLOTHING (DRESS), EXCLUDING WATERPROOF CLOTHING, KNITTED GOODS, AND BOOTS AND SHOES :  
SUB-CLASSES, 1959-60**

Particulars	Tailoring and Ready-made Clothing	Dress-making	Millinery Hats and Caps	Shirts, Underclothing	Foundation Garments	Handkerchiefs, Ties, and Gloves	Total
Number of Factories .. ..	584	549	94	154	33	41	1,455
Number of Persons Employed ..	10,401	8,649	1,122	5,798	1,848	638	28,456
Salaries and Wages Paid £'000	7,587	5,671	838	3,915	1,243	410	19,664
Value of Power, Fuel, &c., Used £'000	169	109	20	61	25	8	392
Value of Materials Used £'000	15,009	6,880	1,328	6,529	2,084	882	32,712
Value of Production .. £'000	11,759	8,940	1,384	6,782	1,810	741	31,416
Value of Output .. £'000	26,937	15,929	2,732	13,372	3,919	1,631	64,520
Value of Land and Buildings £'000	4,649	4,412	783	1,875	1,035	318	13,072
Value of Plant and Machinery £'000	1,204	703	106	494	195	50	2,752
Horse-power of Engines Ordinarily in Use H.P.	3,688	2,969	389	2,513	858	212	10,629

Tailoring and ready-made clothing, and dressmaking together represented 78 per cent. of the factories, 67 per cent. of employment, and 63 per cent. of the horse-power in use; shirts and underclothing contributed 11 per cent., 20 per cent., and 24 per cent. respectively.

Boots and shoes (not rubber) manufacture is the subject of the next table :—

### VICTORIA—BOOTS AND SHOES (NOT RUBBER)

Particulars	1955-56	1956-57	1957-58	1958-59	1959-60
Number of Factories .. ..	226	222	221	215	196
Number of Persons Employed ..	10,939	11,136	11,092	11,231	11,040
Salaries and Wages Paid £'000	7,270	7,974	8,005	8,328	8,911
Value of Power, Fuel, &c., Used					
£'000	114	134	143	156	167
Value of Materials Used £'000	12,055	12,028	12,641	14,786	16,385
Value of Production .. £'000	10,291	11,170	11,935	12,731	13,691
Value of Output .. £'000	22,460	23,332	24,719	27,673	30,243
Value of Land and Buildings £'000	1,818	2,023	2,276	2,915	3,035
Value of Plant and Machinery £'000	2,033	2,081	2,281	2,684	2,914
Horse-power of Engines Ordinarily in Use .. H.P.	9,508	9,265	9,202	10,153	10,603

A feature of this industry is the large proportion of females it employs. Numbering 5,896, they represented 53 per cent. of the total employed in 1959-60.

The details shown above relate generally to footwear made of leather. They are exclusive of the operation of boot repairers. Footwear is also produced in the rubber and plastic moulding industries respectively.

Bakeries which make bread, pastry, and cakes, &c., are the subject of the table which follows :—

### VICTORIA—BAKERIES (INCLUDING CAKES AND PASTRY)

Particulars	1955-56	1956-57	1957-58	1958-59	1959-60
Number of Factories .. ..	1,075	1,052	1,075	1,253	1,146
Number of Persons Employed ..	5,553	5,694	5,472	6,043	6,006
Salaries and Wages Paid £'000	3,294	3,618	3,605	3,820	4,238
Value of Power, Fuel, &c., Used					
£'000	589	661	668	745	779
Value of Materials Used £'000	10,007	10,682	10,884	12,081	12,919
Value of Production .. £'000	7,476	8,824	7,845	9,032	10,110
Value of Output .. £'000	18,072	20,167	19,397	21,858	23,808
Value of Land and Buildings £'000	4,767	5,728	5,923	7,041	7,706
Value of Plant and Machinery £'000	2,975	3,325	3,470	3,753	4,189
Horse-power of Engines Ordinarily in Use .. H.P.	7,018	7,493	8,001	8,030	8,677

The details shown above for 1958-59 and 1959-60 include the operations of a number of smaller bakehouses which had not been included previously in the statistical collection.

In the following table two sub-classes of industry are combined, namely, jam, fruit, and vegetable canning; and pickles, sauces, and vinegar :—

**VICTORIA—JAM, FRUIT, AND VEGETABLE CANNING;  
PICKLES, SAUCES, AND VINEGAR**

Particulars	1955-56	1956-57	1957-58	1958-59	1959-60
Number of Factories .. ..	60	60	63	60	56
Number of Persons Employed ..	4,475	4,965	4,903	4,425	4,748
Salaries and Wages Paid £'000	3,621	4,321	4,462	4,002	4,609
Value of Power, Fuel, &c., Used £'000	371	481	472	468	485
Value of Materials Used £'000	14,533	20,747	22,054	19,829	21,270
Value of Production .. £'000	7,220	9,229	10,407	8,440	10,069
Value of Output .. £'000	22,124	30,457	32,933	28,737	31,824
Value of Land and Buildings £'000	5,091	5,633	6,085	6,858	7,249
Value of Plant and Machinery £'000	4,696	5,297	5,617	5,451	6,025
Horse-power of Engines Ordinarily in Use .. H.P.	20,239	27,465	29,012	28,565	20,513

Female employment is strongly represented in the canning industry which, to a great extent, operates in country areas near the orchards and gardens from which fruit and vegetables used for processing are gathered. Seasonal conditions influence greatly the quantity of goods produced.

Three sub-classes of industry, namely, butter, cheese, condensed and processed milk have been combined in the figures shown below, as some factories producing butter are also engaged in the production of cheese and condensed products and are unable to render separate returns in respect of these activities :—

**VICTORIA—BUTTER, CHEESE, CONDENSED AND  
PROCESSED MILK FACTORIES**

Particulars	1955-56	1956-57	1957-58	1958-59	1959-60
Number of Factories .. ..	130	131	131	127	131
Number of Persons Employed ..	5,443	5,620	5,417	5,452	5,677
Salaries and Wages Paid £'000	5,035	5,381	5,345	5,465	5,906
Value of Power, Fuel, &c., Used £'000	1,521	1,598	1,532	1,528	1,604
Value of Materials Used £'000	50,252	51,561	50,558	51,382	55,757
Value of Production .. £'000	10,679	10,567	11,617	11,799	13,681
Value of Output .. £'000	62,452	63,726	63,707	64,709	71,042
Value of Land and Buildings £'000	5,161	5,836	6,233	6,763	7,185
Value of Plant and Machinery £'000	6,168	7,031	7,524	7,995	8,351
Horse-power of Engines Ordinarily in Use .. H.P.	38,204	41,094	42,537	39,310	43,287

Almost all of this industry is to be found in country areas. The particulars in the above table relate only to factory production. There is also a comparatively small amount of butter and cheese made on farms. Further reference to the Dairying Industry will be found on pages 523 to 526.

Details of the operation of the following sub-classes of industry are given below, namely, sawmills, joinery, boxes and cases, wood turning and carving, and cabinet and furniture making:—

### VICTORIA—SAWMILLS, WOODWORKING, FURNITURE, ETC.

Particulars	1955-56	1956-57	1957-58	1958-59	1959-60
Number of Factories .. ..	1,883	1,840	1,874	1,816	1,843
Number of Persons Employed ..	19,332	19,028	18,819	18,991	19,558
Salaries and Wages Paid £'000	14,509	15,003	15,664	16,158	17,904
Value of Power, Fuel, &c., Used £'000	660	705	724	794	900
Value of Materials Used £'000	28,217	28,237	31,340	31,715	36,693
Value of Production .. £'000	24,173	24,658	27,339	28,170	30,644
Value of Output .. £'000	53,050	53,600	59,403	60,679	68,237
Value of Land and Buildings £'000	8,039	8,955	10,107	11,009	13,377
Value of Plant and Machinery £'000	5,770	5,942	5,782	5,892	6,121
Horse-power of Engines Ordinarily in Use .. H.P.	136,361	136,919	132,941	133,058	138,532

The following table indicates the relative particulars for 1959-60 of the individual industries combined in the preceding table:—

### VICTORIA—SAWMILLS, WOODWORKING, FURNITURE, ETC.: INDIVIDUAL INDUSTRIES

Particulars	Sawmills	Joinery	Boxes and Cases	Wood Turning and Wood Carving	Furniture Making, &c.	Total
Number of Factories .. ..	521	634	75	106	507	1,843
Number of Persons Employed ..	7,024	6,134	719	1,096	4,585	19,558
Salaries and Wages Paid .. £'000	6,637	5,597	626	987	4,057	17,904
Value of Power, Fuel, &c., Used £'000	596	144	23	36	101	900
Value of Materials Used .. £'000	16,730	10,491	1,565	1,175	6,732	36,693
Value of Production .. £'000	12,484	8,587	1,035	1,704	6,834	30,644
Value of Output .. £'000	29,810	19,222	2,623	2,915	13,667	68,237
Value of Land and Buildings .. £'000	4,001	4,368	452	735	3,821	13,377
Value of Plant and Machinery .. £'000	3,318	1,483	160	325	835	6,121
Horse-power of Engines Ordinarily in Use .. H.P.	86,438	27,263	6,689	5,468	12,674	138,532

The activities combined in the above table embrace general milling, re-sawing, moulding and planing, turning, the manufacture of floorboards, weatherboards, boxes and cases, tool handles, toys, &c.

The newspaper and periodicals industry is the subject of the following table:—

### VICTORIA—NEWSPAPERS AND PERIODICALS

Particulars	1955-56	1956-57	1957-58	1958-59	1959-60
Number of Factories .. ..	112	111	106	128	133
Number of Persons Employed ..	3,508	3,348	2,924	3,317	3,633
Salaries and Wages Paid £'000	3,393	3,300	2,951	3,471	4,063
Value of Power, Fuel, &c., Used £'000	118	119	115	135	144
Value of Materials Used £'000	7,048	7,563	7,268	8,660	9,549
Value of Production .. £'000	5,677	5,727	5,224	6,173	6,922
Value of Output .. £'000	12,843	13,409	12,607	14,968	16,615
Value of Land and Buildings £'000	1,372	1,616	1,517	2,350	2,955
Value of Plant and Machinery £'000	2,854	2,795	1,791	2,212	2,750
Horse-power of Engines Ordinarily in Use .. H.P.	10,456	10,484	9,862	10,020	11,171

Some "job" printing is included in this industry but where newspapers, periodicals, &c., are printed for the proprietor by an outside firm, such particulars are included under "Printing, General" below.

General printing (including bookbinding) is the subject of the following table :—

### VICTORIA—PRINTING, GENERAL (INCLUDING BOOKBINDING)

Particulars	1955-56	1956-57	1957-58	1958-59	1959-60
Number of Factories .. ..	513	537	549	539	563
Number of Persons Employed ..	7,602	7,964	8,381	8,515	8,619
Salaries and Wages Paid £'000	6,129	6,681	7,461	7,718	8,520
Value of Power, Fuel, &c., Used					
£'000	163	200	228	247	268
Value of Materials Used £'000	8,426	8,932	10,436	11,180	11,590
Value of Production .. £'000	10,335	11,888	13,304	14,217	15,445
Value of Output .. £'000	18,924	21,020	23,968	25,644	27,303
Value of Land and Buildings £'000	4,652	5,132	5,982	6,433	7,789
Value of Plant and Machinery £'000	5,174	5,587	6,109	6,155	6,653
Horse-power of Engines Ordinarily in Use .. H.P.	11,632	12,554	13,108	13,357	14,825

The above table does not include particulars of the operations of Government printing establishments.

Particulars relating to the manufacture of cardboard boxes, cartons, and containers are detailed in the next table :—

### VICTORIA—CARDBOARD BOXES, CARTONS, AND CONTAINERS

Particulars	1955-56	1956-57	1957-58	1958-59	1959-60
Number of Factories .. ..	56	49	52	51	57
Number of Persons Employed ..	2,053	2,007	2,125	2,297	2,820
Salaries and Wages Paid £'000	1,639	1,598	1,748	2,024	2,616
Value of Power, Fuel, &c., Used					
£'000	54	67	81	93	115
Value of Materials Used £'000	5,543	5,485	6,138	7,214	9,080
Value of Production .. £'000	3,558	3,542	4,318	4,660	6,131
Value of Output .. £'000	9,155	9,094	10,537	11,967	15,326
Value of Land and Buildings £'000	1,241	1,373	1,784	2,414	2,875
Value of Plant and Machinery £'000	1,377	1,505	1,676	1,744	2,250
Horse-power of Engines Ordinarily in Use .. H.P.	4,291	4,179	4,358	4,643	6,140

The following table gives particulars of rubber goods manufacture :—

### VICTORIA—RUBBER GOODS (INCLUDING TYRES MADE)

Particulars	1955-56	1956-57	1957-58	1958-59	1959-60
Number of Factories .. ..	54	54	54	56	52
Number of Persons Employed ..	6,122	6,182	6,254	6,529	6,566
Salaries and Wages Paid £'000	5,819	5,982	6,280	6,669	7,433
Value of Power, Fuel, &c., Used £'000	815	901	991	1,056	1,153
Value of Materials Used £'000	16,170	14,088	15,910	16,418	20,557
Value of Production .. £'000	10,268	11,327	12,001	14,066	12,974
Value of Output .. £'000	27,253	26,316	28,902	31,540	34,684
Value of Land and Buildings £'000	2,949	3,211	3,735	3,759	3,834
Value of Plant and Machinery £'000	4,405	3,757	4,028	3,855	5,966
Horse-power of Engines Ordinarily in Use .. H.P.	50,882	53,254	55,214	60,379	61,154

Tyres and tubes, shoes, soles and heels, hose, toys, belting, sponge and foam rubber are amongst the wide range of articles produced in the above-mentioned industry.

Plastic moulding and products are the subject of the next table :—

### VICTORIA—PLASTIC MOULDING AND PRODUCTS

Particulars	1955-56	1956-57	1957-58	1958-59	1959-60
Number of Factories .. ..	128	147	145	152	154
Number of Persons Employed ..	4,412	4,891	5,006	5,267	5,567
Salaries and Wages Paid £'000	3,331	3,918	4,342	4,934	5,726
Value of Power, Fuel, &c., Used £'000	228	304	353	440	492
Value of Materials Used £'000	7,737	9,613	10,876	13,797	16,310
Value of Production .. £'000	6,460	7,562	8,819	10,653	10,922
Value of Output .. £'000	14,425	17,479	20,048	24,890	27,724
Value of Land and Buildings £'000	2,014	2,718	2,958	3,261	4,388
Value of Plant and Machinery £'000	2,495	2,844	3,381	3,740	4,449
Horse-power of Engines Ordinarily in Use .. H.P.	14,440	19,136	20,694	20,781	22,412

Introduced as a new sub-class in 1945-46, plastic moulding now contributes substantially to the secondary production of the State. A wide variety of articles is produced, including plastic film and sheet, household accessories, garden house, piping and tubing, toys, &c.

The following table shows particulars of the operations of electricity generating stations :—

### VICTORIA—ELECTRIC LIGHT AND POWER

Particulars	1955-56	1956-57	1957-58	1958-59	1959-60
Number of Factories .. ..	57	53	51	44	44
Number of Persons Employed ..	3,007	3,186	3,247	3,398	3,470
Salaries and Wages Paid £'000	3,315	3,534	3,599	3,851	4,218
Value of Power, Fuel, &c., Used £'000	9,737	10,513	11,153	9,971	10,472
Value of Materials Used £'000	524	605	677	600	700
Value of Production .. £'000	11,214	13,824	13,706	18,529	17,977
Value of Output .. £'000	21,475	24,942	25,536	29,100	29,149
Value of Land and Buildings £'000	12,844	15,114	17,444	22,949	21,184
Value of Plant and Machinery £'000	49,071	57,017	63,659	70,244	74,548
Total Installed Horse-power of Engines Used to Drive Generators* .. ..	H.P. 1,332,095	1,568,721	1,565,409	1,786,817	1,832,183

\* Excludes engines using electricity generated in own works.

Because of the extension of services by the State Electricity Commission to areas previously served by other authorities or individuals, the number of electric light and power factories has decreased considerably in recent years.

The above particulars refer only to electric light and power generation by central electric stations in Victoria and do not include details of distribution, &c. They are compiled from factory returns submitted in accordance with the Commonwealth Census and Statistics Act and the Victorian Statistics Act.

Included in the above figures are those of the State Electricity Commission of Victoria which supplies practically all of the electricity generated.

### *State Electricity Commission of Victoria*

#### *Powers*

By the 1918 Act and subsequent amending Acts this authority—known since 1921 as the State Electricity Commission of Victoria—is vested with power to erect, own, and operate electrical undertakings ; acquire existing electricity undertakings ; supply electricity retail to individual consumers or in bulk to any corporation or public institution ; establish brown coal open cuts ; own and operate briquette works ; and develop the State's water-power resources for electricity generation. Incidental to its main operations, the Commission owns and operates the tramway systems in Ballarat and Bendigo.

The Commission is the controlling authority for all electricity undertakings in Victoria. It is responsible for the registration of electrical contractors, the licensing of electrical mechanics, the control of installation methods and material, and the testing and approval of electrical equipment and appliances.

*State Generating System*

Sources of power for the State system generate 99 per cent. of all the electricity produced in Victoria for public supply. The system serves about 96 per cent. of the population through a supply network covering more than three-quarters of the populated area of the State. Electricity generated in, and purchased for this system totalled 6,112 million kilowatt-hours in 1959-60, nearly three-quarters of Victoria's electricity being generated from brown coal used either in its raw state or in the form of briquettes. During 1959-60, hydro-stations produced nearly 11 per cent. of the State's electricity for public supply.

The following table shows the predominant part taken by the State Electricity Commission in the generation of electric power in Victoria, the amount of power generated by water power and other sources and the relative importance of the main power stations:—

**VICTORIA—ELECTRICITY GENERATED, POWER STATIONS, ETC., 1959-60**

Source	Type T = Thermal* H = Hydro	Output Million kWh.
State Electricity Commission—		
Yallourn Power Station and Briquette Factory ..	T	2,952
Morwell Power Station and Briquette Factory ..	T	497
Newport Power Station .. ..	T	1,182
Spencer-street Power Station (M.C.C.) .. ..	T	353
Richmond Power Station .. ..	T	180
Other Country Power Stations .. ..	T	282
Total S.E.C. Thermal Generation ..	T	5,446
Eildon—Rubicon .. ..	H	261
Kiewa .. ..	H	194
Total S.E.C. Hydro Generation ..	H	455
Snowy Mountain Scheme .. ..	H	56
Hume .. ..	H	83
Interchange with New South Wales .. ..	..	72
Total S.E.C. .. ..	T and H	6,112
Other Available for Public Supply .. ..	T	45
Total Available for Public Supply ..	T and H	6,157
Electricity Generated in Factories .. ..	T	196
Cumulative Total .. ..	T and H	6,353

\* Includes Internal Combustion.

Inclusive of generator capacity available to the Victorian system from outside the State, the total installed capacity of the State generating system at 30th June, 1960, was 1,484,000 kilowatts. Except for 24,550 kilowatts of plant in the Mildura sub-region, all power stations are interconnected. The largest power station in this interconnected system is Yallourn, which alone generates almost half Victoria's electricity. The transmission and distribution system at 30th June, 1960, comprised 32,331 miles of high and low voltage power lines, fifteen terminal stations and almost 24,000 distribution sub-stations.

*Snowy Mountains Hydro-power*

Victoria is entitled to one-third of the electricity from the Snowy Mountains scheme—after the Commonwealth has taken the power it needs for the Australian Capital Territory and within the Snowy Mountains area. Output from the Snowy scheme became available to Victoria from 10th November, 1959 via a new 330,000-volt transmission line connecting with the Victorian system at Dederang. Victoria also shares (with New South Wales) the electricity generated at Hume Power Station on the River Murray.

*Consumers Served*

At 30th June, 1960, the State system served 869,330 consumers in Victoria (679,973 retail and the remainder—189,357—through eleven metropolitan councils which buy electricity in bulk). In addition, bulk supply was given to several New South Wales municipalities and irrigation settlements bordering the River Murray. The State system supplies all the Melbourne Metropolitan Area and over 1,500 other centres of population. Rural electrification is now more than four-fifths completed and 44,079 farms were supplied with electricity during the year by the State Electricity Commission. Outside the State system there were 19,911 other consumers served by local country undertakings.

*New Construction*

Inclusive of the substantial output to which Victoria is entitled from the Snowy Mountains hydro-electric scheme, the capacity of Victoria's State generating system will be more than doubled between 1960 and 1969. At Yallourn a 240,000 kilowatt extension (Yallourn "E") is due for completion in 1962. Next to be commissioned after Yallourn "E" will be the new Hazelwood Power Station south of Morwell. It will burn brown coal from the Morwell open cut. Beginning with one turbo-generator (200,000 kilowatts) in 1964, the Commission plans to complete the power station to its ultimate capacity of 1,200,000 kilowatts in 1971.

The new brown coal burning power station built as part of the Morwell power and fuel project is now nearly complete. The installed capacity of the power station was 110,000 kilowatts at 30th June, 1960. An additional 60,000 kilowatt turbo-generator is due to be in service late in 1962. Briquette production in the new factories at Morwell began in December, 1959. Early in 1961 production was at the rate of about 100,000 tons a month.

At Kiewa another hydro-power station of 96,000 kilowatts capacity was completed late in 1960.

The main 220,000 volt transmission system has been greatly extended. Sections in service link Yallourn, Melbourne, and Kiewa; Melbourne, Geelong, and Colac; and Kiewa, Shepparton, Bendigo and Kerang. Completion of the final section (Geelong, Ballarat, Bendigo) in the 220,000 volt ring grid around Central Victoria is scheduled for the end of 1961. The line to Colac is scheduled to extend to Terang by the end of 1961. The line to Kerang will be continued to Red Cliffs (near Mildura) in 1962.

**VICTORIA—STATE ELECTRICITY COMMISSION : INCOME,  
EXPENDITURE, SURPLUS, ETC.  
(£'000)**

Particulars	1957-58	1958-59	1959-60
<b>INCOME</b>			
Electricity Sales—			
Domestic .. .. .	11,387	13,303	14,587
Commercial .. .. .	5,184	5,984	6,535
Industrial .. .. .	9,312	10,717	11,893
Bulk .. .. .	8,848	9,847	11,058
Traction .. .. .	1,997	2,052	1,980
Public Lighting and Miscellaneous .. .. .	427	493	551
Briquette Sales .. .. .	1,998	2,169	2,975
Brown Coal Sales .. .. .	782	721	747
Tramways Income .. .. .	105	101	100
Miscellaneous Income .. .. .	22	25	28
<b>Total Income .. .. .</b>	<b>40,062</b>	<b>45,412</b>	<b>50,454</b>
<b>EXPENDITURE</b>			
Operation and Maintenance (Including Fuel)	20,064	19,174	21,392
Administrative and General Expenses .. .. .	3,106	3,338	3,778
General Services, &c. .. .. .	1,666	1,823	2,217
Depreciation .. .. .	4,840	5,894	7,668
Interest .. .. .	9,633	10,769	11,854
Loan Flotation Expense .. .. .	260	365	400
Deferred Interest, &c., Written Off .. .. .	..	3,200	2,250
Miscellaneous Expenditure .. .. .	473	426	435
<b>Total Expenditure .. .. .</b>	<b>40,042</b>	<b>44,989</b>	<b>49,994</b>
Surplus .. .. .	20	423	460
Fixed Assets (Depreciated) at 30th June .. .. .	227,314	245,660	263,318
Capital Liabilities at 30th June .. .. .	230,297	245,486	265,001

*State Electricity Commission : Brown Coal Production*

*Occurrence of Brown Coal*

In contrast to the scarcity of black coal resources in Victoria, the State possesses one of the most important brown coal bearing regions of the world. This low grade brown coal, which originated comparatively recently in Tertiary geological times, is found in thick deposits at relatively shallow depth, the largest and most important deposit being located in the Latrobe Valley of Central Gippsland.

The coal in this region occurs in a number of distinct beds lying more or less horizontally with thicknesses ranging up to several hundred feet. There are large areas where two or more of these seams are present, usually separated by partings of clay and sand. Overburden covering the top coal consists of sands, clays and gravels less than 50 feet in depth in the most favourable areas.

These conditions are suitable for coal winning by open cut methods, using high capacity mechanical equipment, both for the removal of overburden and recovery of the underlying coal. Estimates based on drilling information to date indicate that there could be over 80,000

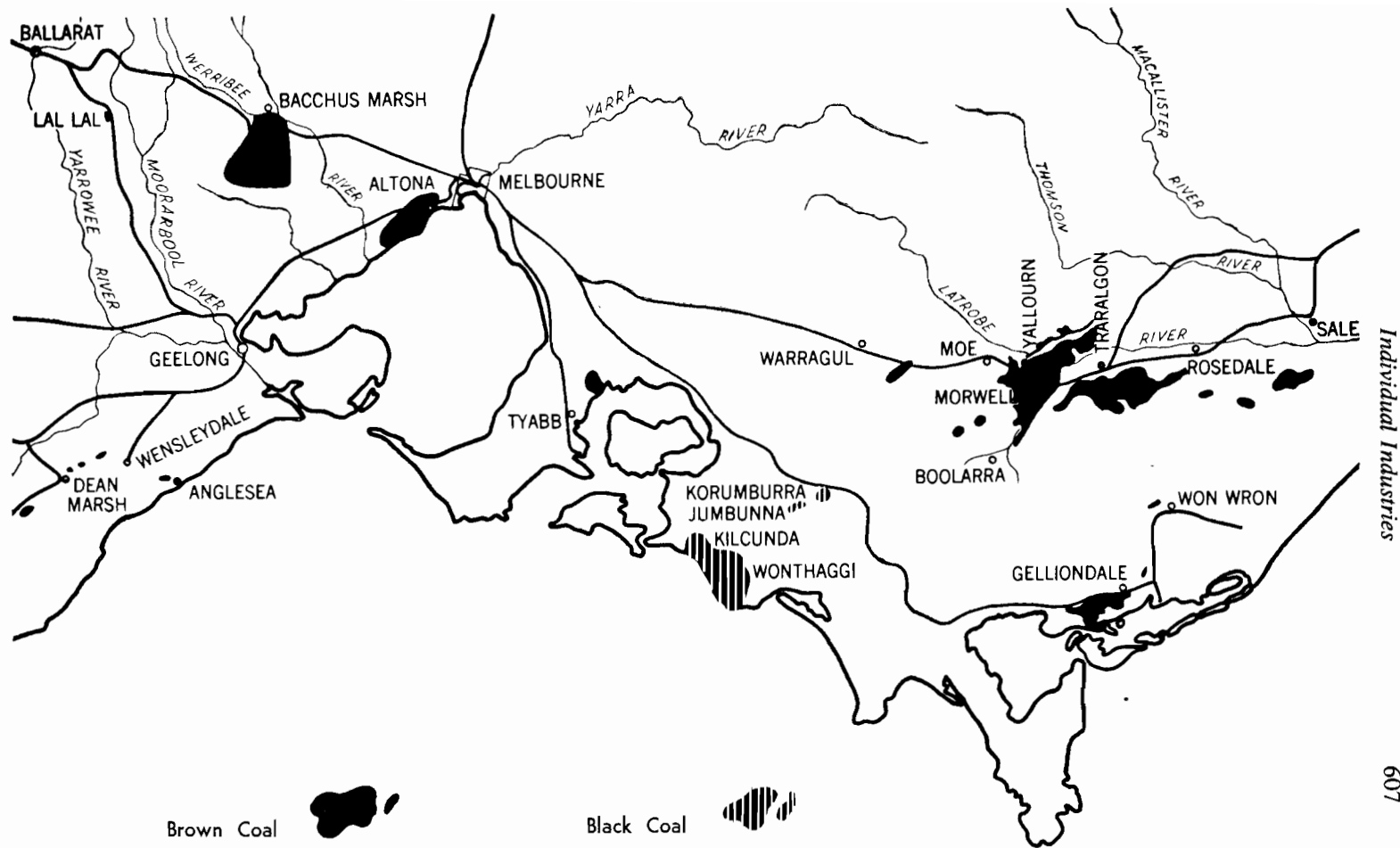


FIGURE 13.—Coal deposits located in Victoria.

million tons of brown coal in the Latrobe Valley, of which over 17,000 million tons could be won by open cut methods, at an economic cost, on present day standards.

Fig. 13 shows the location of the Latrobe Valley coal fields. The Yallourn-Morwell area and the Loy Yang area are separated by a trough of deep coal.

#### *Use of Latrobe Valley Coal*

The water content of Latrobe Valley coals is high, and when burnt, most of them yield only approximately one-quarter of the effective heat obtained from the same weight of a high grade black coal. However, this is far outweighed by cheapness of production when the coal is utilized for electricity generation in power stations adjacent to the coal field. In the 1920's the State Electricity Commission successfully established the Yallourn Power Station at a site on the bank of the Latrobe River, using brown coal from the Yallourn seam with approximately 66 per cent. water content. Progressive additions have made this power station the largest at present operating in Australia with an installed capacity scheduled to total 621,000 kilowatts in 1962 and an annual consumption by that date of approximately 10 mill. tons of brown coal.

A second power station has been established on the coal fields as part of the Morwell power and fuel undertaking, 6 miles from Yallourn; and south of Morwell a third power station, Hazelwood, will begin operating in 1964, for completion by stages to an ultimate capacity of 1.2 mill. kilowatts in 1971. It is the Commission's long-term aim to locate all base loads generating capacity in steam power stations on the coal fields in the Latrobe Valley. Taking into account all steam generation—in the Latrobe Valley and at other centres—more than two-thirds of Victoria's electricity to-day is derived from brown coal, used either in its raw state in the power stations close to the open cuts in the Latrobe Valley, or in the form of briquettes manufactured from brown coal in power stations at centres away from the coal fields.

Owing to transportation costs, it is necessary for fuel from the Latrobe Valley to have a higher heat value per ton in order to be economically attractive in the Metropolitan Area and beyond.

The State Electricity Commission therefore established the briquetting industry at the outset of the Yallourn scheme, following practices developed in Germany where the brown coal industry had been established for many years. This process converts raw brown coal into a hard, high grade fuel with 15 per cent. moisture content and a calorific value, weight for weight, that is over three times that of the raw coal and is comparable with that of black coal. Briquettes are readily transportable to point of use and can be stored. The pioneer briquette factory at Yallourn requires approximately 2.5 mill. tons of brown coal per annum to produce over 600,000 tons of briquettes.

The completion in 1960 of large new briquette factories at Morwell has increased the Commission's annual output of briquettes (Yallourn and Morwell combined) to about 2 mill. tons per annum. The briquette works at Yallourn and Morwell supply a large part of Victoria's industrial solid fuel, fuel for domestic use and fuel for electricity

generation in steam power stations in Melbourne and some provincial cities. In addition, briquettes from Morwell are supplied to the Gas and Fuel Corporation for gas making in the nearby Morwell gas works which pipe gas to Melbourne.

For approximately 15 years after the Second World War, briquette supplies to the Metropolitan Area and elsewhere were supplemented by deliveries of raw brown coal of higher grade won from a seam of limited extent north of the Latrobe River, over 15 mill. tons being produced in this period. But, in view of the greatly increased production of briquettes following the completion of the large new factories at Morwell, production from Yallourn North has now been reduced to less than 500,000 tons annually to supply local industry in the Latrobe Valley.

Fig. 14 shows growth in total annual production of brown coal by the State Electricity Commission since 1925:—

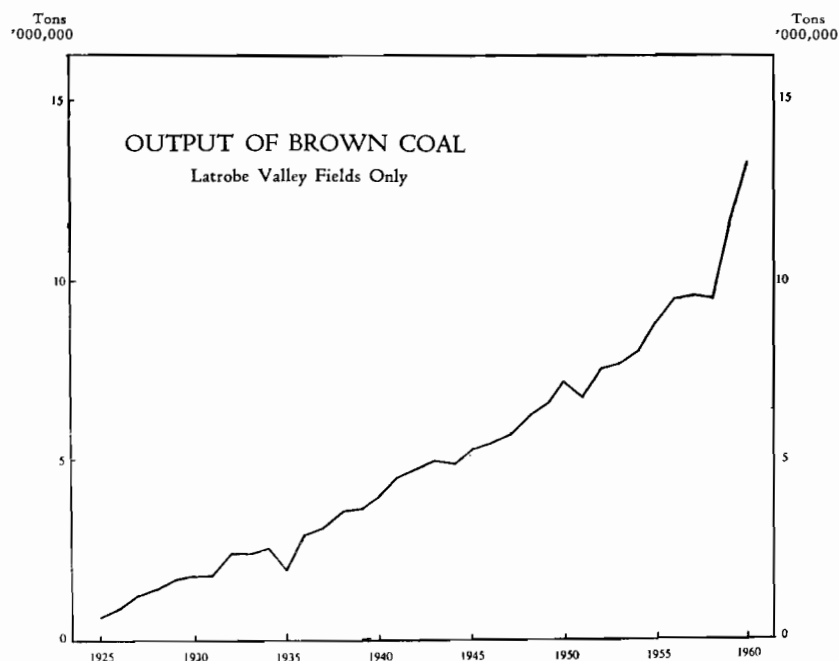


FIGURE 14.—Graph showing brown coal production in Victoria.

#### *Production Methods*

The main centres of coal production are now the two major open cuts at Yallourn and Morwell (Fig. 13).

At Yallourn Open Cut approximately 13 mill. tons per annum are being produced from a seam approximately 200 feet in depth, and overburden material, removed ahead of the advancing coal faces, is deposited on the worked-out floor of the open cut.

At Morwell Open Cut about 5 mill. tons per annum are scheduled to be won in 1962 from the higher levels of the Morwell No. 1 seam, which is over 400 feet thick at the site of present working, and underlain by a lower seam exceeding 100 feet in thickness. Development to full working depth will take many years and overburden disposal is effected outside the open cut boundaries. As plant is installed in Hazelwood Power Station, its fuel requirements from the Morwell Open Cut will progressively increase to about 12 mill. tons a year in 1971.

Owing to the essential nature of the industries based on it, and relatively small storages of coal practicable at points of consumption, open cuts must be planned to ensure continuity of production, with adequate reserves of accessible coal and excavating and handling plant.

Coal is excavated from working faces by high capacity electrically driven dredgers standing on benches developed at suitable levels within the coal seams. These machines employ buckets fitted with digging teeth and are of two types—known as bucket wheel and bucket chain dredgers. Hourly digging capacities range as high as 1,750 tons per hour. Photographs of a large bucket wheel dredger in operation in Yallourn Open Cut and a bucket chain machine are shown in the photographic section of this Year Book.

Overburden in the Latrobe Valley is relatively soft and, as with the coal, it can be readily excavated without preliminary breaking. Similar excavating machines and methods are employed for overburden excavation, although in the more restricted areas some overburden removal has been carried out with modern diesel powered earthmoving plant.

Both in the Yallourn and Morwell open cuts, electric rail haulage is used for overburden removal from the dredgers to the respective dumping areas, but the overburden railway at Yallourn will shortly be replaced by a modern belt conveyor installation to handle the material right from the excavation face to point of disposal.

In the Morwell Open Cut, lines of belt conveyors deliver the coal from the dredgers to the bunkers serving the Morwell undertaking. The conveyor lines extending along the working levels to the dredgers are of special construction to ensure ease of shifting from time to time as the working face recedes.

Electric railways are used at Yallourn for coal haulage, rail tracks of special construction along working faces connecting with the permanent railways for the delivery of coal to terminal bunkers. This railway system is connected with the railway layout at Morwell Open Cut, permitting transfer of coal between these areas as required.

In the Yallourn Open Cut and at Morwell, disposal of overburden is carried out by discharging the material on the face of a dump which advances progressively. High capacity mechanical spreaders perform this function.

A number of auxiliary services and operations are essential to open cut activities. Water spraying of exposed coal surfaces must be carried out as required for fire protection in the summer months and large pumping installations are required for this service and for dewatering purposes.

*Productivity and Costs*

As a result of trends to high capacity equipment, improved methods and increasing mechanization, productivity of operations tends to increase progressively. At Yallourn Open Cut, productivity of labour increased from 24 tons per manshift in 1949-50 to 50 tons per manshift in 1959-60, the manshifts being calculated from time worked by all wages personnel contributing to both overburden and coal operations, and including all maintenance activities.

Costs of production are affected by variations in ruling wage and price levels, but at the major open cuts brown coal can be produced and delivered to bunkers at works for approximately 8s. per ton including all overhead charges.

**Further References**

An outline of the history of the State Electricity Commission of Victoria will be found on pages 580 to 583 of the Victorian Year Book 1961.

In the next table particulars relating to gas works are shown :—

**VICTORIA—GAS WORKS**

Particulars	1955-56	1956-57	1957-58	1958-59	1959-60
Number of Factories .. ..	32	32	27	27	27
Number of Persons Employed ..	1,529	1,626	1,372	1,584	1,513
Salaries and Wages Paid £'000	1,580	1,833	1,738	1,796	1,789
Value of Power, Fuel, &c., Used £'000	135	195	416	397	503
Value of Materials Used £'000	5,882	5,791	5,702	5,800	5,471
Value of Production .. £'000	2,805	2,792	2,609	3,319	3,807
Value of Output .. £'000	8,822	8,778	8,727	9,516	9,781
Value of Land and Buildings £'000	659	3,009	3,349	3,284	3,031
Value of Plant and Machinery £'000	7,357	14,142	12,554	13,332	13,701
Horse-power of Engines Ordinarily in Use .. H.P.	11,196	16,166	16,106	17,048	16,797

The particulars appearing in the above table are compiled from factory returns received under the authority of the Commonwealth Census and Statistics Act and the Victorian Statistics Act. They relate to production and are exclusive of particulars of distribution, &c.

Appropriate details relating to the Gas and Fuel Corporation of Victoria are included in the table. The following is a brief review of the activities of the Corporation.

*Gas and Fuel Corporation of Victoria**Formation*

The Gas and Fuel Corporation of Victoria came into being by Act of Parliament on 6th December, 1950. It was formed by the merger of the Metropolitan and Brighton Gas Companies, which supplied gas to adjoining areas. The privately held shares of the two companies were exchanged for fully paid up preference shares in the Gas and Fuel Corporation.

The State Government of Victoria invested £4 mill. which were held as ordinary shares in the Corporation. Three directors were appointed by the preference shareholders and the Chairman and three other directors were appointed by the Government. Capital requirements for expansions were to be raised by means of loans on which the Government guaranteed the interest payments.

### *Reasons for Formation*

The main reason for the formation of the Corporation was to provide finance to make possible the use of the vast indigenous resources of brown coal in the Latrobe Valley for town gas production. It was considered essential, both from an economic and national viewpoint, to change from the conventional method of producing gas from black coal, imported from New South Wales, to the new and revolutionary method of high pressure gasification of brown coal.

The Lurgi High Pressure Gasification Plant was erected between 1951 and 1956 on the brown coal field at Morwell and came into operation in the spring of 1956. It was officially opened by H.R.H. the Duke of Edinburgh on 5th December of that year. This plant was connected to the metropolitan reticulation by a 103 mile 18-in. welded steel pipe-line.

### *Expansion*

Since its inception, and particularly after the commencement of brown coal gasification, the Corporation's activities expanded rapidly. In 1956 the areas of Dandenong and Frankston were acquired from the Colonial Gas Association and connected to the main Morwell-Melbourne pipe-line for supply. This supply was then further extended to embrace the Mornington area. Subsequently the towns along the pipe-line route, Traralgon, Morwell, Trafalgar and Warragul were connected to brown coal gas supply.

In 1960 the rapidly expanding area of the Lower Dandenongs extending from Lower Fern Tree Gully to Lilydale was supplied with brown coal gas from the pipe-line at Dandenong.

The introduction of catalytic oil refining into Australia in 1954 has had a marked effect upon the gas industry and upon the fuel economy of the country generally. From these refineries end products are available to the gas industry. These include waste refinery gas, propane, and butane on the one hand, and heavy residual oil for gasification on the other. It is essential that these products be integrated into future gas production programmes and this can be achieved at comparatively low capital cost.

The gas production plan of the Corporation for the next five years envisages the doubling of the output of brown coal gas at Morwell. This is possible without appreciable capital expenditure if the existing plant is operated to full capacity without spare or idle reserve plant. All reserve plant would be situated at West Melbourne and would operate on refinery products. The West Melbourne works are already connected by pipe-line to the Vacuum Refining Company's plant at Altona.

The type of plant now being installed will be ready for the winter of 1962 and will gasify low priced residual oil and reform refinery gases and propane to town gas standards. These plants will not only cope with standby requirements but will also provide the necessary load to meet seasonal requirements, fluctuating loads and peak winter demands.

Within the next five years the Morwell works' output from brown coal will be increased from 15 mill. to 28 mill. cubic feet per day. At the same time the output from the West Melbourne works will be increased from 25 mill. cubic feet to 50 mill. cubic feet per day. These large increases in output will supply the greatly increasing gas demands in the rapidly expanding Melbourne Metropolitan Area and some of the country areas.

For certain specific industries and specially located areas, refinery gas, and the gas propane, will be supplied from the Corporation's storage at Altona. A new area, embracing Altona and Laverton, is now being reticulated to supply industry and homes with the neat rich gas propane.

### Summary

The aim of the Gas and Fuel Corporation is to render the best possible service in supplying a clean gaseous fuel to the homes and industries of Victoria, a service which every modern community demands. A gaseous fuel is most convenient. It is clean, easily controlled ; it requires no storage by the consumer ; and a pipe-line is the cheapest mode of transport. For the Corporation to attain its objective it is vital that fuels be gasified as cheaply as possible, so that gas may play its true part in the fuel economy of the State.

### VICTORIA—GAS AND FUEL CORPORATION : REVENUE, EXPENDITURE, ETC.

(£'000)

Particulars	1955-56	1956-57	1957-58	1958-59	1959-60
<b>REVENUE</b>					
Sales—					
Gas .. .. .	7,110	7,604	8,244	9,361	10,065
Residual Products and Other Items* .. .. .	1,611	1,574	1,206	1,166	989
Income from General Investments	3	3	3	1	†
<b>Total Revenue ..</b>	<b>8,724</b>	<b>9,181</b>	<b>9,453</b>	<b>10,528</b>	<b>11,054</b>

\* Excludes sales of appliances.

† Under £500.

**VICTORIA—GAS AND FUEL CORPORATION: REVENUE,  
EXPENDITURE, ETC.—continued**

(£'000)

Particulars	1955-56	1956-57	1957-58	1958-59	1959-60
<b>EXPENDITURE</b>					
Manufacture of Gas .. ..	5,512	6,080	6,256	6,534	6,444
Transmission Expenses .. ..	..	91	134	163	207
Distribution of Gas .. ..	1,743	2,344	2,515	2,792	3,148
Management Expenses .. ..	146	231	263	307	340
Research, Investigation, and Development .. ..	..	56	68	181	243
Superannuation Contributions, Retiring Allowances, &c. ..	88	94	96	129	184
Interest on Debentures, Overdraft, &c. .. ..	404	}	*	*	*
Depreciation and Amortization ..	567				
Long Service Leave .. ..	57	64	68	78	48
Contingency Reserve .. ..	25	25	..	25	25
Other .. ..	24	38	46	99	79
<b>Total Expenditure ..</b>	<b>8,566</b>	<b>9,023</b>	<b>9,446</b>	<b>10,308</b>	<b>10,718</b>
Net Surplus .. ..	158	158	7	220	336
Fixed Assets less Depreciation and Amortization at 30th June ..	24,331	27,877	30,213	31,537	33,146
Loan Indebtedness at 30th June—					
State Government .. ..	11,759	11,908	12,058	12,168	12,258
Other .. ..	13,227	16,928	19,955	22,569	25,132

\* Since 1955-56 interest charges and depreciation have been apportioned over the various expense accounts.

**Government Factories**

In 1938-39, Government factories numbered 127 and employed 12,958 persons. These factories expanded considerably as a result of war activities and reached their peak of employment in 1942-43 when 50,831 persons were working in 158 factories. In 1959-60, employment had decreased to 29,326 in 157 factories. Comparative particulars for the last five years are shown in the following table :—

**VICTORIA—GOVERNMENT FACTORIES AND WORKSHOPS**

Particulars	1955-56	1956-57	1957-58	1958-59	1959-60
Number of Factories .. ..	154	150	143	147	157
Number of Persons Employed ..	30,788	29,448	28,482	28,988	29,326
Salaries and Wages Paid £'000	27,944	27,364	26,910	28,039	31,172
Value of Power, Fuel, &c., Used £'000	11,006	11,857	12,469	11,704	12,577
Value of Materials Used £'000	26,166	27,086	29,076	27,517	30,468
Value of Production .. £'000	42,104	44,681	44,176	51,466	51,528
Value of Output .. £'000	79,276	83,624	85,721	90,687	94,573
Value of Land and Buildings £'000	31,175	36,173	39,238	45,983	49,693
Value of Plant and Machinery £'000	75,662	91,135	93,831	107,209	121,011

The above table embraces establishments under the control of the Commonwealth Government in Victoria, State Government, and local government authorities. Such activities as railway and tramway workshops, electric light and gas works, dockyards, printing works and clothing, aircraft and munitions factories, &c., are included.

In relation to the whole of Victorian factories during 1959-60, Government factories absorbed 8 per cent. of employment; expended 8 per cent. of the salaries and wages paid; and accumulated 8 per cent. of the value of production.