

Part 8

MANUFACTURING INDUSTRY

Manufacturing Development in Victoria during 1964

Large projects were completed or were well advanced to expand capacity considerably in the aluminium, paper products, cement, oil refining, motor vehicle, chemical, fertilizer and man-made fibre industries.

At Point Henry, near Geelong, an aluminium sheet mill and related facilities began production. When in full operation, the complex at Point Henry is expected to employ 500 persons and more than 100 will be required for the power plant at Anglesea.

Within the paper products industry, two large projects were completed. One involved the installation of \$4 mill. of tissue-making equipment at Box Hill and the other a \$1 mill. multi-wall paper sack plant at Keon Park.

Interest in the cement industry was centred around Geelong where the capacities of two plants are now 800,000 and 300,000 tons a year, the former involving an expansion programme of \$10 mill. The latter, at Waurin Ponds, began production in 1964.

A bulk petroleum installation was under construction at Dandenong and will become the main outlet for the Crib Point refinery. Eventually, the two centres will be linked by a 20-mile pipe-line. Construction work has commenced on the refinery which, when completed, will process about 1,100,000 tons of crude oil a year in its first stage.

At Geelong a lubricating oil complex and hydrotreater came on stream and at Altona, \$1·8 mill. was expended on crude petroleum handling facilities.

The motor vehicle industry spent large sums on development. Three of the largest companies are now implementing announced expansion programmes having a total value of more than \$140 mill., a major proportion of which centres on Victorian plants at Geelong, Broadmeadows, Fishermen's Bend, Dandenong, and Clayton.

Three large projects highlighted the chemical industry. A phenol plant was erected at West Footscray at a cost of more than \$4 mill., a plant to make expandable polystyrene and plastic dispersions was being built at Altona, and a sulphonation plant was completed at Geelong. In addition, it was announced that an \$8 mill. installation to manufacture high-density polyethylene would be erected at Altona.

The modernization and enlargement of a fertilizer plant at Yarraville is under way. The products, concentrated superphosphate and high-analysis fertilizers, are new to Australia and the project was completed in 1965 at a cost of \$9·2 mill.

At Bayswater, a further considerable increase in nylon spinning capacity was to be completed late in 1965, the total cost being estimated at \$8 mill.

Other major developments included a plant at Geelong for the production of high carbon wire and wire rope and strand, the planning of a \$2.4 mill. programme at Ballarat for increased production of tapered roller bearings, increased brewing capacity in Melbourne for beer and stout, a \$2.8 mill. milk processing and bottling plant at Broadmeadows, the expenditure of \$1 mill. on bolt-making plant and equipment at Richmond, and a \$2.8 mill. particle board factory at Rosedale in Gippsland.

Development of Secondary Industry, 1965

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 them.

The general provisions of factory legislation, including Wages Boards, are further referred to on pages 408-409, 427-428, and 432-433.

Decentralization of Manufacturing Industries: Division of State Development

Since the early stages of the Second World War, successive State governments have encouraged the development of existing manufacturing facilities and the establishment of new industries in country areas.

Concentration of Victoria's population in the Metropolitan Area of Melbourne is of increasing concern to both individuals and Government alike. The inroads of mechanization into primary industry and the consequent lessening of employment opportunities have emphasized the need to develop other avenues for labour in the non-metropolitan parts of the State. In order to obviate costs of establishment or expansion, the Government may make land available to secondary industry in many country areas with or without consideration. This enables an industry to acquire a site adequate to meet all likely needs of future expansion and at the same time provide for adequate staff amenities.

To supply housing, land can be negotiated, houses built by the State Housing Commission for "imported" key personnel, or money made available to co-operative building societies for the express use of personnel nominated by a sponsored industry. As a further inducement to the setting up or expansion of manufacturing industry in non-metropolitan areas, loans at a moderate rate of interest are available through the Rural Finance and Settlement Commission or, in certain cases, direct from the State Treasury.

Whilst existing incentives offered are for the purpose of bridging the gap between metropolitan and country operations, an all-party committee appointed by the Victorian Houses of Parliament has made it clear that these should be progressively increased even beyond the point of parity between metropolitan and non-metropolitan locations.

To remove any possible locational disadvantages as compared with Melbourne, rail freight rates on raw materials and finished products are reduced to a nominal figure (as low as 10 per cent.) ; charges for power, gas, and water can be subsidized, if necessary, to bring them in line with Melbourne rates ; and, in respect of an approved decentralized industry, restriction on the use of road transport is eliminated. In addition, instrumentalities are encouraged to provide all services and facilities, especially to sites receiving Government sponsorship.

Further Reference, 1965

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, see page 705), 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 a 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.

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. 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 many cases, the quantities of raw materials and fuel used, and quantities and values of principal articles produced. These returns 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 product 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 the annual comparisons of manufacturing production.

The concept of value added prevents this double counting and gives a truer picture of the relative economic importance of industries.

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 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 activities, 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

CLASS IV.—INDUSTRIAL METALS, MACHINES, CONVEYANCES—*continued*

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

CLASS VIII.—CLOTHING (EXCEPT KNITTED)—*continued*

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
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 or Ceiling Board (Not Plaster or Cement)
Other

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

Cabinet and Furniture Making (Including 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 Containers
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
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

Summary of Factories

The table below shows, at intervals between 1901 and 1963-64 the development of manufacturing industry in Victoria :—

VICTORIA—SUMMARY OF FACTORY DEVELOPMENT

Year	Factories	Employment*	Salaries and Wages Paid†	Value of—			
				Materials and Fuel Used	Production‡	Output	Land, Buildings, Plant and Machinery
	No.		\$'000				
1901	3,249	66,529	§	§	§	§	24,596
1920-21	6,532	140,743	42,754	135,170	76,846	212,016	70,986
1940-41	9,121	237,636	104,590	240,696	178,002	418,698	184,100
1950-51	13,504	316,792	326,414	798,746	551,320	1,350,066	415,174
1955-56	16,053	355,185	573,888	1,418,888	983,896	2,402,784	946,432
1956-57	16,232	355,204	593,216	1,496,220	1,056,062	2,552,282	1,067,168
1957-58	16,426	357,143	621,080	1,622,442	1,137,370	2,759,812	1,159,640
1958-59	16,527	362,979	648,672	1,644,188	1,221,938	2,866,126	1,293,880
1959-60	16,979	381,844	741,034	1,867,030	1,384,334	3,251,364	1,466,186
1960-61	17,173	388,050	775,998	1,913,978	1,417,546	3,331,524	1,641,886
1961-62	17,300	378,349	770,378	1,933,828	1,440,644	3,374,472	1,827,610
1962-63	17,500	397,827	838,798	2,104,882	1,601,742	3,706,624	1,957,058
1963-64	17,597	413,120	912,424	2,302,986	1,750,478	4,053,464	2,061,518

NOTE.—See also definitions on pages 556-557.

* Average employment over whole year, including working proprietors.

† Excludes drawings of working proprietors.

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

§ Not available.

A graph showing the distribution of the components of Value of Output for the years 1954-55 to 1963-64 is shown on page 566.

A comparison of Victorian factory activity with that in other States is shown in the following table :—

AUSTRALIA—FACTORIES, 1963-64

State	Factories	Employment*	Salaries and Wages Paid†	Value of—			
				Materials and Fuel Used	Production‡	Output	Land, Buildings, Plant and Machinery
	No.		\$'000				
New South Wales	23,641	487,403	1,100,220	3,067,780	2,266,516	5,334,296	2,959,686
Victoria	17,597	413,120	912,424	2,302,986	1,750,478	4,053,464	2,061,518
Queensland ..	5,955	110,696	218,762	850,386	441,874	1,292,260	519,826
South Australia ..	5,826	110,813	240,316	634,430	427,356	1,061,786	560,908
Western Australia	4,609	55,705	108,516	324,546	230,512	555,058	274,326
Tasmania	1,746	31,833	70,582	188,494	152,570	341,064	310,054
Total	59,374	1,209,570	2,650,820	7,368,622	5,269,306	12,637,928	6,686,318

* † ‡ See notes to table above.

NOTE.—Australian Capital Territory and Northern Territory factories are not included in the above table.

Factories Classified According to Class of Industry

The following table contains a summary of factories by class of industry in Victoria during the year 1963-64 :—

VICTORIA—FACTORIES BY CLASSES, 1963-64

Class of Industry	Factories	Employment*	Salaries and Wages Paid†	Materials and Fuel Used	Value of—		
					Production ‡	Output	Land, Buildings, Plant and Machinery
	No.				\$'000		
I. Treatment of Non-metalliciferous Mine and Quarry Products ..	480	7,496	19,378	56,108	44,780	100,888	78,804
II. Bricks, Pottery, Glass, &c. ..	189	7,299	17,802	23,146	33,508	56,654	45,718
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease ..	395	16,396	43,892	268,174	152,986	421,160	222,668
IV. Industrial Metals, Machines, Conveyances ..	7,041	171,748	409,154	720,616	654,992	1,375,608	675,780
V. Precious Metals, Jewellery, Plate ..	251	2,113	4,242	5,040	7,574	12,614	5,700
VI. Textiles and Textile Goods (Not Dress) ..	773	42,674	79,140	217,410	143,462	360,872	136,898
VII. Skins and Leather (Not Clothing or Footwear)	246	3,969	7,890	22,006	13,764	35,770	12,554
VIII. Clothing (Except Knitted)	2,506	47,168	75,232	122,172	127,018	249,190	78,434
IX. Food, Drink, and Tobacco	1,957	40,832	86,952	486,948	216,320	703,268	261,354
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving ..	1,323	14,521	30,716	67,346	53,960	121,306	46,166
XI. Furniture of Wood, Bedding, &c. ..	644	6,605	12,488	27,290	22,536	49,826	17,200
XII. Paper, Stationery, Printing, Bookbinding, &c.	1,038	27,075	65,204	145,398	131,546	276,944	126,432
XIII. Rubber ..	183	8,506	20,262	49,528	38,118	87,646	36,000
XIV. Musical Instruments ..	21	192	404	456	606	1,062	450
XV. Miscellaneous Products	494	11,791	25,654	55,130	49,996	105,126	57,110
Total, Classes I. to XV.	17,541	408,385	898,410	2,266,768	1,691,166	3,957,934	1,801,268
XVI. Heat, Light, and Power	56	4,735	14,014	36,218	59,312	95,530	260,250
GRAND TOTAL ..	17,597	413,120	912,424	2,302,986	1,750,478	4,053,464	2,061,518

For footnotes see page 560.

“Industrial Metals, Machines, and Conveyances” with 171,748 persons or 41.6 per cent. of the total employment in factories during 1963-64, employed considerably more persons than any other class of industry. Next in order of employment was “Clothing” with 47,168 or 11.4 per cent., followed by “Textiles and Textile Goods” and “Food, Drink, and Tobacco” with 42,674 and 40,832 respectively or 10.3 per cent. and 9.9 per cent. of the total.

The total value of production (added value) in 1963-64 was \$1,750,478,000. Of this amount the metals group contributed \$654,992,000 which represented 37.4 per cent. of the total. The food group followed with \$216,320,000 or 12.4 per cent., and next in order were chemicals, dyes, &c., \$152,986,000, 8.7 per cent., textiles with \$143,462,000, 8.2 per cent., paper \$131,546,000, 7.5 per cent., and clothing, \$127,018,000, 7.3 per cent.

The next table shows the number of factories in Victoria during the years 1959-60 to 1963-64 classified according to industry :—

VICTORIA—NUMBER OF FACTORIES IN INDUSTRIAL CLASSES

Class of Industry	1959-60	1960-61	1961-62	1962-63	1963-64
I. Treatment of Non-metalliferous Mine and Quarry Products	449	457	470	477	480
II. Bricks, Pottery, Glass, &c. ..	176	181	177	183	189
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease	367	362	381	390	395
IV. Industrial Metals, Machines, Conveyances	6,414	6,522	6,779	6,944	7,041
V. Precious Metals, Jewellery, Plate ..	248	242	245	247	251
VI. Textiles, and Textile Goods (Not Dress)	811	806	785	781	773
VII. Skins and Leather (Not Clothing or Footwear)	272	260	245	240	246
VIII. Clothing (Except Knitted)	2,416	2,580	2,514	2,545	2,506
IX. Food, Drink, and Tobacco	2,104	2,052	2,030	1,989	1,957
X. Sawmills, Joinery, Boxes &c., Wood Turning and Carving	1,404	1,396	1,342	1,332	1,323
XI. Furniture of Wood, Bedding, &c. ..	664	630	626	635	644
XII. Paper, Stationery, Printing, Book-binding, &c.	948	967	965	987	1,038
XIII. Rubber	164	163	171	180	183
XIV. Musical Instruments	25	26	24	24	21
XV. Miscellaneous Products	446	463	479	484	494
Total, Classes I. to XV. ..	16,908	17,107	17,233	17,438	17,541
XVI. Heat, Light, and Power	71	66	67	62	56
GRAND TOTAL	16,979	17,173	17,300	17,500	17,597

The size classification of factories is based on the average 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 1959-60 to 1963-64 :—

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

Year	Number of Factories Employing, on the Average, Persons Numbering—							
	Under 4	4	5 to 10	11 to 20	21 to 50	51 to 100	Over 100	Total
1959-60	6,030	1,403	4,003	2,401	1,816	659	667	16,979
1960-61	6,176	1,350	4,083	2,365	1,832	693	674	17,173
1961-62	6,262	1,387	4,109	2,369	1,817	686	670	17,300
1962-63	6,331	1,347	4,124	2,424	1,855	709	710	17,500
1963-64	6,256	1,361	4,154	2,437	1,919	735	735	17,597

VICTORIA—AVERAGE NUMBER OF PERSONS EMPLOYED
DURING PERIOD OF OPERATION

Year	Average Number Employed (Including Working Proprietors) in 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	
1959-60	12,005	5,612	27,991	35,216	57,905	45,866	198,994	383,589
1960-61	12,315	5,400	29,047	34,962	58,167	48,251	201,499	389,641
1961-62	12,450	5,548	28,781	35,072	57,664	47,988	192,720	380,223
1962-63	12,665	5,388	29,129	35,766	58,890	49,734	208,257	399,829
1963-64	12,217	5,444	29,181	35,854	61,022	51,945	219,246	414,909

NOTE.—The average number of persons employed, as shown in the above table (viz., 414,909 in 1963-64), differs from the average number of persons employed shown in all other tables (viz., 413,120 in 1963-64) because the average number of persons employed over *period of operation*—the basis of classification used in the above table—exceeds average employment over the *whole year*.

The increase in numbers of small factories and in the persons employed in large factories is of particular interest.

The relative importance of large and small factories is illustrated in the above table. In 1963-64, 7,617 factories employing four or less employees had a total employment of 17,661 persons. Expressed in terms of percentages, 43 per cent. of factories—those employing four or less persons—employed 4 per cent. of the persons engaged in factories. The most numerous of the factories with less than four persons were Motor Repair Workshops, Bakeries, General Engineering Workshops, and Boot Repairing.

The relative and absolute increases in the number of small factories using power other than manual, i.e., those employing less than four hands, is shown in the table which follows. In 1902, factories employing less than four persons numbered 525 and constituted 13·1 per cent. of the total. By 1963-64, this figure had increased to 6,256, i.e., 35·6 per cent. of the total. This increase is believed to be due not so much to an increase in the number of small factories as to a greater use over the years of fractional horsepower electric motors in small factories, with the result that such establishments came within the statistical definition of a factory. The table also shows that in 1963-64, factories employing less than four persons accounted for only 2·0 per cent. of the total Value of Production, and that Value of Production per person employed is lowest in the smallest factories and, in general, rises as size increases.

VICTORIA—NUMBER OF FACTORIES : PERSONS EMPLOYED AND VALUE OF PRODUCTION ACCORDING TO NUMBER OF PERSONS EMPLOYED OVER PERIOD OF OPERATIONS, 1902 AND 1963-64

Average Number of Persons Employed during Period of Operation	1902				1963-64						
	Factories		Persons Employed*		Factories		Persons Employed*		Value of Production‡		
	No.	%	No.	%	No.	%	No.	%	\$'000	%	Per Person Employed
Under 4	525	13·1	1,636	2·2	6,256	35·6	12,043	2·9	34,880	2·0	2,896
4 ..	398	9·9	1,603	2·2	1,361	7·7	5,397	1·3	17,032	1·0	3,156
5-10 ..	1,629	40·7	11,303	15·5	4,154	23·6	28,823	7·0	103,126	5·9	3,579
11-20 ..	726	18·1	10,562	14·5	2,437	13·8	35,539	8·6	136,256	7·8	3,834
21-50 ..	467	11·7	14,361	19·6	1,919	10·9	60,583	14·7	241,984	13·8	3,994
51-100 ..	148	3·7	10,238	14·0	735	4·2	51,716	12·5	222,718	12·7	4,307
101-200	110	2·8	23,360	32·0	401	2·3	56,300	13·6	248,910	14·2	4,421
201-500					235	1·3	70,049	17·0	339,790	19·4	4,851
Over 500					99	0·6	92,670	22·4	405,782	23·2	4,378
Total ..	4,003	100·0	73,063	100·0	17,597	100·0	413,120	100·0	1,750,478	100·0	4,237

* ‡ For footnotes see page 560.

A graph showing Number of Factories and Value of Production by size groups in 1963-64 is shown on page 566.

A general indication of the geographical disposition of factories in the State is shown in the next table where secondary industry in Victoria for 1963-64 is classified according to Statistical Divisions :—

VICTORIA—FACTORIES IN STATISTICAL DIVISIONS, 1963-64

Statistical Division	Factories	Employment*	Salaries and Wages Paid†	Value of—			
				Materials and Fuel Used	Production‡	Output	Land, Buildings, Plant and Machinery
	No.			\$'000			
Metropolitan ..	12,347	336,048	750,722	1,783,402	1,410,220	3,193,622	1,434,196
Central ..	1,143	23,702	53,322	187,318	106,044	293,362	190,464
North-Central ..	385	4,907	9,056	16,660	17,338	33,998	18,612
Western ..	1,037	15,339	29,363	81,852	52,000	133,852	55,690
Wimmera ..	388	2,336	3,784	11,292	6,954	18,246	6,110
Mallee ..	321	2,421	3,992	8,740	7,646	16,386	12,618
Northern ..	867	11,288	22,180	93,190	42,864	136,054	59,300
North-Eastern ..	450	4,936	9,508	24,950	19,766	44,716	76,078
Gippsland ..	659	12,143	30,498	95,582	87,646	183,228	208,450
Total ..	17,597	413,120	912,424	2,302,986	1,750,478	4,053,464	2,061,518

* † ‡ For footnotes see page 560.

Factories in the Metropolitan Area constituted 70·1 per cent. of the total number in Victoria in 1963-64, 81·3 per cent. of the persons employed, and 80·6 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 therein in each Statistical Division is shown in the following table :—

VICTORIA—NUMBER OF FACTORIES AND PERSONS EMPLOYED* IN EACH STATISTICAL DIVISION : CLASSIFIED ACCORDING TO SIZE OF FACTORY, 1963-64.

Size of Factory (Persons)	Statistical Division									Total
	Metro-politan	Central	North-Central	West-ern	Wim-mera	Mallee	North-ern	North-Eastern	Gipps-land	
NUMBER OF FACTORIES										
Under 5 ..	4,669	632	235	555	259	186	520	251	310	7,617
5-10 ..	2,925	253	79	267	83	85	188	98	176	4,154
11-20 ..	1,875	134	35	104	30	25	78	66	90	2,437
21-50 ..	1,634	57	20	59	13	18	43	25	50	1,919
51-100 ..	612	29	11	30	2	7	22	5	17	735
101-500 ..	551	33	4	18	1	..	14	4	11	636
501 and over..	81	5	1	4	..	..	2	1	5	99
Total ..	12,347	1,143	385	1,037	388	321	867	450	659	17,597
NUMBER OF PERSONS EMPLOYED										
Under 5 ..	10,843	1,417	502	1,269	558	428	1,134	571	718	17,440
5-10 ..	20,528	1,687	534	1,783	551	562	1,257	686	1,235	28,823
11-20 ..	27,588	1,890	467	1,413	433	353	1,130	940	1,325	35,539
21-50 ..	51,588	1,857	645	1,879	388	597	1,352	768	1,509	60,583
51-100 ..	43,116	2,025	787	2,228	†	481	1,454	†	1,161	51,716
101-500 ..	†	7,920	†	4,204	†	..	†	†	†	126,349
501 and over..	†	6,906	†	2,563	..	..	†	†	†	92,670
Total ..	336,048	23,702	4,907	15,339	2,336	2,421	11,288	4,936	12,143	413,120

* Average employment over whole year ; includes working proprietors. The use of the whole year average has the arithmetical effect of reducing the average number of persons working in factories during the period of operations (414,909—see pages 556 and 563) to the average number of persons employed over the whole year (413,120).

† Not available for publication.

The above table shows that in 1963-64 there were 735 factories each employing more than 100 persons with a total employment of 219,019 persons in Victoria. Of these 632 (182,385 persons) were located in the Metropolitan Area and 38 (14,826 persons) in the Central Statistical Division which includes Geelong. The balance, 65 factories (21,808 persons) were distributed over the remainder of the State, principally in the Western (22 factories) and Gippsland (16 factories) 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.

VICTORIA—FACTORIES : VALUE OF OUTPUT, 1954-55 TO 1963-64

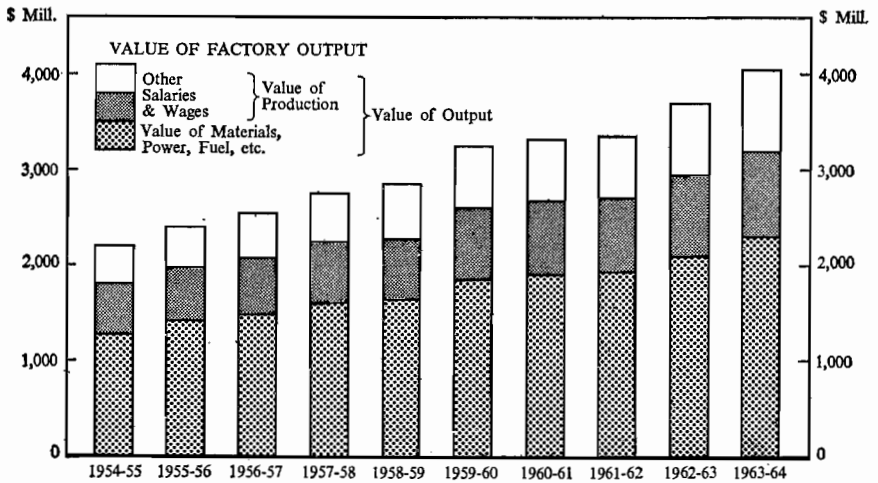


FIGURE 15.

VICTORIA—FACTORIES : NUMBER OF FACTORIES AND VALUE OF PRODUCTION CLASSIFIED ACCORDING TO AVERAGE NUMBER OF PERSONS EMPLOYED, 1963-64

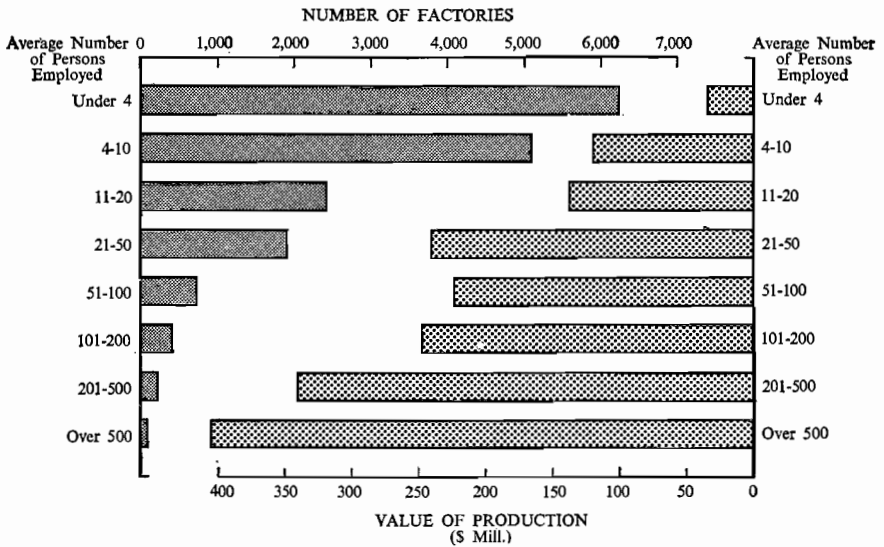


FIGURE 16.

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) workers in factories (skilled and unskilled); foremen and overseers; carters (excluding delivery only), messengers, and persons working regularly at home.

The figures showing average employment in factories represent the equivalent average number of persons employed, including working proprietors, over a full year of twelve months. This method is used for all purposes except in the tables shown on pages 562 to 564, 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 1959-60 to 1963-64 :—

VICTORIA—PERSONS EMPLOYED IN FACTORIES*

Class of Industry	1959-60	1960-61	1961-62	1962-63	1963-64		
					Males	Females	Persons
I. Treatment of Non-metalliferous Mine and Quarry Products ..	6,564	6,977	6,972	7,156	7,074	422	7,496
II. Bricks, Pottery, Glass, &c. ..	6,460	6,569	6,494	7,007	6,429	870	7,299
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease ..	16,231	15,443	15,763	16,062	12,839	3,557	16,396
IV. Industrial Metals, Machines, Conveyances ..	151,173	157,822	151,940	162,649	148,493	23,255	171,748
V. Precious Metals, Jewellery, Plate ..	1,980	2,087	1,959	2,022	1,724	389	2,113
VI. Textiles and Textile Goods (Not Dress) ..	41,073	40,395	39,100	41,930	17,374	25,300	42,674
VII. Skins and Leather (Not Clothing or Footwear) ..	4,413	3,992	3,781	3,993	2,767	1,202	3,969
VIII. Clothing (Except Knitted) ..	45,260	45,462	44,712	46,795	13,723	33,445	47,168
IX. Food, Drink, and Tobacco ..	38,830	38,361	38,999	39,425	27,541	13,291	40,832
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving ..	15,759	15,623	14,595	14,639	13,577	944	14,521
XI. Furniture of Wood, Bedding, &c. ..	6,531	6,309	6,126	6,375	5,106	1,499	6,605
XII. Paper, Stationery, Printing, Bookbinding, &c. ..	24,305	25,228	24,940	25,927	19,800	7,275	27,075
XIII. Rubber ..	7,282	7,359	6,998	7,806	6,689	1,817	8,506
XIV. Musical Instruments ..	233	216	183	192	162	30	192
XV. Miscellaneous Products ..	10,767	11,261	10,787	11,056	7,440	4,351	11,791
Total, Classes I. to XV.	376,861	383,104	373,349	393,034	290,738	117,647	408,385
XVI. Heat, Light, and Power ..	4,983	4,946	5,000	4,793	4,702	33	4,735
GRAND TOTAL ..	381,844	388,050	378,349	397,827	295,440	117,680	413,120

* For footnote see page 560.

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 a total of 73·2 per cent. of factory employment should be noted.

Female factory workers in 1963-64 were 28.5 per cent. of the total. They exceeded males in Class VI.—Textiles and Textile Goods (Not Dress) with 59.3 per cent. and in Class VIII.—Clothing (Except Knitted), with 70.9 per cent. of the Class total.

Of the total females employed 28.4 per cent. were in Class VIII.; 21.5 per cent. in Class VI.; 19.8 per cent. in Class IV.; and 11.3 per cent. in Class IX.

In the following table, the average number of persons employed in factories in Victoria is classified according to the nature of their employment for the years 1959-60 to 1963-64 :—

VICTORIA—NATURE OF EMPLOYMENT IN FACTORIES

Year	Working Proprietors	Managerial and Clerical Staff	Chemists, Draftsmen, &c.	Workers in Factories (Skilled and Unskilled), Foremen and Overseers, Carters (Excluding Delivery Only) and Messengers, &c.	Total
1959-60	13,401	45,913	6,677	315,853	381,844
1960-61	13,223	48,246	7,149	319,432	388,050
1961-62	12,772	48,674	7,574	309,329	378,349
1962-63	12,784	50,984	7,887	326,172	397,827
1963-64	12,641	53,637	8,291	338,551	413,120

The following table shows the nature of employment in factories in 1963-64 according to the class of industry :—

VICTORIA—NATURE OF EMPLOYMENT IN FACTORIES BY CLASSES OF INDUSTRY, 1963-64

Class of Industry	Working Proprietors	Managerial and Clerical Staff	Chemists, Draftsmen, &c.	All Other Workers	Total
I. Treatment of Non-metalliferous Mine and Quarry Products ..	249	932	148	6,167	7,496
II. Bricks, Pottery, Glass, &c. ..	68	861	75	6,295	7,299
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease	106	3,082	1,348	11,860	16,396
IV. Industrial Metals, Machines, Conveyances	4,941	25,469	4,702	136,636	171,748
V. Precious Metals, Jewellery, Plate ..	228	228	4	1,653	2,113
VI. Textile and Textile Goods (Not Dress)	447	3,840	321	38,066	42,674
VII. Skins and Leather (Not Clothing or Footwear)	220	366	21	3,362	3,969
VIII. Clothing (Except Knitted)	2,287	3,208	36	41,637	47,168
IX. Food, Drink, and Tobacco	1,746	5,438	693	32,955	40,832
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving	851	1,799	23	11,848	14,521
XI. Furniture of Wood, Bedding, &c. ..	557	769	3	5,276	6,605
XII. Paper, Stationery, Printing, Book-binding, &c.	623	4,151	222	22,079	27,075
XIII. Rubber	53	1,264	245	6,944	8,506
XIV. Musical Instruments	8	25	2	157	192
XV. Miscellaneous Products	247	1,913	296	9,335	11,791
Total, Classes I. to XV.	12,631	53,345	8,139	334,270	408,385
XVI. Heat, Light, and Power	10	292	152	4,281	4,735
GRAND TOTAL	12,641	53,637	8,291	338,551	413,120

Although "All Other Workers" constitute 81·9 per cent. of the total numbers employed in factories, the percentage varies from 72·3 per cent. in Class III. to 89·2 per cent. in Class VI. Class III. also has the highest percentage of managerial, clerical, and research workers, 18·8 per cent., compared with the Victorian average of 13·0 per cent.

Where small factories predominate, there is usually a higher proportion of working proprietors than on the average and a smaller than average managerial and clerical staff. This is particularly evident in Class V.—Precious Metals and Jewellery, where working proprietors comprise 10·8 per cent. of the total number employed; Class X.—Sawmills, Joinery, &c., 6·5 per cent.; and Class XI.—Furniture of Wood, Bedding, &c., 8·4 per cent. The average for Victoria is 3·1 per cent.

The following table shows the age distribution of male and female factory employees on the last pay day in June of each of the years 1960 to 1964 :—

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
1960 ..	2,573	23,063	242,436	268,072	2,664	16,449	87,003	106,116
1961 ..	2,707	21,988	231,432	256,127	2,586	14,556	79,132	96,274
1962 ..	2,625	24,379	240,367	267,371	3,049	16,068	85,515	104,632
1963 ..	2,444	25,822	248,644	276,910	2,653	16,969	90,125	109,747
1964 ..	2,072	27,740	260,246	290,058	2,207	17,931	96,898	117,036

The numbers of males and females employed in factories, and the proportions of the average male and female population working in factories in 1963–64 and earlier years are shown in the following table :—

VICTORIA—EMPLOYMENT OF MALES AND FEMALES IN FACTORIES

Year	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
1918–19 ..	81,357	1,188	40,992	550	122,349	855
1928–29 ..	104,648	1,195	51,920	586	156,568	889
1938–39 ..	136,218	1,470	65,613	692	201,831	1,076
1948–49 ..	208,184	1,996	83,822	781	292,006	1,380
1958–59 ..	263,847	1,888	99,132	720	362,979	1,308
1960–61 ..	280,207	1,923	107,843	751	388,050	1,341
1961–62 ..	273,949	1,840	104,400	710	378,349	1,279
1962–63 ..	285,685	1,880	112,142	746	397,827	1,317
1963–64 ..	295,440	1,903	117,680	765	413,120	1,337

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		
	1961-62	1962-63	1963-64	1961-62	1962-63	1963-64
I. Treatment of Non-metalliferous Mine and Quarry Products	373	412	422	5·3	5·8	5·6
II. Bricks, Pottery, Glass, &c. ..	756	819	870	11·6	11·7	11·9
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease	3,192	3,265	3,557	20·2	20·3	21·7
IV. Industrial Metals, Machines, Conveyances—	18,845	21,387	23,255	12·4	13·1	13·5
Plant, Equipment and Machinery	2,707	2,924	3,231	10·0	10·4	10·8
Electrical Machinery, Cables, and Apparatus	3,584	3,953	4,653	24·1	25·0	27·0
Sheet Metal Working	2,089	2,167	2,234	19·8	20·2	20·1
Wireless and Amplifying Apparatus	1,184	1,522	1,380	38·1	38·8	38·7
V. Precious Metals, Jewellery, Plate ..	372	383	389	19·0	18·9	18·4
VI. Textiles and Textile Goods (Not Dress)—	22,707	24,614	25,300	58·1	58·7	59·3
Cotton Spinning and Weaving	1,982	2,058	2,177	55·3	55·5	56·4
Wool-Carding, Spinning, Weaving	5,530	5,768	5,442	53·0	53·3	53·4
Hosiery and Other Knitted Goods	12,192	13,301	13,893	74·0	74·7	75·5
VII. Skins and Leather (Not Clothing or Footwear)	1,102	1,141	1,202	29·1	28·6	30·3
VIII. Clothing (Except Knitted)—	31,038	32,809	33,445	69·4	70·1	70·9
Tailoring and Ready-Made Clothing	7,691	8,231	8,168	73·9	74·5	75·0
Dressmaking, Hemstitching	7,093	7,390	7,869	87·2	87·2	87·2
Boots and Shoes (Not Rubber)	6,219	6,538	6,877	54·0	54·9	56·6
Dyeworks and Cleaning, &c. ..	1,385	1,343	1,346	48·4	47·9	48·4
IX. Food, Drink, and Tobacco—	12,041	12,361	13,291	30·9	31·4	32·6
Bakeries (Including Cakes and Pastry)	1,547	1,624	1,730	25·4	25·9	27·3
Confectionery (Including Chocolate and Icing Sugar)	1,721	1,803	1,866	54·9	56·3	56·3
Jam, Fruit, and Vegetable Canning	1,980	1,891	2,203	42·4	40·8	43·2
Tobacco, Cigars, Cigarettes	1,123	1,173	1,199	51·7	53·9	54·0
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving	872	905	944	6·0	6·2	6·5
XI. Furniture of Wood, Bedding, &c. ..	1,340	1,402	1,499	21·9	22·0	22·7
XII. Paper, Stationery, Printing, Book-binding, &c.	6,479	6,888	7,275	26·0	26·6	26·9
XIII. Rubber	1,467	1,683	1,817	21·0	21·6	21·4
XIV. Musical Instruments	25	22	30	13·7	11·5	15·6
XV. Miscellaneous Products	3,752	4,014	4,351	34·8	36·3	36·9
XVI. Heat, Light, and Power	39	37	33	0·8	0·8	0·7
Total Classes Only	104,400	112,142	117,680	27·5	28·2	28·5

In Class XVI.—Heat, Light, and Power, the percentage of females to total persons employed is at its lowest, 0·7 per cent. In Class VIII.—Clothing (Except Knitted), females predominate and comprise 70·9 per cent. of the total number of persons employed. Within Class VIII., in the Dressmaking sub-class, 87·2 per cent. of the total employed are females. In Class IV.—Industrial Metals, Machines, and Conveyances, females constitute 13·5 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 debar employment in factories of children under the age of fifteen years, and the Victorian Education Act makes daily attendance at school compulsory between the ages of six and fifteen years.

Some children under fifteen may work in a shop or office if they are exempted under the Education Act, but the general effect of the two statutes contributes 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 1963-64. 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 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,
1963-64**

(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 ..	2,908	416	15,872	182	18,780	598	19,378
II. Bricks, Pottery, Glass, &c. ..	2,160	382	14,486	774	16,646	1,156	17,802
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease ..	11,716	2,286	26,992	2,898	38,708	5,184	43,892
IV. Industrial Metals, Machines, Conveyances ..	76,958	13,598	298,684	19,912	375,644	33,510	409,154
V. Precious Metals, Jewellery, Plate ..	512	156	3,240	336	3,750	492	4,242
VI. Textiles and Textile Goods (Not Dress) ..	8,286	3,232	35,432	32,188	43,716	35,424	79,140
VII. Skins and Leather (Not Clothing or Footwear) ..	1,008	206	5,294	1,382	6,302	1,588	7,890
VIII. Clothing (Except Knitted) ..	6,090	2,878	23,096	43,168	29,186	46,046	75,232
IX. Food, Drink, and Tobacco ..	12,566	4,020	55,384	14,982	67,950	19,002	86,952
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving ..	4,334	862	25,106	416	29,438	1,278	30,716
XI. Furniture of Wood, Bedding, &c. ..	1,504	526	9,028	1,432	10,532	1,956	12,488
XII. Paper, Stationery, Printing, Bookbinding, &c. ..	10,408	2,820	44,622	7,354	55,030	10,174	65,204
XIII. Rubber ..	3,216	784	14,296	1,968	17,510	2,752	20,262
XIV. Musical Instruments ..	62	16	300	24	364	40	404
XV. Miscellaneous Products ..	4,614	1,310	15,044	4,686	19,658	5,996	25,654
Total, Classes I. to XV. ..	146,342	33,492	586,876	131,702	733,216	165,194	898,410
XVI. Heat, Light, and Power ..	1,664	22	12,296	30	13,962	52	14,014
GRAND TOTAL ..	148,006	33,514	599,172	131,732	747,178	165,246	912,424

Of the total amount of salaries and wages paid in Victoria in 1963-64—\$912,424,000—the Industrial Metals, &c., group was responsible for \$409,154,000 or 44·8 per cent., Food, Drink, &c., \$86,952,000 or 9·5 per cent., Textiles, &c., \$79,140,000 or 8·7 per cent., and Clothing, &c., \$75,232,000 or 8·2 per cent.

The total amount of salaries and wages paid in industry in Victoria in each of the years of 1959-60 to 1963-64 is shown below under similar headings to those in the preceding table. The average per employee is also shown.

VICTORIA—SALARIES AND WAGES PAID IN FACTORIES
(Excludes Drawings of 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	Persons
	Males	Females	Males	Females			
TOTAL AMOUNT PAID (\$'000)							
1959-60	107,586	25,656	498,442	109,350	606,028	135,006	741,034
1960-61	118,114	27,540	519,116	111,230	637,230	138,768	776,000
1961-62	124,002	28,628	507,282	110,466	631,282	139,096	770,378
1962-63	135,050	30,842	550,464	122,444	685,514	153,284	838,800
1963-64	148,006	33,514	599,172	131,732	747,178	165,246	912,424
AVERAGE PER EMPLOYEE (\$)							
1959-60	3,114	1,422	2,168	1,274	2,291	1,298	2,011
1960-61	3,222	1,470	2,232	1,281	2,367	1,314	2,070
1961-62	3,324	1,512	2,244	1,326	2,397	1,361	2,108
1962-63	3,463	1,552	2,331	1,360	2,491	1,395	2,178
1963-64	3,622	1,591	2,454	1,396	2,621	1,432	2,209

Power, Fuel, and Light Used

The following table shows the cost of power, fuel, light, water, and lubricating oil used during the five years 1959-60 to 1963-64 :—

VICTORIA—COST OF POWER, FUEL, LIGHT, ETC., USED IN FACTORIES
((\$'000))

Class of Industry	1959-60	1960-61	1961-62	1962-63	1963-64
I. Treatment of Non-metalliferous Mine and Quarry Products	5,420	5,558	5,818	5,732	6,100
II. Bricks, Pottery, Glass, &c.	4,430	4,592	4,430	5,002	5,902
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease	13,284	12,040	13,584	14,614	15,170
IV. Industrial Metals, Machines, Conveyances	17,900	19,196	18,792	21,878	25,828
V. Precious Metals, Jewellery, Plate	292	316	298	322	348
VI. Textiles, and Textile Goods (Not Dress)	5,336	5,100	5,210	5,570	5,934
VII. Skins and Leather (Not Clothing or Footwear)	914	808	838	892	878
VIII. Clothing (Except Knitted)	1,874	1,906	1,910	2,016	2,094
IX. Food, Drink, and Tobacco	12,252	12,262	12,470	12,912	13,640
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving	1,700	1,618	1,654	1,716	1,872
XI. Furniture of Wood, Bedding, &c.	272	262	250	270	302
XII. Paper, Stationery, Printing, Bookbinding, &c.	4,282	4,346	4,348	5,034	5,406
XIII. Rubber	2,530	2,534	2,456	2,798	2,984
XIV. Musical Instruments	18	16	18	20	20
XV. Miscellaneous Products	1,826	2,004	2,084	2,262	2,464
Total, Classes, I. to XV.	72,330	72,558	74,158	81,038	88,942
XVI. Heat, Light, and Power	21,950	25,872	24,928	22,510	25,706
GRAND TOTAL	94,280	98,430	99,086	103,548	114,648

The next table gives in detail for each of the years 1959-60 to 1963-64 information dealing with the cost of each type of fuel used. The costs of water and lubricating oil are also shown separately.

VICTORIA—COST OF ITEMS OF POWER, FUEL, LIGHT, ETC.,
USED IN FACTORIES

(\$'000)

Commodity	1959-60	1960-61	1961-62	1962-63	1963-64
Coal—					
Black	5,356	4,796	3,846	3,132	3,338
Brown	15,610	13,022	12,702	13,136	14,736
Brown Coal Briquettes	4,712	14,058	14,906	12,222	12,542
Coke	1,270	1,176	1,250	1,484	1,500
Wood	1,096	1,028	978	898	820
Fuel Oil	24,856	20,394	19,210	20,814	22,662
Tar (Fuel)	358	286	250	160	196
Electricity	31,654	34,154	35,378	39,854	45,454
Gas	2,614	2,638	2,858	3,452	4,058
Other (Charcoal, &c.)	1,416	1,202	1,306	1,314	1,506
Water	3,450	3,792	4,550	4,964	5,426
Lubricating Oils	1,888	1,884	1,852	2,118	2,410
Total	94,280	98,430	99,086	103,548	114,648

In 1963-64 electricity, fuel oil, briquettes, and brown coal represented 39·6, 19·8, 10·9, and 12·8 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 1959-60 to 1963-64 are given below :—

VICTORIA—QUANTITIES OF FUELS USED IN FACTORIES

Commodity	Unit of Quantity	1959-60	1960-61	1961-62	1962-63	1963-64
Coal—						
Black	'000 tons	427	387	315	250	316
Brown	'000 tons	11,746	10,921	11,841	12,762	13,461
Brown Coal						
Briquettes	'000 tons	510	1200	1,280	1,089	1,095
Coke	'000 tons	50	47	57	63	60
Wood	'000 tons	282	274	270	235	232
Fuel Oil	'000 gall.	241,433	214,905	226,521	259,849	292,011
Tar Fuel	'000 tons	3,412*	13	12	8	9

* '000 gall.

Cost of Materials Used

The cost of materials used in factories is shown by classes for each of the last five years in the next table. "Materials Used" includes 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	1959-60	1960-61	1961-62	1962-63	1963-64
I. Treatment of Non-metalliferous Mine and Quarry Products	31,342	39,530	41,292	43,686	50,008
II. Bricks, Pottery, Glass, &c.	14,110	14,738	14,346	16,116	17,244
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease	210,628	202,556	219,954	247,324	253,004
IV. Industrial Metals, Machines, Conveyances	520,714	553,874	543,030	609,002	694,788
V. Precious Metals, Jewellery, Plate	3,990	3,928	3,616	4,470	4,692
VI. Textiles and Textile Goods (Not Dress)	166,008	159,688	166,220	194,268	211,476
VII. Skins and Leather (Not Clothing or Footwear)	24,178	20,158	19,118	20,172	21,128
VIII. Clothing (Except Knitted)	106,226	108,276	108,742	115,540	120,078
IX. Food, Drink, and Tobacco	389,642	406,210	422,724	432,996	473,308
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving	63,294	62,534	59,952	61,304	65,474
XI. Furniture of Wood, Bedding, &c.	23,264	22,958	24,086	24,120	26,988
XII. Paper, Stationery, Printing, Book-binding, &c.	116,114	120,380	117,948	130,754	139,992
XIII. Rubber	44,256	43,090	37,692	42,584	46,544
XIV. Musical Instruments	398	396	324	366	436
XV. Miscellaneous Products	46,242	44,952	44,416	48,446	52,666
Total, Classes I. to XV.	1,760,406	1,803,268	1,823,460	1,991,148	2,177,826
XVI. Heat, Light, and Power	12,344	12,280	11,282	10,186	10,512
GRAND TOTAL	1,772,750	1,815,548	1,834,742	2,001,334	2,188,338

Value of Output and Production

Value of factory output by classes of industry in each of the years 1959-60 to 1963-64 is shown in the following table :—

VICTORIA—VALUE OF FACTORY OUTPUT
('\$000)

Class of Industry	1959-60	1960-61	1961-62	1962-63	1963-64
I. Treatment of Non-metalliferous Mine and Quarry Products ..	68,110	81,168	84,872	88,946	100,888
II. Bricks, Pottery, Glass, &c. ..	42,298	44,312	42,658	49,268	56,654
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease ..	344,624	325,540	352,492	404,880	421,160
IV. Industrial Metals, Machines, Conveyances ..	1,046,340	1,110,136	1,085,116	1,218,616	1,375,608
V. Precious Metals, Jewellery, Plate..	10,536	10,712	9,912	11,624	12,614
VI. Textiles and Textile Goods (Not Dress) ..	292,548	283,982	291,086	334,014	360,872
VII. Skins and Leather (Not Clothing or Footwear) ..	37,942	32,946	31,906	34,442	35,770
VIII. Clothing (Except Knitted) ..	213,300	219,770	223,862	237,328	249,190
IX. Food, Drink, and Tobacco ..	565,118	583,258	621,334	644,936	703,268
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving ..	114,984	114,902	109,250	113,384	121,306
XI. Furniture of Wood, Bedding, &c. ..	43,946	42,780	44,542	45,406	49,826
XII. Paper, Stationery, Printing, Book-binding, &c. ..	225,930	233,038	235,730	257,030	276,944
XIII. Rubber ..	76,020	76,522	71,694	82,160	87,646
XIV. Musical Instruments ..	1,066	994	888	964	1,062
XV. Miscellaneous Products ..	85,398	86,402	86,492	95,012	105,126
Total, Classes I. to XV. ..	3,168,160	3,246,462	3,291,834	3,618,010	3,957,934
XVI. Heat, Light, and Power ..	83,204	85,062	82,638	88,614	95,530
GRAND TOTAL ..	3,251,364	3,331,524	3,374,472	3,706,624	4,053,464

In the next table the value of production in Victoria is given according to the various classes of industry for each of the years 1959-60 to 1963-64 :—

VICTORIA—VALUE OF PRODUCTION OF FACTORIES
('\$000)

Class of Industry	1959-60	1960-61	1961-62	1962-63	1963-64
I. Treatment of Non-metalliferous Mine and Quarry Products ..	31,348	36,080	37,762	39,528	44,780
II. Bricks, Pottery, Glass &c. ..	23,758	24,982	23,882	28,150	33,508
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease ..	120,710	110,942	118,954	142,942	152,986
IV. Industrial Metals, Machines, Conveyances ..	507,726	537,066	523,296	587,736	654,992
V. Precious Metals, Jewellery, Plate..	6,254	6,468	5,998	6,832	7,574
VI. Textiles and Textile Goods (Not Dress) ..	121,204	119,194	119,656	134,176	143,462
VII. Skins and Leather (Not Clothing or Footwear) ..	12,850	11,980	11,950	13,378	13,764
VIII. Clothing (Except Knitted) ..	105,200	109,588	113,210	119,772	127,018
IX. Food, Drink, and Tobacco ..	163,224	164,786	186,140	199,028	216,320
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving ..	49,990	50,750	47,644	50,364	53,960
XI. Furniture of Wood, Bedding, &c. ..	20,410	19,562	20,206	21,016	22,536
XII. Paper, Stationery, Printing, Book-binding, &c. ..	105,534	108,312	113,434	121,242	131,546
XIII. Rubber ..	29,234	30,898	31,546	36,778	38,118
XIV. Musical Instruments ..	650	582	546	578	606
XV. Miscellaneous Products ..	37,330	39,446	39,992	44,304	49,996
Total, Classes I. to XV. ..	1,335,422	1,370,636	1,394,216	1,545,824	1,691,166
XVI. Heat, Light, and Power ..	48,912	46,910	46,428	55,918	59,312
GRAND TOTAL ..	1,384,334	1,417,546	1,440,644	1,601,742	1,750,478

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 557.

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 1963–64 are given in the following tables:—

VICTORIA—FACTORY COSTS AND OUTPUT, 1963–64 (\$'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 ..	50,008	6,100	19,378	25,402	100,888
II. Bricks, Pottery, Glass, &c. ..	17,244	5,902	17,802	15,706	56,654
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease	253,004	15,170	43,892	109,094	421,160
IV. Industrial Metals, Machines, Conveyances	694,788	25,828	409,154	245,838	1,375,608
V. Precious Metals, Jewellery, Plate ..	4,692	348	4,242	3,332	12,614
VI. Textile and Textile Goods (Not Dress)	211,476	5,934	79,140	64,322	360,872
VII. Skins and Leather (Not Clothing or Footwear)	21,128	878	7,890	5,874	35,770
VIII. Clothing (Except Knitted) ..	120,078	2,094	75,232	51,786	249,190
IX. Food, Drink, and Tobacco ..	473,308	13,640	86,952	129,368	703,268
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving	65,474	1,872	30,716	23,244	121,306
XI. Furniture of Wood, Bedding, &c.	26,988	302	12,488	10,048	49,826
XII. Paper, Stationery, Printing, Book-binding, &c.	139,992	5,406	65,204	66,342	276,944
XIII. Rubber	46,544	2,984	20,262	17,856	87,646
XIV. Musical Instruments	436	20	404	202	1,062
XV. Miscellaneous Products	52,666	2,464	25,654	24,342	105,126
Total, Classes I. to XV. ..	2,177,826	88,942	898,410	792,756	3,957,934
XVI. Heat, Light, and Power	10,512	25,706	14,014	45,298	95,530
GRAND TOTAL	2,188,338	114,648	912,424	838,054	4,053,464

* Includes containers, tools replaced, and 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—PERCENTAGE OF SPECIFIED COSTS OF PRODUCTION, ETC., TO VALUE OF OUTPUT OF FACTORIES, 1963-64

(Per Cent.)

Class of Industry	Specified Costs of Production			Balance between Value of Output and Specified Costs‡	Total
	Materials Used*	Fuel, Light, and Power Used†	Salaries and Wages Paid		
I. Treatment of Non-metalliferous Mine and Quarry Products ..	49·6	6·0	19·2	25·2	100·0
II. Bricks, Pottery, Glass, &c. ..	30·4	10·4	31·4	27·8	100·0
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease	60·1	3·6	10·4	25·9	100·0
IV. Industrial Metals, Machines, Conveyances	50·5	1·9	29·7	17·9	100·0
V. Precious Metals, Jewellery, Plate ..	37·2	2·8	33·6	26·4	100·0
VI. Textiles and Textile Goods (Not Dress)	58·6	1·7	21·9	17·8	100·0
VII. Skins and Leather (Not Clothing or Footwear)	59·1	2·5	22·0	16·4	100·0
VIII. Clothing (Except Knitted) ..	48·2	0·8	30·2	20·8	100·0
IX. Food, Drink, and Tobacco ..	67·3	1·9	12·4	18·4	100·0
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving ..	54·0	1·5	25·3	19·2	100·0
XI. Furniture of Wood, Bedding, &c.	54·2	0·6	25·0	20·2	100·0
XII. Paper, Stationery, Printing, Book-binding, &c.	50·5	2·0	23·5	24·0	100·0
XIII. Rubber	53·1	3·4	23·1	20·4	100·0
XIV. Musical Instruments	41·1	1·9	38·0	19·0	100·0
XV. Miscellaneous Products	50·1	2·3	24·4	23·2	100·0
Total, Classes, I. to XV. ..	55·0	2·3	22·7	20·0	100·0
XVI. Heat, Light, and Power	11·0	26·9	14·7	47·4	100·0
GRAND TOTAL	54·0	2·8	22·5	20·7	100·0

For footnotes see page 576.

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 31·4 per cent. and the cost of raw materials 30·4 per cent. of the values of the finished articles, whilst, in Class IX., the expenditure on wages amount to 12·4 per cent. and that on raw materials to 67·3 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 1959-60 to 1963-64 :—

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

(\$'000)

Year	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		
1959-60	1,772,750	94,280	741,034	643,300	3,251,364
1960-61	1,815,548	98,430	775,998	641,548	3,331,524
1961-62	1,834,742	99,086	770,378	670,266	3,374,472
1962-63	2,001,334	103,548	838,798	762,944	3,706,624
1963-64	2,188,338	114,648	912,424	838,054	4,053,464

For footnotes see page 576.

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	Specified Costs of Production			Balance between Value of Output and Specified Costs‡	Total
	Materials Used*	Fuel, Light, and Power Used†	Salaries and Wages		
1959-60	54.5	2.9	22.8	19.8	100.0
1960-61	54.5	3.0	23.3	19.2	100.0
1961-62	54.4	2.9	22.8	19.9	100.0
1962-63	54.0	2.8	22.6	20.6	100.0
1963-64	54.0	2.8	22.5	20.7	100.0

For footnotes see page 576.

Land, Building, Plant, and Machinery

The following statement shows the value of land and buildings used in the various classes of manufacturing industries for the years 1959–60 to 1963–64 :—

VICTORIA—FACTORIES : VALUE OF LAND AND BUILDINGS (\$'000)

Class of Industry	1959–60	1960–61	1961–62	1962–63	1963–64
I. Treatment of Non-metalliferous Mine and Quarry Products	19,488	21,576	24,022	24,662	28,122
II. Bricks, Pottery, Glass, &c. ..	10,036	11,648	13,988	20,230	21,952
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease	56,188	61,662	72,106	74,962	75,812
IV. Industrial Metals, Machines, Conveyances	254,272	294,280	333,568	365,988	393,476
V. Precious Metals, Jewellery, Plate ..	3,102	3,562	3,684	3,996	4,350
VI. Textiles and Textile Goods (Not Dress)	57,314	63,586	69,062	71,836	77,674
VII. Skins and Leather (Not Clothing or Footwear)	7,642	7,630	8,314	8,694	9,382
VIII. Clothing (Except Knitted) ..	40,782	47,068	50,416	54,024	58,300
IX. Food, Drink, and Tobacco ..	104,114	113,180	121,836	130,692	138,268
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving	20,964	25,434	26,086	26,890	29,102
XI. Furniture of Wood, Bedding, &c. . .	10,612	11,348	11,498	12,654	14,104
XII. Paper, Stationery, Printing, Book-binding, &c.	47,602	54,252	56,894	59,884	64,062
XIII. Rubber	10,342	13,328	13,844	15,186	20,150
XIV. Musical Instruments	566	496	466	410	332
XV. Miscellaneous Products	17,468	19,802	27,538	29,518	32,078
Total, Classes I. to XV. ..	660,492	748,852	833,322	899,626	967,164
XVI. Heat, Light, and Power	48,430	54,610	56,010	54,112	53,630
GRAND TOTAL	708,922	803,462	889,332	953,738	1,020,794

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 are shown for each of the years 1959-60 to 1963-64 :—

VICTORIA—FACTORIES: VALUE OF PLANT AND MACHINERY
(\$'000)

Class of Industry	1959-60	1960-61	1961-62	1962-63	1963-64
I. Treatment of Non-metalliferous Mine and Quarry Products	33,952	39,668	45,428	49,836	50,682
II. Bricks, Pottery, Glass, &c. ..	7,776	9,156	12,008	20,854	23,766
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease	108,188	108,194	152,930	148,882	146,856
IV. Industrial Metals, Machines, Conveyances	182,674	213,710	227,342	258,374	282,304
V. Precious Metals, Jewellery, Plate ..	980	1,062	1,106	1,158	1,350
VI. Textiles and Textile Goods (Not Dress)	46,556	49,298	52,642	57,628	59,224
VII. Skins and Leather (Not Clothing or Footwear)	2,952	3,302	3,272	3,024	3,172
VIII. Clothing (Except Knitted)	15,680	17,388	17,882	18,484	20,134
IX. Food, Drink, and Tobacco	87,876	96,236	103,162	115,480	123,086
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving	14,000	15,426	15,856	15,778	17,064
XI. Furniture of Wood, Bedding, &c. ..	2,552	2,440	2,530	2,728	3,096
XII. Paper, Stationery, Printing, Book-binding, &c.	50,292	56,164	56,646	60,296	62,370
XIII. Rubber	13,196	14,784	15,296	15,856	15,850
XIV. Musical Instruments	146	170	144	130	118
XV. Miscellaneous Products	13,946	16,228	18,260	22,678	25,032
Total, Classes I. to XV.	580,766	643,226	724,504	791,186	834,104
XVI. Heat, Light, and Power	176,498	195,198	213,774	212,134	206,620
GRAND TOTAL	757,264	838,424	938,278	1,003,320	1,040,724

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*, 1963-64

Class of Industry	Steam		Internal Combustion		Water	Motor Driven by Electricity		Total without Duplication
	Reciprocating	Turbine	Gas	Petrol or Other Light Oils		Purchased	Own Generation	
I. Treatment of Non-metalliferous Mine and Quarry Products ..	1,256	25,400	..	1,047	..	72,032	14,940	99,735
II. Bricks, Pottery, Glass, &c. ..	1,045	..	..	983	..	50,267	12	52,295
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease	2,272	44,860	2,575	2,045	..	149,899	12,677	201,651
IV. Industrial Metals, Machines, Conveyances	1,651	..	..	6,429	..	600,942	1,291	609,022
V. Precious Metals, Jewellery, Plate ..	45	..	..	..	..	3,927	..	3,972
VI. Textiles and Textile Goods (Not Dress)	26	12	..	563	..	112,539	300	113,140
VII. Skins and Leather (Not Clothing or Footwear)	770	95	..	187	..	15,615	548	16,667
VIII. Clothing (Except Knitted)	458	..	..	152	..	29,151	..	29,761
IX. Food, Drink, and Tobacco	2,385	1,565	..	6,790	830	226,549	2,424	238,119
X. Sawmills, Joinery, Boxes &c., Wood Turning and Carving	4,017	..	..	28,151	10	101,755	2,513	133,933
XI. Furniture of Wood, Bedding, &c. ..	..	..	..	..	..	14,769	..	14,769
XII. Paper, Stationery, Printing, Bookbinding, &c.	600	23,500	..	324	..	97,650	26,000	122,074
XIII. Rubber .. ..	..	..	..	307	..	76,706	30	77,013
XIV. Musical Instruments .. ..	..	..	..	..	..	307	..	307
XV. Miscellaneous Products .. ..	..	2,000	..	315	..	40,298	250	42,613
Total, Classes I. to XV.	14,525	97,432	2,575	47,293	840	1,592,406	60,985	1,755,071
XVI. Gas Works	2,556	1,292	90	1,358	..	19,015	7	24,311
GRAND TOTAL	17,081	98,724	2,665	48,651	840	1,611,421	60,992	1,779,382

* Includes gas works, but excludes central electric stations.

The total rated horse-power in reserve or idle during 1963-64 and not included above was 221,972.

Motors driven by purchased electricity comprised approximately 90.6 per cent. of the total horse-power used in factories other than central electric stations in 1963-64, while steam turbines were next in demand with 5.5 per cent.

A comparison over the five-year period 1959-60 to 1963-64 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		Purchased	Own Generation	
1959-60 ..	27,100	64,060	1,756	42,654	890	1,323,214	52,746	1,459,674
1960-61 ..	25,307	64,332	1,758	42,053	890	1,374,133	56,139	1,508,473
1961-62 ..	23,172	83,512	1,771	43,628	890	1,421,296	57,156	1,574,269
1962-63 ..	19,154	91,877	1,760	43,816	890	1,520,437	58,334	1,677,934
1963-64 ..	17,081	98,724	2,665	48,651	840	1,611,421	60,992	1,779,382

* Includes gas works, but excludes central electric stations.

The following table shows the total rated horse-power for each year from 1959-60 to 1963-64 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		
	Purchased Electricity	All Other Types	Total
1959-60	115,721	56,364	172,085
1960-61	130,431	55,104	185,535
1961-62	139,854	57,116	196,970
1962-63	150,303	58,353	208,656
1963-64	161,471	60,501	221,972

* Without duplication; 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 1963-64 are given in the following table :—

VICTORIA—POWER EQUIPMENT INSTALLED IN CENTRAL ELECTRIC STATIONS, 1963-64

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.	1,731,945	..	15,191	20,638	445,700	2,213,474
Generators Installed—						
Kilowatt Capacity—						
Total Installed .. kW.	1,302,725	..	10,235	15,353	332,515	1,660,828
Effective Capacity kW.	1,267,200	..	8,567	15,015	349,915	1,640,697
Horse-power Equivalent—						
Total Installed .. H.P.	1,746,280	..	13,720	20,580	445,731	2,226,311
Effective Capacity.. H.P.	1,698,660	..	11,484	20,127	469,055	2,199,326

Similar information to that shown in the preceding table, but giving a comparison over the years 1959-60 to 1963-64 is shown below :—

VICTORIA—POWER EQUIPMENT INSTALLED IN CENTRAL ELECTRIC STATIONS

Particulars	1959-60	1960-61	1961-62	1962-63	1963-64
Central Electric Stations .. No.	44	41	41	35	29
Engines Installed .. Rated H.P.	1,832,183	2,090,023	2,242,796	2,221,290	2,213,474
Generators Installed—					
Kilowatt Capacity—					
Total Installed .. kW.	1,366,355	1,546,370	1,660,281	1,657,498	1,660,828
Effective Capacity .. kW.	1,320,441	1,492,677	1,666,050	1,672,694	1,640,697
Horse-power Equivalent—					
Total Installed .. H.P.	1,830,916	2,072,882	2,225,578	2,221,847	2,226,311
Effective Capacity .. H.P.	1,770,028	2,000,907	2,233,311	2,242,217	2,199,326

Principal Factory Products

Annual Quantity and Value

The next table lists the principal articles of manufacture in Victoria during 1963-64, 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,
1963-64

Article	Unit of Quantity	Quantity	Value
			\$'000
Acid—Sulphuric	ton	429,477	*
Aerated and Carbonated Waters	'000 gall.	24,148	12,212
Bacon and Ham †	'000 lb.	19,583	*
Biscuits	'000 lb.	69,580	15,355
Blankets, Bed §	pair	441,432	6,033
Bolts and Nuts—For Sale as Such	..	†	9,227
Boxes and Cases—Wooden ..	..	†	3,683
Bread—2 lb. Loaves Equivalent ..	'000	204,776	30,281
Bricks—Clay	'000	354,869	14,756
Briquettes—Brown Coal	ton	1,882,626	12,572
Butter	ton	101,628	81,097
Cakes, Pastry, Pies, &c. (Including Canned) .. .. .	..	†	23,308
Cans, Canisters, Containers—			
Metal .. .. .	..	†	26,084
Plastic .. .. .	..	†	2,638
Cheese	ton	25,177	14,341
Cigarettes	mill.	12,048	63,477
Cloth Piece Goods Woven—			
Woollen or Predominantly Woollen	'000 sq. yd.	6,504	8,556
Worsted or Predominantly Worsted	'000 sq. yd.	5,132	11,171
Confectionery—			
Chocolate Base	'000 lb.	36,215	16,471
Other without Chocolate	'000 lb.	39,051	9,939
Containers—Paperboard ¶ .. .. .	..	†	41,230
Domestic Electrical Appliances—			
Clothes Washing Machines ..	No.	24,524	4,086
Radiators and Electric Fires ..	..	547,190	4,500
Radios and Radiograms .. .. .	..	116,326	4,221
Toasters .. .. .	..	144,757	663
Electric Motors .. .. .	..	481,544	*
Electricity Generated	mill. kWh.	7,889	*

For footnotes see page 585.

VICTORIA—PRINCIPAL ARTICLES MANUFACTURED,
1963-64—continued

Article	Unit of Quantity	Quantity	Value
			\$'000
Fibrous Plaster Sheets	'000 sq. yd.	7,463	5,182
Flour, Plain—Wheaten (Including Sharps)	short ton	507,089	*
Footwear : Boots, Shoes, and Sandals ||—			
Men's and Youths'	'000 pair	3,407	18,857
Women's and Maids'	'000 pair	9,321	34,758
Children's (Including Infants)	'000 pair	2,441	4,331
Slippers	'000 pair	8,917	9,661
Fruit : Preserved—			
Peaches	'000 lb.	80,413	8,898
Pears	'000 lb.	139,356	15,952
Furniture and Office Equipment—			
Metal .. .. .	..	†	12,807
Wooden .. .. .	..	†	26,893
Gas—Towns	mill. cu. ft.	20,639	*
Ice	ton	67,954	620
Ice-cream	'000 gall.	5,855	6,939
Jams, Fruit Spreads, Fruit Butters, &c.	'000 lb.	40,312	5,799
Leather—			
Dressed : Chrome Tanned and Suede .. .. .	..	†	5,897
Sole : Vegetable Tanned .. .. .	..	†	2,677
Machinery : Industrial—			
Conveyor (and Appliances) .. .. .	..	†	4,946
Hoists, Cranes, Lifting .. .. .	..	†	4,373
Food Processing and Canning .. .. .	..	†	5,626
Metal Working .. .. .	..	†	8,819
Mining and Drilling .. .. .	..	†	5,913
Pumping (Including Pumps) .. .. .	..	†	13,645
Malt—Barley	'000 bush.	9,249	*
Mattresses—All Types	No.	444,851	6,400
Meat—Canned	'000 lb.	59,833	14,258
Milk—			
Condensed	'000 lb.	130,598	16,694
Powdered : Full Cream	'000 lb.	22,328	*
Paints (Not Water) and Enamels			
Ready Mixed (Excluding Bituminous and Marine)	'000 gall.	4,496	16,130
Paints, Water	'000 gall.	981	3,745

For, footnotes see next page.

VICTORIA—PRINCIPAL ARTICLES MANUFACTURED,
1963-64—continued

Article	Unit of Quantity	Quantity	Value
			\$'000
Pharmaceutical Products for Human Use .. .. .	..	†	23,258
Pipe Fittings, Ferrous .. .. .	..	†	3,550
Pipes—Concrete (Excluding Agricultural)	ton	197,875	5,798
Plastics and Synthetic Resins	cwt.	857,760	*
Pollard	short ton	105,503	*
Ropes and Cables (Excluding Wire)	cwt.	78,976	2,829
Sauce—Tomato	'000 pint	15,176	3,684
Sausage Casings—Sheep and Lamb	'000 bundle	2,719	5,289
Shirts (Men's and Boys')	doz.	890,405	*
Sinks—Stainless Steel	No.	79,999	1,840
Soap and Detergents—			
Household and General			
Washing and Cleaning	cwt.	940,020	16,642
Personal Toilet	cwt.	105,136	3,194
Socks and Stockings—Men's and			
Children's	'000 doz. pair	2,260	*
Stockings—Women's	'000 doz. pair	3,114	18,239
Soup—Tomato	'000 pint	21,797	3,437
Steam, Gas, and Water Fittings,			
Valves, &c. (Non-ferrous) .. .. .	..	†	14,327
Steel, Structural—Fabricated	ton	106,985	26,294
Tiles, Roofing—			
Cement	'000	26,127	1,851
Terra Cotta	'000	16,711	1,858
Timber Produced from Logs—			
Australian	'000 sup. ft.	320,175	*
Trailers and Semi-trailers	No.	3,134	3,780
Transformers, Chokes, &c.	No.	1,997,821	7,352
Tyres Retreaded and Recapped	No.	1,036,107	8,866
Underwear—			
Men's and Boys'	'000 doz.	905	*
Women's and Girls'	'000 doz.	2,140	*
Vegetables Canned or Bottled**	'000 lb.	44,160	7,496
Window Frames—Metal .. .. .	..	†	8,490
Wool—Scoured or Carbonized	'000 lb.	58,027	*
Wool Tops	'000 lb.	21,776	*

* Quantity only available.

† Value only available.

‡ Cured bone-in weight of smoked, cooked, and canned bacon and ham.

§ Double, three-quarter, single; wool, wool mixture and other fibre.

¶ Includes composite wood and paperboard butter boxes.

|| Excluding wholly of rubber.

** Includes pickled vegetables.

Monthly Production Statistics

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.	28	Footwear (Excluding Sandshoes, Goloshes, and Gum, &c., Boots of Rubber)
3	Plastics and Synthetic Resins and Plasticisers	29	Biscuits, Ice Cream, and Confectionery
4	Paints and Other Surface Coatings	30	Storage Batteries
6	Soap, Detergents, and Glycerine	31	Assembly of Motor Vehicles Chassis
7	Internal Combustion Engines	32	Perambulators (Including Pushers and Strollers)
8	Lawn Mowers	34	Radio, &c., Television Sets and Cabinets
9	Electrical Appliances	35	Mattresses
10	Motor Bodies, Trailers, &c.	36	Preserved Milk Products
11	Pedal Cycles	38	Canned Fish
12	Meters	39	Jams and Preserved Fruit and Vegetables
13	Building Fittings	40	Production of Cereal Products
14	Cotton Goods	41	Margarine and Other Edible Processed Fats
15	Woolscouring, Carbonizing, and Felling-mongering	42	Malt and Beer
16	Woolen and Worsted Carding, Combing, and Spinning	43	Stock and Poultry Meals (Other than Cereal)
17	Wool Weaving	45	Phonograph 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 Tops, Yarns, Woven Fabrics	49	Building Materials
21	Paper and Paper Board	51	Hides and Skins Used in Tanneries
22	Floor Coverings	53	Plastics Film, Sheeting and Coated Materials
23	Electric Motors	54	Flour Mills
24	Men's Youths' and Boys' Outer Clothing	55	Butter and Cheese
25	Foundation Garments	56	Canned Meat
27	Gloves (Other than Rubber) and Slide/Zip Fasteners	58	Steel Wire and Wire Products
		59	Non-ferrous Rolled, Extruded and Drawn Products

In addition, Statistical Bulletins for the Meat and Dairying Industries are issued each month. Australian totals for a greater range of commodities are contained in the Bulletins and Production Summaries than are published monthly in the Bulletin of Production Statistics. Victorian figures are published in the Victorian Monthly Production Bulletin.

Individual Industries

Introductory

Particulars on pages 561 to 566 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.

Agricultural Machinery Industry

Introduction

In 1963-64, there were 556 Australian establishments employing 13,818 persons classified in the "Agricultural Machines and Implements" industry and approximately half of the industry's labour force was employed in seven establishments. Value of output in that year was \$103 mill. Of the total, Victoria contributed 141 establishments and 6,961 persons, and accounted for about 53 per cent. of the total value of the industry's output.

The State contains the two largest manufacturers with the greatest range of products. Because of its geographical position in the middle of the Australian wheat belt, the largest individual market for machinery and implements, the industry developed first in Victoria. Subsequently, Victoria's leading position was consolidated as a result of its protection policies (duty on imports was higher than in other States during the pre-Federation period) and the various improvements and inventions in the late nineteenth century.

Main Products

The following are the principal types of farm machinery made in Victoria :—Tractors, ploughs (both disc and mouldboard), cultivators and scarifiers, pick-up balers, headers, harvesters, mowers, augers and blowers, bale loaders, post-hole diggers, harrows, and side delivery rakes.

The industry's major products have been developed independently of oversea inventions, primarily because of the need for implements to withstand the severe soil conditions and stump infestations. Outstanding examples of this were Richard Bowyer Smith's stump-jump mouldboard plough of 1876 and the stump-jump disc cultivator, now known as the sundercut, developed progressively by the McKay company from 1909.

Australian inventiveness in the grain harvesting sphere stems from the work of the South Australian pioneers Ridley and Bull who developed a stripper, which, based on the ancient Gallic stripping cart, cut the crop below the heads and then threshed the grain from the husks by means of a beater. Winnowing (separating the grain from the harvested mass) was a later operation. Hugh Victor McKay's stripper-harvester of 1884 was the first machine in the world to combine reaping, threshing, and winnowing in a continuous operation, and its economic advantages led to Australia becoming a major broadacre wheat producer and exporter.

Bagshaw (1837) and Horwood (1839) pioneered early implement manufacture in South Australia; manufacturing plants in Melbourne were established by Robinson and Lennon during the 1850's and by 1870 there were eight major plants in or near Melbourne. H. V. McKay moved from Ballarat to Braybrook Junction (now Sunshine) in 1906-7 and subsequently introduced the seed and fertilizer drill (invented by R. A. Squires), the first header harvester of Headlie Taylor, the auto-header (the first machine of its type in the world) by the same inventor, the bridle draught scarifier, and the wire-tie pick-up hay baler. The Sunshine development was followed in 1912 by the

establishment of a subsidiary of an American firm whose products had been marketed in this country since 1852. Predominant amongst the machines marketed was the McCormick reaper, which was introduced into Australia in 1852 and won a prize in 1856. This company commenced the manufacture of farm implements in Geelong in 1939, and in 1949 commenced to manufacture wheeled tractors. It is now the second largest factory employer in that area.

Recent Developments

In terms of employment, capital, and output, the farm equipment industry represents about 1 per cent. of the total for secondary industries. The real value of the products of farm mechanization, however, should be related to farm productivity, farm income, and income from rural exports, all of which have been subject to great expansion.

Mechanization and its attendant economies have led to advances in many farm practices, not the least significant of which have been machines for fodder conservation, pasture rejuvenation, multi-crop harvesting, land clearing, and planting. A recent outstanding example is the development in Victoria of a sugar cane harvester that has halved farm costs for cutting, cleaning, and loading a valuable crop that had defied all previous attempts at mechanized harvesting.

With the universal development and acceptance of the pneumatic tyre tractor as prime mover, farm machines and implements have become more sophisticated engineering projects and have been designed to work faster and cover more ground at a single pass. This has enabled farm operations to be carried out in the short, critical periods of maximum benefit which are so important in light rainfall areas. Thus mechanization has tended to improve farm practices.

Tractors have been manufactured in Victoria since 1949 and producers are paid a bounty. However, only part of the demand for tractors is satisfied from local production and the majority are assembled in Australia from imported components principally of United Kingdom origin. Tractors and other farm machinery are produced on a volume production basis, though output of most items is too small for the moving assembly line to be economic for year-round production.

Demand for farm machinery varies with seasonal and economic conditions, an obvious limiting factor being the small home market for primary produce and intense export competition in a field sometimes plagued by droughts and surpluses. During recent years, however, mechanization, scientific farming practice, and the eradication of rabbits have combined to minimize the impact of sporadic and regional droughts. New markets have also been developed, and farmers have been able to plan and invest in plant and machinery with greater confidence. Taxation concessions to primary producers provide an additional stimulus.

The gradual diversification of agriculture has been matched by a diversification of product by farm machinery manufacturers. The prosperity of the industry depends on that of the primary producer whose flocks, herds, and yields have increased steadily and who is vitally affected by export markets and prices. However, recent experience indicates that the broader dispersal of exports of primary products will stabilize farm output and bring continued demand from the local market for farm machinery.

Export of farm machinery was undertaken by McKay as early as 1902, when he shipped harvesters to Argentina. In 1963-64, South Africa was Australia's best market for farm machinery. However, South Africa, New Zealand, and the United Kingdom, all of them traditional markets, have now become less significant and the trend has been to develop new outlets in such countries as the Philippines, Burma, Thailand, Brazil, Kenya, and India.

The advent of special Federal Government export incentive allowances has stimulated export activity, and tractors and other farm machinery are being shipped to more than 100 oversea territories. Oversea markets are available for specialized components such as agricultural discs, as well as finished machines.

History of Manufacturing, 1961
Motor Vehicle Industry, 1962
Chemical Industry, 1963
Petrochemical Industry, 1964
Glass Industry, 1965

Details of Industries

The industrial and heavy chemical industry expanded considerably during the five year period 1959-60 to 1963-64 as the particulars below indicate :—

VICTORIA—INDUSTRIAL AND HEAVY CHEMICALS AND ACIDS

Particulars	1959-60	1960-61	1961-62	1962-63	1963-64
Number of Factories	83	83	84	87	92
Number of Persons Employed ..	3,276	3,188	3,703	4,034	4,377
Salaries and Wages Paid \$'000	8,210	8,388	10,374	11,556	13,484
Value of Power, Fuel, &c., Used \$'000	1,898	1,582	4,312	4,980	6,273
Value of Materials Used \$'000	22,238	20,878	31,070	39,908	49,501
Value of Production \$'000	23,896	21,768	28,906	37,150	45,248
Value of Output \$'000	48,032	44,228	64,288	82,038	101,021
Value of Land and Buildings \$'000	9,696	11,740	19,742	18,882	18,946
Value of Plant and Machinery \$'000	15,588	19,246	64,584	62,076	59,404
Horse-power of Engines Ordinarily in Use H.P.	26,596	26,130	61,527	62,861	71,726

Particulars of another major industry included in Class III.—Chemicals, &c., namely, those of the pharmaceutical and toilet preparation industry, are given below :—

VICTORIA—PHARMACEUTICAL AND TOILET PREPARATIONS

Particulars	1959-60	1960-61	1961-62	1962-63	1963-64
Number of Factories	58	56	63	70	69
Number of Persons Employed ..	3,026	3,002	3,066	3,225	3,157
Salaries and Wages Paid \$'000	6,116	6,236	6,590	7,354	6,801
Value of Power, Fuel, &c. Used \$'000	1,212	1,232	1,112	1,340	568
Value of Materials Used \$'000	15,824	14,672	15,516	19,646	18,000
Value of Production .. \$'000	15,444	15,108	16,598	19,516	21,175
Value of Output .. \$'000	32,480	31,012	33,226	40,502	39,742
Value of Land and Buildings \$'000	10,914	11,656	13,342	15,452	15,635
Value of Plant and Machinery \$'000	5,998	6,660	6,248	7,414	7,550
Horse-power of Engines Ordinarily in Use .. H.P.	9,863	10,522	11,375	13,293	11,111

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 1959-60 to 1963-64 are shown below :—

VICTORIA—MINERAL OILS

Particulars	1959-60	1960-61	1961-62	1962-63	1963-64
Number of Factories	17	19	20	20	20
Number of Persons Employed ..	1,476	1,397	1,341	1,274	1,222
Salaries and Wages Paid \$'000	4,198	4,110	4,088	3,986	4,158
Value of Power, Fuel, &c., Used \$'000	7,552	6,460	5,512	5,466	5,435
Value of Materials Used \$'000	102,964	99,264	101,178	111,780	106,093
Value of Production .. \$'000	39,776	32,500	31,364	39,876	34,576
Value of Output .. \$'000	150,292	138,224	138,054	157,122	146,104
Value of Land and Buildings \$'000	11,152	10,712	10,232	9,694	8,978
Value of Plant and Machinery \$'000	63,434	58,948	55,764	55,172	54,786
Horse-power of Engines Ordinarily in Use .. H.P.	47,233	48,130	48,241	44,176	46,065

The growth of this industry can be gauged 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 1,222 persons were employed in 1963-64 and the horse-power of engines used totalled 46,065.

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 range of goods including motor vehicles, construction and earth-moving equipment, precision instruments, aircraft, &c., and many other types of manufactures, the production of which was not attempted in earlier years.

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, 1963-64

Particulars	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
	No.			(\$'000)						
Foundries (Ferrous) ..	91	2,342	6,034	828	5,074	9,868	15,770	4,132	2,644	9,902
Plant, Equipment and Machinery, &c. ..	954	29,944	75,580	3,072	125,744	125,686	254,502	66,008	40,494	109,497
Other Engineering ..	941	12,172	28,794	1,218	38,980	47,678	87,876	25,964	17,120	47,030
Electrical Machinery, Cables, and Apparatus ..	414	17,246	38,814	2,196	78,298	65,010	145,504	35,344	20,830	42,465
Tramcars and Railway Rolling Stock	22	6,846	14,568	428	12,426	18,820	31,674	6,776	3,154	24,365
Motor Vehicle Construction and Assembly	16	15,531	43,530	3,782	80,814	76,808	161,404	49,372	38,450	63,429
Motor Repairs	2,641	19,188	35,534	1,160	35,816	55,866	92,842	58,800	9,046	20,480
Motor Bodies ..	551	8,170	19,418	954	26,622	24,368	51,944	23,256	22,322	20,926
Motor Accessories ..	106	8,779	20,286	1,300	36,124	31,362	68,786	14,352	17,500	31,604
Aircraft ..	17	7,586	20,322	586	14,074	24,032	38,692	13,560	7,590	19,345
Agricultural Machines and Implements ..	141	6,961	18,740	1,198	28,514	25,046	54,758	10,780	7,622	22,705
Non-ferrous Metals—Founding, Casting, &c. ..	160	4,154	9,574	748	19,438	17,584	37,770	8,478	5,584	14,401
Sheet Metal Working—Pressing and Stamping ..	435	11,122	25,344	1,378	60,710	47,848	109,936	24,796	17,402	33,761
Wire and Wire Working (Including Nails)	81	2,807	6,644	500	27,074	13,918	41,492	7,056	5,228	10,156
Wireless and Amplifying Apparatus ..	93	3,570	7,934	212	18,210	11,714	30,136	5,292	3,114	2,020
Other Sub-classes	378	15,330	38,038	6,268	86,870	59,384	152,522	39,510	64,204	136,936
Total, Class IV.	7,041	171,748	409,154	25,828	694,788	654,992	1,375,608	393,476	282,304	609,022

Further particulars of certain of the industries listed in the table above are given on pages 592 to 594.

As production in some factories in this class is variable, the classification may change from year to year, since each factory is classified according to the predominant item of production. Under these circumstances comparability may be disturbed. This applies to all classes of industry.

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

VICTORIA—ELECTRICAL MACHINERY, CABLES, AND APPARATUS

Particulars	1959-60	1960-61	1961-62	1962-63	1963-64
Number of Factories	498	457	461	484	507
Number of Persons Employed ..	18,862	18,531	17,950	19,699	20,816
Salaries and Wages Paid \$'000	37,664	38,766	38,456	41,588	46,748
Value of Power, Fuel &c., Used \$'000	1,968	1,952	1,944	2,256	2,408
Value of Materials Used \$'000	82,952	81,744	84,916	88,824	96,508
Value of Production .. \$'000	57,216	60,826	63,780	68,216	76,724
Value of Output \$'000	142,136	144,522	150,640	159,296	175,640
Value of Land and Buildings \$'000	30,192	32,414	34,056	37,992	40,636
Value of Plant and Machinery \$'000	24,466	20,422	21,226	23,456	23,944
Horse-power of Engines Ordinarily in Use .. H.P.	40,339	40,337	42,892	45,150	44,485

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 shows the activities of government controlled railways and tramways workshops :—

VICTORIA—TRAMCARS AND RAILWAY ROLLING STOCK

Particulars	1959-60	1960-61	1961-62	1962-63	1963-64
Number of Factories	22	22	22	22	22
Number of Persons Employed ..	7,214	6,989	7,206	7,035	6,846
Salaries and Wages Paid \$'000	13,724	14,022	14,650	14,232	14,568
Value of Power, Fuel &c., Used \$'000	442	440	412	428	428
Value of Materials Used \$'000	12,272	12,500	11,996	12,020	12,426
Value of Production .. \$'000	17,412	18,954	18,948	18,428	18,820
Value of Output .. \$'000	30,126	31,894	31,356	30,876	31,674
Value of Land and Buildings \$'000	4,430	4,702	6,892	7,006	6,776
Value of Plant and Machinery \$'000	2,852	2,930	3,148	3,188	3,154
Horse-power of Engines Ordinarily in Use .. H.P.	24,104	24,369	23,964	24,006	24,365

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

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 Repairs, Motor Bodies, 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	1959-60	1960-61	1961-62	1962-63	1963-64
Number of Factories	2,899	3,044	3,200	3,282	3,314
Number of Persons Employed ..	40,878	46,041	43,157	48,771	51,668
Salaries and Wages Paid \$'000	83,162	96,638	90,276	107,552	118,768
Value of Power, Fuel, &c., Used \$'000	4,190	5,446	5,360	6,480	7,196
Value of Materials Used \$'000	110,188	131,904	124,732	155,980	179,376
Value of Production .. \$'000	136,352	152,574	144,652	168,790	188,404
Value of Output .. \$'000	250,730	289,924	274,744	331,250	374,976
Value of Land and Buildings \$'000	85,744	98,960	118,758	133,916	145,780
Value of Plant and Machinery \$'000	40,666	64,546	68,984	85,296	87,318
Horse-power of Engines Ordinarily in Use .. H.P.	81,936	101,655	106,423	131,392	136,439

The relative importance of each sub-class of the motor vehicle industry is shown on page 591.

Agricultural Machinery and Implements are the subject of the next table, and are described in detail on pages 587 to 589.

VICTORIA—AGRICULTURAL MACHINERY AND IMPLEMENTS

Particulars	1959-60	1960-61	1961-62	1962-63	1963-64
Number of Factories	108	117	125	130	141
Number of Persons Employed ..	5,910	5,749	5,569	5,668	6,961
Salaries and Wages Paid \$'000	12,492	12,212	11,812	13,484	18,740
Value of Power, Fuel, &c., Used \$'000	874	904	946	1,004	1,198
Value of Materials Used \$'000	21,192	19,636	21,472	21,618	28,514
Value of Production .. \$'000	17,702	17,212	17,108	19,092	25,046
Value of Output .. \$'000	39,768	37,752	39,526	41,714	54,758
Value of Land and Buildings \$'000	5,738	7,108	9,430	9,342	10,780
Value of Plant and Machinery \$'000	5,594	6,114	6,186	6,604	7,622
Horse-power of Engines Ordinarily in Use .. H.P.	20,537	19,891	20,199	20,803	22,705

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

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

Particulars	1959-60	1960-61	1961-62	1962-63	1963-64
Number of Factories	178	182	168	163	160
Number of Persons Employed ..	3,989	4,056	3,595	3,823	4,154
Salaries and Wages Paid \$'000	8,108	8,552	7,740	8,294	9,574
Value of Power, Fuel, &c., Used \$'000	618	620	580	674	748
Value of Materials Used \$'000	14,686	14,632	12,998	16,968	19,438
Value of Production .. \$'000	13,556	14,168	13,462	15,078	17,584
Value of Output .. \$'000	28,860	29,420	27,040	32,720	37,770
Value of Land and Buildings \$'000	5,164	6,606	7,452	8,146	8,478
Value of Plant and Machinery \$'000	3,374	4,568	4,796	5,100	5,584
Horse-power of Engines Ordinarily in Use .. H.P.	10,927	12,474	11,948	12,592	14,401

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	1959-60	1960-61	1961-62	1962-63	1963-64
Number of Factories	427	430	436	430	435
Number of Persons Employed ..	10,802	10,757	10,532	10,754	11,122
Salaries and Wages Paid \$'000	21,774	22,704	22,456	23,940	25,344
Value of Power, Fuel, &c., Used \$'000	1,410	1,158	1,240	1,306	1,378
Value of Materials Used \$'000	49,928	52,214	55,470	58,360	60,710
Value of Production .. \$'000	40,216	40,336	41,882	47,174	47,848
Value of Output .. \$'000	91,554	93,708	98,592	106,840	109,936
Value of Land and Buildings \$'000	19,582	21,334	22,748	23,754	24,796
Value of Plant and Machinery \$'000	12,932	14,102	15,116	15,620	17,402
Horse-power of Engines Ordinarily in Use .. H.P.	32,414	30,305	30,850	32,647	33,761

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	1959-60	1960-61	1961-62	1962-63	1963-64
Number of Factories	81	82	79	78	78
Number of Persons Employed ..	11,691	10,985	10,441	10,816	10,183
Salaries and Wages Paid \$'000	19,208	18,128	17,924	19,290	18,253
Value of Power, Fuel, &c., Used \$'000	1,716	1,554	1,538	1,590	1,500
Value of Materials Used \$'000	51,012	44,106	47,568	56,660	59,175
Value of Production .. \$'000	29,016	27,130	25,862	29,050	28,212
Value of Output .. \$'000	81,744	72,790	74,968	87,300	88,887
Value of Land and Buildings \$'000	13,018	13,256	12,820	14,030	13,799
Value of Plant and Machinery \$'000	13,358	12,992	13,604	14,624	13,943
Horse-power of Engines Ordinarily in Use .. H.P.	42,117	39,724	40,236	40,724	40,271

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 five years to 1963-64 are given below :—

VICTORIA—HOSIERY AND OTHER KNITTED GOODS

Particulars	1959-60	1960-61	1961-62	1962-63	1963-64
Number of Factories	482	476	462	450	441
Number of Persons Employed ..	16,938	17,238	16,486	17,803	18,412
Salaries and Wages Paid \$'000	26,292	26,542	26,284	29,666	31,262
Value of Power, Fuel, &c., Used \$'000	1,146	1,162	1,154	1,194	1,268
Value of Materials Used \$'000	55,390	57,426	58,754	66,102	71,702
Value of Production .. \$'000	47,596	48,968	51,268	54,426	58,745
Value of Output .. \$'000	104,132	107,556	111,176	121,722	131,715
Value of Land and Buildings \$'000	18,972	21,754	22,538	23,686	24,575
Value of Plant and Machinery \$'000	13,162	14,500	15,654	17,134	18,739
Horse-power of Engines Ordinarily in Use .. H.P.	15,643	16,185	17,003	17,201	17,670

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	1959-60	1960-61	1961-62	1962-63	1963-64
Number of Factories	1,455	1,379	1,308	1,317	1,308
Number of Persons Employed ..	28,456	28,012	27,089	28,674	28,796
Salaries and Wages Paid \$'000	39,328	39,718	39,278	42,750	44,527
Value of Power, Fuel, &c., Used \$'000	784	792	778	828	868
Value of Materials Used \$'000	65,424	62,578	61,882	67,200	70,963
Value of Production .. \$'000	62,832	63,164	64,214	69,310	73,746
Value of Output .. \$'000	129,040	126,534	126,874	137,338	145,577
Value of Land and Buildings \$'000	26,144	29,084	30,106	32,082	34,185
Value of Plant and Machinery \$'000	5,504	5,658	5,742	6,090	6,677
Horse-power of Engines Ordinarily in Use .. H.P.	10,629	11,560	10,794	11,171	11,583

In the following table the industries combined in the preceding table are shown in detail for 1963-64 :—

VICTORIA—CLOTHING (DRESS), EXCLUDING WATERPROOF CLOTHING, KNITTED GOODS, AND BOOTS AND SHOES :
INDIVIDUAL INDUSTRIES, 1963-64

Particulars	Tailoring and Ready-made Clothing	Dress-making	Millinery, Hats and Caps	Shirts, Underclothing	Foundation Garments	Handkerchiefs, Ties, and Gloves	Total
Number of Factories	559	494	66	128	32	29	1,308
Number of Persons Employed ..	10,991	8,827	977	5,691	1,854	456	28,796
Salaries and Wages Paid \$'000	17,631	13,711	1,458	8,337	2,697	693	44,527
Value of Power, Fuel, &c., Used \$'000	357	260	41	134	60	16	868
Value of Materials Used \$'000	29,489	18,544	1,792	15,077	4,433	1,628	70,963
Value of Production .. \$'000	29,205	21,719	2,387	14,711	4,569	1,155	73,746
Value of Output .. \$'000	59,051	40,523	4,220	29,922	9,062	2,799	145,577
Value of Land and Buildings \$'000	12,966	11,253	1,870	4,560	2,914	622	34,185
Value of Plant and Machinery \$'000	2,669	1,887	181	1,125	703	112	6,677
Horse-power of Engines Ordinarily in Use H.P.	4,187	2,926	306	2,879	1,089	196	11,583

In the above table, tailoring and ready-made clothing, and dress-making together represented 80·5 per cent. of the factories, 68·8 per cent. of employment, and 61·4 per cent. of the horse-power in use ; shirts and underclothing contributed 9·8 per cent., 19·8 per cent., and 24·9 per cent. respectively.

Manufacture of boots and shoes (not rubber) is the subject of the next table :—

VICTORIA—BOOTS AND SHOES (NOT RUBBER)

Particulars	1959-60	1960-61	1961-62	1962-63	1963-64
Number of Factories	196	205	201	198	193
Number of Persons Employed ..	11,040	11,569	11,510	11,907	12,145
Salaries and Wages Paid \$'000	17,822	19,002	19,388	20,630	21,250
Value of Power, Fuel, &c., Used \$'000	334	366	380	384	410
Value of Materials Used \$'000	32,770	35,992	36,618	37,312	37,974
Value of Production .. \$'000	27,382	30,860	31,888	32,830	34,322
Value of Output .. \$'000	60,486	67,218	68,886	70,526	72,706
Value of Land and Buildings \$'000	6,070	6,874	7,680	8,188	9,869
Value of Plant and Machinery \$'000	5,838	7,162	7,158	7,446	8,335
Horse-power of Engines Ordinarily in Use .. H.P.	7,883	7,338	7,624	7,811	7,852

A feature of this industry is the large proportion of females employed. Numbering 6,877, they represented 56·6 per cent. of the total employed in 1963-64.

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.

The second most important industrial class in Victoria is Class IX.—Food, Drink, and Tobacco. The relative importance of its principal sub-classes is shown in the following table. Victoria leads other States in the production of butter, condensary products, cheese, canned meat, confectionery, jams and preserved fruit. It also produces a third of Australia's flour and biscuits and a quarter of its bacon and ham.

VICTORIA—CLASS IX. : FOOD, DRINK, AND TOBACCO : INDIVIDUAL INDUSTRIES, 1963-64

Particulars	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	
	No.					\$'000				
Flour Milling	27	1,431	3,334	588	45,318	8,842	54,748	5,714	4,202	20,925
Cereal Foods and Starch	23	1,180	2,414	480	11,166	6,148	17,794	3,058	3,864	8,952
Bakeries	1,056	6,336	10,684	1,622	29,842	22,004	53,468	20,872	10,776	10,936
Biscuits	23	2,188	4,206	392	9,178	6,964	16,534	3,694	2,516	4,436
Confectionery	70	3,314	5,926	622	17,704	10,354	28,680	6,974	8,144	18,946
Jam, Fruit and Vegetable Canning ..	36	5,103	11,598	1,180	47,870	30,290	79,340	18,632	17,710	22,912
Butter Factories	88	3,095	7,628	1,896	77,516	18,384	97,796	8,910	13,418	30,943
Cheese Factories	19	937	2,516	302	25,008	6,512	31,822	4,688	3,752	5,662
Condensed and Dried Milk Factories ..	16	1,756	4,148	1,120	29,924	8,516	39,560	3,428	4,652	11,965
Condiments, Coffee, Spices	60	1,376	3,760	268	11,364	6,854	18,486	6,192	2,416	5,446
Ice and Refrigeration Aerated Waters, Cordials, &c. ..	106	1,357	3,426	1,140	938	6,636	8,714	8,908	5,202	28,907
Tobacco, Cigars, Cigarettes, Snuff ..	93	1,073	2,058	196	6,708	6,598	13,502	4,778	3,276	3,288
Other Sub-classes ..	6	2,222	5,044	262	43,478	26,442	70,182	5,670	6,920	5,801
	334	9,464	20,210	3,572	117,294	51,776	172,642	36,750	36,238	59,000
Total, Class IX.	1,957	40,832	86,952	13,640	473,308	216,320	703,268	138,268	123,086	238,119

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

VICTORIA—BAKERIES (INCLUDING CAKES AND PASTRY)

Particulars	1959-60	1960-61	1961-62	1962-63	1963-64
Number of Factories	1,146	1,118	1,117	1,096	1,056
Number of Persons Employed ..	6,006	5,989	6,080	6,271	6,336
Salaries and Wages Paid \$'000	8,476	8,966	9,478	9,946	10,684
Value of Power, Fuel, &c., Used \$'000	1,558	1,570	1,532	1,580	1,622
Value of Materials Used \$'000	25,838	26,872	28,210	28,612	29,842
Value of Production .. \$'000	20,220	19,396	20,606	21,494	22,004
Value of Output .. \$'000	47,616	47,838	50,348	51,686	53,468
Value of Land and Buildings \$'000	15,412	16,646	18,106	19,252	20,872
Value of Plant and Machinery \$'000	8,378	9,682	10,098	11,212	10,776
Horse-power of Engines Ordinarily in Use .. H.P.	8,677	11,928	9,969	10,727	10,936

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	1959-60	1960-61	1961-62	1962-63	1963-64
Number of Factories	56	55	55	54	54
Number of Persons Employed ..	4,748	4,755	5,314	5,142	5,642
Salaries and Wages Paid \$'000	9,218	9,314	10,980	11,452	12,654
Value of Power, Fuel, &c., Used \$'000	970	1,004	1,138	1,142	1,298
Value of Materials Used \$'000	42,540	42,354	49,014	47,200	52,023
Value of Production .. \$'000	20,138	20,538	27,534	28,668	32,459
Value of Output .. \$'000	63,648	63,896	77,686	77,010	85,781
Value of Land and Buildings \$'000	14,498	16,010	18,280	19,080	20,121
Value of Plant and Machinery \$'000	12,050	12,598	14,006	15,256	18,442
Horse-power of Engines Ordinarily in Use .. H.P.	20,513	21,466	22,197	23,454	25,120

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 number of persons employed and 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	1959-60	1960-61	1961-62	1962-63	1963-64
Number of Factories	131	130	127	126	123
Number of Persons Employed ..	5,677	5,581	5,681	5,692	5,788
Salaries and Wages Paid \$'000	11,812	12,212	13,026	13,306	14,292
Value of Power, Fuel &c., Used \$'000	3,208	3,080	3,134	3,252	3,318
Value of Materials Used \$'000	111,514	112,350	114,698	118,754	132,448
Value of Production .. \$'000	27,362	26,554	28,268	30,368	33,412
Value of Output .. \$'000	142,084	141,984	146,100	152,374	169,178
Value of Land and Buildings \$'000	14,370	15,318	16,366	16,792	17,026
Value of Plant and Machinery \$'000	16,702	18,008	19,562	20,246	21,822
Horse-power of Engines Ordinarily in Use .. H.P.	43,287	44,895	45,501	46,438	48,570

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 522 to 524.

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	1959-60	1960-61	1961-62	1962-63	1963-64
Number of Factories	1,843	1,814	1,758	1,760	1,761
Number of Persons Employed ..	19,558	19,218	17,979	18,311	18,177
Salaries and Wages Paid \$'000	35,808	36,868	35,444	37,098	37,755
Value of Power, Fuel, &c., Used \$'000	1,800	1,678	1,576	1,638	1,722
Value of Materials Used \$'000	73,386	72,918	70,110	71,892	77,043
Value of Production .. \$'000	61,288	61,212	57,844	61,360	65,160
Value of Output .. \$'000	136,474	135,808	129,530	134,890	143,925
Value of Land and Buildings \$'000	26,754	30,078	30,594	32,338	34,592
Value of Plant and Machinery \$'000	12,242	13,132	12,912	13,196	12,974
Horse-power of Engines Ordinarily in Use .. H.P.	138,532	138,805	132,480	133,963	136,824

The following table shows the particulars of the individual industries combined in the preceding table for 1963-64 :—

VICTORIA.—SAWMILLS, WOODWORKING, FURNITURE,
ETC.: INDIVIDUAL INDUSTRIES, 1963-64

Particulars	Sawmills	Joinery	Boxes and Cases	Wood Turning and Wood Carving	Furniture Making, &c.	Total
Number of Factories	447	670	63	88	493	1,761
Number of Persons Employed	6,038	6,046	649	746	4,698	18,177
Salaries and Wages Paid .. \$'000	12,770	13,076	1,188	1,446	9,275	37,755
Value of Power, Fuel, &c., Used \$'000	1,072	323	42	58	227	1,722
Value of Materials Used .. \$'000	32,433	23,375	2,057	2,332	16,846	77,043
Value of Production \$'000	24,318	20,852	1,875	2,653	15,462	65,160
Value of Output \$'000	57,824	44,550	3,973	5,043	32,535	143,925
Value of Land and Buildings .. \$'000	10,087	12,031	1,125	1,504	9,845	34,592
Value of Plant and Machinery .. \$'000	6,528	3,595	314	495	2,042	12,974
Horse-power of Engines Ordinarily in Use H.P.	86,186	28,668	4,716	4,882	12,372	136,824

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	1959-60	1960-61	1961-62	1962-63	1963-64
Number of Factories	133	128	128	123	122
Number of Persons Employed ..	3,633	3,765	3,765	3,717	3,796
Salaries and Wages Paid \$'000	8,126	9,304	9,126	9,532	9,991
Value of Power, Fuel, &c., Used \$'000	288	318	322	342	371
Value of Materials Used \$'000	19,098	19,344	18,288	18,540	19,425
Value of Production .. \$'000	13,844	15,312	16,272	16,058	16,343
Value of Output .. \$'000	33,230	34,974	34,882	34,940	36,139
Value of Land and Buildings \$'000	5,910	6,248	6,544	6,834	6,916
Value of Plant and Machinery \$'000	5,500	6,244	7,290	8,248	9,134
Horse-power of Engines Or- dinarily in Use .. H.P.	11,171	12,018	12,152	12,331	12,550

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	1959-60	1960-61	1961-62	1962-63	1963-64
Number of Factories	563	581	600	618	659
Number of Persons Employed ..	8,619	9,034	9,452	9,719	10,857
Salaries and Wages Paid \$'000	17,040	18,756	19,864	21,302	23,024
Value of Power, Fuel, &c. Used					
\$'000	536	600	620	714	780
Value of Materials Used \$'000	23,180	24,966	23,860	27,402	29,904
Value of Production .. \$'000	30,890	33,508	36,434	38,862	41,936
Value of Output .. \$'000	54,606	59,074	60,914	66,978	72,620
Value of Land and Buildings \$'000	15,578	17,874	20,048	20,640	23,009
Value of Plant and Machinery \$'000	13,306	14,768	15,468	16,574	17,577
Horse-power of Engines Ordinarily in Use .. H.P.	14,825	15,289	15,810	16,551	17,556

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	1959-60	1960-61	1961-62	1962-63	1963-64
Number of Factories	57	62	60	60	66
Number of Persons Employed ..	2,820	3,029	3,056	3,363	3,562
Salaries and Wages Paid \$'000	5,232	5,752	6,236	6,906	7,737
Value of Power, Fuel &c., Used					
\$'000	230	234	272	294	338
Value of Materials Used \$'000	18,160	19,628	21,320	24,324	26,633
Value of Production .. \$'000	12,262	13,004	13,748	14,840	16,944
Value of Output .. \$'000	30,652	32,866	35,340	39,458	43,915
Value of Land and Buildings \$'000	5,750	7,660	7,622	8,614	9,461
Value of Plant and Machinery \$'000	4,500	5,688	5,848	7,134	7,924
Horse-power of Engines Ordinarily in Use .. H.P.	6,140	6,329	6,602	6,980	7,535

The following table gives particulars of rubber goods manufacture:—

VICTORIA—RUBBER GOODS (INCLUDING TYRES MADE)

Particulars	1959-60	1960-61	1961-62	1962-63	1963-64
Number of Factories	52	49	48	51	52
Number of Persons Employed ..	6,566	6,632	6,193	6,958	7,614
Salaries and Wages Paid \$'000	14,866	14,636	13,758	16,474	18,397
Value of Power, Fuel, &c., Used \$'000	2,306	2,304	2,212	2,554	2,726
Value of Materials Used \$'000	41,114	39,754	34,176	38,744	42,507
Value of Production .. \$'000	25,948	27,332	27,278	32,316	33,383
Value of Output .. \$'000	69,368	69,390	63,666	73,614	78,617
Value of Land and Buildings \$'000	7,668	10,114	10,330	10,904	15,246
Value of Plant and Machinery \$'000	11,932	13,352	13,878	14,510	14,445
Horse-power of Engines Ordinarily in Use .. H.P.	61,154	61,676	63,656	67,468	73,487

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	1959-60	1960-61	1961-62	1962-63	1963-64
Number of Factories	154	157	165	168	175
Number of Persons Employed ..	5,567	5,754	5,415	6,018	6,384
Salaries and Wages Paid \$'000	11,452	11,780	11,022	13,042	14,658
Value of Power, Fuel, &c., Used \$'000	984	964	974	1,144	1,298
Value of Materials Used \$'000	32,620	28,772	27,556	32,560	35,648
Value of Production .. \$'000	21,844	22,596	21,802	26,548	31,434
Value of Output .. \$'000	55,448	52,332	50,332	60,252	68,379
Value of Land and Buildings \$'000	8,776	9,810	10,938	11,940	13,171
Value of Plant and Machinery \$'000	8,898	10,794	11,290	13,782	15,587
Horse-power of Engines Ordinarily in Use .. H.P.	22,412	24,070	25,277	31,918	32,581

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, containers, piping and tubing, toys, &c.

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

VICTORIA—ELECTRIC LIGHT AND POWER

Particulars	1959-60	1960-61	1961-62	1962-63	1963-64
Number of Factories	44	41	41	35	29
Number of Persons Employed ..	3,470	3,476	3,541	3,379	3,356
Salaries and Wages Paid \$'000	8,436	8,522	9,582	9,482	10,180
Value of Power, Fuel, &c., Used \$'000	20,944	24,824	23,806	21,328	24,410
Value of Materials Used \$'000	1,400	1,634	1,534	1,484	1,779
Value of Production .. \$'000	41,300	38,584	36,926	42,514	44,905
Value of Output .. \$'000	63,644	65,042	62,266	65,326	71,094
Value of Land and Buildings \$'000	42,368	46,672	47,626	45,682	44,848
Value of Plant and Machinery \$'000	149,096	167,938	185,426	184,798	178,450
Total Installed Horse-power of Engines Used to Drive Generators* H.P.	1,832,183	2,090,023	2,242,796	2,221,290	2,213,474

* 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 individual suppliers, 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.

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

General

By the *Electricity Commissioners Act* 1918 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.

The supply network of the State Electricity Commission of Victoria covers most of the State and serves nearly 98 per cent. of the population. Except for a few small centres in the far north-east of the State which are supplied in bulk from New South Wales, the entire area covered by the Commission's network is served by one interconnected system of thermal and hydro-electric generating stations with a base load plant located on the brown coal fields of the Latrobe Valley.

Rural Electricity Supply

Of a present total of more than one million electricity consumers throughout Victoria, all except about 7,500 are served directly or indirectly by the State system built up during a period of more than 40 years by the State Electricity Commission of Victoria. Outside the Commission's network there is a decreasing number of local country electricity undertakings. These are being absorbed as the State supply network is extended.

The State system in 1965 served 2,150 centres outside the Metropolitan Area through a supply network extending, east to west, from Orbost in Gippsland to the South Australian border and, north to south, from the River Murray to the sea.

The electrification of rural Victoria has been a major objective of the State Electricity Commission from its earliest days. The first report submitted to the Victorian Parliament within a few months of the Act of 1918 which established this State instrumentality recommended that any electricity supply scheme for Melbourne "must be considered only as providing the nucleus of a system for the production of electrical energy from all sources within Victoria, and its distribution in quantities sufficient to meet the requirements of the whole State, both for industrial and domestic purposes". The policy then laid down has since been consistently followed.

The area served by the State system has been continually extended. In 1928, at the close of the first decade of the Commission's operations, there were 41,000 extra-metropolitan consumers. The number had grown in 1938 to 76,000 and in 1948 to 143,000, including more than 13,000 farms.

In 1951, the Commission presented to the Victorian Parliament a report on the "Final Phase of the Rural Electrification of the State", and the programme of development set out in that report is now well advanced towards completion. After taking into account 22,000 homes served by local electricity supply undertakings in country centres, there were in 1951 about 90,000 dwellings outside the Metropolitan Area without public electricity supply. The Commission's programme provided for the acquisition of 48 local country undertakings, extension of supply to about 650 centres and other small settlements, and connexion of all but a small and remote residue of the 90,000 homes awaiting supply.

From 1951 to 1964, the Commission (both by the extension of supply lines to new areas and by the acquisition of local undertakings) has established nearly 1,200 new country supply centres and connected up 272,500 additional country consumers, including 38,800 farms. This represents an increase of almost 150 per cent. in the number of country consumers served and an increase of more than 200 per cent. in farms connected.

By the end of 1963–64, about 855,000 of the 888,000 homes and 57,000 of the 71,500 farms throughout the State were served by public electricity supply mains, leaving a residue of only about 33,000 homes and about 15,000 farms still to be connected.

In contrast with the original estimate in 1951 that there would be about 15,000 homes still without supply in areas too isolated to be connected to its system, the Commission now expects that by 1970 or 1971—after allowing for extensions then in progress—only about 6,000 homes and fewer than 1,250 farms will be out of reach of public supply mains; and efforts will continue to be made to supply as many of these as possible.

Apart from building an extensive system of 330,000 volt and 220,000 volt trunk transmission lines to provide interconnexion between generating stations and link up main load centres, the Commission since 1951 has added 26,000 miles of high and low voltage distribution lines and over 31,000 sub-stations. More than 90 per cent. of this new construction has been outside the Metropolitan Area.

Confronted in 1951 with severe shortage of finance for capital development, the Commission introduced a “self help” plan to finance supply extensions involving the construction of high voltage power lines and “self help” financing has ever since played a most important role in the Commission’s rural electrification programme.

Under this plan prospective consumers contribute the cost of high voltage extensions by way of interest bearing advances against their electricity bills for the following ten years, at the end of which period any outstanding balances are refunded. The plan has proved so successful that the Commission has been obliged to set a limit to its annual commitments for “self help” extensions. The limit has, however, been progressively raised and for 1964–65 stood at over \$7 mill. Charges to consumers who obtain supply under the “self help” finance plan are at the standard tariff rates. Country consumers, however remote, thus pay no extra loading for their extension. This is in line with an objective pursued by the Commission for more than twenty years—the achievement of uniform tariff rates in town and country throughout its area of supply.

The objective has now been fully realized. From January, 1965, uniform tariff schedules for domestic, commercial and industrial consumers, respectively, have operated in all parts of Victoria served by the State system. Victoria and Tasmania are the only States in the Commonwealth with uniform tariff schedules.

Through a network served by the great thermal power stations on the brown coal fields of the Latrobe Valley and hydro-electric stations at Kiewa and in the Snowy Mountains Scheme, electricity goes out to farmer and city dweller alike, to factories and shops in the Metropolitan Area or in remote country centres—a State-wide service at a uniform State-wide schedule of charges.

Further References 1961–1964

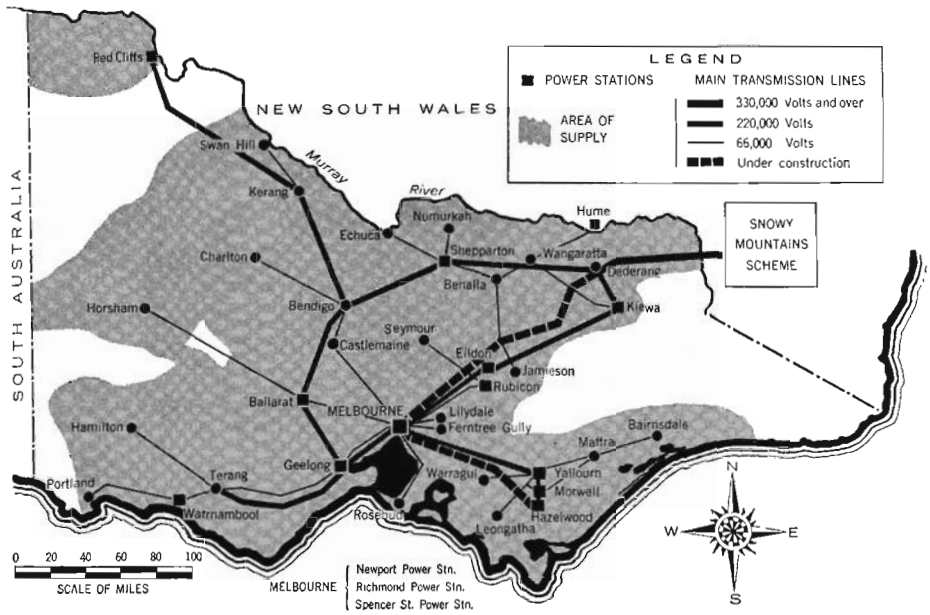


Figure 17.—High Voltage Transmission of Electricity in Victoria.

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, AND SOURCE OF POWER, 1963-64

Source	Source T = Thermal* H = Hydro	Production Million kWh.
State Electricity Commission—		
Own Generation—		
Yallourn Power Station and Briquette Factory	T	4,296
Morwell Power Station	T	1,157
Newport Power Station	T	1,052
Spencer-street Power Station (M.C.C.†)	T	372
Richmond Power Station	T	71
Provincial Thermal Power Stations ..	T	72
Total S.E.C. Thermal Generation ..	T	7,020
Eildon—Rubicon	H	244
Kiewa	H	296
Cairn Curran	H	4
Total S.E.C. Hydro Generation ..	H	544
Net Purchases	T and H	1,074
Total	T and H	8,638
Other Public Supply		
Total Public Supply	T and H	8,673
Electricity Generated in Factories‡	T	289
Cumulative Total	T and H	8,962

* Includes Internal Combustion.

† Melbourne City Council.

‡ Excluding S.E.C. Briquette Factory.

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

VICTORIA—GAS WORKS

Particulars	1959-60	1960-61	1961-62	1962-63	1963-64
Number of Factories	27	25	26	27	27
Number of Persons Employed ..	1,513	1,470	1,459	1,414	1,379
Salaries and Wages Paid \$'000	3,578	3,792	3,830	3,894	3,834
Value of Power, Fuel, &c., Used \$'000	1,006	1,048	1,122	1,182	1,296
Value of Materials Used \$'000	10,942	10,646	9,750	8,702	8,733
Value of Production .. \$'000	7,614	8,326	9,498	13,402	14,407
Value of Output .. \$'000	19,562	20,020	20,370	23,286	24,435
Value of Land and Buildings \$'000	6,062	7,938	8,384	8,428	8,782
Value of Plant and Machinery \$'000	27,402	27,260	28,350	27,336	28,170
Horse-power of Engines Ordinarily in Use .. H.P.	16,797	17,856	21,826	26,955	26,291

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

The following is a brief review of the activities of the Gas and Fuel Corporation of Victoria.

Gas and Fuel Corporation of Victoria

Formation

The Gas and Fuel Corporation of Victoria came into being by Act of Parliament in 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 \$8 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 expansion were to be raised by means of loans on which the Government guaranteed the interest payments and loan redemptions.

Reasons for Formation

The main reason for the formation of the Corporation was to provide finance to make possible the use of the vast resources of brown coal in the Latrobe Valley for towns 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 pipeline.

Changing Trends in Gas Production

General

The task of the Gas Industry is to convert solid, liquid or gaseous carbonaceous raw materials to high-grade towns gas at minimum cost. Although the Corporation was initially formed to facilitate the economic production of gas from brown coal, changes in raw material availability and new process developments have led to a considerable diversification in methods of gas production over recent years.

Developments in gas production methods taking place throughout the world are continually evaluated, and new processes and raw materials, which can lead to reduction in production costs, incorporated in the gas producing facilities. The extent of diversification may be seen from the figures for 1963-64 which show that the 83·5 mill. therms of gas manufactured were made up as follows :—

- 34·8 per cent. brown coal gas from 182,816 tons of briquettes ;
- 26·7 per cent. refinery and liquefied petroleum gases ;
- 18 per cent. oil gas from 46,860 tons of residual oil ;
- 12·1 per cent. black coal gas from 104,285 tons of Maitland coal ;
- 4·3 per cent. producer gas from 20,800 tons of Newcastle coal ;
- and
- 4·1 per cent. water gas and reformed refinery gases from 8,907 tons of coke and 2·09 mill. therms of refinery gases.

Brown Coal Gas

In 1957-58, the first full year of operation, the Morwell Lurgi pressure gasification plant produced 17.1 mill. therms of gas from brown coal. By 1963-64, annual output had risen to 29.1 mill. therms and it is anticipated that production will be maintained at this general level in the immediate future.

Black Coal Gas

Prior to 1956, Melbourne's gas requirements were met by carbonization of New South Wales black coal in conventional vertical retorts and production of water gas from part of the by-product coke. Over the years, black coal gas has been progressively replaced by brown coal gas, refinery tail gases, and oil gas, and today represents a relatively small proportion of the total output. A large construction programme implemented at the Corporation's West Melbourne works, which was formerly the principal black coal carbonization works in the State, changed the works into a major establishment converting petroleum products into town gas.

Refinery Gases

The construction of refineries in Victoria in the early 1950's led to by-product tail gases becoming available. The gas industry treats and blends these gases and produces a standard town gas from tail gases which would otherwise be of very limited value. Refinery tail gases and L.P.G. first contributed to the Corporation's gas issue in June, 1955. Today they represent some 29 per cent. of the total output.

Oil Gas

The availability of low priced residual fuel oils in Europe in the 1950's led to the development of an entirely new series of processes which would allow their economic conversion to town gas. The Corporation has adopted one of these processes, the Onia-Gegi cyclic catalytic oil gasification process, to produce gas from locally available residual oils. Since 1960, four Onia-Gegi units, each capable of producing 5 mill. cubic feet per day of standard town gas from heavy fuel oil, have been built at the Corporation's West Melbourne works. Oil gas has thus become one of the major components in today's blend.

Natural Gas

Today, the Australian gas industry is on the threshold of another major change; one which can have far reaching repercussions and lead to the industry becoming a major contributor to the nation's energy requirements. Petroleum exploration activities have indicated the presence of considerable quantities of natural gas in Australia and already the industry is preparing to change to the use of this indigenous fuel when adequate supplies are available.

Although so far there has been only one major gas discovery in Victoria, the Corporation is in close touch with activities both in this State and in other areas for which natural gas could possibly be supplied to Victoria. It will take all steps necessary to ensure that, when adequate reserves of this valuable fuel have been established in sufficient quantity, it will be made available to both the industrial and domestic gas consumers of this State.

Off-peak Tariffs

Significant concessions in gas prices to industry are available under the recently introduced off-peak tariff. Because off-peak loads improve the Gas and Fuel Corporation's load factor, favourable gas rates are possible and already a number of major industries have taken advantage of the special tariff. This step is in line with the Corporation's policy under which gas prices to industry and commerce have been steadily reduced during the past decade.

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. Comparative particulars for the last five years are shown in the following table :—

VICTORIA—GOVERNMENT FACTORIES AND WORKSHOPS

Particulars	1959-60	1960-61	1961-62*	1962-63	1963-64
Number of Factories	157	168	285	306	312
Number of Persons Employed ..	29,326	30,542	32,290	32,178	32,074
Salaries and Wages Paid \$'000	62,344	67,820	73,826	74,442	79,758
Value of Power, Fuel, &c., Used \$'000	25,154	29,086	28,388	26,088	29,382
Value of Materials Used \$'000	60,936	64,832	65,360	67,004	71,204
Value of Production .. \$'000	108,404	114,050	118,664	130,832	136,458
Value of Output .. \$'000	194,494	207,968	212,412	223,924	237,044
Value of Land and Buildings \$'000	99,386	115,438	122,858	122,326	123,822
Value of Plant and Machinery \$'000	242,022	266,220	287,524	282,504	276,864

* A special investigation into repair and manufacturing activities carried out by local and semi-governmental authorities resulted in a number of returns being supplied for the first time in 1961-62.

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 1963-64, Government factories absorbed 7·8 per cent. of employment; expended 8·7 per cent. of salaries and wages; and accumulated 7·8 per cent. of the value of production.