

# Part 8

## MANUFACTURING INDUSTRY

### *Modern Management Techniques in Manufacturing Industry*

#### **Introduction**

The ever increasing complexity and rate of change in the industrialized world is demanding from each community a continuing improvement in its capacity to understand and in its skill to apply the techniques of management, particularly as they concern manufacturing.

Before the First World War the purchasing public and authorities in Australia gave little encouragement to locally made products. The free traders were a group deprecating local manufacture and arguing with some justification in the last century that Australia's function was to supply primary products to European countries and balance the trade by importing their manufactures.

Ability to import largely ceased as the First World War entered its third year, and it was realized that Australia must plan to produce and manufacture her essential products. In this Victoria, in large measure, was able to give a lead, because already by the mid-1890's the following manufacturing activities had been firmly established: clothing manufacture, iron founding, boot and shoe manufacture, printing, tanning and fellmongering, coach making, sawmilling, joinery works, and breweries—each employing more than 1,000 persons. Other notable industries which had shown marked development and which at the time had employed more than 500 persons were woollen mills, butter and cheese factories, flour mills, biscuit making, jam making, aerated water making, agricultural implement making, and gas works. These key manufacturing industries played a fundamental part in Victoria's early economy. Many were family owned and managed, and their success depended on practical experience and skills rather than planned organization and methods.

The Tariff Board established after the First World War was an expression of national policy in building local manufacturing. About the mid-1920's, the impact of modern industrialization began to be felt in Victoria. Electricity and the internal combustion engine then began rapidly to replace steam driven units and horses.

### **Introduction of Modern Management Techniques**

The increasing demand for mechanization resulted in American companies manufacturing in Victoria mass-produced standard products requiring accurate and consistent components made from guaranteed materials. This called for production planning, organization of operations, and staff training, in accordance with the systems started in America by Ford and others. American industry had developed and enunciated teachable principles underlying the various departmental functions essential to effective modern management.

At the outbreak of the Second World War, General Motors had organized in their plant at Fisherman's Bend a staff training section for the teaching of management techniques in their own works, and also to assist their sub-contractors in Australia. Similar procedures were also being established by other American companies in Australia. The Second World War not only largely cut Australia's oversea supplies, but also made her a main source of supply for the allied armies east of Suez. To meet the demands of a big and diverse programme of munitions production, the Commonwealth Government organized training of large numbers of skilled operatives in the workshops and laboratories of the technical colleges.

### **Beginning of Management Training**

Effective supervision of this type of labour obviously called for well-trained foremen. Realizing this, the Department of Technical Education in Melbourne joined with a number of leaders in the engineering industry in beginning a training course at the Royal Melbourne Technical College (now the Royal Melbourne Institute of Technology) to develop suitable tradesmen into foremen, by giving them some education and training in the techniques of supervision and management.

General Motors passed over all their relevant information and made available their senior training officer to organize the course of lectures for the first year. Applications to attend the course greatly outnumbered teaching capacity. Additional lecturers were trained in the course and multiple groups were set up the next year and in succeeding years. Many of the students on completing the course asked for a second year, and in due time for still a third year, covering more advanced management practices. From Melbourne the courses in supervision and management spread to the technical colleges in other capital cities and to New Zealand.

From this small beginning in applying management techniques to industry as well as a centralized direction from the Department of Munitions which required modern methods in its own factories and in those of its contractors, grew the Australian Institute of Management. This body became the forerunner of the many other activities for improvement in management practices by planned staff training and executive development that have been established since the war in industry, business, and administration throughout Australia.

### Growth of Interest in Management

From the end of the Second World War to 1950 was a period of re-organization and extension of existing factories, building new works, and bringing them into production. The following table shows subsequent industrial growth :—

#### VICTORIA—FACTORY ACTIVITY

Year	Number of Factories	Employment	Value of Output	Balance Sheet Valuation of Land, Buildings, Plant and Machinery	Value Added during Manufacture
	No.			£ mill.	
1950-51 ..	13,504	316,792	675	208	276
1960-61 ..	17,173	387,430	1,646	819	701
Increase ..	27·2%	22·3%	143·9%	293·8%	154·0%

Except for a short period in 1952-53, there was little unemployment during this decade, but great shortage of experienced staff and of skilled work people. This called forth great improvement in the field of personnel management and the establishment by industrial companies of in-works training schemes (Training Within Industry, &c.).

### Development of Executives

Formal staff training, as described above, commenced in 1940 at the Royal Melbourne Technical College (later the Royal Melbourne Institute of Technology). Training for more senior management staff by lecture and discussion group methods at the Institute of Management was developed in 1942, and this was followed by conferences and courses organized for the development of executives. The growth of students enrolling in management courses at the Royal Melbourne Institute of Technology, and of membership of the Melbourne Division of the Australian Institute of Management is shown in the following figures at five year intervals from 1945 to 1960 :—

#### VICTORIA—ENROLMENTS FOR MANAGEMENT TRAINING

Institution	1945	1950	1955	1960
Royal Melbourne Institute of Technology : Student Enrolments for Management Courses .. .. .	798	866	1,223	1,300
Members Melbourne Division of Australian Institute of Management .. .. .	972	1,470	1,599	2,764

[Sources : Royal Melbourne Institute of Technology and Australian Institute of Management.

In 1960 the Melbourne Division organized 33 day conference and lecture series for executives, and 108 staff training courses attended by 3,110 delegates. The operating expenses of the Division were over £60,000. The equivalent figure for 1950 was £13,250.

Since the beginning of courses at the Management School of the Royal Melbourne Institute of Technology, some 30,000 students in Victoria have enrolled for subjects, and year by year, members continue to increase. The Royal Melbourne Institute of Technology continues to assist technical colleges to establish similar courses; Geelong, Ballarat, Footscray, Swinburne, Moorabbin, and Dandenong, have already established them by this means.

Higher management training has been assisted by the establishment of the Administrative Staff College at Mt. Eliza and the Summer Vacation School for Executives at the Melbourne University (see Victorian Year Book 1961, pages 204-5, 213) These provide for extended residential courses where selected senior executives live together while undergoing intensive courses on the Harvard or Henley Staff College systems. Applications for enrolments exceed the places available.

### In-works Training Schemes

An increasing number of industries and Government departments have set up their own internal training organizations employing full-time specialist staff. These staffs co-operate with the Institute of Management and other kindred bodies to the mutual advantage of all concerned in bettering management methods.

### Summary

The table below shows, at intervals between 1901 and 1960-61, the development of manufacturing industry:—

#### 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.	No.	£'000	£'000	£'000	£'000	£'000
1901 .. ..	3,249	66,529	§	§	§	§	12,298
1920-21 .. ..	6,532	140,743	21,377	67,585	38,423	106,008	35,493
1940-41 .. ..	9,121	237,636	52,295	120,348	89,001	209,349	92,050
1950-51 .. ..	13,504	316,792	163,207	399,373	275,660	675,033	207,587
1952-53 .. ..	15,154	310,759	210,878	502,113	358,033	860,146	282,690
1953-54 .. ..	15,533	331,277	236,036	577,190	408,315	985,505	339,268
1954-55 .. ..	15,861	346,648	262,750	648,433	452,223	1,100,656	412,671
1955-56 .. ..	16,053	355,185	286,944	709,444	491,948	1,201,392	473,216
1956-57 .. ..	16,232	355,204	296,608	748,110	528,031	1,276,141	533,584
1957-58 .. ..	16,426	357,143	310,540	811,221	568,685	1,379,906	579,820
1958-59 .. ..	16,527	362,979	324,336	822,094	610,969	1,433,063	646,940
1959-60 .. ..	16,979	381,514	370,181	923,113	688,389	1,611,502	730,827
1960-61 .. ..	17,173	387,430	387,221	945,941	700,511	1,646,452	818,669

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

† Excludes drawings of working proprietors.

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

§ Not available.

NOTE.—A graph showing the distribution of the components of value of output for the years 1951-52 to 1960-61 is shown on page 594.

## Manufacturing Activity

### General

#### *Factory and Wages Board Legislation*

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

The general provisions of factory legislation, including Wages Boards, are further referred to on pages 432 to 434, 454-455, and 459-460.

#### *Decentralization of Manufacturing Industries: Division of State Development*

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

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

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

The promotion and assistance of this development is one of the functions of the Division of State Development of the Premier's Department, further reference to which is made on page 419 of the Victorian Year Book 1962.

In addition, the Rural Finance Corporation was constituted by Parliament in 1950, to make advances for the development of both primary and secondary industry in rural areas. In March, 1962, the Rural Finance Corporation was amalgamated with the Soldier Settlement Commission and became the Finance Branch of the Rural Finance and Settlement Commission. Loans made to secondary industries as at 30th June, 1961, amounted to £3,295,880.

*Commonwealth Department of Trade*

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

*Customs and Excise Tariffs and Bounties on Manufacture*

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

Bounties are paid by the Commonwealth Government to encourage local manufacture of certain products. The statutory provisions usually fix a term of operation of the bounty, provide for payment at a rate varying according to changes in the corresponding customs duty, specify the annual maximum amount of bounty payable, and require the bounty to be withheld or reduced if a manufacturer's net profit in production of the commodity exceeds a certain rate or if rates of wages and conditions of employment in production of the commodity do not conform to prescribed standards.

**Scientific Research and Standardization***Commonwealth Scientific and Industrial Research Organization*

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

*Standards Association of Australia*

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

*National Association of Testing Authorities*

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

**Definitions in Factory Statistics**

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

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

Manufacturers are requested to state in their returns particulars about the number, age, wages, &c., of their employees, the value of premises and equipment and of factory stocks, the horse-power of machinery, the value, and, in many cases, the quantities of raw materials and fuel used, and quantities and values of principal articles produced. The returns obtained from manufacturers are not intended to show a complete record of the income and expenditure of factories nor to show the profits or losses of factories collectively or individually.

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

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

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

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

It is considered that, because of the duplication of materials used, (which means that the finished 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 annual comparisons of manufacturing production.

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

### Classification of Factories

#### *General*

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

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

Factories According to Class of Industry

The following table contains a summary of factories by class of industry in Victoria during the year ended 30th June, 1961 :—

VICTORIA—FACTORIES BY CLASSES, 1960-61

Class of Industry	Fac-tories	Employ-ment*	Salaries and Wages Paid†	Materials and Fuel Used	Value of—		
					Pro-duction	Output	Land, Buildings, Plant and Machinery
		No.			£'000		
I. Treatment of Non-metal-liferous Mine and Quarry Products ..	457	6,977	8,202	22,544	18,040	40,584	30,621
II. Bricks, Pottery, Glass, &c. ..	181	6,569	7,150	9,665	12,491	22,156	10,402
III. Chemicals, Dyes, Explo-sives, Paints, Oils, Grease ..	362	15,443	18,274	107,299	55,471	162,770	84,928
IV. Industrial Metals, Machines, Con-veyances ..	6,522	157,202	169,925	276,461	265,003	541,464	251,723
V. Precious Metals, Jewel-ery, Plate ..	242	2,087	1,965	2,122	3,234	5,356	2,312
VI. Textiles and Textile Goods (Not Dress) ..	806	40,395	33,987	82,394	59,033	141,427	56,441
VII. Skins and Leather (Not Clothing or Footwear)	260	3,992	3,652	10,483	5,990	16,473	5,466
VIII. Clothing (Except Knitted)	2,580	45,462	33,537	55,091	54,794	109,885	32,227
IX. Food, Drink, and Tobacco	2,052	38,361	36,863	208,262	80,733	288,995	104,708
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving ..	1,396	15,623	15,165	32,076	25,375	57,451	20,431
XI. Furniture of Wood, Bed-ding, &c. ..	630	6,309	5,527	11,609	9,781	21,390	6,895
XII. Paper, Stationery, Print-ing, Bookbinding, &c. ..	967	25,228	27,854	62,363	54,156	116,519	55,207
XIII. Rubber ..	163	7,359	7,993	22,812	15,449	38,261	14,056
XIV. Musical Instruments ..	26	216	213	206	291	497	333
XV. Miscellaneous Products	463	11,261	10,757	23,478	19,723	43,201	18,014
Total, Classes I. to XV. ..	17,107	382,484	381,064	926,865	679,564	1,606,429	693,764
XVI. Heat, Light, and Power	66	4,946	6,157	19,076	20,947	40,023	124,905
GRAND TOTAL ..	17,173	387,430	387,221	945,941	700,511	1,646,452	818,669

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

† Excludes drawings of working proprietors.

“Industrial Metals, Machines, and Conveyances” with 157,202 persons or 41 per cent. of the total employment in factories during 1960-61, employed considerably more persons than any other class of industry. Next in order of employment was “Clothing” with 45,462 or 12 per cent., followed by “Textiles and Textile Goods” and “Food, Drink, and Tobacco” with 40,395 and 38,361 respectively or 10 per cent. of the total.

The total value of production (added value) in 1960-61 was £700,511,000. Of this amount the metals group contributed £265,003,000 which represented 38 per cent. of the total. The food group followed with £80,733,000 or 12 per cent., and next in order were textiles with £59,033,000, chemicals, dyes, &c., £55,471,000, paper £54,156,000, and clothing £54,794,000—each with approxi-mately 8 per cent.

The next table shows the number of factories in Victoria during the years 1956-57 to 1960-61 classified according to industry :—

VICTORIA—NUMBER OF FACTORIES IN INDUSTRIAL CLASSES

Class of Industry	1956-57	1957-58	1958-59	1959-60	1960-61
I. Treatment of Non-metalliferous Mine and Quarry Products ..	445	442	450	449	457
II. Bricks, Pottery, Glass, &c. ..	161	159	160	176	181
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease ..	345	350	361	367	362
IV. Industrial Metals, Machines, Conveyances ..	5,818	5,971	6,018	6,414	6,522
V. Precious Metals, Jewellery, Plate ..	273	266	265	248	242
VI. Textiles and Textile Goods (Not Dress) ..	740	748	754	811	806
VII. Skins and Leather (Not Clothing or Footwear) ..	297	289	275	272	260
VIII. Clothing (Except Knitted) ..	2,512	2,516	2,442	2,416	2,580
IX. Food, Drink, and Tobacco ..	1,999	2,022	2,178	2,104	2,052
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving ..	1,387	1,407	1,382	1,404	1,396
XI. Furniture of Wood, Bedding, &c. ..	700	704	665	664	630
XII. Paper, Stationery, Printing, Book-binding, &c. ..	864	884	892	948	967
XIII. Rubber ..	146	151	158	164	163
XIV. Musical Instruments ..	30	28	25	25	26
XV. Miscellaneous Products ..	430	411	431	446	463
Total, Classes I. to XV. ..	16,147	16,348	16,456	16,908	17,107
XVI. Heat, Light, and Power ..	85	78	71	71	66
GRAND TOTAL	16,232	16,426	16,527	16,979	17,173

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 1951-52 to 1960-61 :—

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
1951-52 .. ..	4,789	1,267	3,714	2,141	1,720	585	542	14,758
1952-53 .. ..	5,325	1,292	3,699	2,156	1,613	556	513	15,154
1953-54 .. ..	5,474	1,251	3,841	2,179	1,660	572	556	15,533
1954-55 .. ..	5,672	1,250	3,826	2,206	1,717	600	590	15,861
1955-56 .. ..	5,693	1,229	3,915	2,260	1,754	608	594	16,053
1956-57 .. ..	5,854	1,247	3,918	2,252	1,705	638	618	16,232
1957-58 .. ..	6,077	1,254	3,862	2,268	1,721	621	623	16,426
1958-59 .. ..	6,062	1,320	3,876	2,261	1,725	643	640	16,527
1959-60 .. ..	6,030	1,403	4,003	2,401	1,816	659	667	16,979
1960-61 .. ..	6,176	1,350	4,083	2,365	1,832	693	674	17,173

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

Year	Average Number Employed (Including Working Proprietors)—							Total
	Under 4	4	5 to 10	11 to 20	21 to 50	51 to 100	Over 100	
1951-52 .. ..	9,640	5,068	25,739	31,472	53,922	41,016	158,701	325,558
1952-53 .. ..	10,478	5,168	25,691	31,718	50,820	39,165	149,348	312,388
1953-54 .. ..	10,725	5,004	26,824	32,035	52,602	40,617	165,447	333,254
1954-55 .. ..	11,070	5,000	26,885	32,151	53,410	41,620	178,132	348,268
1955-56 .. ..	11,116	4,916	27,408	33,006	55,581	42,758	181,907	356,692
1956-57 .. ..	11,730	4,988	27,444	33,219	53,729	44,427	180,976	356,513
1957-58 .. ..	11,748	5,016	27,252	33,341	54,254	43,358	183,921	358,890
1958-59 .. ..	12,314	5,280	27,604	33,184	54,311	44,817	187,467	364,977
1959-60 .. ..	12,005	5,612	27,991	35,216	57,905	45,866	198,664	383,259
1960-61 .. ..	12,315	5,400	29,047	34,962	58,167	48,251	200,879	389,021

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 1960-61, 7,526 factories employing four or less employees had a total employment of 17,715 persons. Expressed in terms of percentages, 44 per cent. of factories—those employing four or less persons—employed less than 5 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 1960-61, this figure had increased to 6,176, i.e., 36·0 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 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 following table also shows that, in 1960-61, factories employing less than four persons constituted 36·0 per cent. of the total number of factories and accounted for only 2·3 per cent. of the total Value of Production. The table also shows 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 SIZE OF  
ESTABLISHMENT, 1902 AND 1960-61

Average Number of Persons Employed during Period of Operation	1902				1960-61						
	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	6,176	36·0	12,090	3·1	15,963	2·3	1,320
4 .. ..	398	9·9	1,603	2·2	1,350	7·9	5,366	1·4	7,909	1·1	1,474
5-10 .. ..	1,629	40·7	11,303	15·5	4,083	23·8	28,682	7·5	46,134	6·6	1,608
11-20 .. ..	726	18·1	10,562	14·5	2,365	13·8	34,655	8·9	58,020	8·3	1,674
21-50 .. ..	467	11·7	14,361	19·6	1,832	10·7	57,805	14·9	101,570	14·5	1,757
51-100.. ..	148	3·7	10,238	14·0	693	4·0	48,016	12·4	87,766	12·5	1,828
101-200 .. ..					377	2·2	53,269	13·7	96,721	13·8	1,816
201-500 .. ..	110	2·8	23,360	32·0	200	1·1	60,102	15·5	121,077	17·3	2,015
Over 500 .. ..					97	0·5	87,445	22·6	165,351	23·6	1,891
Total .. ..	4,003	100·0	73,063	100·0	17,173	100·0	387,430	100·0	700,511	100·0	1,801

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

NOTE.—A graph showing Number of Factories and Value of Production by size groups in 1960-61 is shown on page 594.

A general indication of the geographical disposition of factories in the State is shown in the next table where secondary industry in Victoria for 1960-61 is classified according to statistical divisions :—

VICTORIA—FACTORIES IN STATISTICAL DIVISIONS, 1960-61

Statistical Division	Factories	Employment*	Salaries and Wages Paid†	Value of—			
				Materials and Fuel Used	Production	Output	Land, Buildings, Plant and Machinery
	No.	No.	£'000	£'000	£'000	£'000	£'000
Metropolitan ..	12,182	314,108	317,919	728,758	563,847	1,292,605	558,912
Central .. ..	1,105	22,020	21,844	73,836	41,152	114,988	61,553
North-Central ..	380	5,044	4,231	7,929	8,500	16,429	8,712
Western .. ..	1,003	14,492	12,779	34,362	22,198	56,560	24,239
Wimmera .. ..	384	2,302	1,744	5,076	3,151	8,227	2,626
Mallee .. ..	302	2,271	1,784	3,747	2,907	6,654	5,934
Northern .. ..	780	10,284	9,183	40,298	16,283	56,581	23,017
North-Eastern ..	454	5,034	4,324	10,935	9,019	19,954	38,539
Gippsland .. ..	583	11,875	13,413	41,000	33,454	74,454	95,137
Total .. ..	17,173	387,430	387,221	945,941	700,511	1,646,452	818,669

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

† Excludes drawings of working proprietors.

Factories in the Metropolitan Area constituted 71 per cent. of the total number in Victoria in 1960-61, 81 per cent. of the persons employed, and 80 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 114.

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

VICTORIA—NUMBER OF FACTORIES AND PERSONS EMPLOYED IN EACH STATISTICAL DIVISION : CLASSIFIED ACCORDING TO SIZE OF FACTORY, 1960-61

Size of Factory (Persons)	Statistical Division									
	Metro-politan	Central	North-Central	West-ern	Wim-mera	Mallee	North-ern	North-Eastern	Gipps-land	Total
NUMBER OF FACTORIES										
Under 5 ..	4,716	623	227	548	256	184	471	256	245	7,526
5-10 ..	2,922	246	79	256	82	70	159	98	171	4,083
11-20 ..	1,852	118	37	92	30	24	69	60	83	2,365
21-50 ..	1,535	59	22	59	13	16	46	30	52	1,832
51-100 ..	583	28	9	22	2	8	20	5	16	693
101-500 ..	494	26	5	22	1	..	13	4	12	577
501 and over..	80	5	1	4	..	..	2	1	4	97
Total ..	12,182	1,105	380	1,003	384	302	780	454	583	17,173
NUMBER OF PERSONS EMPLOYED										
Under 5 ..	11,062	1,425	497	1,267	538	427	1,101	556	583	17,456
5-10 ..	20,745	1,705	555	1,728	528	464	1,066	699	1,192	28,682
11-20 ..	27,431	1,667	520	1,300	420	331	975	834	1,177	34,655
21-50 ..	48,503	1,888	683	1,795	389	545	1,544	906	1,552	57,805
51-100 ..	40,356	1,986	603	1,642	*	504	1,318	*	1,121	48,016
101-500 ..	94,219	6,330	*	*	*	..	*	928	2,930	113,371
501 and over..	71,792	7,019	*	*	..	..	*	*	3,320	87,445
Total ..	314,108	22,020	5,044	14,492	2,302	2,271	10,284	5,034	11,875	387,430

\* Not available for publication.

The above table shows that in 1960-61 there were 674 factories each employing more than 100 persons with a total employment of 200,816 persons in Victoria. Of these 574 (166,011 persons) were located in the Metropolitan Area and 31 (13,349 persons) in the Central Statistical Division which includes Geelong. The balance, 69 factories (21,456 persons) were distributed over the remainder of the State, principally in the Western (26 factories and 6,760 persons) and Gippsland (16 factories and 6,250 persons) Statistical Divisions.

VICTORIA—FACTORIES : VALUE OF OUTPUT, 1951-52 TO 1960-61

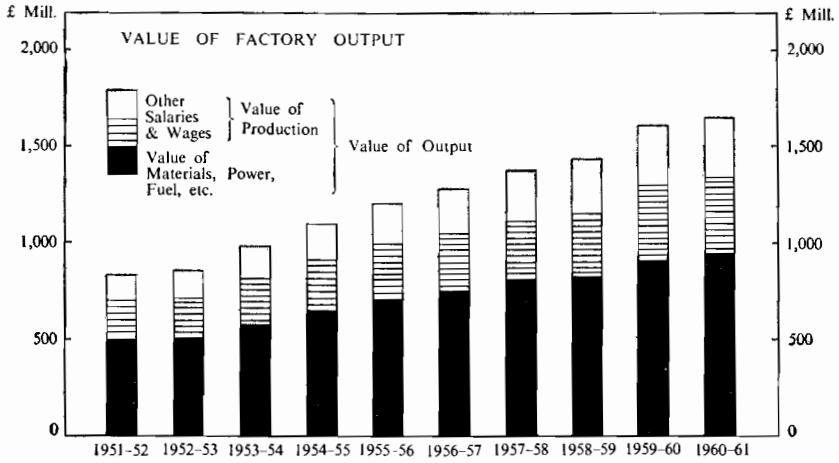


FIGURE 13. Graph showing value of output of factories.

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

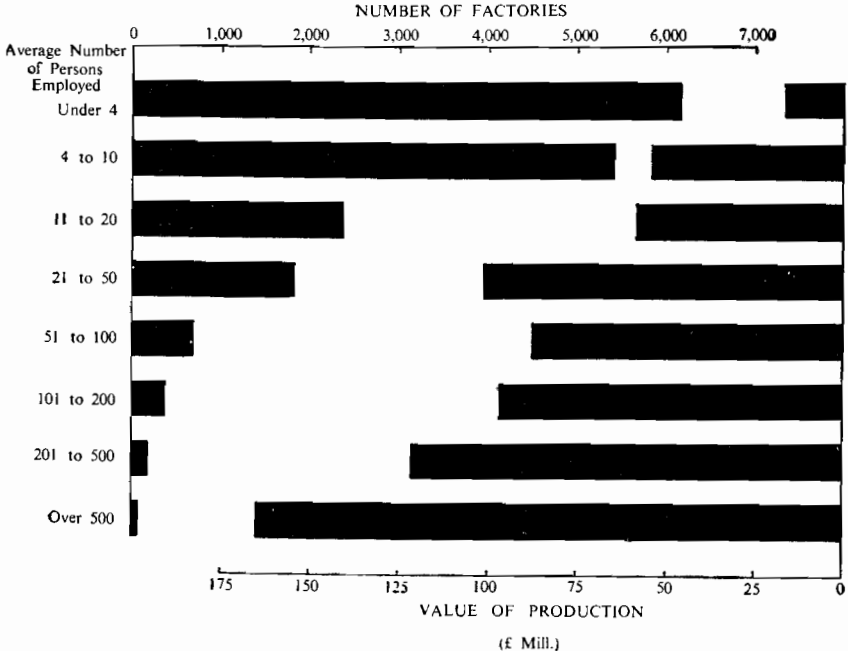
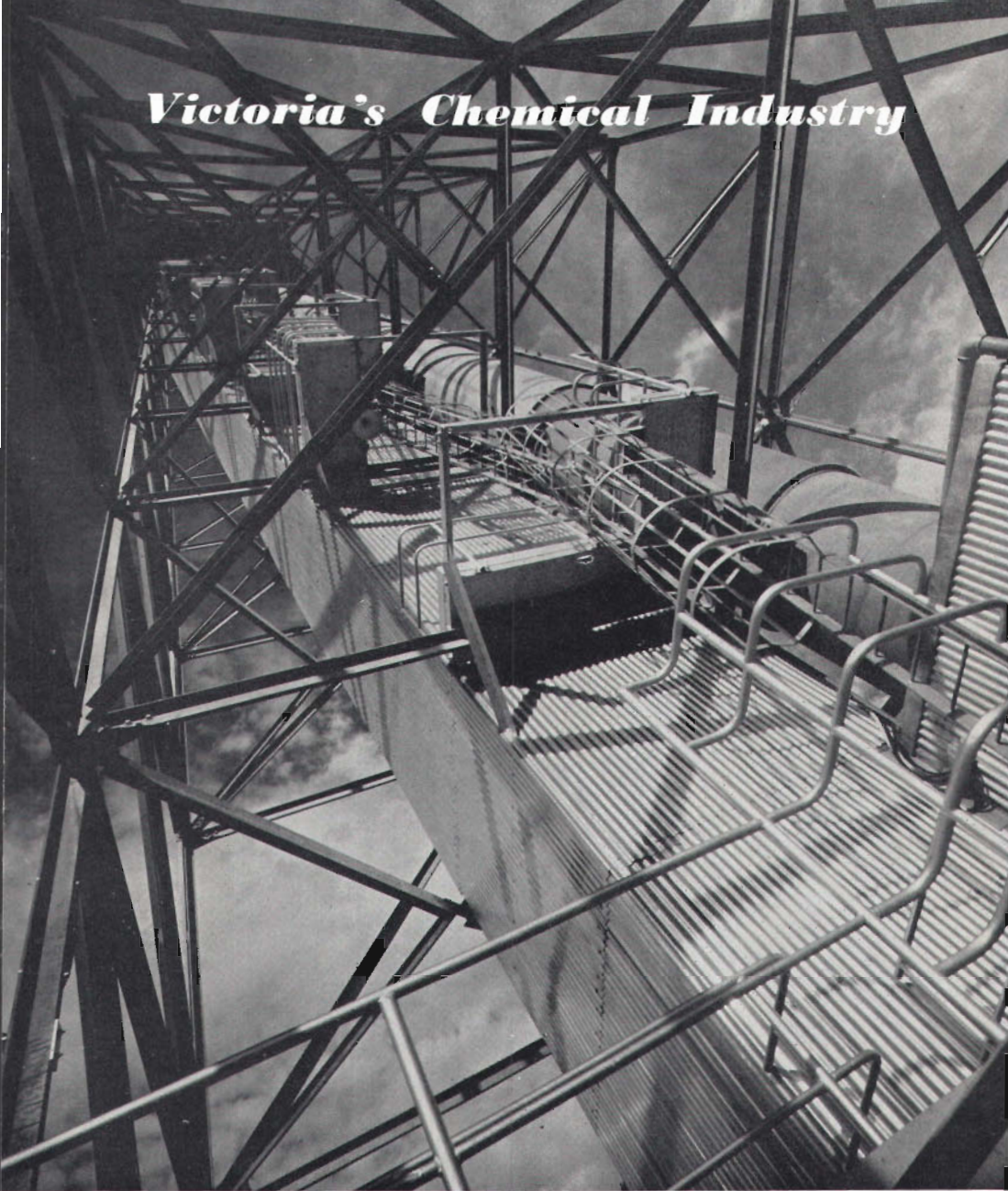


FIGURE 14. Graph showing number of factories and value of production classified according to average number of persons employed.

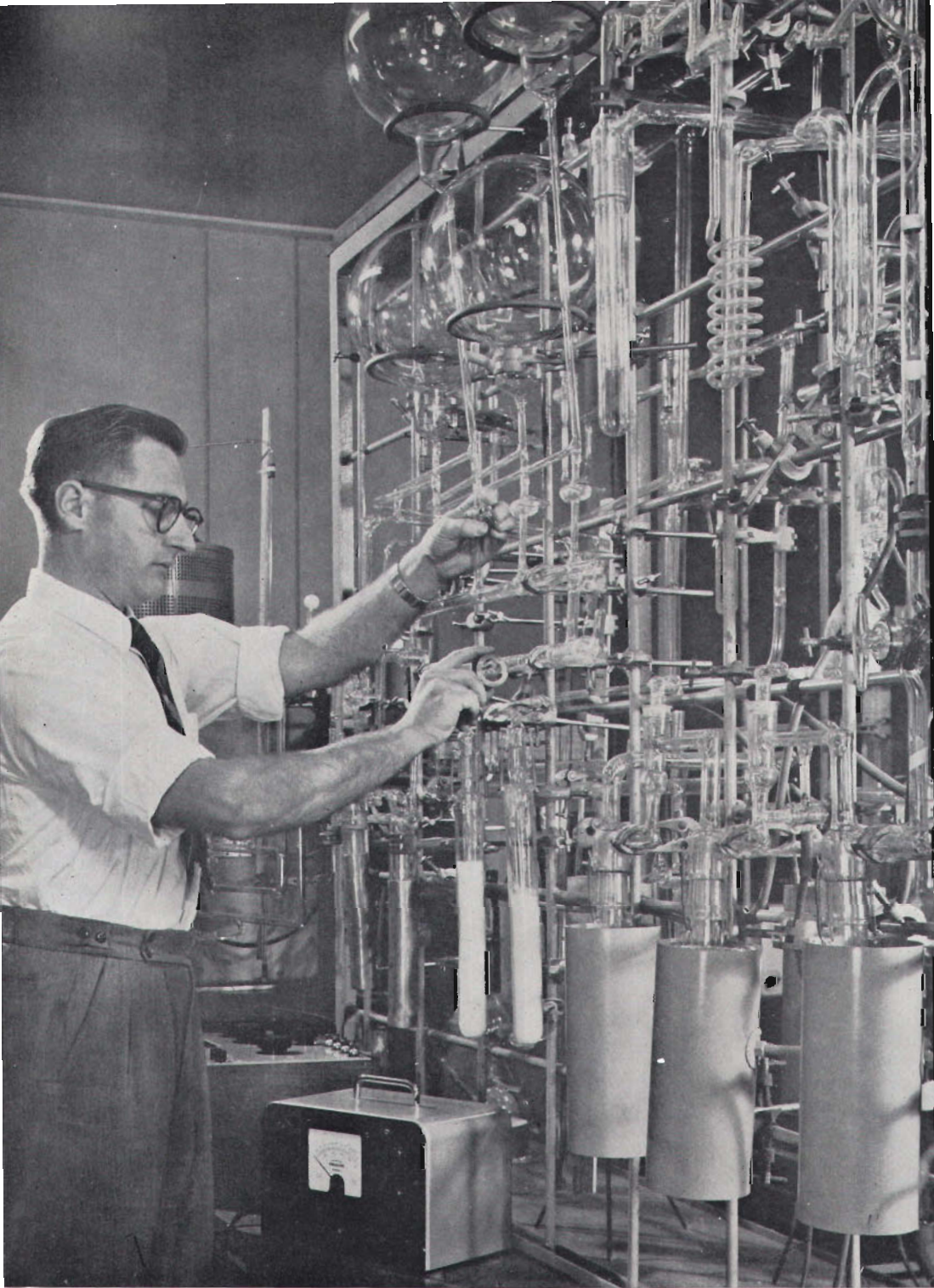


# *Victoria's Chemical Industry*



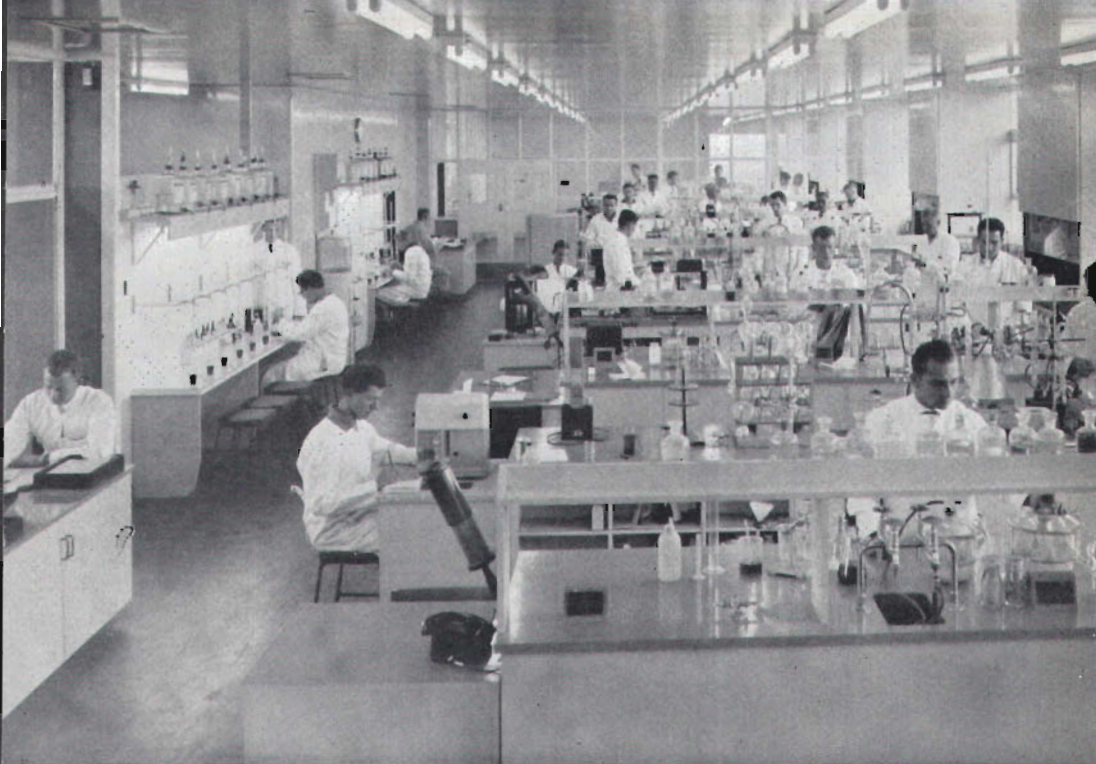
P.C.I.A.N.Z.

Production of lead shot for sporting ammunition and industrial purposes is carried on at this 180 feet high shot tower at Deer Park, Melbourne, constructed in 1960.



[I.C.I.A.N.Z.]

Scientist at the Melbourne central research laboratory of a large industrial firm, prepares high-vacuum equipment used in the study of hydrocarbonoxidation, and reactions involving thermal decompositions. Industrial laboratories in Victoria carry out basic as well as applied research, supplementing the much greater quantity of study performed by the C.S.I.R.O. and other Government institutions.

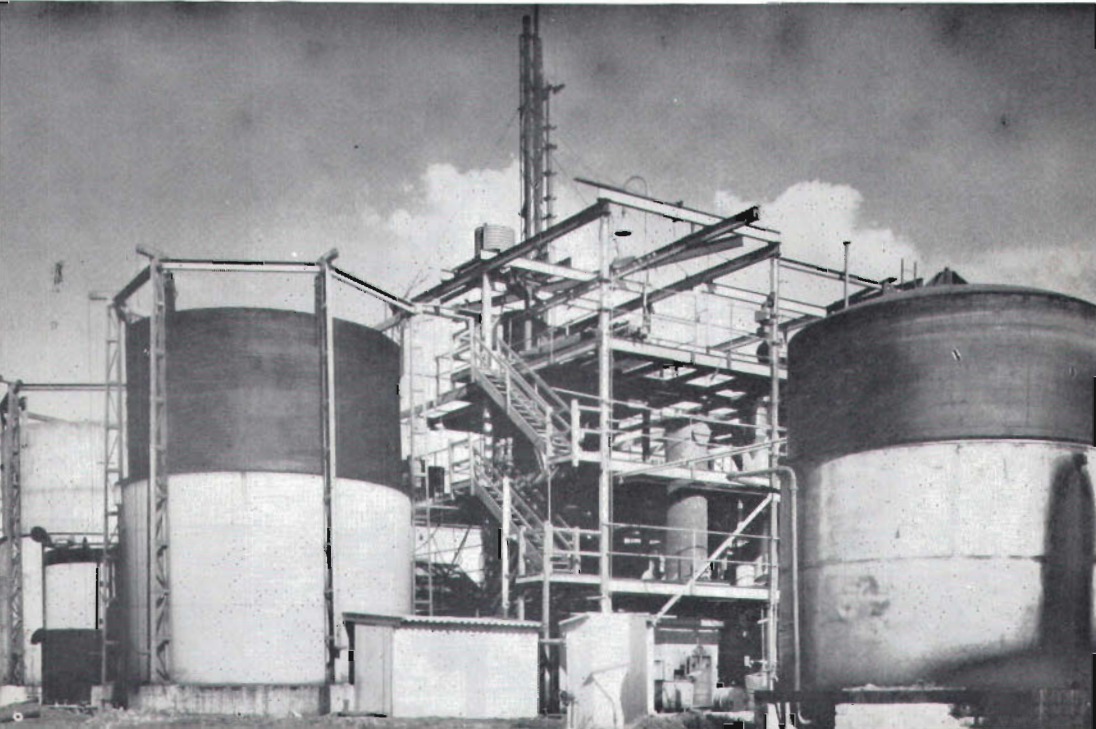


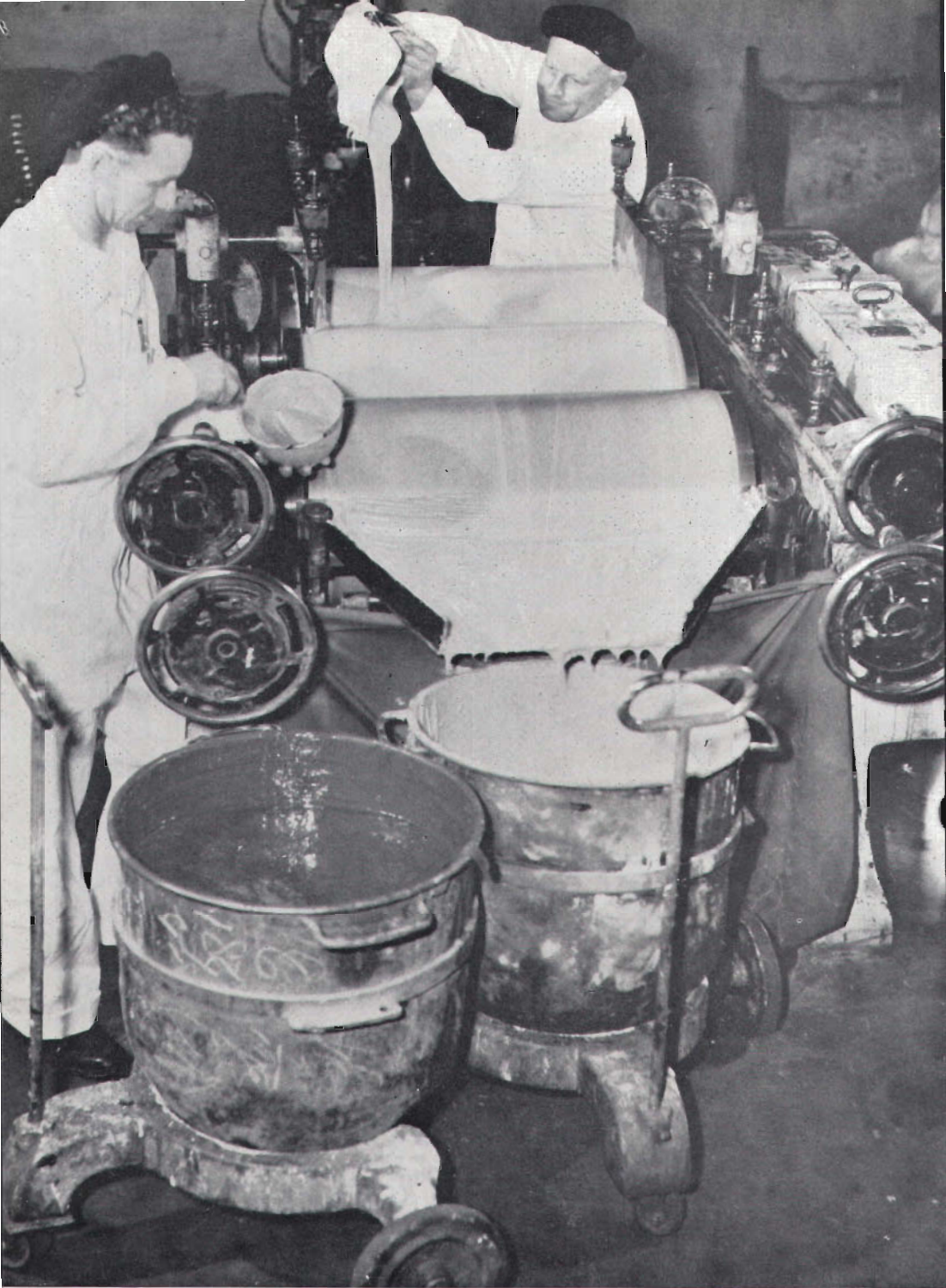
[Monsanto Chemicals (Aust.)]

*Above* : Chemicals manufacturing necessarily demands strict quality control, and this laboratory has been planned to meet the most exacting demands of production requirements.

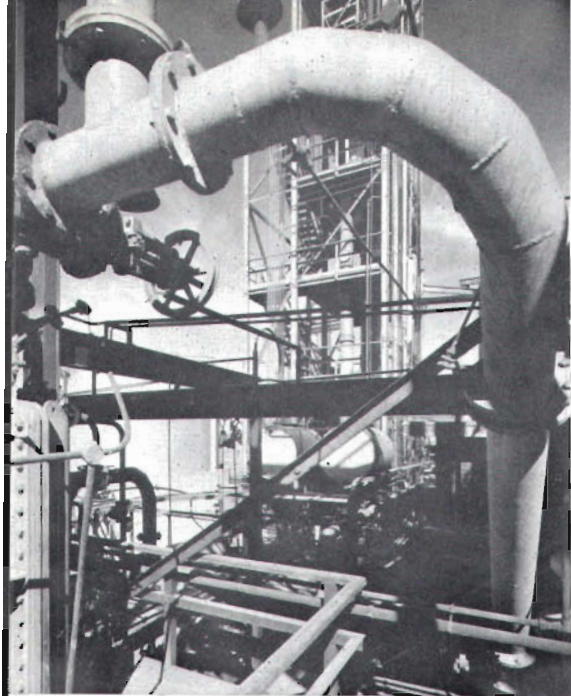
*Below* : Experimental plant for coal gasification at Fishermen's Bend.

[C.S.I.R.O.]





[I.C.I.A.N.Z.]  
Colourful pigment pastes, used in the making of vinyl coated fabrics, are finely ground in a triple roll mill at a Melbourne factory. The pigments are later blended with the PVC compound which forms the coating on the woven base cloth.

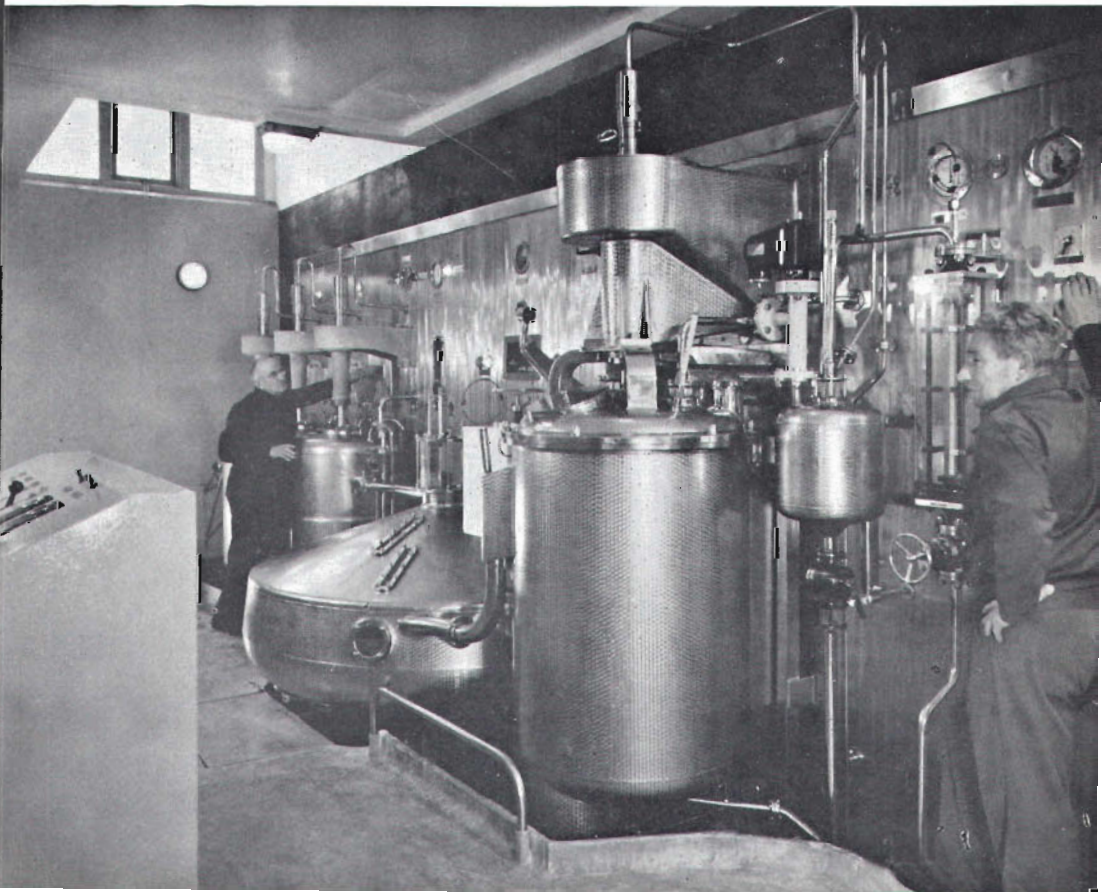


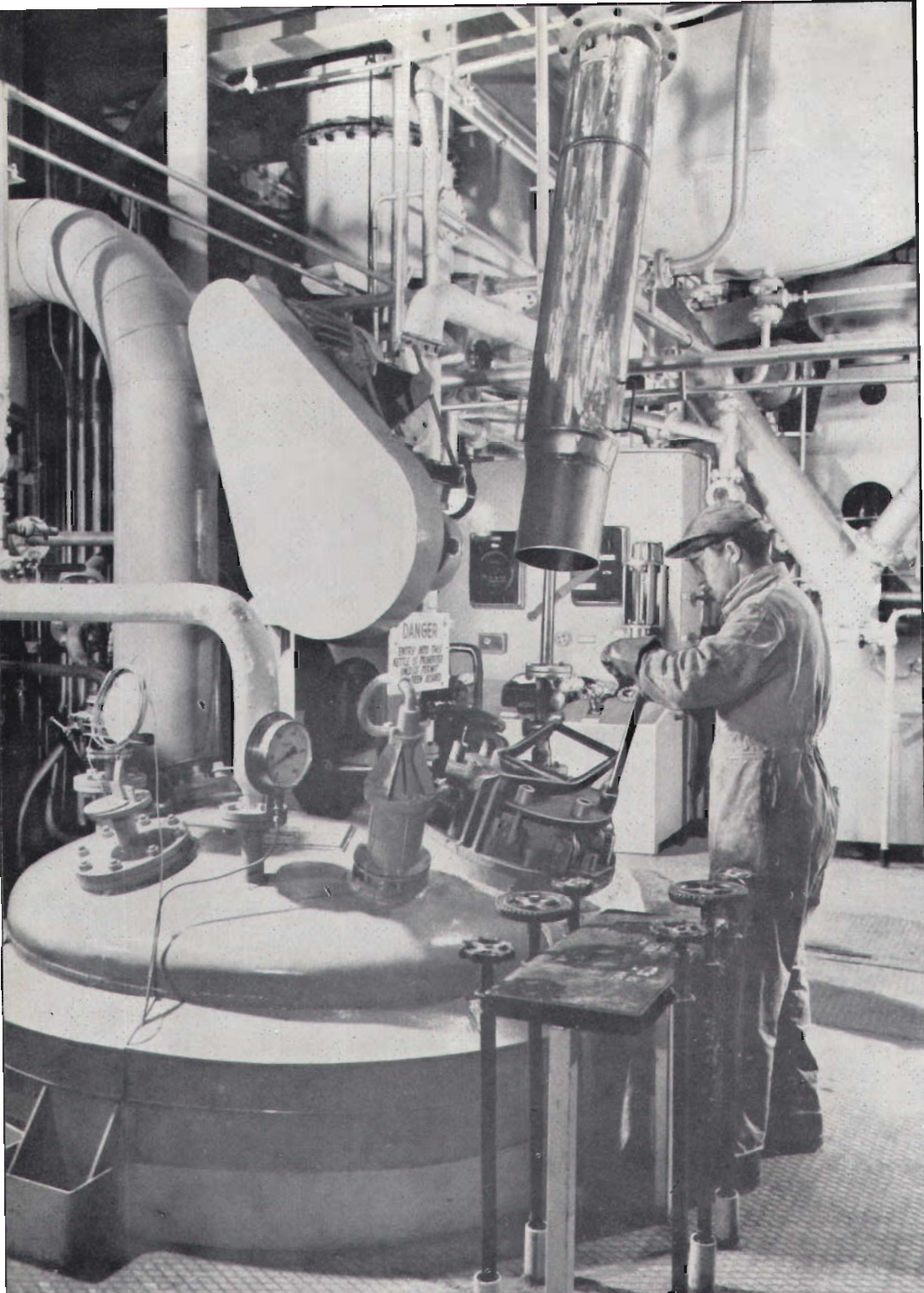
*Left:* Equipment for the production of Diphenylamine at a large factory in Yarraville. Significant for the manufacture of D.D.T. ammonia, and other equally important commodities. Diphenylamine is only one of the many complex organic chemicals manufactured in Victoria by the chemical industry.

[I.C.I.A.N.Z.]

*Below:* This Biazzi plant at Deer Park is the largest in the world. Installed in 1956, it allows, with great safety, the continuous production of nitroglycerine, as opposed to the traditional "batch" process. Explosives produced by the plant are widely used in national developmental works, such as the Snowy Mountains Scheme.

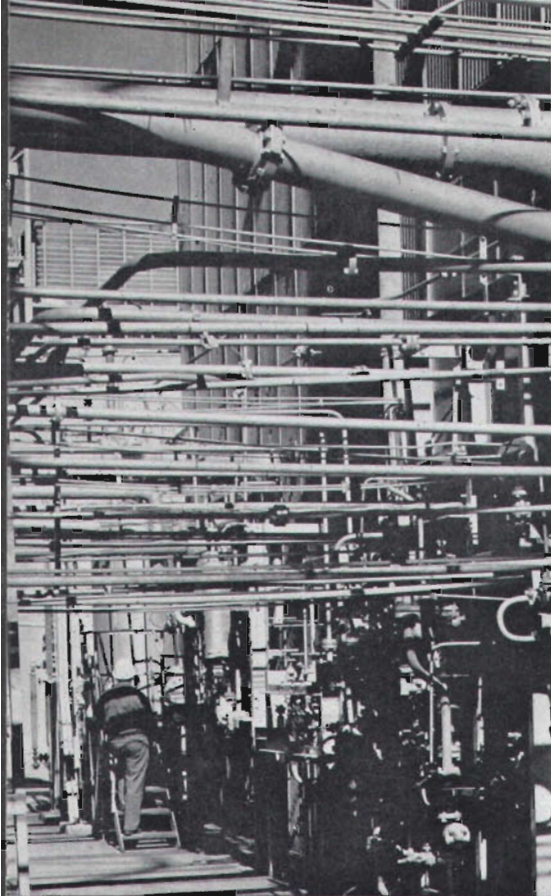
[I.C.I.A.N.Z.]





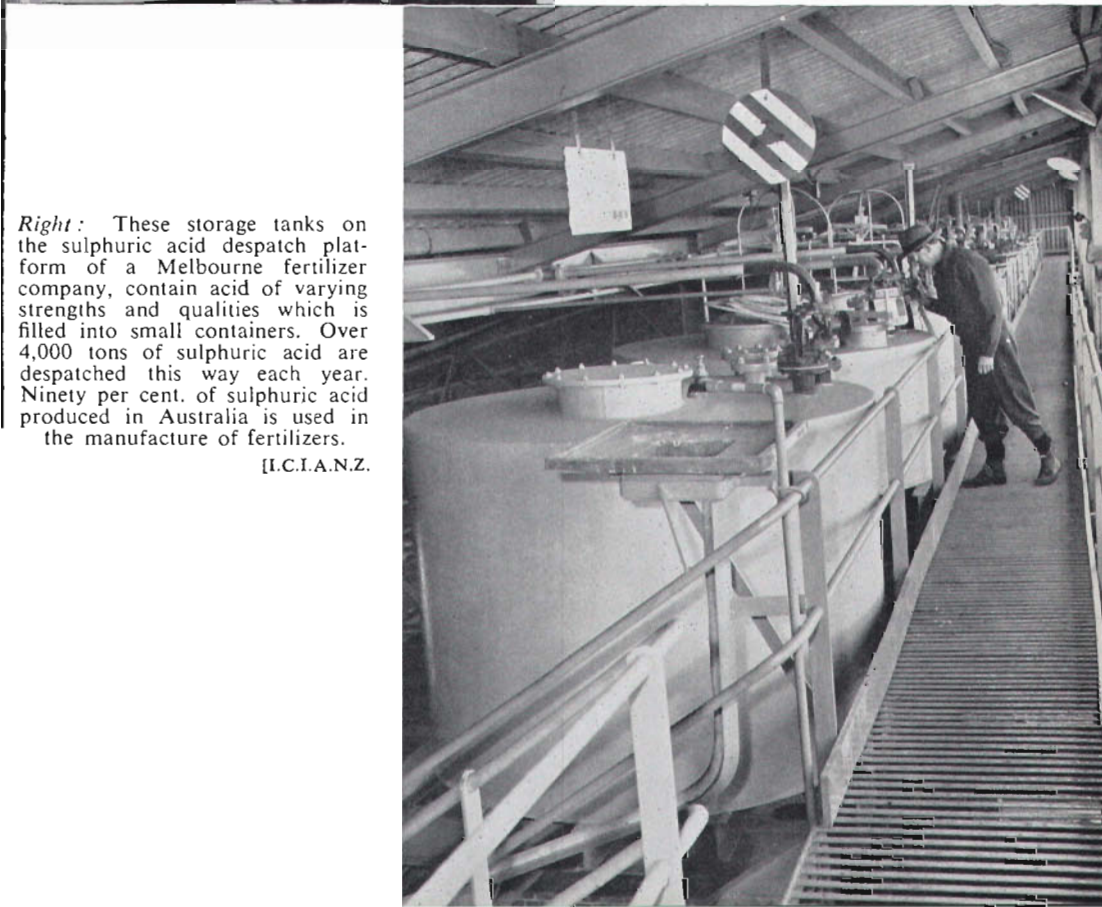
[Monsanto Chemicals (Aust.)

Part of the kettle section of the phenolic resin manufacturing unit at a large Victorian plant. These resins are mainly used in moulding powders for the plastics industry.



*Left:* Maze of pipes illustrates the complexity of chemical manufacture. This view is of a synthetic ammonia plant at Deer Park, which uses the Haber process to "fix" atmospheric nitrogen for use in the manufacture of nitric acid, ammonia, fertilizers, and commercial explosives.

[I.C.I.A.N.Z.]



*Right:* These storage tanks on the sulphuric acid despatch platform of a Melbourne fertilizer company, contain acid of varying strengths and qualities which is filled into small containers. Over 4,000 tons of sulphuric acid are despatched this way each year. Ninety per cent. of sulphuric acid produced in Australia is used in the manufacture of fertilizers.

[I.C.I.A.N.Z.]



Australian farmers used about 2½ million tons of superphosphate in 1960-61, spending £20 million on topdressing alone. This giant fertilizer storage shed in Melbourne has a capacity of 3,000 tons. Both superphosphate and mixed fertilizers are stored here for up to a month until they have matured.

[I.C.I.A.N.Z.]



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.

**Employment in Factories**

All persons employed in the manufacturing activities of a factory, including proprietors working in their own businesses and persons working regularly at home are counted as factory employees while those engaged in selling and distributing, such as salesmen, travellers, and carters employed on outward delivery of manufactured goods, are excluded. The grouping of occupations comprises (i) working proprietors ; (ii) managerial and clerical staff including salaried managers and working directors ; (iii) chemists, draftsmen, and other laboratory and research staff ; (iv) foremen and overseers ; (v) workers in factory (skilled and unskilled) ; and (vi) 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 52 weeks. This method is used for all purposes except where factories are classified according to size (see pages 590-591), 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 year 1956-57 to 1960-61 :—

**VICTORIA—PERSONS EMPLOYED IN FACTORIES.**

Class of Industry	1956-57	1957-58	1958-59	1959-60	1960-61		
					Males	Females	Persons
I. Treatment of Non-ferrous Mine and Quarry Products ..	6,398	6,341	6,522	6,564	6,632	345	6,977
II. Bricks, Pottery, Glass, &c. ..	5,652	5,660	5,846	6,460	5,831	738	6,569
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease ..	16,653	16,996	17,392	16,231	12,168	3,275	15,443
IV. Industrial Metals, Machines, Conveyances ..	131,299	134,221	139,115	150,843	136,932	20,270	157,202
V. Precious Metals, Jewellery, Plate ..	2,605	2,469	2,150	1,980	1,676	411	2,087
VI. Textiles and Textile Goods (Not Dress) ..	37,945	38,078	37,500	41,073	16,545	23,850	40,395
VII. Skins and Leather (Not Clothing or Footwear) ..	4,724	4,649	4,559	4,413	2,820	1,172	3,992
VIII. Clothing (Except Knitted) ..	47,093	45,764	45,783	45,260	13,874	31,588	45,462
IX. Food, Drink, and Tobacco ..	37,542	37,310	37,383	38,830	26,725	11,636	38,361
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving ..	15,093	14,815	15,092	15,759	14,718	905	15,623
XI. Furniture of Wood, Bedding, &c. ..	6,312	6,550	6,492	6,531	4,984	1,325	6,309
XII. Paper, Stationery, Printing, Bookbinding, &c. ..	21,619	22,113	22,846	24,305	18,592	6,636	25,228
XIII. Rubber ..	6,848	6,932	7,207	7,282	5,858	1,501	7,359
XIV. Musical Instruments ..	293	269	247	233	182	34	216
XV. Miscellaneous Products ..	10,313	10,357	9,863	10,767	7,231	4,030	11,261
Total, Classes I. to XV. ..	350,389	352,524	357,997	376,531	274,768	107,716	382,484
XVI. Heat, Light, and Power ..	4,815	4,619	4,982	4,983	4,907	39	4,946
GRAND TOTAL ..	355,204	357,143	362,979	381,514	279,675	107,755	387,430

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 73 per cent. of factory employment should be noted.

Twenty-eight per cent. of factory workers in 1960–61 were females. They exceeded males in Class VI.—Textiles and Textile Goods (Not Dress) with 59 per cent. and in Class VIII.—Clothing (Except Knitted), with 69 per cent. of the Class total.

Of the total females employed, 29 per cent. were in Class VIII.; 22 per cent. in Class VI.; 19 per cent. in Class IV.—Industrial Metals, Machines, and Conveyances; and 11 per cent. in Class IX.—Food, Drink, and Tobacco.

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 1951–52 to 1960–61 :—

#### VICTORIA—NATURE OF EMPLOYMENT IN FACTORIES

Year	Working Proprietors	Managerial and Clerical Staff	Chemists, Draftsmen, &c.	Foremen and Overseers	Workers in Factories (Skilled and Unskilled)	Carters (Excluding Delivery Only) and Messengers, &c.	Total
1951–52.. ..	12,851	32,846	4,019	13,866	258,251	2,310	324,143
1952–53.. ..	13,392	32,722	4,098	13,639	244,866	2,042	310,759
1953–54.. ..	13,722	33,789	4,299	14,193	262,916	2,358	331,277
1954–55.. ..	14,053	36,262	4,590	14,862	274,741	2,140	346,648
1955–56.. ..	14,056	38,287	5,511	15,262	279,848	2,221	355,185
1956–57.. ..	13,967	40,279	5,585	15,498	277,507	2,368	355,204
1957–58.. ..	13,934	40,951	5,751	16,262	278,110	2,135	357,143
1958–59.. ..	13,704	42,960	6,152	17,264	280,772	2,127	362,979
1959–60.. ..	13,401	45,913	6,677	18,060	295,423	2,040	381,514
1960–61.. ..	13,223	48,010	7,112		319,085		387,430

During the ten years reviewed in the previous table, the proportion of foremen, skilled and unskilled workers in factories and carters declined from 85 per cent. to 82 per cent., managerial and clerical staffs increased from 10 per cent. to 12 per cent., and chemists, draftsmen, &c., increased from 1 per cent. to 2 per cent.

In 1960–61 there was an average of 387,430 persons employed in factories and of these 3·4 per cent. were working proprietors; 14·2 per cent. comprised managerial, clerical, and professional staff; and the balance, 82·4 per cent., consisted of persons engaged as foremen, workers in the processes of manufacture, sorting and packing.

The following table shows the nature of employment in factories in 1960-61, according to the class of industry :—

VICTORIA—NATURE OF EMPLOYMENT IN FACTORIES BY CLASSES OF INDUSTRY, 1960-61

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 ..	280	836	110	5,751	6,977
II. Bricks, Pottery, Glass, &c. ..	75	595	52	5,847	6,569
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease .. ..	103	2,666	1,168	11,506	15,443
IV. Industrial Metals, Machines, Conveyances .. ..	4,799	22,657	3,990	125,756	157,202
V. Precious Metals, Jewellery, Plate .	219	205	6	1,657	2,087
VI. Textiles and Textile Goods (Not Dress) .. ..	579	3,510	251	36,055	40,395
VII. Skins and Leather (Not Clothing or Footwear) .. ..	253	348	24	3,367	3,992
VIII. Clothing (Except Knitted) ..	2,520	2,918	28	39,996	45,462
IX. Food, Drink, and Tobacco ..	1,855	5,099	566	30,841	38,361
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving ..	987	1,739	39	12,858	15,623
XI. Furniture of Wood, Bedding, &c.	567	689	5	5,048	6,309
XII. Paper, Stationery, Printing, Book-binding, &c. .. ..	632	3,686	220	20,690	25,228
XIII. Rubber .. ..	58	1,086	227	5,988	7,359
XIV. Musical Instruments .. ..	11	34	..	171	216
XV. Miscellaneous Products .. ..	271	1,618	275	9,097	11,261
Total, Classes I. to XV. ..	13,209	47,686	6,961	314,628	382,484
XVI. Heat, Light, and Power ..	14	324	151	4,457	4,946
GRAND TOTAL .. ..	13,223	48,010	7,112	319,085	387,430

Although "All Other Workers" constitute 82·4 per cent. of the total numbers employed in factories, the percentage varies from 75 per cent. in Class III. to 89 per cent. in Class II. Class III. also has the highest percentage of managerial and clerical and research workers, 25 per cent., compared with the Victorian average of 14 per cent.

Where small factories predominate, there is usually a higher proportion of working proprietors than on the average and a smaller than average managerial and clerical staff. This is particularly evident in Class V.—Precious Metals and Jewellery, where working proprietors comprise 10 per cent. of the total number employed ; Class X.—Sawmills, Joinery, &c., 6 per cent. ; and Class XI.—Furniture of Wood, Bedding, &c., 9 per cent. The average for Victoria is 3 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 1952 to 1961 :—

**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
1952 ..	2,981	16,417	199,303	218,701	1,911	13,051	65,530	80,492
1953 ..	2,972	17,890	200,533	221,395	2,432	13,546	67,056	83,034
1954 ..	3,093	18,778	211,311	233,182	2,527	14,180	74,260	90,967
1955 ..	2,908	19,417	220,582	242,907	2,381	14,316	76,863	93,560
1956 ..	2,888	19,815	223,462	246,165	2,338	14,549	78,054	94,941
1957 ..	2,966	20,446	222,402	245,814	2,480	14,571	77,282	94,333
1958 ..	2,705	21,584	223,776	248,065	2,408	14,900	77,392	94,700
1959 ..	2,595	22,203	229,285	254,083	2,535	15,774	79,213	97,522
1960 ..	2,573	23,013	242,436	268,022	2,664	16,449	87,003	106,116
1961 ..	2,707	21,948	230,989	255,644	2,586	14,531	79,069	96,186

The numbers of males and females employed in factories, and the proportions of the average male and female population working in factories in 1960–61 and earlier years are shown in the following tables :—

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

Year Ended 30th June—	Males		Females		Total	
	Number	Average per 10,000 of Male Population	Number	Average per 10,000 of Female Population	Number	Average per 10,000 of Total Population
1919 ..	81,357	1,188	40,992	550	122,349	855
1929 ..	104,648	1,195	51,920	586	156,568	889
1939 ..	136,218	1,470	65,613	692	201,831	1,076
1949 ..	208,184	1,996	83,822	781	292,006	1,380
1956 ..	258,006	1,995	97,179	764	355,185	1,385
1957 ..	258,119	1,937	97,085	743	355,204	1,345
1958 ..	259,404	1,901	97,739	728	357,143	1,319
1959 ..	263,847	1,888	99,132	720	362,979	1,308
1960 ..	275,315	1,918	106,199	750	381,514	1,338
1961 ..	279,675	1,919	107,755	750	387,430	1,339

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		
	1958-59	1959-60	1960-61	1958-59	1959-60	1960-61
I. Treatment of Non-metalliferous Mine and Quarry Products .. .. .	323	317	345	5.0	4.8	4.9
II. Bricks, Pottery, Glass, &c. .. .. .	553	699	738	9.5	10.8	11.2
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease .. .. .	3,983	3,533	3,275	22.9	21.8	21.2
IV. Industrial Metals, Machines, Conveyances .. .. .	16,732	19,328	20,270	12.0	12.8	12.9
Plant, Equipment and Machinery	2,548	3,107	3,027	10.3	11.2	11.1
Electrical Machinery, Cables, and Apparatus .. .. .	3,499	3,878	3,783	25.5	25.8	25.1
Sheet Metal Working .. .. .	2,069	2,290	2,176	20.5	21.2	20.2
Wireless and Amplifying Apparatus .. .. .	1,459	1,545	1,340	40.2	40.3	39.1
V. Precious Metals, Jewellery, Plate .. .. .	364	352	411	16.9	17.8	19.7
VI. Textiles and Textile Goods (Not Dress) .. .. .	21,314	23,969	23,850	56.8	58.4	59.0
Cotton Spinning and Weaving .. .. .	2,021	2,053	1,970	51.9	52.7	55.9
Wool-Carding, Spinning, Weaving .. .. .	5,916	6,399	5,932	53.8	54.7	54.0
Hosiery and Other Knitted Goods .. .. .	10,790	12,411	12,756	70.6	73.3	74.0
VII. Skins and Leather (Not Clothing or Footwear) .. .. .	1,090	1,147	1,172	23.9	26.0	29.4
VIII. Clothing (Except Knitted) .. .. .	31,755	31,756	31,588	69.4	70.2	69.5
Tailoring and Ready-Made Clothing .. .. .	6,963	7,592	7,885	86.1	73.0	73.1
Dressmaking, Hemstitching .. .. .	7,280	7,535	7,202	88.5	87.1	86.8
Boots and Shoes (Not Rubber) .. .. .	5,769	5,896	6,182	51.4	53.4	53.4
Dyeworks and Cleaning, &c. .. .. .	1,970	1,599	1,453	52.7	50.0	48.8
IX. Food, Drink, and Tobacco—	10,395	11,243	11,636	27.8	29.0	30.3
Bakeries (Including Cakes and Pastry) .. .. .	1,458	1,510	1,539	24.1	25.1	25.7
Confectionery (Including Chocolate and Icing Sugar) .. .. .	1,673	1,700	1,787	54.7	54.8	55.9
Jam, Fruit, and Vegetable Canning .. .. .	1,549	1,723	1,668	40.7	42.0	40.8
Tobacco, Cigars, Cigarettes .. .. .	943	976	1,171	49.2	47.4	50.9
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving .. .. .	823	860	905	5.5	5.5	5.8
XI. Furniture of Wood, Bedding, &c. .. .. .	1,116	1,282	1,325	17.2	19.6	21.0
XII. Paper, Stationery, Printing, Book-binding, &c. .. .. .	5,712	6,295	6,636	25.0	25.9	26.3
XIII. Rubber .. .. .	1,469	1,528	1,501	20.4	21.0	20.4
XIV. Musical Instruments .. .. .	38	33	34	15.4	14.2	15.7
XV. Miscellaneous Products .. .. .	3,431	3,815	4,030	34.8	35.4	35.8
XVI. Heat, Light, and Power .. .. .	34	42	39	0.7	0.8	0.8
Total Classes Only .. .. .	99,132	106,199	107,755	27.3	27.8	27.8

In Class XVI.—Heat, Light and Power, the percentage of females to total persons employed is at its lowest, 0.8 per cent. In Class VIII.—Clothing (Except Knitted), females predominate and comprise 70 per cent. of the total number of persons employed. Within Class VIII., in the Dressmaking sub-class, 87 per cent. of the total employed are females. In Class IV.—Industrial Metals, Machines, and Conveyances, females constitute 13 per cent. of the persons employed. In 1938-39 only 6 per cent. of the persons employed in Class IV. were females.

*Child Labour in Factories*

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

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

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

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

The next table gives comprehensive information regarding salaries and wages paid in the various classes of industry in Victoria in 1960-61. Amounts paid to managers, clerical staff, chemists, and draftsmen, &c., are shown separately from those paid to foremen, overseers, workers in the factory, &c. There is also a dissection within these categories of the amounts paid to male and female employees.

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

**VICTORIA—SALARIES AND WAGES PAID IN FACTORIES,  
1960-61**

(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 ..	1,111	176	6,864	51	7,975	227	8,202
II. Bricks, Pottery, Glass, &c. ..	718	133	5,974	325	6,692	458	7,150
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease ..	4,713	928	11,360	1,273	16,073	2,201	18,274
IV. Industrial Metals, Machines, Conveyances ..	29,834	5,452	126,538	8,101	156,372	13,553	169,925
V. Precious Metals, Jewellery, Plate ..	223	69	1,485	188	1,708	257	1,965
VI. Textiles and Textile Goods (Not Dress) ..	3,463	1,338	15,449	13,737	18,912	15,075	33,987
VII. Skins and Leather (Not Clothing or Footwear) ..	445	90	2,503	614	2,948	704	3,652
VIII. Clothing (Except Knitted) ..	2,492	1,254	10,867	18,924	13,359	20,178	33,537
IX. Food, Drink, and Tobacco ..	5,220	1,671	24,239	5,733	29,459	7,404	36,863
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving ..	1,946	382	12,683	154	14,629	536	15,165
XI. Furniture of Wood, Bedding, &c. ..	679	216	4,075	557	4,754	773	5,527
XII. Paper, Stationery, Printing, Bookbinding, &c. ..	4,104	1,138	19,419	3,193	23,523	4,331	27,854

VICTORIA—SALARIES AND WAGES PAID IN FACTORIES,  
1960-61—*continued*  
(Excludes Drawings of Working Proprietors)  
(£'000)

Class of Industry	Managers, Clerical Staff, Chemists, Draftsmen, &c.		All Other Employees		Total		
	Males	Females	Males	Females	Males	Females	Persons
XIII. Rubber .. .. .	1,245	293	5,713	742	6,958	1,035	7,993
XIV. Musical Instruments .. .. .	35	10	156	12	191	22	213
XV. Miscellaneous Products .. .. .	1,825	530	6,404	1,998	8,229	2,528	10,757
Total, Classes I. to XV. .. .. .	58,053	13,680	253,729	55,602	311,782	69,282	381,064
XVI. Heat, Light, and Power .. .. .	674	19	5,451	13	6,125	32	6,157
GRAND TOTAL .. .. .	58,727	13,699	259,180	55,615	317,907	69,314	387,221

Of the total amount of salaries and wages paid in Victoria in 1960-61—£387,221,000—the Industrial Metals, &c., group was responsible for £169,925,000 or 44 per cent., Food, Drink, &c., £36,863,000 or 10 per cent., and Clothing, &c., £33,537,000 or 9 per cent.

The total amount of salaries and wages paid in industry in Victoria in each of the years 1951-52 to 1961-62 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 by Working Proprietors)

Year	Salaries and Wages Paid to—				Total Salaries and Wages Paid to—		
	Managers, Clerical Staff, Chemists, Draftsmen, &c.		All Other Employees				
	Males	Females	Males	Females	Males	Females	Persons
<b>TOTAL AMOUNT PAID</b> (£'000)							
1951-52 .. .. .	23,286	5,833	140,402	33,065	163,688	38,898	202,586
1952-53 .. .. .	25,725	6,343	146,172	32,638	171,897	38,981	210,878
1953-54 .. .. .	27,875	6,877	162,698	38,586	190,573	45,463	236,036
1954-55 .. .. .	31,735	7,836	181,642	41,537	213,377	49,373	262,750
1955-56 .. .. .	37,312	8,946	197,472	43,214	234,784	52,160	286,944
1956-57 .. .. .	40,159	9,963	201,428	45,058	241,587	55,021	296,608
1957-58 .. .. .	43,363	10,347	209,979	46,851	253,342	57,198	310,540
1958-59 .. .. .	46,587	11,190	219,028	47,531	265,615	58,721	324,336
1959-60 .. .. .	53,793	12,828	248,885	54,675	302,678	67,503	370,181
1960-61 .. .. .	58,727	13,699	259,180	55,615	317,907	69,314	387,221
<b>AVERAGE PER EMPLOYEE</b> (£)							
1951-52 .. .. .	962	461	709	433	737	437	651
1952-53 .. .. .	1,052	513	760	478	793	483	679
1953-54 .. .. .	1,108	532	800	507	834	511	713
1954-55 .. .. .	1,178	563	855	524	891	530	790
1955-56 .. .. .	1,292	570	910	538	955	547	841
1956-57 .. .. .	1,326	640	934	566	982	578	869
1957-58 .. .. .	1,405	654	969	586	1,023	598	905
1958-59 .. .. .	1,439	668	996	593	1,053	606	929
1959-60 .. .. .	1,557	711	1,084	637	1,146	649	1,006
1960-61 .. .. .	1,610	734	1,116	640	1,183	657	1,035

## Power, Fuel, and Light Used

The following table shows the cost of power, fuel, light, water and lubricating oil used during the five years 1956-57 to 1960-61 :—

VICTORIA—COST OF POWER, FUEL, AND LIGHT USED IN  
FACTORIES  
(£'000)

Class of Industry	1956-57	1957-58	1958-59	1959-60	1960-61
I. Treatment of Non-metalliferous Mine and Quarry Products .. .. .	1,991	2,028	2,236	2,710	2,779
II. Bricks, Pottery, Glass, &c. .. .. .	1,961	1,974	2,043	2,215	2,296
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease .. .. .	6,196	6,355	6,384	6,642	6,020
IV. Industrial Metals, Machines, Conveyances .. .. .	6,212	6,963	7,742	8,950	9,584
V. Precious Metals, Jewellery, Plate .. .. .	136	142	143	146	158
VI. Textiles and Textile Goods (Not Dress) .. .. .	2,158	2,357	2,424	2,668	2,550
VII. Skins and Leather (Not Clothing or Footwear) .. .. .	469	469	495	457	404
VIII. Clothing (Except Knitted) .. .. .	933	905	967	937	953
IX. Food, Drink, and Tobacco .. .. .	5,651	5,747	5,951	6,126	6,131
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving .. .. .	649	663	782	850	809
XI. Furniture of Wood, Bedding, &c. .. .. .	111	121	133	136	131
XII. Paper, Stationery, Printing, Bookbinding, &c. .. .. .	1,705	1,792	1,927	2,141	2,173
XIII. Rubber .. .. .	983	1,088	1,166	1,265	1,267
XIV. Musical Instruments .. .. .	13	11	11	9	8
XV. Miscellaneous Products .. .. .	506	568	606	913	1,002
Total Classes I. to XV. .. .. .	29,674	31,193	33,010	36,165	36,265
XVI. Heat, Light, and Power .. .. .	10,707	11,569	10,368	10,975	12,936
GRAND TOTAL .. .. .	40,381	42,762	43,378	47,140	49,201

The next table gives in detail for each of the years 1956-57 to 1960-61 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, AND LIGHT  
USED IN FACTORIES  
(£'000)

Commodity	1956-57	1957-58	1958-59	1959-60	1960-61
Coal—					
Black .. .. .	2,738	2,834	3,009	2,678	2,398
Brown .. .. .	7,540	7,882	7,582	7,805	6,511
Brown Coal Briquettes .. .. .	1,696	1,737	1,464	2,356	7,029
Coke .. .. .	861	759	651	635	588
Wood .. .. .	637	563	560	548	514
Fuel Oil .. .. .	12,388	12,990	11,895	12,428	10,196
Tar (Fuel) .. .. .	257	241	164	179	143
Electricity .. .. .	10,841	11,970	13,910	15,827	17,067
Gas .. .. .	986	1,082	1,120	1,307	1,316
Other (Charcoal, &c.) .. .. .	321	356	629	708	601
Water .. .. .	1,314	1,485	1,543	1,725	1,895
Lubricating Oils .. .. .	802	863	851	944	943
Total .. .. .	40,381	42,762	43,378	47,140	49,201



In 1960-61 electricity, fuel oil, briquettes, and brown coal represented 35, 21, 14, and 13 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 1956-57 to 1960-61 are given below :—

VICTORIA—QUANTITIES OF FUELS USED IN FACTORIES

Commodity	Unit of Quantity	1956-57	1957-58	1958-59	1959-60	1960-61
Coal—						
Black .. ..	'000 tons	408	453	483	427	387
Brown .. ..	'000 tons	9,058	9,127	10,582	11,746	10,921
Brown Coal						
Briquettes .. ..	'000 tons	347	357	305	510	1200
Coke .. ..	'000 tons	98	77	57	50	47
Wood .. ..	'000 tons	324	266	275	282	274
Fuel Oil .. ..	'000 gall.	227,292	239,172	219,738	241,433	214,895
Tar Fuel .. ..	'000 gall.	4,985	4,550	3,018	3,412	13*

\* '000 tons

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" include the value of containers, &c., the cost of tools replaced, and repairs to plant.

VICTORIA—COST OF MATERIALS USED IN FACTORIES

(£'000)

Class of Industry	1956-57	1957-58	1958-59	1959-60	1960-61
I. Treatment of Non-metalliferous Mine and Quarry Products .. ..	11,639	12,370	13,800	15,671	19,765
II. Bricks, Pottery, Glass, &c. .. ..	5,054	5,102	5,254	7,055	7,369
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease .. ..	90,825	98,261	100,164	105,314	101,278
IV. Industrial Metals, Machines, Conveyances .. ..	175,401	202,772	213,429	249,955	266,877
V. Precious Metals, Jewellery, Plate .. ..	3,156	2,871	1,984	1,995	1,964
VI. Textiles and Textile Goods (Not Dress) .. ..	71,068	77,985	67,531	83,004	79,844
VII. Skins and Leather (Not Clothing or Footwear) .. ..	12,570	11,129	10,649	12,089	10,079
VIII. Clothing (Except Knitted) .. ..	47,648	48,160	49,765	53,113	54,138
IX. Food, Drink, and Tobacco .. ..	174,978	183,714	182,920	194,821	202,131
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving .. ..	24,513	26,946	27,430	31,647	31,267
XI. Furniture of Wood, Bedding, &c. .. ..	8,974	10,123	10,133	11,632	11,479
XII. Paper, Stationery, Printing, Book-binding, &c. .. ..	42,933	46,425	51,225	58,057	60,190
XIII. Rubber .. ..	15,455	17,415	17,876	22,128	21,545
XIV. Musical Instruments .. ..	305	251	226	199	198
XV. Miscellaneous Products .. ..	16,815	18,556	19,930	23,121	22,476
Total, Classes I. to XV. .. ..	701,334	762,080	772,316	869,801	890,600
XVI. Heat, Light, and Power .. ..	6,395	6,379	6,400	6,172	6,140
GRAND TOTAL .. ..	707,729	768,459	778,716	875,973	896,740

## Value of Output and Production

Value of factory output by classes of industry in each of the years 1956-57 to 1960-61 is shown in the following table :—

VICTORIA—VALUE OF FACTORY OUTPUT  
(£'000)

Class of Industry	1956-57	1957-58	1958-59	1959-60	1960-61
I. Treatment of Non-metalliferous Mine and Quarry Products .. .. .	24,734	26,220	29,341	34,055	40,584
II. Bricks, Pottery, Glass, &c. .. .	14,750	15,844	16,946	21,149	22,156
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease .. .. .	144,750	155,389	163,734	172,312	162,770
IV. Industrial Metals, Machines, Conveyances .. .. .	361,874	408,199	435,371	511,662	541,464
V. Precious Metals, Jewellery, Plate .. .	6,314	6,436	5,290	5,268	5,356
VI. Textiles and Textile Goods (Not Dress) .. .. .	123,493	130,872	123,508	146,274	141,427
VII. Skins and Leather (Not Clothing or Footwear) .. .. .	19,007	17,607	17,344	18,971	16,473
VIII. Clothing (Except Knitted) .. .. .	95,936	97,411	100,813	106,650	109,885
IX. Food, Drink, and Tobacco .. .. .	245,863	260,893	259,773	282,559	288,995
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving .. .. .	45,216	49,640	50,860	57,492	57,451
XI. Furniture of Wood, Bedding, &c. .. .	17,224	19,308	19,837	21,973	21,390
XII. Paper, Stationery, Printing, Book-binding, &c. .. .. .	80,931	90,058	99,012	112,965	116,519
XIII. Rubber .. .. .	29,035	31,959	34,582	38,010	38,261
XIV. Musical Instruments .. .. .	651	699	596	533	497
XV. Miscellaneous Products .. .. .	32,643	35,107	37,440	42,699	43,201
Total, Classes I. to XV. .. .. .	1,242,421	1,345,642	1,394,447	1,572,572	1,606,429
XVI. Heat, Light, and Power .. .. .	33,720	34,264	38,616	38,930	40,023
GRAND TOTAL .. .. .	1,276,141	1,379,906	1,433,063	1,611,502	1,646,452

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

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

Class of Industry	1956-57	1957-58	1958-59	1959-60	1960-61
I. Treatment of Non-metalliferous Mine and Quarry Products .. .. .	11,104	11,822	13,305	15,674	18,040
II. Bricks, Pottery, Glass, &c. .. .	7,735	8,768	9,649	11,879	12,491
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease .. .. .	47,729	50,772	57,186	60,355	55,471
IV. Industrial Metals, Machines, Conveyances .. .. .	180,261	198,464	214,200	252,757	265,003
V. Precious Metals, Jewellery, Plate .. .	3,022	3,423	3,163	3,127	3,234
VI. Textiles and Textile Goods (Not Dress) .. .. .	50,267	50,520	53,553	60,602	59,033
VII. Skins and Leather (Not Clothing or Footwear) .. .. .	5,968	6,009	6,200	6,425	5,990
VIII. Clothing (Except Knitted) .. .. .	47,355	48,347	50,081	52,600	54,794
IX. Food, Drink, and Tobacco .. .. .	65,234	71,433	70,902	81,612	80,733
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving .. .. .	20,054	22,031	22,648	24,995	25,375
XI. Furniture of Wood, Bedding, &c. .. .	8,139	9,063	9,571	10,205	9,781
XII. Paper, Stationery, Printing, Book-binding, &c. .. .. .	36,293	41,841	45,860	52,767	54,156
XIII. Rubber .. .. .	12,597	13,457	15,540	14,617	15,449
XIV. Musical Instruments .. .. .	333	437	359	325	291
XV. Miscellaneous Products .. .. .	15,322	15,983	16,904	18,665	19,723
Total, Classes I. to XV. .. .. .	511,413	552,370	589,121	666,605	679,564
XVI. Heat, Light, and Power .. .. .	16,618	16,315	21,848	21,784	20,947
GRAND TOTAL .. .. .	528,031	568,685	610,969	688,389	700,511

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 586.

**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 1960–61 are given in the following tables :—

**VICTORIA—FACTORY COSTS AND OUTPUT, 1960–61**  
(£'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 .. .. .	19,765	2,779	8,202	9,838	40,584
II. Bricks, Pottery, Glass, &c. . . . .	7,369	2,296	7,150	5,341	22,156
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease .. .. .	101,278	6,020	18,274	37,198	162,770
IV. Industrial Metals, Machines, Conveyances .. .. .	266,877	9,584	169,925	95,078	541,464
V. Precious Metals, Jewellery, Plate .. .	1,964	158	1,965	1,269	5,356
VI. Textile and Textile Goods (Not Dress)	79,844	2,550	33,987	25,046	141,427
VII. Skins and Leather (Not Clothing or Footwear) .. .. .	10,079	404	3,652	2,338	16,473
VIII. Clothing (Except Knitted) .. .	54,138	953	33,537	21,257	109,885
IX. Food, Drink, and Tobacco .. .	202,131	6,131	36,863	43,870	288,995
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving .. .	31,267	809	15,165	10,210	57,451
XI. Furniture of Wood, Bedding, &c. . . . .	11,479	131	5,527	4,253	21,390
XII. Paper, Stationery, Printing, Book-binding, &c. .. .. .	60,190	2,173	27,854	26,302	116,519
XIII. Rubber .. .. .	21,545	1,267	7,993	7,456	38,261
XIV. Musical Instruments .. .. .	198	8	213	78	497
XV. Miscellaneous Products .. .. .	22,476	1,002	10,757	8,966	43,201
Total, Classes I. to XV. .. .	890,600	36,265	381,064	298,500	1,606,429
XVI. Heat, Light, and Power .. .. .	6,140	12,936	6,157	14,790	40,023
GRAND TOTAL .. .. .	896,740	49,201	387,221	313,290	1,646,452

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

† Includes cost of lubricants and water.

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

VICTORIA—PERCENTAGE OF SPECIFIED COSTS OF  
PRODUCTION, ETC., TO VALUE OF OUTPUT OF FACTORIES,  
1960-61

(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 .. ..	48·7	6·8	20·2	24·3	100·0
II. Bricks, Pottery, Glass, &c. ..	33·2	10·4	32·3	24·1	100·0
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease .. ..	62·2	3·7	11·2	22·9	100·0
IV. Industrial Metals, Machines, Conveyances .. ..	49·3	1·7	31·4	17·6	100·0
V. Precious Metals, Jewellery, Plate ..	36·7	2·9	36·7	23·7	100·0
VI. Textiles and Textile Goods (Not Dress) .. ..	56·5	1·8	24·0	17·7	100·0
VII. Skins and Leather (Not Clothing or Footwear) .. ..	61·2	2·4	22·2	14·2	100·0
VIII. Clothing (Except Knitted) ..	49·3	0·9	30·5	19·3	100·0
IX. Food, Drink, and Tobacco ..	69·9	2·1	12·8	15·2	100·0
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving .. ..	54·4	1·4	26·4	17·8	100·0
XI. Furniture of Wood, Bedding, &c. ..	53·7	0·6	25·8	19·9	100·0
XII. Paper, Stationery, Printing, Book-binding, &c. .. ..	51·6	1·9	23·9	22·6	100·0
XIII. Rubber .. ..	56·3	3·3	20·9	19·5	100·0
XIV. Musical Instruments .. ..	39·8	1·6	42·9	15·7	100·0
XV. Miscellaneous Products .. ..	52·0	2·3	24·9	20·8	100·0
Total, Classes I. to XV. ..	55·4	2·3	23·7	18·6	100·0
XVI. Heat, Light, and Power .. ..	15·3	32·3	15·4	37·0	100·0
GRAND TOTAL .. ..	54·5	3·0	23·5	19·0	100·0

For footnotes see page 605.

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 32·3 per cent. and the cost of raw materials 33·2 per cent. of the values of the finished articles, whilst, in Class IX., the expenditure on wages amounts to 12·8 per cent. and that on raw materials to 69·9 per cent. of the value of the output.

In the next table specified costs of production, the value of the output of factories, and the balance available for profit and miscellaneous expenses are compared for each of the years 1951-52 to 1960-61 :—

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

(£'000)

Year Ended 30th June—	Specified Costs of Production			Balance between Value of Output and Specified Costs‡	Total Value of Output
	Materials Used*	Fuel, Light, and Power Used†	Salaries and Wages		
1952.. ..	477,617	21,990	202,586	131,774	833,967
1953.. ..	476,487	25,626	210,878	147,155	860,146
1954.. ..	548,111	29,080	236,036	172,278	985,505
1955.. ..	616,665	31,768	262,750	189,473	1,100,656
1956.. ..	674,846	34,598	286,944	205,004	1,201,392
1957.. ..	707,729	40,381	296,608	231,423	1,276,141
1958.. ..	768,459	42,762	310,540	258,145	1,379,906
1959.. ..	778,716	43,378	324,336	286,633	1,433,063
1960.. ..	875,973	47,140	370,181	318,208	1,611,502
1961.. ..	896,740	49,201	387,221	313,290	1,646,452

For footnotes see page 605.

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

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

(Per Cent.)

Year Ended 30th June—	Specified Costs of Production			Balance between Value of Output and Specified Costs‡	Total
	Materials Used*	Fuel, Light, and Power Used†	Salaries and Wages		
1952.. ..	57·3	2·6	24·3	15·8	100·0
1953.. ..	55·4	3·0	24·5	17·1	100·0
1954.. ..	55·6	2·9	24·0	17·5	100·0
1955.. ..	56·0	2·9	23·9	17·2	100·0
1956.. ..	56·2	2·9	23·9	17·0	100·0
1957.. ..	55·5	3·2	23·2	18·1	100·0
1958.. ..	55·7	3·1	22·5	18·7	100·0
1959.. ..	54·4	3·0	22·6	20·0	100·0
1960.. ..	54·4	2·9	23·0	19·7	100·0
1961.. ..	54·5	3·0	23·5	19·0	100·0

For footnotes see page 605.

### Land, Buildings, Plant, and Machinery

The following statement shows the value of land and buildings used in connexion with the various classes of manufacturing industries for the years 1956-57 to 1960-61 :—

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

Class of Industry	1956-57	1957-58	1958-59	1959-60	1960-61
I. Treatment of Non-metalliferous Mine and Quarry Products .. ..	3,937	4,365	5,212	9,743	10,788
II. Bricks, Pottery, Glass, &c. ..	3,401	3,603	4,051	5,018	5,824
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease .. ..	24,964	28,851	29,873	28,094	30,831
IV. Industrial Metals, Machines, Conveyances .. ..	85,848	95,603	106,642	126,411	146,160
V. Precious Metals, Jewellery, Plate ..	1,704	1,721	1,581	1,551	1,781
VI. Textiles and Textile Goods (Not Dress) .. ..	20,803	22,475	26,671	28,657	31,793
VII. Skins and Leather (Not Clothing or Footwear) .. ..	2,859	2,806	3,001	3,821	3,815
VIII. Clothing (Except Knitted) ..	15,329	16,516	18,609	20,391	23,534
IX. Food, Drink, and Tobacco ..	39,343	43,318	46,878	52,057	56,590
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving .. ..	6,976	7,590	8,379	10,482	12,717
XI. Furniture of Wood, Bedding, &c. ..	3,709	4,490	4,818	5,306	5,674
XII. Paper, Stationery, Printing, Book-binding, &c. .. ..	15,578	17,362	19,696	23,801	27,126
XIII. Rubber .. ..	3,927	4,680	4,979	5,171	6,664
XIV. Musical Instruments .. ..	150	183	229	283	248
XV. Miscellaneous Products .. ..	5,372	5,851	6,378	8,734	9,901
Total, Classes I. to XV. ..	233,900	259,414	286,997	329,520	373,446
XVI. Heat, Light, and Power .. ..	15,816	18,143	22,836	24,215	27,305
GRAND TOTAL .. ..	249,716	277,557	309,833	353,735	400,751

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 1956-57 to 1960-61 :—

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

Class of Industry	1956-57	1957-58	1958-59	1959-60	1960-61
I. Treatment of Non-metalliferous Mine and Quarry Products ..	6,174	6,569	8,315	16,976	19,833
II. Bricks, Pottery, Glass, &c. ..	3,054	3,005	3,286	3,888	4,578
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease ..	48,540	51,435	58,002	54,094	54,097
IV. Industrial Metals, Machines, Conveyances ..	62,505	69,561	83,490	89,797	105,563
V. Precious Metals, Jewellery, Plate ..	625	588	540	490	531
VI. Textiles and Textile Goods (Not Dress) ..	17,948	19,420	21,696	23,278	24,649
VII. Skins and Leather (Not Clothing or Footwear) ..	1,479	1,407	1,490	1,476	1,651
VIII. Clothing (Except Knitted) ..	7,234	6,850	7,501	7,840	8,694
IX. Food, Drink, and Tobacco ..	35,587	38,525	39,848	43,938	48,118
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving ..	5,401	5,237	6,684	7,000	7,713
XI. Furniture of Wood, Bedding, &c. ..	1,129	1,189	1,271	1,276	1,220
XII. Paper, Stationery, Printing, Book-binding, &c. ..	21,124	20,925	22,064	25,146	28,082
XIII. Rubber ..	4,202	4,603	4,529	6,598	7,392
XIV. Musical Instruments ..	114	106	72	73	84
XV. Miscellaneous Products ..	4,510	5,246	5,064	6,973	8,114
Total, Classes I. to XV. ..	219,626	234,666	263,852	288,843	320,319
XVI. Heat, Light, and Power ..	64,242	67,597	73,255	88,249	97,599
GRAND TOTAL ..	283,868	302,263	337,107	377,092	417,918

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\*, 1960-61

Class of Industry	Steam		Internal Combustion			Water	Motors Driven by Electricity		Total without Duplication
	Reciprocating	Turbine	Gas	Petrol or Other Light Oils	Heavy Oils		Purchased	Own Generation	
I. Treatment of Non-metalliferous Mine and Quarry Products	1,246	23,500	..	931	..	..	63,127	13,390	88,804
II. Bricks, Pottery, Glass, &c. ..	1,045	..	..	298	..	..	37,723	10	39,066
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease ..	7,139	14,695	1,680	2,019	..	50	106,593	10,356	132,176
IV. Industrial Metals, Machines, Conveyances ..	1,841	12	..	6,391	..	..	497,111	1,435	505,355
V. Precious Metals, Jewellery, Plate ..	30	..	..	..	..	..	3,994	..	4,024
VI. Textiles and Textile Goods (Not Dress) ..	36	..	..	415	..	..	103,863	85	104,314

\*For footnote see next page.

VICTORIA—TOTAL RATED HORSE-POWER OF ENGINES AND ELECTRIC MOTORS ORDINARILY IN USE IN FACTORIES\*, 1960-61—*continued*

Class of Industry	Steam		Internal Combustion			Water	Motors Driven by Electricity		Total without Duplication
	Reciprocating	Turbine	Gas	Petrol or Other Light Oils	Heavy Oils		Purchased	Own Generation	
VII. Skins and Leather (Not Clothing or Footwear) .. .. .	770	95	..	302	..	..	17,475	670	18,642
VIII. Clothing (Except Knitted) .. .. .	109	..	..	179	..	..	27,056	..	27,344
IX. Food, Drink, and Tobacco .. .. .	4,327	1,555	..	3,819	..	830	205,053	3,327	215,584
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving .. .. .	5,243	16	66	25,725	..	10	101,083	2,269	132,143
XI. Furniture of Wood, Bedding, &c. .. .. .	..	..	..	10	..	..	14,204	..	14,214
XII. Paper, Stationery, Printing, Book-binding, &c. .. .. .	650	23,500	..	315	..	..	86,420	24,502	110,885
XIII. Rubber .. .. .	..	..	..	295	..	..	64,167	30	64,462
XIV. Musical Instruments .. .. .	..	..	..	..	..	..	326	..	326
XV. Miscellaneous Products .. .. .	225	..	..	183	..	..	32,870	..	33,278
Total, Classes I. to XV. .. .. .	22,661	63,373	1,746	40,882	..	890	1,361,065	56,074	1,490,617
XVI. Gas Works .. .. .	2,646	959	12	1,171	..	..	13,068	65	17,856
GRAND TOTAL .. .. .	25,307	64,332	1,758	42,053	..	890	1,374,133	56,139	1,508,473

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

The total rated horse-power in reserve or idle during 1960-61 and not included above was 185,569.

Motors driven by purchased electricity comprised approximately 91 per cent. of the total horse-power used in factories other than central electric stations in 1960-61, while steam turbines were next in demand with 4 per cent.

A comparison over the ten year period 1951-52 to 1960-61 of the total rated horse-power used to drive engines and electric motors ordinarily in use in factories is given in the table which follows:—

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

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

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



The following table shows the total rated horse-power for each year from 1951-52 to 1960-61 for engines and electric motors in reserve or idle. It includes engines which are used only occasionally, or during periods of breakdown to own engines or power supply.

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

Year	Rated Horse-power of Engines, &c., in Reserve or Idle			Year	Rated Horse-power of Engines, &c., in Reserve or Idle		
	Purchased Electricity	All Other Types	Total		Purchased Electricity	All Other Types	Total
1951-52	84,760	57,480	142,240	1956-57	111,049	63,011	174,060
1952-53	86,488	62,723	149,211	1957-58	117,976	72,190	190,166
1953-54	90,317	64,998	155,315	1958-59	123,644	76,888	200,532
1954-55	96,493	67,787	164,280	1959-60	115,721	76,109	191,830
1955-56	98,660	59,227	157,887	1960-61	130,431	72,777	203,208

\* 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 1960-61 are given in the following table :—

**VICTORIA—POWER EQUIPMENT INSTALLED IN CENTRAL ELECTRIC STATIONS, 1960-61**

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.	1,590,129	236	18,728	35,230	445,700	2,090,023
Generators Installed—						
Kilowatt Capacity—						
Total Installed .. kW.	1,174,725	155	12,868	26,107	332,515	1,546,370
Effective Capacity .. kW.	1,139,600	135	11,805	24,622	316,515	1,492,677
Horse-power Equivalent—						
Total Installed .. H.P.	1,574,699	208	17,249	34,996	445,730	2,072,882
Effective Capacity .. H.P.	1,527,614	181	15,824	33,005	424,283	2,000,907

Similar information to that shown in the preceding table, but giving a comparison over the years 1956-57 to 1960-61 is shown below :—

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

Particulars	1956-57	1957-58	1958-59	1959-60	1960-61
Central Electric Stations .. .. No.	53	51	44	44	41
Engines Installed .. .. Rated H.P.	1,568,721	1,565,409	1,786,817	1,832,183	2,090,023
Generators Installed—					
Kilowatt Capacity—					
Total Installed .. .. kW.	1,163,030	1,160,196	1,309,751	1,366,355	1,546,370
Effective Capacity .. .. kW.	1,093,568	1,087,053	1,276,788	1,320,441	1,492,677
Horse-power Equivalent—					
Total Installed .. .. H.P.	1,558,460	1,554,663	1,755,066	1,830,916	2,072,882
Effective Capacity .. .. H.P.	1,465,381	1,456,651	1,710,896	1,770,028	2,000,907

## Principal Factory Products

## Annual Quality and Value

The next table lists the principal articles of manufacture in Victoria during 1960-61, 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,  
1960-61

Article	Unit of Quantity	Quantity	Value
			£'000
Acid—Sulphuric .. .. .	ton	319,625	*
Aerated and Carbonated Waters	'000 gall.	21,778	5,412
Beer† (Excluding Waste) .. .. .	'000 gall.	..	..
Biscuits .. .. .	'000 lb.	58,002	6,315
Blankets .. .. .	pair	484,253	2,921
Bolts and Nuts .. .. .	..	..	4,074
Paperboard Boxes and Cartons‡	..	..	16,540
Boxes and Cases—Wooden .. .. .	..	..	1,836
Bread—2 lb. Loaves .. .. .	'000	205,920	14,085
Bricks—Clay .. .. .	'000	289,109	6,043
Briquettes—Brown Coal .. .. .	ton	1,806,619	5,865
Butter .. .. .	ton	89,356	36,217
Cakes, Pastry, Pies, &c. .. .. .	..	..	9,506
Cans, Canisters, Containers—			
Metal .. .. .	..	..	16,434
Plastic .. .. .	..	..	985
Cheese .. .. .	ton	19,978	4,829
Cigarettes .. .. .	'000,000	8,657	18,469
Cloth Piece Goods Woven—			
Woollen or Predominantly			
Woollen .. .. .	'000 sq. yd.	8,259	5,099
Worsted or Predominantly			
Worsted .. .. .	'000 sq. yd.	5,803	*
Confectionery—			
Chocolate Base .. .. .	'000 lb.	29,158	6,977
Other without Chocolate .. .. .	'000 lb.	37,096	4,618
Electrical Appliances—			
Portable Tools .. .. .	..	..	1,341
Regulating, Starting, and			
Controlling .. .. .	..	..	5,135
Electricity Generated .. .. .	mill. kWh.	6,556	*
Fibrous Plaster Sheets .. .. .	'000 sq. yd.	7,658	2,537
Flour, Plain—Wheaten (Incl. sharps)	short ton	453,292	*
Footwear: Boots, Shoes, and			
Sandals§—			
Men's and Youths' .. .. .	'000 pair	2,790	7,570
Women's and Maids' .. .. .	'000 pair	8,277	17,305
Children's .. .. .	'000 pair	1,810	1,990
Slippers .. .. .	'000 pair	7,587	4,305
Fruit: Preserved—			
Peaches .. .. .	'000 lb.	39,844	2,438
Pears .. .. .	'000 lb.	110,487	6,803
Furniture and Office Equipment—			
Metal .. .. .	..	..	5,153
Wooden .. .. .	..	..	11,593
Gas—Town .. .. .	mill. cu. ft.	18,097	*
Ice .. .. .	ton	85,313	363
Ice Cream .. .. .	'000 gall.	4,098	2,203
Jams, Fruit Spreads, Fruit Butters,			
&c... .. .	'000 lb.	38,352	2,472

For footnotes see page 613

VICTORIA—PRINCIPAL ARTICLES MANUFACTURED,  
1960-61—continued

Article	Unit of Quantity	Quantity	Value
			£'000
Leather—			
Dressed and Upper from Hides	..	..	3,664
Sole and Belting ..	..	..	1,926
Machinery : Industrial—			
Conveyor (and Appliances)	..	..	2,409
Hoists, Cranes, Lifting ..	..	..	1,791
Food Processing and Canning	..	..	2,409
Metal Working ..	..	..	3,580
Mining ..	..	..	1,976
Pumping (Including Pumps) ..	..	..	3,778
Malt—Barley ..	'000 bushels	6,456	6,585
Mattresses—All Types ..	No.	409,929	2,631
Meat—Canned ..	'000 lb.	58,204	7,363
Medicines, &c. (Proprietary) ..	..	..	7,602
Milk—			
Condensed ..	'000 lb.	89,209	5,806
Powdered : Full Cream ..	'000 lb.	22,396	*
Paints (Not Water) and Enamels	'000 gall.	3,737	6,862
Pipes—Concrete (Excluding Agriculture)	..	..	2,510
Pollard ..	short ton	93,869	*
Ropes and Cables (Excluding Wire)	cwt.	69,603	1,150
Sauce—Tomato ..	'000 pint	15,990	1,929
Sausage Casings—Sheep and Lamb	cwt.	1,960	1,493
Shirts (Men's and Boys') ..	doz.	821,737	*
Sinks—Stainless Steel ..	No.	75,254	954
Soap and Detergents—			
Household and General			
Washing ..	cwt.	846,732	7,144
Personal Toilet ..	cwt.	103,527	1,456
Socks and Stockings—Men's and			
Children's ..	'000 doz. pair	1,874	*
Stockings—Women's ..	'000 doz. pair	2,074	7,576
Soup—Tomato ..	'000 pint	23,055	1,701
Steam, Gas, and Water Fittings,			
Valves, &c. (Non-Ferrous) ..	..	..	5,628
Steel : Structural—Fabricated ..	ton	98,603	14,665
Tiles : Roofing—			
Cement ..	'000	18,437	753
Terra Cotta ..	'000	15,947	835
Timber Produced from Logs—			
Australian ..	'000 sup. ft.	321,823	*
Trailers and Semi-trailers ..	No.	3,761	1,484
Transformers, Chokes, &c. ..	..	..	2,859
Tyres Retreaded and Recapped ..	No.	695,266	3,459
Underwear : Knitted Garments—			
Men's and Boys' ..	'000 doz.	780	*
Women's and Girls' ..	'000 doz.	1,589	*
Vegetables Canned or Bottled¶ ..	'000 lb.	34,103	2,464
Window Frames—Metal ..	..	..	3,761
Wool—Scoured or Carbonized ..	'000 lb.	52,888	*
Wool Tops ..	'000 lb.	17,957	*

\* Quantity only available.

† As recorded by Department of Customs and Excise.

‡ Includes composite wood and paperboard butter boxes.

§ Excluding wholly of rubber.

|| Value of gas sold.

¶ Including pickled vegetables.

*Monthly Production Statistics*

Statistics of monthly production had their origin in the wartime controls of rationed goods when details of piece goods, footwear, and foodstuffs were collected by the Departments immediately concerned with the war effort. In 1948, the Commonwealth Bureau of Census and Statistics opened a permanent Branch Office in Melbourne. Many new collections were then undertaken and those previously administered by other Departments were transferred to this Office. Since then the range of commodities for which monthly production statistics are available has been expanded to provide statistics of value to government as indicators of business activity. The various monthly production series derived from the collections were also found to be of value to the business community and requests were made for dissections of existing collections and the introduction of new items. The forms used are subject to annual review to keep abreast of technical developments and new demands.

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

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

## AUSTRALIA—PRODUCTION SUMMARIES

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

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

*Individual Industries***Introductory**

Particulars on pages 590–591 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.

**Chemical Industry in Victoria***Introduction*

The products of the chemical industry are mainly complex and technical, produced for the exacting requirements of other industries rather than for general sale. It is a relatively small employer of labour and the complexity of its processes does not yield itself to simple explanation. For this reason it is not surprising that the centenary of Victoria's chemical industry in 1962 (based on the date of the first manufacture of sulphuric and nitric acid) has not gained very wide publicity.

Yet, for Victoria, the significance of the centenary is considerable ; for the growth of chemical manufacture has paralleled, and frequently led, the move towards more complex and more efficient production which has brought Victoria to its present position in Australian manufacturing industry.

A modest beginning to meet the demands of a growing colony for mining explosives and agricultural fertilizers ; later development with spurts of sudden growth to meet the national needs of two world wars ; and expansion into scientific maturity—these are the stages of the growth of Victoria's chemical industry.

The accepted yardstick by which the economic strength of a community is measured—production of such chemicals as sulphuric acid, nitrogen, caustic soda and chlorine—may be enlarged to include newer materials as yet little known.

The chemical industry in Victoria has always been subject to the pressure of economic necessity, both from competition of imports and the cost of local production. First were the economics of demand—the manufacturer's worry whether the population of the tiny colony was sufficient to generate enough demand for his specialized products. Next were the economics of transport, both of raw materials and finished goods, in a country with marked problems of distance between centres of population. Then came the economics of skill—the problem

of training or getting skilled technical staff for an industry which each year became more complex. Finally—and this is a problem which in the industry's second century may perhaps be the most important of all—there were the economics of size. With the growing complexity and capital cost of modern chemical processes, will a new project be economically viable even with a nation of twenty, rather than ten million people?

### *Agriculture*

In 1872, sulphuric acid to treat bones was first used for the manufacture of superphosphate, a product directly needed by the Colony's developing agriculture. Since then, the fertilizer industry has always formed a major section of chemical industry in Victoria.

This initial service to primary industry, later greatly expanded by the manufacture of arsenical dips, dusts and sprays, as well as copper sulphate, formed a base upon which the chemical industry of the day could supply the needs of Victorian manufacturing firms in their first steps towards local production.

Today, superphosphate manufacture still uses sulphuric acid—but to treat rock phosphate from Ocean Island, Nauru, and Christmas Island. Fertilizers are supplied mixed with trace elements such as copper, zinc, and cobalt; they are treated with insecticides to reduce crop and pasture damage; nitrogen and potash are added to meet the special needs of different soils. Production in 1960–61 was 868,000 tons. Today the farmer and grazier have become practised and skilful users of many other chemicals for the protection of both crops and stock—chemicals which were, in many cases, not even discovered twenty years ago.

### *Mining*

As agriculture developed, mining also maintained a place of equal importance in early Victoria. Commercial explosives based on nitroglycerine were first manufactured in 1874.

Today, "contact" plants have largely replaced the original "chamber" process for manufacture of sulphuric acid. A new source of supply since 1958 has been by-product sulphur from oil refining, added to the standard methods of roasting imported sulphur or local pyritic ores. In 1960–61, Victoria produced about 319,000 tons.

Nitroglycerine is made by automatic processes at Deer Park in Victoria. The original reaction of sulphuric acid with Chilean nitrate of soda for making nitric acid was replaced by synthetic ammonia plants at Deer Park which convert nitrogen from the air to ammonia and thus to nitric acid. Nitric acid is not used solely, of course, to make nitroglycerine or ammonium nitrate blasting agents. Nitrocellulose for coated fabrics, lacquers, and explosives and lead nitrate for ore refining, are also important uses.

### *Wartime Expansion*

Until 1914, the chemical industry continued with its greatest emphasis on service to agriculture. But the shortages of war made necessary a wider range of local production—not least the commercial exploitation of a new process to make salicylic acid and aspirin—and the chemical industry began on a new phase of expansion. The Government Explosives Factory at Maribyrnong, established in 1907, helped to fulfil the great demand for military propellants and explosives.

The increasing complexity of the industry makes it necessary for this article to confine description to fertilizer manufacture, the production of pharmaceuticals, and that of chemicals proper. But the growth of other branches of the industry—the production of paints and varnishes, inks and polishes, vegetable and mineral oils, soaps, detergents—has been no less striking.

In 1918, basic chemical manufacture expanded further with the first plant to manufacture caustic soda and chlorine at Yarraville. Using electric power and salt from the Mallee, Geelong, and South Australia, output has risen steadily since then. Both chemicals are basic to the manufacture of many other chemicals. Caustic soda and other alkalis, for instance, are used in practically every industry and especially the manufacture of glass and soap. Chlorine and hydrochloric acid are the basic chemicals for selective weedkillers, insecticides, disinfectants, bleaches, and water-softening chemicals.

Steady growth of the industry through the 1920's and 1930's ran parallel with increasing population. What is more, there occurred something of a technological revolution in chemical engineering and basic research throughout the world. The industry was ready for expansion. The Second World War, like its predecessor, increased the demand for locally-produced chemicals—not only as basic materials of military strength, but to supply civilian demand for previously imported materials. Nitrobenzene, aniline, carbamite, phosphorus, phosphoric acid and phosphates, synthetic ammonia, methanol, formaldehyde, potassium chlorate, synthetic phenol, DDT, sulphur drugs, penicillin—these and other complex chemicals were successfully produced for an Australia in wartime isolation.

Most have continued in time of peace for different purposes. Aniline, for instance, was needed for explosives manufacture in war-time; in peace it provides the basic starting point for phenothiazine, the sheep drench used by graziers throughout Australia, as well as for complex chemicals used in the manufacture of tyres and other rubber goods. Phosphorous, electrothermally produced, is used for matches and for fireworks. Yet its main uses are for phosphoric acid and phosphates for food phosphates, plasticisers, and detergent powders.

### *Post-war Growth*

After 1945, the chemical industry began an expansion in size and complexity which could hardly have been foreseen a generation before.

Plastics materials had begun modestly with phenol formaldehyde resins in 1928, and nitrocellulose-coated leathercloth in the same year. Newer and more dramatic materials in plastics have taken the leading part in developments since 1945. Urea formaldehyde production began in 1947; polystyrene in 1953; and the production of fabrics coated with polyvinyl-chloride in 1947.

In 1961, a new group of industries at Altona introduced to Victoria the production of polyvinyl-chloride, polyethylene, styrene monomer, carbon black, and synthetic rubber. This group of plants operates as a series of satellites round a central plant in which the gases used as raw materials for all (mainly ethylene and butadiene), are derived and purified from an imported petroleum base. The word "petrochemical", as applied to this group, refers particularly to the source of the basic chemical "building blocks" from which more complex chemicals are made.

The use of imported oil products as chemical raw materials, however, does illustrate the importance of cost to the industry. While they are freely available at a price advantage, there is little possibility of the use of the great local brown coal deposits for the same purpose. These deposits in the Latrobe Valley and at Anglesea are potentially useful for production of petroleum, benzene, and other organic chemicals—and have been widely exploited for the generation of electricity, gas, and fuel briquettes.

Proximity to raw materials, water supply, facilities for transport and effluent disposal, and distance from the consumer are factors in selecting sites for chemical industry. Thus, the large chemical factories of Victoria are situated close to Melbourne, Geelong, or Ballarat.

Basic raw materials (salt and soda ash from South Australia, calcium carbide from Tasmania, ethyl alcohol from Queensland, ilmenite and bauxite from Western Australia) come to Victoria. So do materials for further processing; New South Wales, for instance, provides phthalic anhydride, beta-naphthol and benzene, polyvinyl-chloride, and polyethylene.

New developments outside the Altona complex include the production of synthetic organic pigments for the first time in Australia (at Laverton in 1962); chlorosulphonic acid; horticultural sprays and dusts; liquid sulphur dioxide; and the sulphonation of refinery by-products to produce detergent chemicals.

### *Industrial Gases*

Industrial gases are also produced in Victoria. Oxygen, nitrogen and argon are produced by fractional distillation of liquefied air. Oxygen is used for oxy-acetylene welding and cutting operations, in glass working and for medical purposes. Nitrogen is used as a blanketing agent to prevent fires and oxidation and in many metal working applications as well as in the electronics and electrical industries. Argon is used in metal working, welding, and together with nitrogen it is used to fill incandescent lamps and fluorescent luminous tubes.



Acetylene, used with oxygen for metal cutting and welding, is produced from calcium carbide. Hydrogen is obtained by hydrolysis of water and as a by-product of the electrolytic caustic soda-chlorine processes. It is used for brazing and welding, in the electronics industry, as a cooling medium for large electric generating equipment, for the hydrogenation of vegetable oils to make margarine, and for the manufacture of hydrochloric acid and aniline.

Other important gases manufactured in Victoria are nitrous oxide for anaesthetics and carbon dioxide which is used in fire extinguishers and in its solid form ("dry ice") as a cooling agent.

#### *Economic Position*

Basically, then, Victoria's chemical industry today consists of a breadth of production and scale which could not have been foreseen even twenty years ago. It is important, however, to note that this development has been made largely without the protection of high tariff barriers. In view of the economies of large-scale production, especially notable in modern chemical engineering, the local producer must strive always to remain highly efficient.

Applied research and method study has improved efficiency both in production and distribution; bulk handling of liquid and solids is extensively practised; advanced techniques of instrument control have allowed most newer chemical processes to be operated continuously rather than by the older "batch" system. In addition, close attention to safety measures has avoided the potential hazards associated with some chemical materials, and some Victorian chemical factories have established records for freedom from accidents to workers.

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

#### VICTORIA—PHARMACEUTICAL AND TOILET PREPARATIONS

Particulars	1956-57	1957-58	1958-59	1959-60	1960-61
Number of Factories .. ..	59	59	57	58	56
Number of Persons Employed ..	2,537	2,665	2,748	3,026	3,002
Salaries and Wages Paid £'000	2,202	2,376	2,577	3,058	3,118
Value of Power, Fuel, &c., Used					
£'000	192	241	601	606	616
Value of Materials Used £'000	6,006	6,499	6,591	7,912	7,336
Value of Production .. £'000	5,468	5,945	6,786	7,722	7,554
Value of Output .. £'000	11,666	12,685	13,978	16,240	15,506
Value of Land and Buildings £'000	3,881	5,224	4,780	5,457	5,828
Value of Plant and Machinery £'000	1,432	1,706	2,811	2,999	3,330
Horse-power of Engines Ordinarily in Use .. H.P.	9,234	8,738	9,504	9,863	10,522

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 1956-57 to 1960-61 are shown below :—

## VICTORIA—MINERAL OILS

Particulars	1956-57	1957-58	1958-59	1959-60	1960-61
Number of Factories .. ..	19	18	18	17	19
Number of Persons Employed ..	1,485	1,443	1,459	1,476	1,397
Salaries and Wages Paid £'000	1,762	1,799	1,863	2,099	2,055
Value of Power, Fuel, &c., Used					
£'000	4,163	4,058	3,476	3,776	3,230
Value of Materials Used £'000	45,835	46,129	45,732	51,482	49,632
Value of Production .. £'000	15,537	17,444	19,275	19,888	16,250
Value of Output .. £'000	65,535	67,631	68,483	75,146	69,112
Value of Land and Buildings £'000	7,171	7,263	7,635	5,576	5,356
Value of Plant and Machinery £'000	30,310	28,999	32,691	31,717	29,474
Horse-power of Engines Ordinarily in Use .. H.P.	53,258	49,029	44,799	47,233	48,130

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 1,397 persons were employed in 1960-61 and the horse-power of engines used totalled 48,130.

The industrial and heavy chemical industry expanded considerably during the five year period 1956-57 to 1960-61 as the particulars below indicate :—

## VICTORIA—INDUSTRIAL AND HEAVY CHEMICALS AND ACIDS

Particulars	1956-57	1957-58	1958-59	1959-60	1960-61
Number of Factories .. ..	69	74	79	83	83
Number of Persons Employed ..	2,308	2,723	3,035	3,276	3,188
Salaries and Wages Paid £'000	2,754	3,171	3,554	4,105	4,194
Value of Power, Fuel, &c., Used					
£'000	640	706	826	949	791
Value of Materials Used £'000	9,408	10,104	10,115	11,119	10,439
Value of Production .. £'000	6,925	6,873	9,269	11,948	10,884
Value of Output .. £'000	16,973	17,683	20,210	24,016	22,114
Value of Land and Buildings £'000	2,127	4,333	4,679	4,848	5,870
Value of Plant and Machinery £'000	3,781	6,344	7,103	7,794	9,623
Horse-power of Engines Ordinarily in Use .. H.P.	19,296	22,531	26,834	26,596	26,130

## Details of Industries\*

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

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

VICTORIA—CLASS IV : INDUSTRIAL METALS, MACHINES,  
AND CONVEYANCES : INDIVIDUAL INDUSTRIES, 1960–61

Particulars	Number of Factories	Persons Employed	Salaries and Wages Paid	Value of—						Horse-power of Engines Ordinarily in Use
				Power, Fuel, and Light	Materials Used	Production	Output	Land and Buildings	Plant and Machinery	
				(£'000)						
Foundries (Ferrous) ..	99	2,719	3,228	455	3,240	4,596	8,291	2,233	1,618	10,772
Plant, Equipment and Machinery, &c. ..	742	27,359	31,190	1,378	52,510	51,881	105,769	25,557	16,511	99,002
Other Engineering ..	961	11,889	12,976	456	15,052	20,600	36,108	11,250	7,003	37,102
Electrical Machinery, Cables, and Apparatus ..	385	15,100	16,010	870	32,132	26,021	59,023	13,907	8,814	37,871
Tramcars and Railway Rolling Stock	22	6,989	7,011	220	6,250	9,477	15,947	2,351	1,465	24,369
Motor Vehicle Construction and Assembly	15	13,814	17,337	1,504	19,426	29,339	50,269	13,842	14,498	51,500
Motor Repairs	2,435	17,429	15,134	472	15,035	22,726	38,233	24,314	4,279	18,126
Motor Bodies..	503	8,044	8,892	324	11,480	11,041	22,845	5,910	5,833	14,194
Motor Accessories ..	91	6,134	6,178	408	9,404	10,199	20,011	4,434	6,369	17,835
Aircraft ..	16	6,321	7,536	277	5,503	9,074	14,854	5,260	3,240	17,553
Agricultural Machines and Implements ..	117	5,749	6,106	452	9,818	8,606	18,876	3,554	3,057	19,891
Non-ferrous Metals—										
Founding, Casting, &c. ..	182	4,056	4,276	310	7,316	7,084	14,710	3,303	2,284	12,474
Sheet Metal Working—										
Pressing and Stamping ..	430	10,757	11,352	579	26,107	20,168	46,854	10,667	7,051	30,305
Wire and Wire Working (Including Nails)	69	2,902	3,249	216	10,527	6,086	16,829	3,127	2,068	8,496
Wireless and Amplifying Apparatus ..	72	3,431	3,373	106	8,740	4,392	13,238	2,300	1,397	2,566
Other Sub-classes	383	14,509	16,077	1,557	34,337	23,713	59,607	14,151	20,076	104,734
<b>Total, Class IV.</b>	<b>6,522</b>	<b>157,202</b>	<b>169,925</b>	<b>9,584</b>	<b>266,877</b>	<b>265,003</b>	<b>541,464</b>	<b>146,160</b>	<b>105,563</b>	<b>506,790</b>

Further particulars of certain of the industries listed in the table above are given on pages 622 to 624.

\* Other than the Chemical Industry.

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

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

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

Particulars	1956-57	1957-58	1958-59	1959-60	1960-61
Number of Factories .. ..	417	409	439	498	457
Number of Persons Employed ..	13,562	15,394	17,361	18,862	18,531
Salaries and Wages Paid £'000	11,357	13,639	16,239	18,832	19,383
Value of Power, Fuel, &c., Used					
£'000	504	672	903	984	976
Value of Materials Used £'000	22,255	31,765	37,696	41,476	40,872
Value of Production .. £'000	16,657	20,827	24,432	28,608	30,413
Value of Output .. £'000	39,416	53,264	63,031	71,068	72,261
Value of Land and Buildings £'000	8,856	10,084	12,543	15,096	16,207
Value of Plant and Machinery £'000	5,405	7,326	9,612	12,233	10,211
Horse-power of Engines Ordinarily in Use .. H.P.	24,743	30,993	40,213	40,339	40,337

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	1956-57	1957-58	1958-59	1959-60	1960-61
Number of Factories .. ..	22	22	22	22	22
Number of Persons Employed ..	7,580	7,554	7,391	7,214	6,989
Salaries and Wages Paid £'000	6,554	6,487	6,429	6,862	7,011
Value of Power, Fuel, &c., Used					
£'000	204	229	222	221	220
Value of Materials Used £'000	5,417	5,168	5,479	6,136	6,250
Value of Production .. £'000	8,878	8,603	8,683	8,706	9,477
Value of Output .. £'000	14,499	14,000	14,384	15,063	15,947
Value of Land and Buildings £'000	1,918	2,064	2,138	2,215	2,351
Value of Plant and Machinery £'000	1,075	1,108	1,429	1,426	1,465
Horse-power of Engines Ordinarily in Use .. H.P.	23,005	23,416	22,881	24,104	24,369

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 Bodies, Motor Repairs, and Motor Accessories. It should be noted, however, that the manufacture of particular parts may be included in other sub-classes of industry.

## VICTORIA—MOTOR VEHICLES

Particulars	1956-57	1957-58	1958-59	1959-60	1960-61
Number of Factories .. ..	2,656	2,751	2,756	2,899	3,044
Number of Persons Employed ..	36,406	37,080	38,212	40,548	45,421
Salaries and Wages Paid £'000	30,520	32,502	34,762	41,245	47,541
Value of Power, Fuel, &c., Used £'000	1,513	1,744	1,920	2,095	2,708
Value of Materials Used £'000	39,308	43,829	42,450	44,692	55,345
Value of Production .. £'000	45,270	52,454	59,182	67,070	73,305
Value of Output .. £'000	86,091	98,027	103,552	113,857	131,358
Value of Land and Buildings £'000	21,198	31,851	36,325	42,146	48,500
Value of Plant and Machinery £'000	16,539	17,222	17,311	18,793	30,979
Horse-power of Engines Ordinarily in Use .. H.P.	76,472	79,776	87,777	81,936	101,655

The relative importance of each sub-class of the motor vehicle industry is shown in the following table for 1960-61 :—

## VICTORIA—MOTOR VEHICLES : SUB-CLASSES, 1960-61

Particulars	Motor Vehicle Construction and Assembly	Motor Repairs	Motor Bodies	Motor Accessories	Total
Number of Factories .. ..	15	2,435	503	91	3,044
Number of Persons Employed ..	13,814	17,429	8,044	6,134	45,421
Salaries and Wages Paid £'000	17,337	15,134	8,892	6,178	47,541
Value of Power, Fuel, &c., Used £'000	1,504	472	324	408	2,708
Value of Materials Used £'000	19,426	15,035	11,480	9,404	55,345
Value of Production : £'000	29,339	22,726	11,041	10,199	73,305
Value of Output .. £'000	50,269	38,233	22,845	20,011	131,358
Value of Land and Buildings £'000	13,842	24,314	5,910	4,434	48,500
Value of Plant and Machinery £'000	14,498	4,279	5,833	6,369	30,979
Horse-power of Engines Ordinarily in Use .. H.P.	51,500	18,126	14,194	17,835	101,655

The information in the above table indicates that while motor repair workshops accounted for 80 per cent. of the number of factories and 38 per cent. of the persons employed, factories engaged in construction and assembly predominated with 51 per cent. of the total horse-power in use.

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

**VICTORIA—AGRICULTURAL MACHINES AND IMPLEMENTS**

Particulars	1956-57	1957-58	1958-59	1959-60	1960-61
Number of Factories .. ..	97	100	91	108	117
Number of Persons Employed ..	5,060	5,299	5,761	5,910	5,749
Salaries and Wages Paid £'000	4,668	5,085	5,802	6,246	6,106
Value of Power, Fuel, &c., Used £'000	345	385	422	437	452
Value of Materials Used £'000	6,447	7,742	8,892	10,596	9,818
Value of Production .. £'000	7,622	8,672	8,992	8,851	8,606
Value of Output .. £'000	14,414	16,799	18,306	19,884	18,876
Value of Land and Buildings £'000	2,454	2,731	2,709	2,869	3,554
Value of Plant and Machinery £'000	2,726	2,649	2,525	2,797	3,057
Horse-power of Engines Ordinarily in Use .. H.P.	20,970	20,821	20,399	20,537	19,891

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

**VICTORIA—NON-FERROUS METALS: FOUNDRY, CASTING, ETC.**

Particulars	1956-57	1957-58	1958-59	1959-60	1960-61
Number of Factories .. ..	155	153	178	178	182
Number of Persons Employed ..	3,359	3,430	3,959	3,989	4,056
Salaries and Wages Paid £'000	2,895	3,113	3,661	4,054	4,276
Value of Power, Fuel, &c., Used £'000	222	249	290	309	310
Value of Materials Used £'000	4,378	4,816	6,171	7,343	7,316
Value of Production .. £'000	4,974	4,920	6,483	6,778	7,084
Value of Output .. £'000	9,574	9,985	12,944	14,430	14,710
Value of Land and Buildings £'000	2,005	2,187	2,142	2,582	3,303
Value of Plant and Machinery £'000	1,492	1,378	1,548	1,687	2,284
Horse-power of Engines Ordinarily in Use .. H.P.	9,449	9,372	10,789	10,927	12,474

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	1956-57	1957-58	1958-59	1959-60	1960-61
Number of Factories .. ..	359	363	396	427	430
Number of Persons Employed ..	8,022	8,493	10,098	10,802	10,757
Salaries and Wages Paid £'000	7,066	7,825	9,380	10,887	11,352
Value of Power, Fuel, &c., Used £'000	344	405	544	705	579
Value of Materials Used £'000	16,639	20,051	22,287	24,964	26,107
Value of Production .. £'000	12,413	12,931	15,828	20,108	20,168
Value of Output .. £'000	29,396	33,387	38,659	45,777	46,854
Value of Land and Buildings £'000	5,744	5,916	8,018	9,791	10,667
Value of Plant and Machinery £'000	3,945	5,062	5,673	6,466	7,051
Horse-power of Engines Ordinarily in Use .. H.P.	20,420	23,700	30,688	32,414	30,305

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	1956-57	1957-58	1958-59	1959-60	1960-61
Number of Factories .. ..	84	88	87	81	82
Number of Persons Employed ..	12,013	12,055	10,995	11,691	10,985
Salaries and Wages Paid £'000	8,925	9,065	8,475	9,604	9,064
Value of Power, Fuel, &c., Used £'000	812	811	798	858	777
Value of Materials Used £'000	24,716	25,218	20,295	25,506	22,053
Value of Production .. £'000	14,674	13,432	14,047	14,508	13,565
Value of Output .. £'000	40,202	39,461	35,140	40,872	36,395
Value of Land and Buildings £'000	5,533	5,543	6,579	6,509	6,628
Value of Plant and Machinery £'000	6,264	6,583	6,386	6,679	6,496
Horse-power of Engines Ordinarily in Use .. H.P.	42,803	41,081	43,084	42,117	39,724

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

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

## VICTORIA—HOSIERY AND OTHER KNITTED GOODS

Particulars	1956-57	1957-58	1958-59	1959-60	1960-61
Number of Factories .. ..	429	427	438	482	476
Number of Persons Employed ..	15,224	15,039	15,285	16,938	17,238
Salaries and Wages Paid £'000	10,521	10,658	10,979	13,146	13,271
Value of Power, Fuel, &c., Used £'000	491	514	549	573	581
Value of Materials Used £'000	22,112	24,541	21,820	27,695	28,713
Value of Production .. £'000	18,997	17,969	20,846	23,798	24,484
Value of Output .. £'000	41,600	43,024	43,215	52,066	53,778
Value of Land and Buildings £'000	6,666	7,320	8,240	9,486	10,877
Value of Plant and Machinery £'000	5,504	5,766	6,529	6,581	7,250
Horse-power of Engines Ordinarily in Use .. H.P.	13,555	14,227	15,560	15,643	16,185

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	1956-57	1957-58	1958-59	1959-60	1960-61
Number of Factories .. ..	1,565	1,569	1,481	1,455	1,379
Number of Persons Employed ..	29,358	28,496	28,310	28,456	28 012
Salaries and Wages Paid £'000	17,946	18,002	18,127	19,664	19,859
Value of Power, Fuel, &c., Used					
£'000	358	362	389	392	396
Value of Materials Used £'000	31,918	32,084	31,257	32,712	31,289
Value of Production .. £'000	28,606	29,058	29,472	31,416	31,582
Value of Output .. £'000	60,882	61,504	61,118	64,520	63,267
Value of Land and Buildings £'000	9,651	10,515	11,769	13,072	14,542
Value of Plant and Machinery £'000	2,725	2,791	2,906	2,752	2,829
Horse-power of Engines Ordinarily in Use .. H.P.	10,840	11,008	11,599	10,629	11,560

In the following table the industries combined in the preceding table are shown in detail for 1960-61 :—

VICTORIA—CLOTHING (DRESS), EXCLUDING WATERPROOF CLOTHING, KNITTED GOODS, AND BOOTS AND SHOES :  
SUB-CLASSES, 1960-61

Particulars	Tailoring and Ready-made Clothing	Dress-making	Millinery, Hats and Caps	Shirts, Underclothing	Foundation Garments	Handkerchiefs, Ties, and Gloves	Total
Number of Factories .. ..	569	522	70	150	34	34	1,379
Number of Persons Employed ..	10,788	8,296	885	5,557	1,921	565	28,012
Salaries and Wages Paid £'000	8,045	5,674	623	3,781	1,318	418	19,859
Value of Power, Fuel, &c., Used							
£'000	171	108	21	62	26	8	396
Value of Materials Used £'000	13,864	6,874	840	6,736	2,002	973	31,289
Value of Production .. £'000	12,611	9,054	1,047	6,178	2,059	633	31,582
Value of Output .. £'000	26,646	16,036	1,908	12,976	4,087	1,614	63,267
Value of Land and Buildings £'000	5,543	4,711	712	1,967	1,257	352	14,542
Value of Plant and Machinery							
£'000	1,266	678	76	550	212	47	2,829
Horse-power of Engines Ordinarily in Use .. .. H.P.	3,994	2,594	913	2,784	1,093	182	11,560

Tailoring and ready-made clothing, and dressmaking together represented 79 per cent. of the factories, 68 per cent. of employment, and 57 per cent. of the horse-power in use ; shirts and underclothing contributed 11 per cent., 20 per cent., and 24 per cent. respectively.



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

VICTORIA—BOOTS AND SHOES (NOT RUBBER)

Particulars	1956-57	1957-58	1958-59	1959-60	1960-61
Number of Factories .. ..	222	221	215	196	205
Number of Persons Employed ..	11,136	11,092	11,231	11,040	11,569
Salaries and Wages Paid £'000	7,974	8,005	8,328	8,911	9,501
Value of Power, Fuel, &c., Used £'000	134	143	156	167	183
Value of Materials Used £'000	12,028	12,641	14,786	16,385	17,996
Value of Production .. £'000	11,170	11,935	12,731	13,691	15,430
Value of Output .. £'000	23,332	24,719	27,673	30,243	33,609
Value of Land and Buildings £'000	2,023	2,276	2,915	3,035	3,437
Value of Plant and Machinery £'000	2,081	2,281	2,684	2,914	3,581
Horse-power of Engines Ordinarily in Use .. H.P.	7,115	7,072	7,433	7,883	7,338

A feature of this industry is the large proportion of females it employs. Numbering 6,182, they represented 53 per cent. of the total employed in 1960-61.

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 the 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, 1960-61

Particulars	Number of Factories	Persons Employed	Salaries and Wages Paid	Value of—					Horsepower of Engines Ordinarily in Use	
				Power, Fuel and Light	Materials Used	Production	Output	Land and Buildings		Plant and Machinery
				£'000						
Flour Milling ..	33	1,321	1,440	250	19,456	3,537	23,243	2,281	1,645	15,242
Cereal Foods and Starch ..	23	1,344	1,317	258	6,272	2,798	9,328	1,601	2,093	11,692
Bakeries ..	1,118	5,989	4,483	785	13,436	9,698	23,919	8,323	4,841	11,928
Biscuits ..	22	2,040	1,750	181	3,669	2,785	6,635	1,489	1,363	4,606
Confectionery ..	87	3,198	2,636	265	7,670	4,833	12,768	2,469	2,677	15,951
Jam, Fruit, and Vegetable Canning	35	4,093	4,015	403	18,212	9,026	27,641	7,405	5,792	19,882
Butter Factories ..	95	3,134	3,465	892	34,642	7,243	42,777	4,160	5,659	29,444
Cheese Factories ..	18	801	915	121	9,165	2,368	11,654	1,938	1,861	4,348
Condensed and Dried Milk Factories ..	17	1,646	1,726	527	12,368	3,667	16,562	1,561	1,485	11,103
Condiments, Coffee, Spices ..	66	1,243	1,150	127	4,987	2,749	7,863	2,739	1,059	5,426
Ice and Refrigerating Waters, Cordials, &c. ..	119	1,106	1,200	482	357	2,188	3,027	3,700	1,850	27,213
Tobacco, Cigars, Cigarettes, Snuff	102	1,278	1,201	104	3,855	3,302	7,261	2,554	1,539	3,723
Other Sub-classes ..	7	2,299	2,251	112	16,633	5,791	22,536	1,785	2,849	4,708
	310	8,869	9,314	1,624	51,409	20,748	73,781	14,585	13,405	53,781
Total, Class IX.	2,052	38,361	36,863	6,131	202,131	80,733	288,995	56,590	48,118	219,047

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

VICTORIA—BAKERIES (INCLUDING CAKES AND PASTRY)

Particulars	1956-57	1957-58	1958-59	1959-60	1960-61
Number of Factories .. ..	1,052	1,075	1,253	1,146	1,118
Number of Persons Employed ..	5,694	5,472	6,043	6,006	5,989
Salaries and Wages Paid £'000	3,618	3,605	3,820	4,238	4,483
Value of Power, Fuel, &c., Used £'000	661	668	745	779	785
Value of Materials Used £'000	10,682	10,884	12,081	12,919	13,436
Value of Production .. £'000	8,824	7,845	9,032	10,110	9,698
Value of Output .. £'000	20,167	19,397	21,858	23,808	23,919
Value of Land and Buildings £'000	5,728	5,923	7,041	7,706	8,323
Value of Plant and Machinery £'000	3,325	3,470	3,753	4,189	4,841
Horse-power of Engines Ordinarily in Use .. H.P.	7,493	8,001	8,030	8,677	11,928

From 1958-59 the figures include operations of a number of smaller bakehouses which had not been included previously in the statistical collection.

In the following table two sub-classes of industry are combined, namely, Jam, Fruit, and Vegetable Canning ; and Pickles, Sauces, and Vinegar :—

VICTORIA—JAM, FRUIT, AND VEGETABLE CANNING :  
PICKLES, SAUCES, AND VINEGAR

Particulars	1956-57	1957-58	1958-59	1959-60	1960-61
Number of Factories .. ..	60	63	60	56	55
Number of Persons Employed ..	4,965	4,903	4,425	4,748	4,755
Salaries and Wages Paid £'000	4,321	4,462	4,002	4,609	4,657
Value of Power, Fuel, &c., Used £'000	481	472	468	485	502
Value of Materials Used £'000	20,747	22,054	19,829	21,270	21,177
Value of Production .. £'000	9,229	10,407	8,440	10,069	10,269
Value of Output .. £'000	30,457	32,933	28,737	31,824	31,948
Value of Land and Buildings £'000	5,633	6,085	6,858	7,249	8,005
Value of Plant and Machinery £'000	5,297	5,617	5,451	6,025	6,299
Horse-power of Engines Ordinarily in Use .. H.P.	*	*	*	20,513	21,466

\* Comparable figures not available.

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

Three sub-classes of industry, namely, butter, cheese, condensed and processed milk have been combined in the figures shown below, as some factories producing butter are also engaged in the production of

cheese and condensed products and are unable to render separate returns in respect of these activities.

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

Particulars	1956-57	1957-58	1958-59	1959-60	1960-61
Number of Factories .. ..	131	131	127	131	130
Number of Persons Employed ..	5,620	5,417	5,452	5,677	5,581
Salaries and Wages Paid £'000	5,381	5,345	5,465	5,906	6,106
Value of Power, Fuel, &c., Used					
£'000	1,598	1,532	1,528	1,604	1,540
Value of Materials Used £'000	51,561	50,558	51,382	55,757	56,175
Value of Production .. £'000	10,567	11,617	11,799	13,681	13,277
Value of Output .. £'000	63,726	63,707	64,709	71,042	70,992
Value of Land and Buildings £'000	5,836	6,233	6,763	7,185	7,659
Value of Plant and Machinery £'000	7,031	7,524	7,995	8,351	9,004
Horse-power of Engines Ordinarily in Use .. H.P.	41,094	42,537	39,310	43,287	44,895

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 545 to 547.

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	1956-57	1957-58	1958-59	1959-60	1960-61
Number of Factories .. ..	1,840	1,874	1,816	1,843	1,814
Number of Persons Employed ..	19,028	18,819	18,991	19,558	19,218
Salaries and Wages Paid £'000	15,003	15,664	16,158	17,904	18,434
Value of Power, Fuel, &c., Used					
£'000	705	724	794	900	839
Value of Materials Used £'000	28,237	31,340	31,715	36,693	36,459
Value of Production .. £'000	24,658	27,339	28,170	30,644	30,606
Value of Output .. £'000	53,600	59,403	60,679	68,237	67,904
Value of Land and Buildings £'000	8,955	10,107	11,009	13,377	15,039
Value of Plant and Machinery £'000	5,942	5,782	5,892	6,121	6,566
Horse-power of Engines Ordinarily in Use .. H.P.	136,919	132,941	133,058	138,532	138,805

The following table shows the particulars of the individual industries combined in the preceding table, for 1960-61 :—

VICTORIA—SAWMILLS, WOODWORKING, FURNITURE, ETC.:  
INDIVIDUAL INDUSTRIES, 1960-61

Particulars	Sawmills	Joinery	Boxes and Cases	Wood Turning and Wood Carving	Furniture Making, &c.	Total
Number of Factories .. .. .	506	655	75	99	479	1,814
Number of Persons Employed .. ..	6,697	6,318	717	1,117	4,369	19,218
Salaries and Wages Paid .. £'000	6,619	6,176	649	1,038	3,952	18,434
Value of Power, Fuel, &c., Used .. £'000	523	159	23	36	98	839
Value of Materials Used .. .. £'000	16,125	11,237	1,151	1,288	6,658	36,459
Value of Production .. .. £'000	11,554	9,820	988	1,715	6,529	30,606
Value of Output .. .. £'000	28,202	21,216	2,162	3,039	13,285	67,904
Value of Land and Buildings .. .. £'000	4,423	5,174	538	797	4,107	15,039
Value of Plant and Machinery .. .. £'000	3,399	1,683	306	388	790	6,566
Horse-power of Engines Ordinarily in Use .. H.P.	85,275	28,827	7,380	5,528	11,795	138,805

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	1956-57	1957-58	1958-59	1959-60	1960-61
Number of Factories .. .. .	111	106	128	133	128
Number of Persons Employed ..	3,348	2,924	3,317	3,633	3,765
Salaries and Wages Paid .. £'000	3,300	2,951	3,471	4,063	4,652
Value of Power, Fuel, &c., Used .. £'000	119	115	135	144	159
Value of Materials Used .. .. £'000	7,563	7,268	8,660	9,549	9,672
Value of Production .. .. £'000	5,727	5,224	6,173	6,922	7,656
Value of Output .. .. £'000	13,409	12,607	14,968	16,615	17,487
Value of Land and Buildings .. £'000	1,616	1,517	2,350	2,955	3,124
Value of Plant and Machinery .. £'000	2,795	1,791	2,212	2,750	3,122
Horse-power of Engines Ordinarily in Use .. H.P.	10,484	9,862	10,020	11,171	12,018

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	1956-57	1957-58	1958-59	1959-60	1960-61
Number of Factories .. ..	537	549	539	563	581
Number of Persons Employed ..	7,964	8,381	8,515	8,619	9,034
Salaries and Wages Paid £'000	6,681	7,461	7,718	8,520	9,378
Value of Power, Fuel, &c., Used					
£'000	200	228	247	268	300
Value of Materials Used £'000	8,932	10,436	11,180	11,590	12,483
Value of Production .. £'000	11,888	13,304	14,217	15,445	16,754
Value of Output .. £'000	21,020	23,968	25,644	27,303	29,537
Value of Land and Buildings £'000	5,132	5,982	6,433	7,789	8,937
Value of Plant and Machinery £'000	5,587	6,109	6,155	6,653	7,384
Horse-power of Engines Ordinarily in Use .. H.P.	12,554	13,108	13,357	14,825	15,289

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	1956-57	1957-58	1958-59	1959-60	1960-61
Number of Factories .. ..	49	52	51	57	62
Number of Persons Employed ..	2,007	2,125	2,297	2,820	3,029
Salaries and Wages Paid £'000	1,598	1,748	2,024	2,616	2,876
Value of Power, Fuel, &c., Used					
£'000	67	81	93	115	117
Value of Materials Used £'000	5,485	6,138	7,214	9,080	9,814
Value of Production .. £'000	3,542	4,318	4,660	6,131	6,502
Value of Output .. £'000	9,094	10,537	11,967	15,326	16,433
Value of Land and Buildings £'000	1,373	1,784	2,414	2,875	3,830
Value of Plant and Machinery £'000	1,505	1,676	1,744	2,250	2,844
Horse-power of Engines Ordinarily in Use .. H.P.	4,179	4,358	4,643	6,140	6,329

The following table gives particulars of rubber goods manufacture :—

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

Particulars	1956-57	1957-58	1958-59	1959-60	1960-61
Number of Factories .. ..	54	54	56	52	49
Number of Persons Employed ..	6,182	6,254	6,529	6,566	6,632
Salaries and Wages Paid £'000	5,982	6,280	6,669	7,433	7,318
Value of Power, Fuel, &c., Used £'000	901	991	1,056	1,153	1,152
Value of Materials Used £'000	14,088	15,910	16,418	20,557	19,877
Value of Production .. £'000	11,327	12,001	14,066	12,974	13,666
Value of Output .. £'000	26,316	28,902	31,540	34,684	34,695
Value of Land and Buildings £'000	3,211	3,735	3,759	3,834	5,057
Value of Plant and Machinery £'000	3,757	4,028	3,855	5,966	6,676
Horse-power of Engines Ordinarily in Use .. H.P.	53,254	55,214	60,379	61,154	61,676

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	1956-57	1957-58	1958-59	1959-60	1960-61
Number of Factories .. ..	147	145	152	154	157
Number of Persons Employed ..	4,891	5,006	5,267	5,567	5,754
Salaries and Wages Paid £'000	3,918	4,342	4,934	5,726	5,890
Value of Power, Fuel, &c., Used £'000	304	353	440	492	482
Value of Materials Used £'000	9,613	10,876	13,797	16,310	14,386
Value of Production .. £'000	7,562	8,819	10,653	10,922	11,298
Value of Output .. £'000	17,479	20,048	24,890	27,724	26,166
Value of Land and Buildings £'000	2,718	2,958	3,261	4,388	4,905
Value of Plant and Machinery £'000	2,844	3,381	3,740	4,449	5,397
Horse-power of Engines Ordinarily in Use .. H.P.	19,136	20,694	20,781	22,412	24,070

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

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

### VICTORIA—ELECTRIC LIGHT AND POWER

Particulars	1956-57	1957-58	1958-59	1959-60	1960-61
Number of Factories .. ..	53	51	44	44	41
Number of Persons Employed ..	3,186	3,247	3,398	3,470	3,476
Salaries and Wages Paid £'000	3,534	3,599	3,851	4,218	4,261
Value of Power, Fuel, &c., Used					
£'000	10,513	11,153	9,971	10,472	12,412
Value of Materials Used	605	677	600	700	818
Value of Production .. ..	£'000 13,824	13,706	18,529	17,977	16,784
Value of Output .. ..	£'000 24,942	25,536	29,100	29,149	30,013
Value of Land and Buildings	£'000 15,114	17,444	22,949	21,184	23,336
Value of Plant and Machinery	£'000 57,017	63,659	70,244	74,548	83,969
Total Installed Horse-power of Engines Used to Drive Generators* .. ..	H.P. 1,568,721	1,565,409	1,786,817	1,832,183	2,090,023

\* Excludes engines using electricity generated in own works.

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

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

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

#### State Electricity Commission of Victoria

##### Powers

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

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

### State Generating System

The State system generates 99 per cent. of all the electricity produced in Victoria for public supply. The system serves about 97 per cent. of the population through a supply network covering more than three-quarters of the populated area of the State. Electricity generated in, and purchased for this system totalled 6,577 million kilowatt-hours in 1960-61, nearly four-fifths of Victoria's electricity being generated from brown coal used either in its raw state or in the form of briquettes. During 1960-61, hydro-stations produced over 13 per cent. of the State's electricity for public supply.

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

### VICTORIA—ELECTRICITY GENERATED, POWER STATIONS, AND SOURCE OF POWER, 1960-61

Source	Source T = Thermal* H = Hydro	Output Million kWh.
State Electricity Commission—		
Yallourn Power Station and Briquette Factory ..	T	2,952
Morwell Power Station and Briquette Factory ..	T	701
Newport Power Station .. ..	T	1,325
Spencer-street Power Station (M.C.C.) .. ..	T	242
Richmond Power Station .. ..	T	75
Provincial Thermal Power Stations .. ..	T	278
Total S.E.C. Thermal Generation ..	T	5,573
Eildon—Rubicon .. ..	H	342
Kiewa .. ..	H	341
Cairn Curran .. ..	H	2
Total S.E.C. Hydro Generation .. ..	H	685
Snowy Mountain Scheme .. ..	H	43
Hume .. ..	H	133
Interchange with New South Wales .. ..	..	143
Total S.E.C. .. ..	T and H	319
Other Available for Public Supply .. ..	T	44
Total Available for Public Supply .. ..	T and H	6,621
Electricity Generated in Factories .. ..	T	253
Cumulative Total .. ..	T and H	6,874

\* Includes Internal Combustion.

Inclusive of generator capacity available to the Victorian system from outside the State, the total installed capacity of the State generating system at 30th June, 1961, was 1,682,133 kilowatts. Except for 24,550 kilowatts of plant in the Mildura sub-region, all power stations are interconnected. The largest power station in this interconnected system is Yallourn, which alone generates almost half Victoria's electricity. The transmission and distribution system at 30th June, 1961, comprised 34,557 miles of high and low voltage power lines, including 1,014 miles of underground cables, sixteen terminal stations and almost 27,100 distribution sub-stations.



*Hydro-power Available from Interstate Sources*

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

*Consumers Served*

At 30th June, 1961, the State system served 906,638 consumers in Victoria (712,421 retail and the remainder—194,217—through eleven metropolitan councils which buy electricity in bulk). In addition, bulk supply was given to several New South Wales municipalities and irrigation settlements bordering the River Murray. The State system supplies all the Melbourne Metropolitan Area and over 1,650 other centres of population. Rural electrification is now more than four-fifths completed and 46,838 farms were supplied at the end of the year by the State Electricity Commission. Outside the State system there were 18,190 other consumers served by local country undertakings.

*New Construction*

Inclusive of the substantial output to which Victoria is entitled from the Snowy Mountains hydro-electric scheme, the capacity of Victoria's State generating system will be more than doubled between 1961 and 1971. At Yallourn a 240,000 kilowatt extension (Yallourn "E") was completed in 1962. Next to be commissioned after Yallourn "E" will be the new Hazelwood Power Station south of Morwell. It will burn brown coal from the Morwell open cut. Beginning with one turbo-generator (200,000 kilowatts) in 1964, the Commission plans to complete the power station to its ultimate capacity of 1,200,000 kilowatts in 1971.

The new brown coal burning power station built as part of the Morwell power and fuel project is now nearly complete. The installed capacity of the power station was 110,000 kilowatts at 30th June, 1961. An additional 60,000 kilowatt turbo-generator was due to be in service late in 1962. Now in full production, the Morwell briquette factories have an annual capacity of 1,300,000 tons of briquettes.

The main 220,000 volt transmission system has been greatly extended to reinforce existing links between generating stations and main distribution centres. The 220,000 volt ring grid around central Victoria was completed early in 1962. The final section (Colac-Terang) of a 220,000 volt spur line from Geelong (temporarily operating at 66,000 volts) was also completed early in 1962, and another 220,000 volt spur line from Bendigo to Red Cliffs (near Mildura) was due to be completed in the latter months of 1962.

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

Particulars	1958-59	1959-60	1960-61
<b>INCOME</b>			
Electricity Sales—			
Domestic .. .. .	13,303	14,587	16,019
Commercial .. .. .	5,984	6,535	7,353
Industrial .. .. .	10,717	11,893	12,646
Bulk .. .. .	9,847	11,058	11,707
Traction .. .. .	2,052	1,980	1,971
Public Lighting and Miscellaneous .. .. .	493	551	601
Briquette Sales .. .. .	2,169	2,975	4,386
Brown Coal Sales .. .. .	721	747	557
Tramways Income .. .. .	101	100	101
Miscellaneous Income .. .. .	25	28	39
Total Income .. .. .	45,412	50,454	55,380
<b>EXPENDITURE</b>			
Operation and Maintenance (Including Fuel)	19,174	21,392	22,966
Administrative and General Expenses .. .. .	3,338	3,778	4,194
General Services, &c. .. .. .	1,823	2,217	2,531
Depreciation .. .. .	5,894	7,668	10,403
Interest .. .. .	10,769	11,854	12,974
Loan Flotation Expense .. .. .	365	400	400
Deferred Interest, &c., Written Off .. .. .	3,200	2,250	1,250
Miscellaneous Expenditure .. .. .	426	435	442
Total Expenditure .. .. .	44,989	49,994	55,180
Surplus .. .. .	423	460	220
Fixed Assets (Depreciated) at 30th June .. .. .	245,660	263,318	286,356
Capital Liabilities at 30th June .. .. .	245,486	265,001	282,256

### *Briquetting of Victorian Brown Coal*

#### *Introduction*

The production of brown coal briquettes by the State Electricity Commission of Victoria commenced at Yallourn in 1924 with a small plant of 360 tons per day capacity.

With major additions at Yallourn in 1931 and 1944 and the commissioning of a new plant at Morwell in 1959-60, briquetting has developed in less than four decades into an important State industry with an annual output of about 2 mill. tons.

#### *Raw Material*

The raw brown coal used for briquetting is obtained from portion of the extensive Latrobe Valley deposits. The raw coal has a soft earthy texture and disintegrates comparatively rapidly when exposed.

Moisture content is high—63 to 70 per cent.—and calorific value low, but ash content is also low. A typical proximate analysis on a dry basis would be Fixed Carbon 47·17 per cent., Volatiles 50·80 per cent., and Ash 2·03 per cent.

Economically, therefore, direct usage of raw brown coal as a fuel is limited to within a short radius of its source, a condition that can be overcome by up-grading the raw coal into briquettes. This in turn is rendered possible by the low winning cost of the raw coal and by its property, when dried, of self-binding under pressure.

### *Process*

The process employed at Yallourn and Morwell is basically similar and the various stages in sequence of coal flow are:—

- (1) Reduction of the raw coal by crushing, milling, and screening to produce a balanced fine coal up to a maximum of 8-mm. grain size ;
- (2) drying of the fine coal to an end moisture content of 16 to 17 per cent. in rotating tubular driers heated by steam ;
- (3) conveying and treatment of the hot coal to promote after-evaporation, pre-oxidation, cooling and equalizing of moisture span ;
- (4) pressing of the cooled coal into the required briquette shapes ; and
- (5) handling of the finished briquettes to despatch points or storage.

These sections are served by electro-filter and/or mechanical dedusting systems for the removal and disposal of the fine dust generated during processing.

The steam used to heat the drying drums is produced at high pressure and is passed through back-pressure turbo-alternators prior to use in the driers where it is condensed and re-cycled to the boilers.

### *Plants*

The State Electricity Commission operates briquetting works at Morwell and Yallourn. The modern Morwell plant has more than twice the capacity of Yallourn ; unit plant sizes are larger ; and it possesses some variations in detailed plant layout which improve control and flexibility. The following is a brief description of the Morwell plant.

Incoming raw coal passes through cog-roll crushers to double-shaker fine screens (up to 8 mm.) and over-size lumps are re-circulated through swing hammer mills. Approximately 2.6 tons of moist coal are required per ton of briquettes produced. Major plant units are arranged for parallel flow and are on one main floor, thus minimizing outage losses and giving good supervision.

The driers are arranged in four groups of six and have a total heating surface of about 53,280 square metres (Yallourn 24,960)—or approximately 63,200 and 29,800 square yards, respectively. Output rates vary from about 150 to 170 tons per drier-day, depending on initial coal moisture and the steam pressure employed ; the latter normally varies between 28 and 35 p.s.i.

The hot, dry coal is then subjected to screening out and reduction of over-size lumps, secondary evaporation, partial stabilization and cooling, and is then conveyed to the press hoppers. All dried coal-handling plant is enclosed and under slight negative—or suction—air pressure to promote pre-oxidation and similar reactions, and to avoid dust egress into the works.

Now at an optimum of about 15 per cent. moisture, the cooled coal is compressed to the desired format in four-stamp, electrically-driven extrusion presses which are arranged in four groups of five, i.e., 80 10-in. stamps in all. The finished briquettes are push-conveyed along fixed open-framed launders on to a belt conveyor system which handles them to the points of storage or despatch.

Briquettes are manufactured in different types to meet special requirements—with one type for automatic firing and another for hand firing in industrial furnaces and a household type for domestic use.

Limited quantities of household briquettes are also available ready packed in packages of 36 briquettes. The packages are the product of an experimental, semi-automatic, wrapping machine installed at the Yallourn Works.

When finally used by a consumer, the briquettes have an equilibrium moisture content of approximately 13 per cent. and a net calorific value of some 9,000 B.T.U.'s per pound (roughly three times that of the raw coal), and a gross calorific value of 9,600 B.T.U.'s per pound.

Because of the fire and/or explosion hazards peculiar to the industry, careful thought must be given to all phases of plant layout and detailed design and, in subsequent operation, keen supervision and good management are essential.

In addition, squads of selected operators are especially trained to handle all foreseeable emergency conditions.

#### *Marketing Division*

The four major uses of briquette fuel in Victoria are electricity generation in steam power stations at centres distant from the coal fields, industrial consumption, domestic consumption, and gas manufacture on site in the Latrobe Valley for piping to Melbourne and other centres both in the Latrobe Valley and *en route* to Melbourne.

Large-scale use of briquette fuel at power stations in Melbourne and provincial cities has greatly reduced purchases of fuel oil and interstate black coal by the State Electricity Commission of Victoria.

Industrial consumption of briquettes, already large, is being fostered by continued research to improve handling and combustion techniques.

While about 86 per cent. of Victoria's industrial activity is located in the metropolitan and central areas, the briquetting industry offers a substantial inducement towards industrial decentralization in the Latrobe Valley. For those industries requiring heat and steam, the

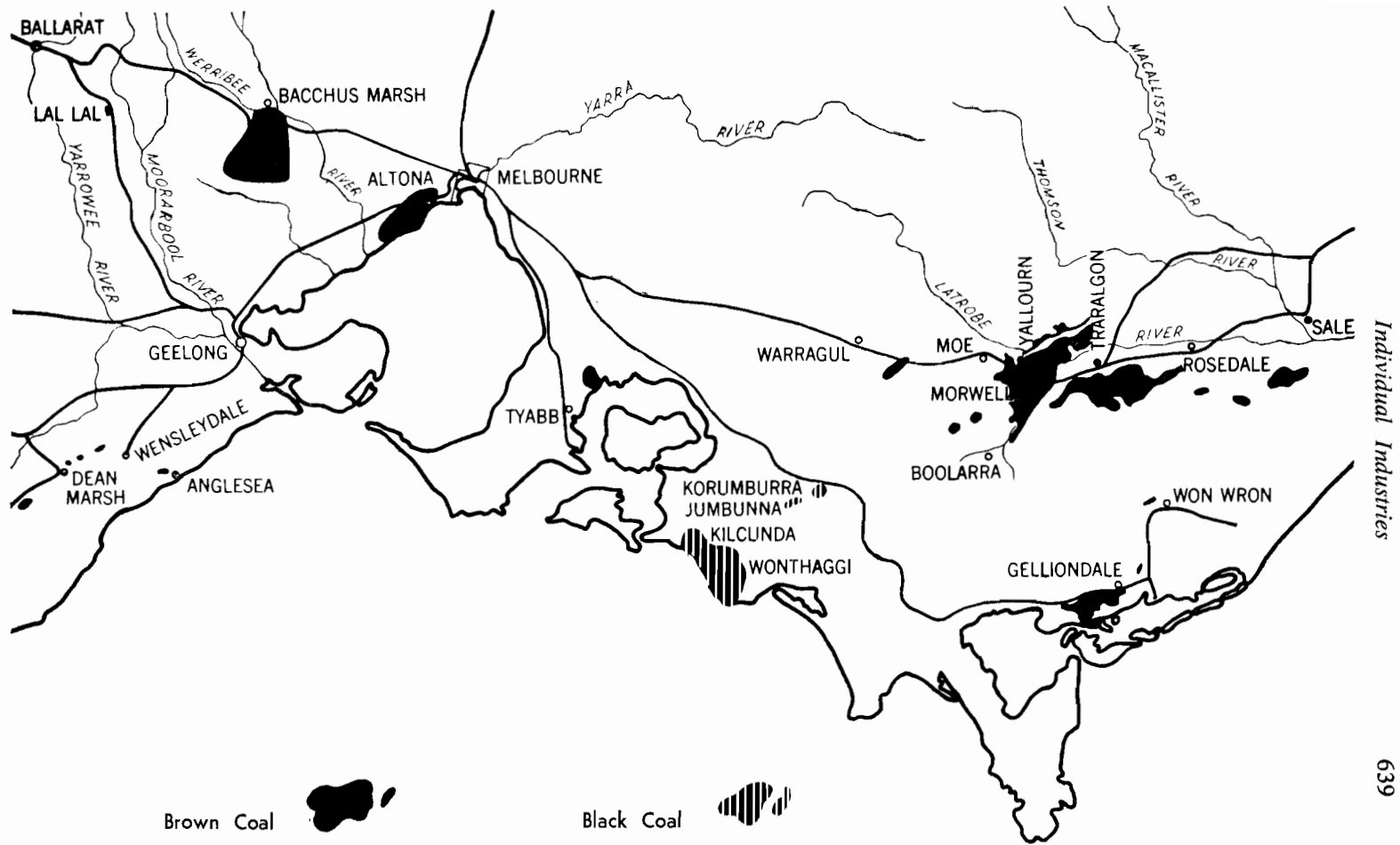


FIGURE 15. Map showing coal deposits in Victoria.

ready availability of briquette fuel from the Morwell and Yallourn factories greatly reduces transport charges, which form an important component in briquette fuel costs at centres distant from the Latrobe Valley.

In the domestic field, factors of importance have been the growth in popularity of central heating, the low operating cost of briquette hot water systems, development of briquette packaging, and progressive improvement in appliances for space heating, water heating, and cooking.

All the brown coal briquettes required for gas manufacture by the Lurgi process in the Morwell works of the Gas and Fuel Corporation of Victoria are delivered by belt conveyor direct from the State Electricity Commission's Morwell factories about 1 mile away. The Morwell gas works produce about 27 per cent. of Melbourne's gas requirements.

A pilot plant at Morwell is producing char (hard coke) from briquettes, and this is expected to prove more suitable for iron smelting than coke obtained from outside Victoria, since it contains very few impurities and possesses greater heating power with a relatively low ash content.

#### Further References

An outline of the history of the State Electricity Commission of Victoria will be found on pages 580 to 583 of the Victorian Year Book 1961 and an article on Brown Coal Production on pages 606 to 611 of the Victorian Year Book 1962.

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

#### VICTORIA—GAS WORKS

Particulars	1956-57	1957-58	1958-59	1959-60	1960-61
Number of Factories .. ..	32	27	27	27	25
Number of Persons Employed ..	1,626	1,372	1,584	1,513	1,470
Salaries and Wages Paid £'000	1,833	1,738	1,796	1,789	1,896
Value of Power, Fuel, &c., Used £'000	195	416	397	503	524
Value of Materials Used £'000	5,791	5,702	5,800	5,471	5,323
Value of Production .. £'000	2,792	2,609	3,319	3,807	4,163
Value of Output .. £'000	8,778	8,727	9,516	9,781	10,010
Value of Land and Buildings £'000	3,009	3,349	3,284	3,031	3,969
Value of Plant and Machinery £'000	14,142	12,554	13,332	13,701	13,630
Horse-power of Engines Ordinarily in Use .. H.P.	16,166	16,106	17,048	16,797	17,856

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

Appropriate details relating to the Gas and Fuel Corporation of Victoria are included in the table on page 643. The following is a brief review of the activities of the Corporation.

*Gas and Fuel Corporation of Victoria**Formation of the Corporation*

The Gas and Fuel Corporation of Victoria came into being, by Act of Parliament, on 6th December, 1950. It was formed by the merger of two Gas Companies which supplied adjoining areas—The Metropolitan Gas Company of Melbourne and The Brighton Gas Company Limited. Three directors are appointed by the preference shareholders, whilst the chairman and three other directors are appointed by the Government. Further capital is raised by means of loans, the Government guaranteeing the repayment of principal and payment of interest.

*Operations Division*

This division, the largest, is responsible for the manufacture and distribution of gas both from the metropolitan and country works, using black coal and refinery products as raw materials, and also the Morwell plant utilizing brown coal in the form of briquettes.

For the year ended 30th June, 1961, the Corporation issued 14,417 mill. cubic feet of gas with a heat content of 75·8 mill. therms. Of this, 34·5 per cent. was produced by carbonizing 256,268 tons of black coal, 26·5 per cent. by gasifying 123,709 tons of briquettes, 8·4 per cent. was produced from 35,169 tons of coke, and 869,753 gallons of oil in water gas and oil gas plants, and the remaining 30·6 per cent. was a mixture of refinery and liquid petroleum gases.

The Corporation's Lurgi high pressure gasification plant on the brown coalfields at Morwell is now producing approximately 27 per cent. of the requirements of the Metropolitan Area, and supplies those towns along the 103 mile pipe-line route covering Morwell, Traralgon, Trafalgar, Warragul, Frankston, Mt. Eliza, and Mornington, through Dandenong to Springvale.

Two major projects have been recently undertaken ; one to supply gas by pipe-line to the lower Dandenong Ranges where mains have been laid to carry supplies of Lurgi gas to the areas of Fern Tree Gully, Boronia, Bayswater, Croydon, and Lilydale. The reticulation of town gas has also been undertaken on the western side of the City. This project will supply the vast petrochemical industry complex, the associated housing estates, and ultimately will extend to the Laverton area. The gas supplied is a controlled blend of liquid petroleum gas from the Corporation's Altona installation.

*Development Division*

In the post-war years, tremendous advances have taken place in techniques for gas production. The Gas and Fuel Corporation has a staff of scientists in constant liaison with research establishments in Britain, Europe, and the United States, to ensure that the Corporation is informed of all advances made in gas making techniques throughout the world.

At West Melbourne, a reconstruction programme costing approximately £5 mill., which includes an Onia Gegi oil gasification plant, is taking place. It produces town gas from heavy residual fuel oil by a process developed in France and England in the last decade, and when completed, the works will have a capacity of 55 mill. cubic feet of gas per day.

Yet another major development currently taking place, which is a new technique, is the refrigerated storage of liquified petroleum gases. Liquified petroleum gases are by-products of the operation of oil refineries and, apart from their use as bottled gas, they provide raw materials for the production of the additional quantities of town gas required to meet peak loads.

The Corporation has constructed at Derrimut two refrigerated storage tanks in which some 3 mill. gall. of liquified petroleum gas are stored and these are maintained at a temperature of minus 46° C., the temperature at which the gases remain liquid at atmospheric pressure. The installation, together with pipe-lines from the refinery to the plant and from there to West Melbourne, cost approximately £1,250,000.

*Commerce and Finance Division*

The planning and recommending of financial and sales policies are the responsibilities of this division. Sales functions include not only the selling of gas, appliances and by-products, but also market research, accounting, sales promotion, publicity and advertising. The turnover on the sale of appliances alone exceeds £2,250,000 per annum.

In addition to the sale of town gas, which is reticulated, another gas is sold in steel bottles to homes in the country where normal piped supplies are not available. This gas is Propane, which is liquified under pressure and marketed in bottles and cylinders. By this means, the Corporation is bringing to country homes throughout Victoria, an amenity which is available in the City.



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

(£'000)

Particulars	1956-57	1957-58	1958-59	1959-60	1960-61
<b>REVENUE</b>					
Sales—					
Gas .. .. .	7,604	8,244	9,361	10,065	10,459
Residual Products and Appliances	*1,574	*1,206	*1,166	4,138	4,191
Income from General Investments	3	3	1	..	..
Profit on Sale of Freeholds ..	..	..	..	..	29
<b>Total Revenue .. ..</b>	<b>9,181</b>	<b>9,453</b>	<b>10,528</b>	<b>14,203</b>	<b>14,679</b>
<b>EXPENDITURE</b>					
Gas—					
Manufacture .. .. .	6,080	6,256	6,534	6,444	6,446
Transmission .. .. .	91	134	163	207	205
Distribution .. .. .	2,344	2,515	2,792	2,938	3,223
Residual Products, Appliances and Gas Promotional Expenses ..	..	..	..	3,322	3,594
Management .. .. .	231	263	307	376	474
Planning, Research and Develop- ment .. .. .	56	68	181	243	308
Superannuation and Retiring Al- lowances .. .. .	94	96	129	184	210
Long Service Leave .. .. .	64	68	78	48	79
Contingency Reserve .. .. .	25	..	25	25	..
Other Costs .. .. .	38	46	99	80	71
<b>Total Expenditure .. ..</b>	<b>9,023</b>	<b>9,446</b>	<b>10,308</b>	<b>13,867</b>	<b>14,610</b>
<b>Net Surplus .. .. .</b>	<b>158</b>	<b>7</b>	<b>220</b>	<b>336</b>	<b>69</b>
Fixed Assets less Depreciation and Amortization at 30th June ..	27,877	30,213	31,537	33,146	37,432
Capital Liabilities at 30th June—					
State Government .. .. .	11,837	11,959	12,040	12,099	12,147
Other .. .. .	18,541	21,316	23,696	26,050	28,053

\* Profit on Sales of Residual Products, Appliances, &c. only.

### *Australian Gas Association*

The Australian Gas Association formally came into being in 1962. It was formed by the amalgamation of The National Gas Association of Australia and The Australian Gas Institute. Seven Association committees are appointed by the Board of Management to serve the gas industry. They are concerned with management, industrial and commercial gas, residential gas, operating procedures, accounting, statistics, and advertising. Many aspects of the Association's work are conducted in and from Victoria.

Among these is the work of the Technical Department which is concerned with maintaining high standards for gas appliances. The Technical Officer is Chairman of the Appliance Approval Requirements Committee, which compiles requirements for gas appliances regarding safety, durability, and efficiency. These requirements are constantly being reviewed to keep them up to date with modern trends. The Technical Department recently issued a new general code defining gas flexibility requirements for all domestic appliances which will ensure their suitability throughout the Commonwealth. It has also issued a revised code for gas cookers. Now under revision is a code for room heaters and a code for commercial cookers. Special codes for gas incinerators and clothes dryers are being prepared.

Appliance prototypes undergo strict laboratory tests and the results are evaluated by the Technical Department of the Association, which co-ordinates, whenever necessary, the views of the Physical Testing Officers in all States. The Technical Department's workshop in Melbourne provides any member of the Association with assistance on problems pertaining to the technical aspects of combustion, the development of new appliances or the improvement of existing appliances and equipment.

### 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	1956-57	1957-58	1958-59	1959-60	1960-61
Number of Factories .. ..	150	143	147	157	168
Number of Persons Employed ..	29,448	28,482	28,988	29,326	30,542
Salaries and Wages Paid £'000	27,364	26,910	28,039	31,172	33,910
Value of Power, Fuel, &c., Used					
£'000	11,857	12,469	11,704	12,577	14,543
Value of Materials Used £'000	27,086	29,076	27,517	30,468	32,416
Value of Production .. £'000	44,681	44,176	51,466	51,528	54,517
Value of Output .. £'000	83,624	85,721	90,687	94,573	101,476
Value of Land and Buildings £'000	36,173	39,238	45,983	49,693	57,719
Value of Plant and Machinery £'000	91,135	93,831	107,209	121,011	133,110

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 1960-61, Government factories absorbed 8 per cent. of employment ; expended 9 per cent. of the salaries and wages paid ; and accumulated 8 per cent. of the value of production.