

Part 8

MANUFACTURING INDUSTRY

Development of Secondary Industry

Beginnings

The initial impetus to secondary industry in Victoria was brought about by the acceptance of a policy of protection which followed the general election of 1865. In the century which followed, Victoria has become a highly industrialized State, firstly through this early and sustained protective policy, then because of the stimulation given to manufacturing industry by the two world wars, and in the years since the end of the Second World War, by the high level of both local and oversea investment in manufacturing industry.

Surplus labour, redundant after the gold rush had abated in the early 1860's, generated a popular demand for the establishment of secondary industry as a source of employment, and created a growing consumer market.

Victoria's first industrial tariff was introduced in 1866, and it achieved very satisfactory results. Between 1865 and 1875, the number of "manufactories" in Victoria increased from 705 to 1,545. Protection in Victoria enabled the establishment of many industries in the State which probably could not have been sustained in a free trading economy. (After Federation in 1901, all States operated under the Commonwealth-wide protective tariff policy.) Thus, during the early period of her industrialization, Victoria developed in the clothing industry, textiles, tanneries, footwear, food, carriage making and metal working trades. The influence of this early grouping is in evidence in the pattern of Victorian industry today and the State has held this pattern of early development in most of these industries and in industries subsequently developed from them.

The foundry industry, both ferrous and non-ferrous, is amongst the oldest in Victoria, having been established well over a hundred years ago. Its most important function up to 1939 was to provide castings for agricultural machinery and other engineering industries which were then reasonably well developed.

Heavy engineering, also over a hundred years old, grew out of the necessity to repair, rather than construct machinery. Gradually machinery for textile, woodworking, agricultural, printing, and various other industries was built in Victoria.

In food processing, Australian canned foods have become well known overseas and prominent Victorian brands are well established in overseas markets.

This rapid development of secondary industry has been achieved despite the fact that Victoria has no pig iron manufacturing facilities, mainly because of a lack of coking coal. However, Victoria has developed its brown coal (lignite) deposits to a major degree and has huge reserves in the Latrobe Valley which are being exploited at Yallourn and Morwell mainly for electric power and gas generation purposes.

Despite its small steel making capacity, Victoria is represented in a wide range of secondary industries and possesses the skill to make many basic industrial materials, complex machinery and equipment and sophisticated consumer goods.

Progress until 1939

In the First World War, Australia was not sufficiently industrialized to do much more than provide her armies with food, clothing, ammunition, and rifles. Victoria was able to play a prominent part in this production, particularly in the first three items.

Between the two World Wars, several new industrial enterprises were introduced to give Victoria a more substantial base. The first large automobile assembly plant was established at Geelong in 1925. Although the textile industry was already well entrenched in the area, this new industry represented the beginning of a large industrial movement towards Geelong. In the mid-1930's, a motor-car factory was built at Fishermen's Bend and ultimately became the centre of Australia's largest manufacturer of motor vehicles.

In 1939, a plant was set up at Geelong for the manufacture of farm machinery and subsequently, commercial motor vehicles.

The motor industry, which is heavily concentrated in Victoria is thus a particular product of the years between the wars and has saved Australia many millions of pounds in foreign exchange. In contrast to the usual pattern of growth elsewhere, development of the industry in Australia commenced with the manufacture of car bodies. This stemmed from a regulation imposed by the Commonwealth Government during the First World War, when owing to pressure on limited shipping space, only one body was permitted to be imported for every two chassis. Victoria's early prominence in carriage building thus gave the State an excellent lead to future developments of other aspects of the motor industry. There has also been a natural development of a supporting parts and accessories industry in Victoria embracing many skills and techniques. A large share of Australia's motor tyre manufacture is carried on in Victoria. In addition to production of internal combustion engines for motor vehicles, there is production of engines for other purposes.

The Commonwealth Aircraft Corporation Pty. Ltd. was formed in Victoria in 1936 and the first "Wirraway" aircraft produced at the Corporation's works at Fishermen's Bend flew in March, 1939. This was the first Australian plant to produce sizeable quantities of aircraft and it was joined early in the Second World War by the neighbouring Government Aircraft Factories, thus centering aircraft production in Victoria. This industry naturally suffered a heavy decline after the war, but efforts made to maintain its capacity with other types of work have proved successful and it is now carrying out work on the "Mirage" fighter for the R.A.A.F.

During the early 1930's, Commonwealth Government munitions factories in Victoria were employed for commercial purposes and were pioneers in the production of metal rolling and forgings for motor vehicles.

Since the Second World War

The technological challenge that Australia had to meet in the Second World War was for mass production of goods of a higher degree of complexity and accuracy than had been previously attempted in Australia. Of course, much of the vast increase in production in the war period was of war materials, but the immense development of technique and knowledge in Australian industry by war production cannot be minimized. Such development was felt to a great extent in Victoria and paved the way for post-war local and oversea investment and major industrial expansion.

During the ten years 1938-39 to 1948-49, Victorian factory employment increased about 30 per cent. to over 290,000 persons while the annual value of production increased nearly 180 per cent. to £180 mill. By 1962-63 factory employment had risen to 397,000 and the value of production to £801 mill.

In addition to spectacular expansion in the motor industry, the petroleum refining industry in Australia developed rapidly during the 1950's, increasing its refining capacity from under 1 mill. tons of crude oil a year to over 16 mill. tons. Two major refineries are located in Victoria; a refinery at Geelong and one at Altona; a third refinery is being constructed at a cost of £15 mill. at Crib Point near Westernport. A £3.5 mill. lubricating oil plant was recently established at Geelong.

The chemical industry has grown rapidly in recent years. As well as increasing the production of established products to satisfy the demands of industry and a growing consumer market, many new products have been introduced. Plastics materials are supplied for the manufacture of products in extensive use throughout the community. Other notable developments have included industrial gases, surface coating emulsions, polystyrene, polyester resins for bonding, phenol, pesticides, weed killers, and veterinary chemicals, while additions to capacity have taken place in the manufacture of sulphuric acid, chemicals for the paper industry, chlorine, and pharmaceuticals.

A petro-chemicals complex involving a number of companies has been set up at Altona. This includes a £13 mill. plant for the manufacture of butadiene and ethylene from petroleum distillate, and a £4.5 mill. plant for the production of styrene monomer, chlorine and caustic soda, and ethylene dichloride. In 1962 the first stage of a polyethylene manufacturing plant was completed and polyvinyl chloride and carbon black are also being produced in the complex. The plant manufacturing the latter has an output capacity of 20 to 30 mill. lb. annually, sufficient to meet 70 per cent. of Australia's needs, all of which had previously been imported.

In the field of drugs, penicillin, A.C.T.H., Salk vaccine, and streptomycin are produced and facilities for the production of the tetracycline range of antibiotics have recently been completed.

The manufacture, processing, and spinning of man-made fibre yarns has become of major importance in the textile field. Nylon textile yarn and nylon tyre yarn are produced in Victoria. Many of

the firms which twist, texturize, process and spin man-made fibre yarns are located in Victoria. Victoria has, of course, had for many years a strong wool textile industry covering all stages of production from wool tops to finished cloth.

In the field of aluminium smelting, the establishment of a £35 mill. plant at Point Henry near Geelong and later an associated thermal generating plant at Anglesea is a major achievement for Victoria. The plant obtains alumina from Western Australia which will ultimately be smelted using power from an £11 mill. Anglesea generating plant fed by local brown coal reserves. The potential annual production rate is 40,000 tons of aluminium per annum.

Pulp, paper and paper board, and fibre manufacture have grown substantially since the war and the range and types of paper and board made have been considerably extended.

To keep pace with the rapid rate of increase in demand for electric power, Victoria's present available capacity will be considerably augmented by the power station under construction at Hazelwood in the Latrobe Valley, utilizing the fuel sources of the Morwell open cut, which will have an ultimate capacity of 1,200,000 kW. Estimated total cost including that of additional transmission lines and terminal station facilities will be £57 mill.

It will be seen that some of the most significant developments in recent years have taken place in the petrochemical industry and in aluminium smelting and fabricating plants, oil refining, and chemical and motor vehicle manufacture. Several of these projects have been financed wholly or partly by oversea investment.

These specific items quoted above illustrate the growth of Victorian secondary industry. They are by no means a complete listing of the products made in the State over recent years, but rather indicative of the diverse and complex range of products which can now be efficiently produced by Victorian secondary industry, and which make a significant contribution to Australian requirements.

While there are likely to be further divergent trends, secondary industry in Victoria remains highly concentrated in and around Melbourne, the Metropolitan Area contributing about 80 per cent. by value of the State's secondary industry production. A feature of post-war industrial expansion has been the development of new industrial areas on the outer fringe of the Metropolitan Area, such as the Clayton-Dandenong and Broadmeadows-Somerton areas. Nevertheless, Geelong and Ballarat are large provincial centres of industry, and important industrial plants such as textile mills, food canneries, and engineering establishments are scattered through a number of country towns.

Manufacturing Activity

General

Factory and Wages Board Legislation

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

The general provisions of factory legislation, including Wages Boards, are further referred to on pages 432-433, 452-453 and 458.

Decentralization of Manufacturing Industries: Division of State Development

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

The larger enterprises established in the country since the end of the Second World War include aluminium at Point Henry, textile mills at Wangaratta, a roller-bearing factory at Ballarat, roller chains, wheels, and pinions at Benalla, a cement plant at Traralgon, food processing plants at Shepparton and Ballarat, various engineering works in Ballarat and Geelong, and a hardboard plant at Bacchus Marsh.

A £15 mill. oil refinery being established at Crib Point is regarded as an important step in the development of Westernport area. The decision to pipe the products of the refinery to a distribution point in Dandenong will minimize road use for deliveries to the eastern sector of the State. The legislation introduced to ratify the agreement with the Company provides for easements for the pipeline and for the construction of jetty facilities by the Government. The estimated cost of these is £2½ mill.

Further information about the activities of the Division of State Development is set out on page 419 of the Victorian Year Book 1962 and page 583 of the Victorian Year Book 1963.

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 a tariff and makes recommendations relating to the necessity for new, increased, or reduced duties and, where necessary, advises regarding the necessity for granting bounties. It takes into consideration the effect of any changes on manufacturing industry in Australia.

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

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

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

Standards Association of Australia

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

National Association of Testing Authorities

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

Definitions in Factory Statistics

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

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

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

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

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

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

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

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

Summary of Factories

The table below shows, at intervals between 1901 and 1962-63, the development of manufacturing industry in Victoria :—

VICTORIA—SUMMARY OF FACTORY DEVELOPMENT

Year	Factories	Employment*	Salaries and Wages Paid†	Value of—			
				Materials and Fuel Used	Production‡	Output	Land, Buildings, Plant and Machinery
No.			£'000				
1901	3,249	66,529	\$	\$	\$	\$	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
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	946,368	703,282	1,649,650	818,669
1961-62	17,300	377,745	384,433	957,333	717,327	1,674,660	911,570
1962-63	17,500	397,156	418,551	1,040,647	801,467	1,842,114	976,146

NOTE.—See also Definitions on pages 575-576.

* Average employment over whole year, including working proprietors.

† Excludes drawings of working proprietors.

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

§ Not available.

A graph showing the distribution of the components of Value of Output for the years 1953-54 to 1962-63 is shown on page 585.

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

AUSTRALIA—FACTORIES, 1962-63

State	Factories	Employment*	Salaries and Wages Paid †	Value of—			
				Materials and Fuel Used	Production ‡	Output	Land, Buildings, Plant and Machinery
No.			£'000				
New South Wales	23,729	475,249	513,608	1,413,579	1,037,443	2,451,022	1,409,397
Victoria	17,500	397,156	418,551	1,040,647	801,467	1,842,114	976,146
Queensland ..	5,895	104,998	97,915	374,463	190,483	564,946	237,034
South Australia ..	5,766	105,265	110,034	267,466	189,571	457,037	253,286
Western Australia	4,492	53,435	49,940	150,738	108,211	258,949	117,746
Tasmania	1,764	30,755	32,418	85,255	71,017	156,272	151,038
Total	59,146	1,166,858	1,222,466	3,332,148	2,398,192	5,730,340	3,144,647

* † ‡ See notes to table above.

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

Factories Classified According to Class of Industry

The following table contains a summary of factories by class of industry in Victoria during the year 1962-63 :—

VICTORIA—FACTORIES BY CLASSES, 1962-63

Class of Industry	Factories	Employment*	Salaries and Wages Paid†	Materials and Fuel Used	Value of—		
					Production ‡	Output	Land, Buildings, Plant and Machinery
	No.				£'000		
I. Treatment of Non-metalliciferous Mine and Quarry Products ..	477	7,156	8,583	24,709	19,764	44,473	37,249
II. Bricks, Pottery, Glass, &c.	183	7,007	7,918	10,559	14,075	24,634	20,542
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease ..	390	16,062	20,339	130,969	71,471	202,440	111,922
IV. Industrial Metals, Machines, Conveyances ..	6,944	161,978	182,237	303,646	295,461	599,107	309,798
V. Precious Metals, Jewellery, Plate ..	247	2,022	2,051	2,396	3,416	5,812	2,577
VI. Textiles and Textile Goods (Not Dress) ..	781	41,930	37,793	99,919	67,088	167,007	64,732
VII. Skins and Leather (Not Clothing or Footwear) ..	240	3,993	3,891	10,532	6,689	17,221	5,859
VIII. Clothing (Except Knitted) ..	2,545	46,795	36,334	58,778	59,886	118,664	36,254
IX. Food, Drink, and Tobacco	1,989	39,425	40,449	222,954	99,514	322,468	123,086
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving ..	1,332	14,639	15,146	31,510	25,182	56,692	21,334
XI. Furniture of Wood, Bedding, &c.	635	6,375	5,838	12,195	10,508	22,703	7,691
XII. Paper, Stationery, Printing, Bookbinding, &c.	987	25,927	30,277	67,894	60,621	128,515	60,090
XIII. Rubber ..	180	7,806	9,122	22,691	20,567	43,258	15,521
XIV. Musical Instruments ..	24	192	201	193	289	482	270
XV. Miscellaneous Products	484	11,056	11,684	25,354	22,152	47,506	26,098
Total, Classes I. to XV.	17,438	392,363	411,863	1,024,299	776,683	1,800,982	843,023
XVI. Heat, Light, and Power	62	4,793	6,688	16,348	24,784	41,132	133,123
GRAND TOTAL ..	17,500	397,156	418,551	1,040,647	801,467	1,842,114	976,146

* † ‡ See footnotes on page 579.

“Industrial Metals, Machines, and Conveyances” with 161,978 persons or 40·8 per cent. of the total employment in factories during 1962-63, employed considerably more persons than any other class of industry. Next in order of employment was “Clothing” with 46,795 or 11·8 per cent., followed by “Textiles and Textile Goods” and “Food, Drink, and Tobacco” with 41,930 and 39,425 respectively or 10·6 per cent. and 9·9 per cent. of the total.

The total value of production (added value) in 1962-63 was £801,467,000. Of this amount the metals group contributed £295,461,000 which represented 36·9 per cent. of the total. The food group followed with £99,514,000 or 12·4 per cent., and next in order were chemicals, dyes, &c., £71,471,000, 8·9 per cent., textiles with £67,088,000, 8·4 per cent., paper £60,621,000, 7·6 per cent., and clothing, £59,886,000, 7·5 per cent.

The next table shows the number of factories in Victoria during the years 1958-59 to 1962-63 classified according to industry :—

VICTORIA—NUMBER OF FACTORIES IN INDUSTRIAL CLASSES

Class of Industry	1958-59	1959-60	1960-61	1961-62	1962-63
I. Treatment of Non-metalliferous Mine and Quarry Products ..	450	449	457	470	477
II. Bricks, Pottery, Glass, &c. ..	160	176	181	177	183
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease ..	361	367	362	381	390
IV. Industrial Metals, Machines, Conveyances ..	6,018	6,414	6,522	6,779	6,944
V. Precious Metals, Jewellery, Plate ..	265	248	242	245	247
VI. Textiles and Textile Goods (Not Dress) ..	754	811	806	785	781
VII. Skins and Leather (Not Clothing or Footwear) ..	275	272	260	245	240
VIII. Clothing (Except Knitted) ..	2,442	2,416	2,580	2,514	2,545
IX. Food, Drink, and Tobacco ..	2,178	2,104	2,052	2,030	1,989
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving ..	1,382	1,404	1,396	1,342	1,332
XI. Furniture of Wood, Bedding, &c. ..	665	664	630	626	635
XII. Paper, Stationery, Printing, Book-binding, &c. ..	892	948	967	965	987
XIII. Rubber ..	158	164	163	171	180
XIV. Musical Instruments ..	25	25	26	24	24
XV. Miscellaneous Products ..	431	446	463	479	484
Total, Classes I. to XV. ..	16,456	16,908	17,107	17,233	17,438
XVI. Heat, Light, and Power ..	71	71	66	67	62
GRAND TOTAL	16,527	16,979	17,173	17,300	17,500

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 1958-59 to 1962-63 :—

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
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
1961-62	6,262	1,387	4,109	2,369	1,817	686	670	17,300
1962-63	6,331	1,347	4,124	2,424	1,855	709	710	17,500

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

Year	Average Number Employed (Including Working Proprietors)—							
	Under 4	4	5 to 10	11 to 20	21 to 50	51 to 100	Over 100	Total
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
1961-62	12,450	5,548	28,781	35,072	57,664	47,988	192,116	379,619
1962-63	12,665	5,388	29,129	35,766	58,890	49,734	207,586	399,158

NOTE.—The average number of persons employed in the above table (viz., 399,158 in 1962-63) differs from the average number of persons employed shown in all other tables (viz., 397,156 in 1962-63) because the average number of persons employed over *period of operation*—being the basis for all classifications according to size—exceeds average employment *over the whole year*.

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

The relative importance of large and small factories is illustrated in the above table. In 1962-63, 7,678 factories employing four or less employees had a total employment of 18,053 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 1962-63, this figure had increased to 6,331, i.e., 36·1 per cent. of the total. This increase is believed to be due not so much to an increase in the number of small factories as to a greater use over the years of fractional horsepower electric motors in small factories, with the result that such establishments came within the statistical definition of a factory. The table also shows that in 1962-63, factories employing less than four persons accounted for only 2·1 per cent. of the total Value of Production, and that Value of Production per person employed is lowest in the smallest factories and in general rises as size increases.

VICTORIA—NUMBER OF FACTORIES : PERSONS EMPLOYED AND VALUE OF PRODUCTION ACCORDING TO SIZE OF ESTABLISHMENT, 1902 and 1962-63

Average Number of Persons Employed during Period of Operation	1902				1962-63						
	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	6,331	36·1	12,394	3·1	17,255	2·1	1,392
4 ..	398	9·9	1,603	2·2	1,347	7·7	5,357	1·3	8,181	1·0	1,527
5-10 ..	1,629	40·7	11,303	15·5	4,124	23·6	28,701	7·2	49,356	6·2	1,720
11-20 ..	726	18·1	10,562	14·5	2,424	13·8	35,320	8·9	62,673	7·8	1,774
21-50 ..	467	11·7	14,361	19·6	1,855	10·6	58,509	14·8	110,509	13·8	1,889
51-100..	148	3·7	10,238	14·0	709	4·1	49,508	12·4	98,972	12·3	1,999
101-200	110	2·8	23,360	32·0	398	2·3	56,161	14·2	114,849	14·4	2,045
201-500					220	1·2	66,473	16·7	156,748	19·5	2,358
Over 500					92	0·6	84,733	21·4	182,924	22·9	2,159
Total ..	4,003	100·0	73,063	100·0	17,500	100·0	397,156	100·0	801,467	100·0	2,018

* ‡ For footnotes see page 579.

A graph showing Number of Factories and Value of Production by size groups in 1962-63 is shown on page 585.

A general indication of the geographical disposition of factories in the State is shown in the next table where secondary industry in Victoria for 1962-63 is classified according to statistical divisions :—

VICTORIA—FACTORIES IN STATISTICAL DIVISIONS, 1962-63

Statistical Division	Factories	Employment*	Salaries and Wages Paid†	Value of—			
				Materials and Fuel Used	Production‡	Output	Land, Buildings, Plant and Machinery
	No.			£'000			
Metropolitan ..	12,254	322,495	343,234	804,029	646,549	1,450,578	673,099
Central ..	1,139	22,860	24,568	85,657	49,118	134,775	87,286
North-Central ..	384	4,814	4,364	7,800	7,742	15,542	9,008
Western ..	1,042	14,882	13,837	37,905	24,360	62,265	26,449
Wimmera ..	386	2,260	1,772	4,762	3,202	7,964	2,890
Mallee ..	317	2,365	1,885	3,966	3,381	7,347	6,200
Northern ..	867	10,900	10,412	41,860	19,372	61,832	28,340
North-Eastern ..	458	4,823	4,401	11,897	8,932	20,829	37,984
Gippsland ..	653	11,757	14,138	42,771	38,211	80,982	104,890
Total ..	17,500	397,156	418,551	1,040,647	801,467	1,842,114	976,146

* † ‡ For footnotes see page 579.

Factories in the Metropolitan Area constituted 70·9 per cent. of the total number in Victoria in 1962-63, 81·2 per cent. of the persons employed, and 80·7 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 126.

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

**VICTORIA—NUMBER OF FACTORIES AND PERSONS
EMPLOYED IN EACH STATISTICAL DIVISION : CLASSIFIED
ACCORDING TO SIZE OF FACTORY, 1962-63**

Size of Factory (Persons)	Statistical Division									Total
	Metropolitan	Central	North-Central	West-ern	Wim-mera	Mallee	North-ern	North-Eastern	Gipps-land	
NUMBER OF FACTORIES										
Under 5 ..	4,682	632	247	568	263	182	536	259	309	7,678
5-10 ..	2,906	259	69	265	84	84	175	106	176	4,124
11-20 ..	1,892	124	36	99	25	26	72	60	90	2,424
21-50 ..	1,575	62	16	59	11	18	45	24	45	1,855
51-100 ..	591	27	11	27	2	7	24	4	16	709
101-500 ..	533	30	4	20	1	..	13	4	13	618
501 and over..	75	5	1	4	..	..	2	1	4	92
Total ..	12,254	1,139	384	1,042	386	317	867	458	653	17,500
NUMBER OF PERSONS EMPLOYED										
Under 5 ..	10,968	1,455	540	1,313	580	422	1,199	575	699	17,751
5-10 ..	20,394	1,713	496	1,797	596	553	1,193	744	1,215	28,701
11-20 ..	27,770	1,735	531	1,343	379	345	1,043	879	1,295	35,320
21-50 ..	49,714	2,031	543	1,823	312	602	1,377	730	1,377	58,509
51-100 ..	41,401	1,909	739	1,984	*	443	1,585	*	1,063	49,508
101-500 ..	102,699	*	*	4,066	*	..	*	*	*	122,634
501 and over..	69,549	*	*	2,556	..	..	*	*	*	84,733
Total ..	322,495	22,860	4,814	14,882	2,260	2,365	10,900	4,823	11,757	397,156

* Not available for publication.

The above table shows that in 1962-63 there were 710 factories each employing more than 100 persons with a total employment of 207,367 persons in Victoria. Of these 608 (172,248 persons) were located in the Metropolitan Area and 35 (14,017 persons) in the Central Statistical Division which includes Geelong. The balance, 67 factories (21,102 persons) were distributed over the remainder of the State, principally in the Western (24 factories) and Gippsland (17 factories) Statistical Divisions.

It should be noted that Castlemaine and Maryborough are included in the North-Central Statistical Division; Ballarat and Warrnambool in the Western Statistical Division; Bendigo and Shepparton in the Northern Statistical Division; Wangaratta in the North-Eastern Statistical Division; and Morwell and Yallourn in the Gippsland Statistical Division.

VICTORIA—FACTORIES : VALUE OF OUTPUT, 1953-54 TO 1962-63

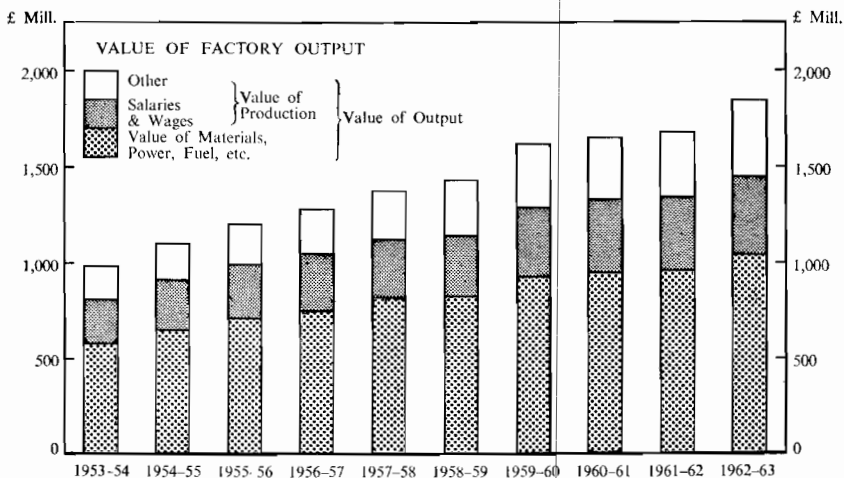


FIGURE 15. Graph showing value of output of factories.

VICTORIA—FACTORIES : NUMBER OF FACTORIES, AND VALUE OF PRODUCTION CLASSIFIED ACCORDING TO AVERAGE NUMBER OF PERSONS EMPLOYED, 1962-63

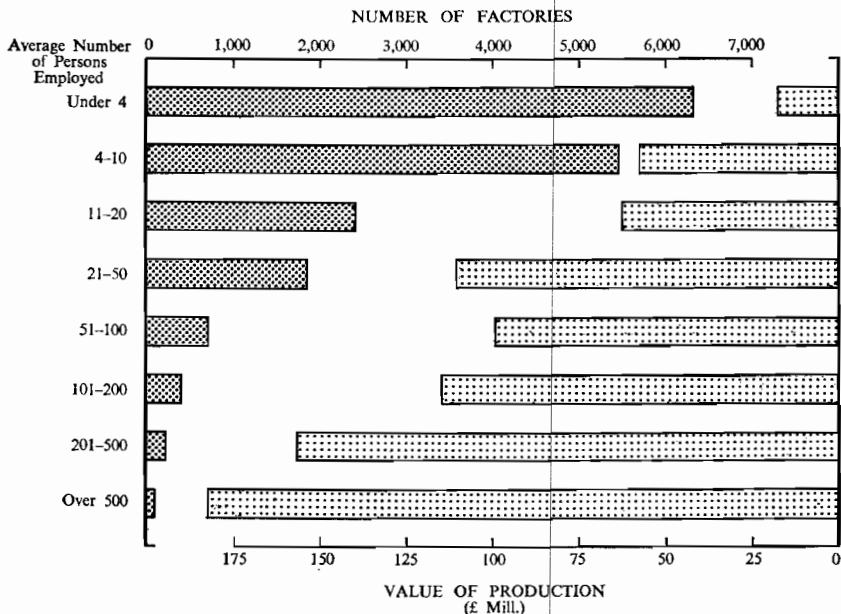


FIGURE 16. Graph showing number of factories and value of production according to average number of persons employed. The left-hand bars show the number of factories in each employment size group; the right-hand bars show the value of production in each of these size groups.

Employment in Factories

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

The figures showing average employment in factories represent the equivalent average number of persons employed, including working proprietors, over a full year of twelve months. This method is used for all purposes except in the tables shown on pages 581-582, 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 1958-59 to 1962-63 :—

VICTORIA—PERSONS EMPLOYED IN FACTORIES*

Class of Industry	1958-59	1959-60	1960-61	1961-62	1962-63		
					Males	Females	Persons
I. Treatment of Non-metalliferous Mine and Quarry Products ..	6,522	6,564	6,977	6,972	6,744	412	7,156
II. Bricks, Pottery, Glass, &c. ..	5,846	6,460	6,569	6,494	6,188	819	7,007
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease ..	17,392	16,231	15,443	15,763	12,797	3,265	16,062
IV. Industrial Metals, Machines, Conveyances ..	139,115	150,843	157,202	151,336	140,678	21,300	161,978
V. Precious Metals, Jewellery, Plate ..	2,150	1,980	2,087	1,959	1,639	383	2,022
VI. Textiles and Textile Goods (Not Dress) ..	37,500	41,073	40,395	39,100	17,316	24,614	41,930
VII. Skins and Leather (Not Clothing or Footwear) ..	4,559	4,413	3,992	3,781	2,852	1,141	3,993
VIII. Clothing (Except Knitted) ..	45,783	45,260	45,462	44,712	13,986	32,809	46,795
IX. Food, Drink, and Tobacco ..	37,383	38,830	38,361	38,999	27,064	12,361	39,425
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving ..	15,092	15,759	15,623	14,595	13,734	905	14,639
XI. Furniture of Wood, Bedding, &c. ..	6,492	6,531	6,309	6,126	4,973	1,402	6,375
XII. Paper, Stationery, Printing, Bookbinding, &c. ..	22,846	24,305	25,228	24,940	19,039	6,888	25,927
XIII. Rubber ..	7,207	7,282	7,359	6,998	6,123	1,683	7,806
XIV. Musical Instruments ..	247	233	216	183	170	22	192
XV. Miscellaneous Products ..	9,863	10,767	11,261	10,787	7,042	4,014	11,056
Total, Classes I. to XV.	357,997	376,531	382,484	372,745	280,345	112,018	392,363
XVI. Heat, Light, and Power ..	4,982	4,983	4,946	5,000	4,756	37	4,793
GRAND TOTAL ..	362,979	381,514	387,430	377,745	285,101	112,055	397,156

* For footnote see page 579.

The dominance of four classes, namely, Class IV.—Industrial Metals, Machines, and Conveyances; Class VI.—Textiles and Textile Goods (Not Dress); Class VIII.—Clothing (Except Knitted); and Class IX.—Food, Drink, and Tobacco with a total of 73·1 per cent. of factory employment should be noted.

Female factory workers in 1962-63 were 28.2 per cent. of the total. They exceeded males in Class VI.—Textiles and Textile Goods (Not Dress) with 58.7 per cent. and in Class VIII.—Clothing (Except Knitted), with 70.1 per cent. of the Class total.

Of the total females employed 29.3 per cent were in Class VIII. ; 22.0 per cent. in Class VI. ; 19.0 per cent. in Class IV. ; and 11.0 per cent. in Class IX.

In the following table, the average number of persons employed in factories in Victoria is classified according to the nature of their employment for the years 1958-59 to 1962-63 :—

VICTORIA—NATURE OF EMPLOYMENT IN FACTORIES

Year	Working Proprietors	Man-gerial and Clerical Staff	Chemists, Drafts-men, &c.	Foremen and Overseers	Workers in Factories (Skilled and Unskilled)	Carters (Excluding Delivery Only) and Messengers, &c.	Total
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
1961-62.. ..	12,772	48,446	7,538		308,989		377,745
1962-63.. ..	12,784	50,730	7,839		325,803		397,156

The following table shows the nature of employment in factories in 1962-63 according to the class of industry :—

VICTORIA—NATURE OF EMPLOYMENT IN FACTORIES BY CLASSES OF INDUSTRY, 1962-63

Class of Industry	Working Proprietors	Man-gerial and Clerical Staff	Chemists, Drafts-men, &c.	All Other Workers	Total
I. Treatment of Non-metalliferous Mine and Quarry Products ..	252	917	128	5,859	7,156
II. Bricks, Pottery, Glass, &c. ..	69	766	69	6,103	7,007
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease ..	96	2,908	1,255	11,803	16,062
IV. Industrial Metals, Machines, Con-veyances ..	4,949	23,805	4,425	128,799	161,978
V. Precious Metals, Jewellery, Plate ..	213	222	3	1,584	2,022
VI. Textile and Textile Goods (Not Dress) ..	471	3,737	297	37,425	41,930
VII. Skins and Leather (Not Clothing or Footwear) ..	215	362	21	3,395	3,993
VIII. Clothing (Except Knitted) ..	2,424	3,173	39	41,159	46,795
IX. Food, Drink, and Tobacco ..	1,806	5,214	638	31,767	39,425
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving ..	848	1,831	25	11,935	14,639
XI. Furniture of Wood, Bedding, &c. ..	539	714	2	5,120	6,375
XII. Paper, Stationery, Printing, Book-binding, &c. ..	585	3,964	236	21,142	25,927
XIII. Rubber ..	55	1,173	239	6,339	7,806
XIV. Musical Instruments ..	10	27	2	153	192
XV. Miscellaneous Products ..	241	1,623	298	8,894	11,056
Total, Classes I. to XV. ..	12,773	50,436	7,677	321,477	392,363
XVI. Heat, Light, and Power ..	11	294	162	4,326	4,793
GRAND TOTAL ..	12,784	50,730	7,839	325,803	397,156

Although "All Other Workers" constitute 82·0 per cent. of the total numbers employed in factories, the percentage varies from 73·5 per cent. in Class III. to 87·1 per cent. in Class II. Class III. also has the highest percentage of managerial, clerical, and research workers, 18·1 per cent., compared with the Victorian average of 12·8 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 10·5 per cent. of the total number employed; Class X.—Sawmills, Joinery, &c., 5·8 per cent.; and Class XI.—Furniture of Wood, Bedding, &c., 8·5 per cent. The average for Victoria is 3·2 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 1959 to 1963 :—

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
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
1962 ..	2,625	24,329	239,842	266,796	3,049	16,038	85,446	104,533
1963 ..	2,444	25,774	248,144	276,362	2,653	16,944	90,073	109,670

The numbers of males and females employed in factories, and the proportions of the average male and female population working in factories in 1962–63 and earlier years are shown in the following table :—

VICTORIA—EMPLOYMENT OF MALES AND FEMALES IN FACTORIES

Year	Males		Females		Total	
	Number	Average per 10,000 of Male Population	Number	Average per 10,000 of Female Population	Number	Average per 10,000 of Total Population
1918–19 ..	81,357	1,188	40,992	550	122,349	855
1928–29 ..	104,648	1,195	51,920	586	156,568	889
1938–39 ..	136,218	1,470	65,613	692	201,831	1,076
1948–49 ..	208,184	1,996	83,822	781	292,006	1,380
1958–59 ..	263,847	1,888	99,132	720	362,979	1,308
1959–60 ..	275,315	1,918	106,199	750	381,514	1,338
1960–61 ..	279,675	1,919	107,755	750	387,430	1,339
1961–62 ..	273,435	1,837	104,310	709	377,745	1,277
1962–63 ..	285,101	1,877	112,055	746	397,156	1,314

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 Industr	Females Employed					
	Number			Percentage of Total Employment in Each Class of Industry		
	1960-61	1961-62	1962-63	1960-61	1961-62	1962-63
I. Treatment of Non-metalliferous Mine and Quarry Products	345	373	412	4·9	5·3	5·8
II. Bricks, Pottery, Glass, &c.	738	756	819	11·2	11·6	11·7
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease	3,275	3,192	3,265	21·2	20·2	20·3
IV. Industrial Metals, Machines, Conveyances—	20,270	18,755	21,300	12·9	12·4	13·1
Plant, Equipment and Machinery	3,027	2,707	2,924	11·1	10·0	10·4
Electrical Machinery, Cables, and Apparatus	3,783	3,584	3,953	25·1	24·1	25·0
Sheet Metal Working	2,176	2,089	2,167	20·2	19·8	20·2
Wireless and Amplifying Apparatus	1,340	1,184	1,522	39·1	38·1	38·8
V. Precious Metals, Jewellery, Plate	411	372	383	19·7	19·0	18·9
VI. Textiles and Textile Goods (Not Dress)—	23,850	22,707	24,614	59·0	58·1	58·7
Cotton Spinning and Weaving	1,970	1,982	2,058	55·9	55·3	55·5
Wool-Carding, Spinning, Weaving	5,932	5,530	5,768	54·0	53·0	53·3
Hosiery and Other Knitted Goods	12,756	12,192	13,301	74·0	74·0	74·7
VII. Skins and Leather (Not Clothing or Footwear)	1,172	1,102	1,141	29·4	29·1	28·6
VIII. Clothing (Except Knitted)—	31,588	31,038	32,809	69·5	69·4	70·1
Tailoring and Ready-Made Clothing	7,885	7,691	8,231	73·1	73·9	74·5
Dressmaking, Hemstitching	7,202	7,093	7,390	86·8	87·2	87·2
Boots and Shoes (Not Rubber)	6,182	6,219	6,538	53·4	54·0	54·9
Dyeworks and Cleaning, &c.	1,453	1,385	1,343	48·8	48·4	47·9
IX. Food, Drink, and Tobacco—	11,636	12,041	12,361	30·3	30·9	31·4
Bakeries (Including Cakes and Pastry)	1,539	1,547	1,624	25·7	25·4	25·9
Confectionery (Including Chocolate and Icing Sugar)	1,787	1,721	1,803	55·9	54·9	56·3
Jam, Fruit, and Vegetable Canning	1,668	1,980	1,891	40·8	42·4	40·8
Tobacco, Cigars, Cigarettes	1,171	1,123	1,173	50·9	51·7	53·9
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving	905	872	905	5·8	6·0	6·2
XI. Furniture of Wood, Bedding, &c.	1,325	1,340	1,402	21·0	21·9	22·0
XII. Paper, Stationery, Printing, Book-binding, &c.	6,636	6,479	6,888	26·3	26·0	26·6
XIII. Rubber	1,501	1,467	1,683	20·4	21·0	21·6
XIV. Musical Instruments	34	25	22	15·7	13·7	11·5
XV. Miscellaneous Products	4,030	3,752	4,014	35·8	34·8	36·3
XVI. Heat, Light, and Power	39	39	37	0·8	0·8	0·8
Total Classes Only	107,755	104,310	112,055	27·8	27·6	28·2

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 70·1 per cent. of the total number of persons employed. Within Class VIII., in the Dressmaking sub-class, 87·2 per cent. of the total employed are females. In Class IV.—Industrial Metals, Machines, and Conveyances, females constitute 13·1 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 debars employment in factories of children under the age of fifteen years, and the Victorian Education Act makes daily attendance at school compulsory between the ages of six and fifteen years.

Some children under fifteen may work in a shop or office if they are exempted under the Education Act, but the general effect of the two statutes contributes to the very low incidence of child labour in this State.

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

The next table gives comprehensive information regarding salaries and wages paid in the various classes of industry in Victoria in 1962-63. Amounts paid to managers, clerical staff, chemists, and draftsmen, &c., are shown separately from those paid to foremen, overseers, workers in the factory, &c. There is also dissection within these categories of the amounts paid to male and female employees.

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

VICTORIA—SALARIES AND WAGES PAID IN FACTORIES,
1962-63

(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 ..	1,311	202	6,988	82	8,299	284	8,583
II. Bricks, Pottery, Glass, &c. ..	1,007	162	6,395	354	7,402	516	7,918
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease ..	5,672	1,046	12,386	1,235	18,058	2,281	20,339
IV. Industrial Metals, Machines, Conveyances ..	33,733	6,057	133,669	8,778	167,402	14,835	182,237
V. Precious Metals, Jewellery, Plate ..	257	74	1,549	171	1,806	245	2,051
VI. Textiles and Textile Goods (Not Dress) ..	3,847	1,521	17,090	15,335	20,937	16,856	37,793
VII. Skins and Leather (Not Clothing or Footwear) ..	505	94	2,645	647	3,150	741	3,891
VIII. Clothing (Except Knitted) ..	2,962	1,425	11,405	20,542	14,367	21,967	36,334
IX. Food, Drink, and Tobacco	5,847	1,845	25,913	6,844	31,760	8,689	40,449
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving ..	2,171	410	12,379	186	14,550	596	15,146
XI. Furniture of Wood, Bedding, &c. ..	732	239	4,224	643	4,956	882	5,838
XII. Paper, Stationery, Printing, Bookbinding, &c. ..	4,704	1,270	20,893	3,410	25,597	4,680	30,277

VICTORIA—SALARIES AND WAGES PAID IN FACTORIES,
1962-63—*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	1,543	360	6,331	888	7,874	1,248	9,122
XIV. Musical Instruments	36	6	150	9	186	15	201
XV. Miscellaneous Products	2,031	625	6,942	2,086	8,973	2,711	11,684
Total, Classes I. to XV.	66,358	15,336	268,959	61,210	335,317	76,546	411,863
XVI. Heat, Light, and Power	766	13	5,897	12	6,663	25	6,688
GRAND TOTAL	67,124	15,349	274,856	61,222	341,980	76,571	418,551

Of the total amount of salaries and wages paid in Victoria in 1962-63—£418,551,000—the Industrial Metals, &c., group was responsible for £182,237,000 or 43.5 per cent., Food, Drink, &c., £40,449,000 or 9.7 per cent., and Clothing, &c., £36,334,000 or 8.7 per cent.

The total amount of salaries and wages paid in industry in Victoria in each of the years of 1958-59 to 1962-63 is shown below under similar headings to those in the preceding table. The average per employee is also shown.

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

Year	Salaries and Wages Paid to—				Total Salaries and Wages Paid to—		
	Managers, Clerical Staff, Chemists, Draftsmen, &c.		All Other Employees				
	Males	Females	Males	Females	Males	Females	Persons
TOTAL AMOUNT PAID (£'000)							
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
1961-62	61,701	14,241	253,258	55,233	314,959	69,474	384,433
1962-63	67,124	15,349	274,856	61,222	341,980	76,571	418,551
AVERAGE PER EMPLOYEE (£)							
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
1961-62	1,662	755	1,122	663	1,198	680	1,053
1962-63	1,731	776	1,166	680	1,245	697	1,089

Power, Fuel, and Light Used

The following table shows the cost of power, fuel, light, water, and lubricating oil used during the five years 1958–59 to 1962–63 :—

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

(£'000)

Class of Industry	1958–59	1959–60	1960–61	1961–62	1962–63
I. Treatment of Non-metalliferous Mine and Quarry Products	2,236	2,710	2,779	2,909	2,866
II. Bricks, Pottery, Glass, &c.	2,043	2,215	2,296	2,215	2,501
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease	6,384	6,642	6,020	6,792	7,307
IV. Industrial Metals, Machines, Conveyances	7,742	8,950	9,584	9,381	10,925
V. Precious Metals, Jewellery, Plate	143	146	158	149	161
VI. Textiles and Textile Goods (Not Dress)	2,424	2,668	2,550	2,605	2,785
VII. Skins and Leather (Not Clothing or Footwear)	495	457	404	419	446
VIII. Clothing (Except Knitted)	967	937	953	955	1,008
IX. Food, Drink, and Tobacco	5,951	6,126	6,131	6,235	6,456
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving	782	850	809	827	858
XI. Furniture of Wood, Bedding, &c.	133	136	131	125	135
XII. Paper, Stationery, Printing, Bookbinding, &c.	1,927	2,141	2,173	2,174	2,517
XIII. Rubber	1,166	1,265	1,267	1,228	1,399
XIV. Musical Instruments	11	9	8	9	10
XV. Miscellaneous Products	606	913	1,002	1,042	1,131
Total, Classes I. to XV.	33,010	36,165	36,265	37,065	40,505
XVI. Heat, Light, and Power	10,368	10,975	12,936	12,464	11,255
GRAND TOTAL	43,378	47,140	49,201	49,529	51,760

The next table gives in detail for each of the years 1958–59 to 1962–63 information dealing with the cost of each type of fuel used. The costs of water and lubricating oil are also shown separately.

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

(£'000)

Commodity	1958–59	1959–60	1960–61	1961–62	1962–63
Coal—					
Black	3,009	2,678	2,398	1,923	1,566
Brown	7,582	7,805	6,511	6,351	6,567
Brown Coal Briquettes	1,464	2,356	7,029	7,453	6,111
Coke	651	635	588	625	742
Wood	560	548	514	489	449
Fuel Oil	11,895	12,428	10,196	9,604	10,406
Tar (Fuel)	164	179	143	125	80
Electricity	13,910	15,827	17,067	17,679	19,918
Gas	1,120	1,307	1,316	1,427	1,724
Other (Charcoal, &c.)	629	708	601	653	657
Water	1,543	1,725	1,895	2,274	2,481
Lubricating Oils	851	944	943	926	1,059
Total	43,378	47,140	49,201	49,529	51,760

In 1962-63 electricity, fuel oil, briquettes, and brown coal represented 38.5, 20.1, 11.8, and 12.7 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 1958-59 to 1962-63 are given below :—

VICTORIA—QUANTITIES OF FUELS USED IN FACTORIES

Commodity	Unit of Quantity	1958-59	1959-60	1960-61	1961-62	1962-63
Coal—						
Black	'000 tons	483	427	387	315	250
Brown	'000 tons	10,582	11,746	10,921	11,841	12,762
Brown Coal						
Briquettes	'000 tons	305	510	1200	1,280	1,089
Coke	'000 tons	57	50	47	57	63
Wood	'000 tons	275	282	274	270	235
Fuel Oil	'000 gall.	219,738	241,433	214,895	226,509	254,738
Tar Fuel	'000 gall.	3,018	3,412	13*	12*	8*

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

VICTORIA—COST OF MATERIALS USED IN FACTORIES

(£'000)

Class of Industry	1958-59	1959-60	1960-61	1961-62	1962-63
I. Treatment of Non-metalliferous Mine and Quarry Products	13,800	15,671	19,765	20,646	21,843
II. Bricks, Pottery, Glass, &c.	5,254	7,055	7,369	7,173	8,058
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease	100,164	105,314	101,278	109,977	123,662
IV. Industrial Metals, Machines, Conveyances	213,429	249,955	266,330	261,948	292,721
V. Precious Metals, Jewellery, Plate	1,984	1,995	1,964	1,808	2,235
VI. Textiles and Textile Goods (Not Dress)	67,531	83,004	79,844	83,110	97,134
VII. Skins and Leather (Not Clothing or Footwear)	10,649	12,089	10,079	9,559	10,086
VIII. Clothing (Except Knitted)	49,765	53,113	54,138	54,371	57,770
IX. Food, Drink, and Tobacco	182,920	194,821	203,105	211,362	216,498
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving	27,430	31,647	31,267	29,976	30,652
XI. Furniture of Wood, Bedding, &c.	10,133	11,632	11,479	12,043	12,060
XII. Paper, Stationery, Printing, Book-binding, &c.	51,225	58,057	60,190	58,974	65,377
XIII. Rubber	17,876	22,128	21,545	18,846	21,292
XIV. Musical Instruments	226	199	198	162	183
XV. Miscellaneous Products	19,930	23,121	22,476	22,208	24,223
Total, Classes I. to XV.	772,316	869,801	891,027	902,163	983,794
XVI. Heat, Light, and Power	6,400	6,172	6,140	5,641	5,093
GRAND TOTAL	778,716	875,973	897,167	907,804	988,887

Value of Output and Production

Value of factory output by classes of industry in each of the years 1958-59 to 1962-63 is shown in the following table :—

VICTORIA—VALUE OF FACTORY OUTPUT
(£'000)

Class of Industry	1958-59	1959-60	1960-61	1961-62	1962-63
I. Treatment of Non-metalliferous Mine and Quarry Products	29,341	34,055	40,584	42,436	44,473
II. Bricks, Pottery, Glass, &c. ..	16,946	21,149	22,156	21,329	24,634
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease	163,734	172,312	162,770	176,246	202,440
IV. Industrial Metals, Machines, Conveyances	435,371	511,662	541,464	531,938	599,107
V. Precious Metals, Jewellery, Plate ..	5,290	5,268	5,356	4,956	5,812
VI. Textiles and Textile Goods (Not Dress)	123,508	146,274	141,991	145,543	167,007
VII. Skins and Leather (Not Clothing or Footwear)	17,344	18,971	16,473	15,953	17,221
VIII. Clothing (Except Knitted)	100,813	106,650	109,885	111,931	118,664
IX. Food, Drink, and Tobacco	259,773	282,559	291,629	310,667	322,468
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving	50,860	57,492	57,451	54,625	56,692
XI. Furniture of Wood, Bedding, &c. ..	19,837	21,973	21,390	22,271	22,703
XII. Paper, Stationery, Printing, Book-binding, &c.	99,012	112,965	116,519	117,865	128,515
XIII. Rubber	34,582	38,010	38,261	35,847	43,258
XIV. Musical Instruments	596	533	497	444	482
XV. Miscellaneous Products	37,440	42,699	43,201	43,246	47,506
Total, Classes I. to XV.	1,394,447	1,572,572	1,609,627	1,635,297	1,800,982
XVI. Heat, Light, and Power	38,616	38,930	40,023	39,363	41,132
GRAND TOTAL	1,433,063	1,611,502	1,649,650	1,674,660	1,842,114

In the next table the value of production in Victoria is given according to the various classes of industry for each of the years 1958-59 to 1962-63 :—

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

Class of Industry	1958-59	1959-60	1960-61	1961-62	1962-63
I. Treatment of Non-metalliferous Mine and Quarry Products	13,305	15,674	18,040	18,881	19,764
II. Bricks, Pottery, Glass, &c.	9,649	11,879	12,491	11,941	14,075
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease	57,186	60,355	55,471	59,477	71,471
IV. Industrial Metals, Machines, Conveyances	214,200	252,757	265,550	260,609	295,461
V. Precious Metals, Jewellery, Plate ..	3,163	3,127	3,234	2,999	3,416
VI. Textiles and Textile Goods (Not Dress)	53,553	60,602	59,597	59,828	67,088
VII. Skins and Leather (Not Clothing or Footwear)	6,200	6,425	5,990	5,975	6,689
VIII. Clothing (Except Knitted)	50,081	52,600	54,794	56,605	59,886
IX. Food, Drink, and Tobacco	70,902	81,612	82,393	93,070	99,514
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving	22,648	24,995	25,375	23,822	25,182
XI. Furniture of Wood, Bedding, &c. ..	9,571	10,205	9,781	10,103	10,508
XII. Paper, Stationery, Printing, Book-binding, &c.	45,860	52,767	54,156	56,717	60,621
XIII. Rubber	15,540	14,617	15,449	15,773	20,567
XIV. Musical Instruments	359	325	291	273	289
XV. Miscellaneous Products	16,904	18,665	19,723	19,996	22,152
Total, Classes I. to XV.	589,121	666,605	682,335	696,069	776,683
XVI. Heat, Light, and Power	21,848	21,784	20,947	21,258	24,784
GRAND TOTAL	610,969	688,389	703,282	717,327	801,467

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 576.

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 1962–63 are given in the following tables :—

VICTORIA—FACTORY COSTS AND OUTPUT, 1962–63
(£'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 ..	21,843	2,866	8,583	11,181	44,473
II. Bricks, Pottery, Glass, &c. ..	8,058	2,501	7,918	6,157	24,634
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease	123,662	7,307	20,339	51,132	202,440
IV. Industrial Metals, Machines, Conveyances	292,721	10,925	182,237	113,224	599,107
V. Precious Metals, Jewellery, Plate ..	2,235	161	2,051	1,365	5,812
VI. Textile and Textile Goods (Not Dress)	97,134	2,785	37,793	29,295	167,007
VII. Skins and Leather (Not Clothing or Footwear)	10,086	446	3,891	2,798	17,221
VIII. Clothing (Except Knitted) ..	57,770	1,008	36,334	23,552	118,664
IX. Food, Drink, and Tobacco ..	216,498	6,456	40,449	59,065	322,468
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving	30,652	858	15,146	10,036	56,692
XI. Furniture of Wood, Bedding, &c.	12,060	135	5,838	4,670	22,703
XII. Paper, Stationery, Printing, Book-binding, &c.	65,377	2,517	30,277	30,344	128,515
XIII. Rubber	21,292	1,399	9,122	11,445	43,258
XIV. Musical Instruments	183	10	201	88	482
XV. Miscellaneous Products	24,223	1,131	11,684	10,468	47,506
Total, Classes I. to XV. ..	983,794	40,505	411,863	364,820	1,800,982
XVI. Heat, Light, and Power	5,093	11,255	6,688	18,096	41,132
GRAND TOTAL	988,887	51,760	418,551	382,916	1,842,114

* Includes containers, tools replaced, and repairs to plant.

† Includes cost of lubricants and water.

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

VICTORIA—PERCENTAGE OF SPECIFIED COSTS OF PRODUCTION, ETC., TO VALUE OF OUTPUT OF FACTORIES, 1962-63

(Per Cent.)

Class of Industry	Specified Costs of Production			Balance between Value of Output and Specified Costs‡	Total
	Materials Used*	Fuel, Light, and Power Used†	Salaries and Wages Paid		
I. Treatment of Non-metalliferous Mine and Quarry Products ..	49.1	6.4	19.3	25.2	100.0
II. Bricks, Pottery, Glass, &c. ..	32.7	10.2	32.1	25.0	100.0
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease	61.1	3.6	10.0	25.3	100.0
IV. Industrial Metals, Machines, Conveyances	48.9	1.8	30.4	18.9	100.0
V. Precious Metals, Jewellery, Plate ..	38.5	2.8	35.3	23.4	100.0
VI. Textiles and Textile Goods (Not Dress)	58.2	1.7	22.6	17.5	100.0
VII. Skins and Leather (Not Clothing or Footwear)	58.6	2.6	22.6	16.2	100.0
VIII. Clothing (Except Knitted) ..	48.7	0.8	30.6	19.9	100.0
IX. Food, Drink, and Tobacco ..	67.1	2.0	12.6	18.3	100.0
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving	54.1	1.5	26.7	17.7	100.0
XI. Furniture of Wood, Bedding, &c.	53.1	0.6	25.7	20.6	100.0
XII. Paper, Stationery, Printing, Book-binding, &c.	50.9	2.0	23.5	23.6	100.0
XIII. Rubber	49.2	3.2	21.1	26.5	100.0
XIV. Musical Instruments	38.0	2.1	41.7	18.2	100.0
XV. Miscellaneous Products	51.0	2.4	24.6	22.0	100.0
Total, Classes I. to XV. ..	54.6	2.2	22.9	20.3	100.0
XVI. Heat, Light, and Power	12.4	27.3	16.3	44.0	100.0
GRAND TOTAL	53.7	2.8	22.7	20.8	100.0

For footnotes see page 595.

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 32.1 per cent. and the cost of raw materials 32.7 per cent. of the values of the finished articles, whilst, in Class IX., the expenditure on wages amount to 12.6 per cent. and that on raw materials to 67.1 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 1958-59 to 1962-63 :—

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

(£'000)

Year	Specified Costs of Production			Balance between Value of Output and Specified Costs‡	Total Value of Output
	Materials Used*	Fuel, Light, and Power Used†	Salaries and Wages		
1958-59	778,716	43,378	324,336	286,633	1,433,063
1959-60	875,973	47,140	370,181	318,208	1,611,502
1960-61	897,167	49,201	387,221	316,061	1,649,650
1961-62	907,804	49,529	384,433	332,894	1,674,660
1962-63	988,887	51,760	418,551	382,916	1,842,114

For footnotes see page 595.

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

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

(Per Cent.)

Year	Specified Costs of Production			Balance between Value of Output and Specified Costs‡	Total
	Materials Used*	Fuel, Light, and Power Used†	Salaries and Wages		
1958-59	54·4	3·0	22·6	20·0	100·0
1959-60	54·4	2·9	23·0	19·7	100·0
1960-61	54·4	3·0	23·5	19·1	100·0
1961-62	54·2	2·9	23·0	19·9	100·0
1962-63	53·7	2·8	22·7	20·8	100·0

For footnotes see page 595.

Land, Building, 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 1958-59 to 1962-63 :—

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

Class of Industry	1958-59	1959-60	1960-61	1961-62	1962-63
I. Treatment of Non-metalliferous Mine and Quarry Products	5,212	9,743	10,788	12,011	12,331
II. Bricks, Pottery, Glass, &c. ..	4,051	5,018	5,824	6,994	10,115
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease	29,873	28,094	30,831	36,053	37,481
IV. Industrial Metals, Machines, Conveyances	106,642	126,411	146,160	165,801	181,927
V. Precious Metals, Jewellery, Plate ..	1,581	1,551	1,781	1,842	1,998
VI. Textiles and Textile Goods (Not Dress)	26,671	28,657	31,793	34,531	35,918
VII. Skins and Leather (Not Clothing or Footwear)	3,001	3,821	3,815	4,157	4,347
VIII. Clothing (Except Knitted) ..	18,609	20,391	23,534	25,208	27,012
IX. Food, Drink, and Tobacco ..	46,878	52,057	56,590	60,918	65,346
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving	8,379	10,482	12,717	13,043	13,445
XI. Furniture of Wood, Bedding, &c.	4,818	5,306	5,674	5,749	6,327
XII. Paper, Stationery, Printing, Book-binding, &c.	19,696	23,801	27,126	28,447	29,942
XIII. Rubber	4,979	5,171	6,664	6,922	7,593
XIV. Musical Instruments	229	283	248	233	205
XV. Miscellaneous Products	6,378	8,734	9,901	13,769	14,759
Total, Classes I. to XV. ..	286,997	329,520	373,446	415,678	448,746
XVI. Heat, Light, and Power	22,836	24,215	27,305	28,005	27,056
GRAND TOTAL	309,833	353,735	400,751	443,683	475,802

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 1958-59 to 1962-63 :—

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

Class of Industry	1958-59	1959-60	1960-61	1961-62	1962-63
I. Treatment of Non-metalliferous Mine and Quarry Products	8,315	16,976	19,833	22,714	24,918
II. Bricks, Pottery, Glass, &c. ..	3,286	3,888	4,578	6,004	10,427
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease	58,002	54,094	54,097	76,465	74,441
IV. Industrial Metals, Machines, Conveyances	83,490	89,797	105,563	112,418	127,871
V. Precious Metals, Jewellery, Plate ..	540	490	531	553	579
VI. Textiles and Textile Goods (Not Dress)	21,696	23,278	24,649	26,321	28,814
VII. Skins and Leather (Not Clothing or Footwear)	1,490	1,476	1,651	1,636	1,512
VIII. Clothing (Except Knitted)	7,501	7,840	8,694	8,941	9,242
IX. Food, Drink, and Tobacco	39,848	43,938	48,118	51,581	57,740
X. Sawmills, Joinery, Boxes, &c., Wood Turning and Carving	6,684	7,000	7,713	7,928	7,889
XI. Furniture of Wood, Bedding, &c. ..	1,271	1,276	1,220	1,265	1,364
XII. Paper, Stationery, Printing, Book-binding, &c.	22,064	25,146	28,082	28,323	30,148
XIII. Rubber	4,529	6,598	7,392	7,649	7,928
XIV. Musical Instruments	72	73	84	72	65
XV. Miscellaneous Products	5,064	6,973	8,114	9,130	11,339
Total, Classes I. to XV.	263,852	288,843	320,319	361,000	394,277
XVI. Heat, Light, and Power	73,255	88,249	97,599	106,887	106,067
GRAND TOTAL	337,107	377,092	417,918	467,887	500,344

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*, 1962-63

Class of Industry	Steam		Internal Combustion		Water	Motor Driven by Electricity		Total without Duplication
	Reciprocating	Turbine	Gas	Petrol or Other Light Oils		Purchased	Own Generation	
I. Treatment of Non-metalliferous Mine and Quarry Products	1,231	25,400	..	1,166	..	67,651	15,055	95,448
II. Bricks, Pottery, Glass, &c. ..	1,045	..	..	921	..	47,644	12	49,610
III. Chemicals, Dyes, Explosives, Paints, Oils, Grease	2,362	37,924	1,695	1,891	50	138,297	11,015	182,219
IV. Industrial Metals, Machines, Conveyances	1,681	..	35	6,070	..	562,138	1,269	569,924
V. Precious Metals, Jewellery, Plate	45	..	..	15	..	3,716	..	3,776
VI. Textiles and Textile Goods (Not Dress)	26	12	..	285	..	110,992	..	111,315

* Includes gas works, but excludes central electric stations.

VICTORIA—TOTAL RATED HORSE-POWER OF ENGINES AND ELECTRIC MOTORS ORDINARILY IN USE IN FACTORIES*, 1962-63—continued

Class of Industry	Steam		Internal Combustion			Water	Motor 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	..	32	..	..	13,831	620	14,728
VIII. Clothing (Except Knitted) ..	518	..	..	157	..	..	28,961	..	29,636
IX. Food, Drink, and Tobacco ..	3,447	1,565	..	6,035	830	..	213,187	2,568	225,064
X. Sawmills, Joinery, Boxes, &c. Wood Turning and Carving	4,565	..	..	23,856	10	..	99,214	2,508	127,645
XI. Furniture of Wood, Bedding, &c. ..	..	..	..	..	..	..	13,940	..	13,940
XII. Paper, Stationery, Printing, Bookbinding, &c. ..	600	23,500	..	319	..	..	92,231	25,000	116,650
XIII. Rubber ..	..	..	..	365	..	..	70,508	30	70,873
XIV. Musical Instruments ..	..	..	..	..	..	..	322	..	322
XV. Miscellaneous Products ..	..	2,000	..	317	..	..	38,839	250	41,156
Total, Classes I. to XV.	16,290	90,496	1,730	41,429	890	..	1,501,471	58,327	1,652,306
XVI. Gas Works ..	2,864	1,381	30	2,387	..	..	18,966	7	25,628
GRAND TOTAL ..	19,154	91,877	1,760	43,816	890	..	1,520,437	58,334	1,677,934

* Includes gas works, but excludes central electric stations.

The total rated horse-power in reserve or idle during 1962-63 and not included above was 208,656.

Motors driven by purchased electricity comprised approximately 90.6 per cent. of the total horse-power used in factories other than central electric stations in 1962-63, while steam turbines were next in demand with 5.5 per cent.

A comparison over the five year period 1958-59 to 1962-63 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	
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	1,439,674
1960-61 ..	25,307	64,332	1,758	42,053	..	890	1,374,133	56,139	1,508,473
1961-62 ..	23,172	83,512	1,771	43,628	..	890	1,421,296	57,156	1,574,269
1962-63 ..	19,154	91,877	1,760	43,816	..	890	1,520,437	58,334	1,677,934

* Includes gas works, but excludes central electric stations.

The following table shows the total rated horse-power for each year from 1958-59 to 1962-63 for engines and electric motors in reserve or idle. It includes engines which are used only occasionally, or during periods of breakdown to own engines or power supply.

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

Year	Rated Horse-power of Engines, &c., in Reserve or Idle		
	Purchased Electricity	All Other Types	Total
1958-59	123,644	58,707	182,351
1959-60	115,721	56,364	172,085
1960-61	130,431	55,104	185,535
1961-62	139,854	57,116	196,970
1962-63	150,303	58,353	208,656

* Without duplication ; includes gas works, but excludes central electric stations.

Particulars of the type and capacity of engines and generators installed in central electric stations in Victoria during 1962-63 are given in the following table :—

VICTORIA—POWER EQUIPMENT INSTALLED IN CENTRAL ELECTRIC STATIONS, 1962-63

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.	1,728,169	116	15,017	32,288	445,700	2,221,290
Generators Installed—						
Kilowatt Capacity—						
Total Installed .. kW.	1,290,725	75	10,364	23,819	332,515	1,657,498
Effective Capacity kW.	1,290,200	55	9,373	23,151	349,915	1,672,694
Horse-power Equivalent—						
Total Installed .. H.P.	1,730,194	100	13,893	31,929	445,731	2,221,847
Effective Capacity.. H.P.	1,729,491	74	12,564	31,033	469,055	2,242,217

Similar information to that shown in the preceding table, but giving a comparison over the years 1958-59 to 1962-63 is shown below :—

VICTORIA—POWER EQUIPMENT INSTALLED IN CENTRAL ELECTRIC STATIONS

Particulars	1958-59	1959-60	1960-61	1961-62	1962-63
Central Electric Stations.. .. No.	44	44	41	41	35
Engines Installed Rated H.P.	1,786,817	1,832,183	2,090,023	2,242,796	2,221,290
Generators Installed—					
Kilowatt Capacity—					
Total Installed kW.	1,309,751	1,366,355	1,546,370	1,660,281	1,657,498
Effective Capacity kW.	1,276,788	1,320,441	1,492,677	1,666,050	1,672,694
Horse-power Equivalent—					
Total Installed H.P.	1,755,066	1,830,916	2,072,882	2,225,578	2,221,847
Effective Capacity H.P.	1,710,896	1,770,028	2,000,907	2,233,311	2,242,217

Principal Factory Products

Annual Quantity and Value

The next table lists the principal articles of manufacture in Victoria during 1962-63, 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, 1962-63

Article	Unit of Quantity	Quantity	Value
Acid—Sulphuric	ton	369,300	£'000 *
Aerated and Carbonated Waters	'000 gall.	22,865	6,190
Bacon and Ham †	'000 lb.	17,412	*
Biscuits	'000 lb.	62,650	7,105
Blankets	pair	468,386	2,711
Bolts and Nuts .. ..	..	†	4,300
Boxes and Cases—Wooden .. ..	..	†	1,902
Bread—2 lb. Loaves Equivalent	'000	198,997	14,400
Bricks—Clay	'000	280,233	5,859
Briquettes—Brown Coal	ton	1,805,347	5,597
Butter	ton	103,276	38,500
Cakes, Pastry, Pies, &c. (Including Canned) .. ..	..	†	11,092
Cans, Canisters, Containers—			
Metal .. ..	..	†	17,113
Plastic .. ..	..	†	1,248
Cheese	ton	26,033	5,760
Cigarettes	mill.	11,567	28,780

For footnotes see page 604.

VICTORIA—PRINCIPAL ARTICLES MANUFACTURED,
1962-63—continued

Article	Unit of Quantity	Quantity	Value
			£'000
Cloth Piece Goods Woven—			
Woolen or Predominantly			
Woolen	'000 sq. yd.	7,465	4,872
Worsted or Predominantly			
Worsted	'000 sq. yd.	6,683	6,698
Confectionery—			
Chocolate Base	'000 lb.	38,047	8,611
Other without Chocolate	'000 lb.	38,544	4,911
Containers—Paperboard§	.. .. .	†	18,807
Domestic Electrical Appliances—			
Clothes Washing Machines	No.	29,059	2,382
Radiators and Electric Fires .. .. .	.. .. .	448,747	2,029
Radios and Radiograms .. .. .	.. .. .	121,666	2,460
Toasters .. .. .	.. .. .	137,647	305
Electric Motors .. .. .	.. .. .	433,178	*
Electricity Generated	mill. kWh.	7,089	*
Fibrous Plaster Sheets	'000 sq. yd.	7,435	2,475
Flour, Plain—Wheaten (Including Sharps)	short ton	423,949	*
Footwear : Boots, Shoes, and Sandals¶—			
Men's and Youths'	'000 pair	3,225	8,849
Women's and Maids'	'000 pair	9,078	17,981
Children's (Including Infants)	'000 pair	2,249	2,265
Slippers	'000 pair	8,229	4,018
Fruit : Preserved—			
Peaches	'000 lb.	87,736	4,899
Pears	'000 lb.	109,813	6,361
Furniture and Office Equipment—			
Metal .. .. .	.. .. .	†	5,975
Wooden .. .. .	.. .. .	†	11,533
Gas—Towns	mill. cu. ft.	19,672	*
Ice	ton	77,674	346
Ice Cream	'000 gall.	4,825	2,944
Jams, Fruit Spreads, Fruit Butters, &c.	'000 lb.	43,221	3,106
Leather—			
Dressed : Chrome Tanned and Suede .. .. .	.. .. .	†	2,797
Sole : Vegetable Tanned .. .. .	.. .. .	†	1,547
Leathercloth	'000 sq. yd.	8,489	4,008
Machinery : Industrial—			
Conveyor (and Appliances) .. .. .	.. .. .	†	2,367
Hoists, Cranes, Lifting .. .. .	.. .. .	†	2,250
Food Processing and Canning .. .. .	.. .. .	†	2,940
Metal Working .. .. .	.. .. .	†	5,914
Mining and Drilling .. .. .	.. .. .	†	2,261
Pumping (Including Pumps) .. .. .	.. .. .	†	6,078
Malt—Barley	'000 bush.	7,948	*
Mattresses—All Types	No.	400,869	2,869
Meat—Canned	'000 lb.	51,170	5,937

For footnotes see next page.

VICTORIA—PRINCIPAL ARTICLES MANUFACTURED,
1962-63—continued

Article	Unit of Quantity	Quantity	Value £'000
Milk—			
Condensed	'000 lb.	105,928	6,518
Powdered : Full Cream	'000 lb.	20,635	*
Paints (Not Water) and Enamels	'000 gall.	4,308	7,949
Pharmaceutical Products For Human Use .. ..	..	†	11,050
Pipe Fittings, Ferrous .. ..	..	†	1,700
Pipes—Concrete (Excluding Agricultural)	ton	165,582	2,451
Plastic, Unsupported Film, P.V.C.	'000 lb.	3,721	1,200
Pollard	short ton	86,914	*
Ropes and Cables (Excluding Wire)	cwt.	69,985	1,122
Sauce—Tomato	'000 pint	13,018	1,676
Sausage Casings—Sheep and Lamb	'000 bundle	2,736	2,489
Shirts (Men's and Boys')	doz.	885,881	*
Sinks—Stainless Steel	No.	72,908	893
Soap and Detergents—			
Household and General Washing and Cleaning	cwt.	901,523	7,980
Personal Toilet	cwt.	97,414	1,385
Socks and Stockings—Men's and Children's	'000 doz. pair	2,229	*
Stockings—Women's	'000 doz. pair	2,875	8,818
Soup—Tomato	'000 pint	19,922	1,659
Steam, Gas, and Water Fittings, Valves, &c. (Non-Ferrous) .. ..	..	†	6,396
Steel, Structural—Fabricated	ton	107,810	13,530
Tiles, Roofing—			
Cement	'000	20,546	778
Terra Cotta	'000	15,503	888
Timber Produced from Logs—			
Australian	'000 sup. ft.	319,147	*
Trailers and Semi-trailers	No.	2,933	1,385
Transformers, Chokes, &c.	No.	1,223,604	3,446
Tyres Retreaded and Recapped	No.	846,368	*
Underwear—			
Men's and Boys'	'000 doz.	950	*
Women's and Girls'	'000 doz.	2,009	*
Vegetables Canned or Bottled|| .. ..	'000 lb.	40,897	32,280
Window Frames—Metal .. ..	..	†	2,550
Wool—Scoured or Carbonized	'000 lb.	61,019	*
Wool Tops	'000 lb.	20,716	*

* Quantity only available

† Value only available

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

§ Includes composite wood and paperboard butter boxes

¶ Excluding wholly of rubber

|| Includes 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 approximately 40 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.	27	Gloves (Other than Rubber) and Slide/Zip Fasteners
3	Plastics and Synthetic Resins and Plasticisers	28	Footwear (Excluding Sandshoes, Goloshes, and Gum, &c., Boots of Rubber)
4	Paints and Other Surface Coatings	29	Biscuits, Ice Cream, and Confectionery
6	Soap, Detergents, and Glycerine	30	Storage Batteries
7	Internal Combustion Engines	31	Assembly of Motor Vehicle Chassis
8	Lawn Mowers	32	Perambulators (Including Pushers and Strollers)
9	Electrical Appliances	34	Radio, &c., Television Sets and Cabinets
10	Motor Bodies, Trailers, &c.	35	Mattresses
11	Pedal Cycles	36	Preserved Milk Products
12	Meters	38	Canned Fish
13	Building Fittings	39	Jams and Preserved Fruit and Vegetables
14	Cotton Goods	40	Production of Cereal Products
15	Woolscouring, Carbonizing, and Fellingmongering	41	Margarine and Other Edible Processed Fats
16	Woollen and Worsted Carding, Combing, and Spinning	42	Malt and Beer
17	Wool Weaving	43	Stock and Poultry Meals (Other than Cereal)
18	Hosiery	45	Phonograph Records
19	Men's and Youths', Boys', Women's and Maids', Girls', Infants' and Babies' Wear, Shirts, Cardigans, Pyjamas, Underclothing, &c.	47	Aerated Waters,, Cordials and Syrups, and Concentrated Cordial Extract
20	Rayon and Synthetic Fibre Tops, Yarns, Woven Fabrics	48	Sports Goods
21	Paper and Paper Board	49	Building Materials
22	Floor Coverings	51	Hides and Skins Used in Tanneries
23	Electric Motors	55	Butter and Cheese
24	Men's, Youths' and Boys' Outer Clothing	56	Canned Meat
25	Foundation Garments	58	Steel Wire and Wire Products
		59	Non-Ferrous Rolled, Extruded and Drawn Products

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

*Individual Industries***Introductory**

Particulars on pages 580 to 585 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.

Growth of the Victorian Glass Industry*Early History*

The glass industry in Victoria had its beginnings in 1872 when Alfred Felton and Frederick Sheppard Grimwade founded a glass bottle works in South Melbourne. Thirty-two people were employed in the factory—the main products of which were marble-stoppered aerated water bottles, medicine bottles, and a limited number of other lines. At the time no beer bottles were made because most bottled beer consumed in the colony was imported. Production was manual and skilled tradesmen were brought into the firm from Yorkshire and Lancashire, and some from continental Europe. In time, seamless wine and brandy bottles, produced by turning the bottles in the moulds during blowing operations, were added to the range.

The industry used locally available sand, which is the bulk ingredient of glass but had to rely on imports for most other materials, notably soda ash, which came from England. The glass marbles used as the stoppers for aerated water bottles were also imported. Pale green and amber were the colours then manufactured.

The partners in the industry realized it would outgrow the area in South Melbourne and in 1890 transferred operations to a larger site on the banks of the Yarra at Spottiswoode (Spotswood). This area had the advantage of being in an established industrial locality. It had rail access and jetty loading facilities were available to transport finished products by boat to South Wharf, Melbourne, for city distribution. Soon after the move to Spotswood, clear white glass was produced which soon took the place of pale green glass produced up to this time. White glass had more appeal to packers of foodstuffs and to consumers.

Development after 1900

At the turn of the century significant improvements were being made overseas in the sealing media used on glass containers, and in 1908 crown seals were used for the first time in Australia for sealing beer and other bottles, taking the place of the comparatively expensive cork which had to be secured by wire. Developments

towards mechanical production also took place overseas and when demand economically justified using mechanical methods, the first machines to assist in making glass containers were used.

Progress during the First World War was necessarily rapid to cope with the rising demand for glass containers for beverages and food packing, and to fill the gap in supply brought about by the cessation of imports. The techniques of mechanized production kept pace with increasing demand for all kinds of glass containers.

The years following the First World War saw a steady increase in demand for all kinds of glass containers, notably for the food, drink, medical, and cosmetics industries. The glass container industry itself had become soundly established by now and well-supported by the specialized services it had developed in engineering and chemistry. With a few minor exceptions it supplied all local requirements. During the Second World War period, it was able to meet all requirements for glass containers, including the special demands of the defence forces. In addition to this, part of its engineering and allied facilities was diverted (and expanded for the time being) for the purposes of munitions production.

From its beginning in 1872 the glass industry in Victoria has grown from a producer of a small range of containers for the packing of foods, beverages, and medicines, to a highly mechanized complex using large capital investment and supplying the needs of major industries for containers, as well as fibreglass and sheet glass. Containers produced are used principally in Victorian industries producing foods, beverages, cosmetics, medicines, detergents, and a variety of other items. With the growth of living standards over the years, the packing of consumer goods in glass has increased and is still increasing.

In the course of its growth, the glass container industry has stimulated other industries such as plastics, metal working, lacquer, rubber (all associated with bottle and jar closures), corrugated paper for cartons, and engineering, not only for its own operational purposes, but also for packing machinery.

Fibreglass

A new feature of the glass industry in Victoria was the establishment in conjunction with American interests, of a factory to produce fibreglass near Dandenong in 1960. The industry had been already established in New South Wales, but by 1963 all manufacture of fibreglass in Australia was concentrated at the new plant at Dandenong.

Fibreglass is manufactured in two basic forms, wool and textile filaments. Wool used for thermal insulation and to suppress noise, is applied in home and industrial building, household appliances, industrial piping, motor vehicles, and air conditioning. Textile filaments are used in the production of yarns for weaving into industrial and decorative fabrics. In industrial grades fibreglass is used as the reinforcing material in fibreglass reinforced plastics, such as large containers, boats, motor car bodies, and other articles where strength and dimensional stability are required.

Fibreglass wool and textile filaments are supplied from Victoria to all parts of Australia for the building, appliance, and other industries mentioned earlier.

Sheet Glass

Another important element in the growth of the industry in Victoria was the commencement in October, 1962, of sheet glass production, also near Dandenong. The factory and plant were established in conjunction with United Kingdom interests. Since 1931 sheet glass has been produced in New South Wales, and with the growth of demand, a second producing centre from Australian sources became economically warranted to satisfy the Australian demand.

For some years previously a portion of Australian requirements for sheet glass had been imported and prior to 1931 was all imported. Victoria was chosen because it already constituted a significant market and provided a suitable manufacturing area, while supplies of materials and other manufacturing facilities were already available.

Victorian produced sheet glass is to a large extent consumed in Victoria but important quantities are consumed by other Australian States. The principal industries using sheet glass are home, industrial, and commercial building, and automotive and furniture making.

Conclusion

The glass industry depends on various Victorian sources for the supply of sand, lime, fuels, industrial gases, other goods and services. Soda ash, formerly imported, has in recent years become available from South Australia. Case timber, some other raw materials, and certain furnace blocks are examples of items obtained from other States. Much of the plant and machinery items used by the industry is of Victorian or Australian manufacture. Dependence on overseas for raw materials and plant items, while still important, has diminished over the years.

Details of Industries

The industrial and heavy chemical industry expanded considerably during the five year period 1958-59 to 1962-63 as the particulars below indicate :—

VICTORIA—INDUSTRIAL AND HEAVY CHEMICALS AND ACIDS

Particulars	1958-59	1959-60	1960-61	1961-62	1962-63
Number of Factories	79	83	83	84	87
Number of Persons Employed ..	3,035	3,276	3,188	3,703	4,034
Salaries and Wages Paid £'000	3,554	4,105	4,194	5,187	5,778
Value of Power, Fuel, &c., Used £'000	826	949	791	2,156	2,490
Value of Materials Used £'000	10,115	11,119	10,439	15,535	19,954
Value of Production .. £'000	9,269	11,948	10,884	14,453	18,575
Value of Output .. £'000	20,210	24,016	22,114	32,144	41,019
Value of Land and Buildings £'000	4,679	4,848	5,870	9,871	9,441
Value of Plant and Machinery £'000	7,103	7,794	9,623	32,292	31,038
Horse-power of Engines Ordinarily in Use .. H.P.	26,834	26,596	26,130	61,527	62,861

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

VICTORIA—PHARMACEUTICAL AND TOILET PREPARATIONS

Particulars	1958-59	1959-60	1960-61	1961-62	1962-63
Number of Factories	57	58	56	63	70
Number of Persons Employed ..	2,748	3,026	3,002	3,066	3,225
Salaries and Wages Paid £'000	2,577	3,058	3,118	3,295	3,672
Value of Power, Fuel, &c., Used					
£'000	601	606	616	556	670
Value of Materials Used £'000	6,591	7,912	7,336	7,758	9,823
Value of Production .. £'000	6,786	7,722	7,554	8,299	9,758
Value of Output .. £'000	13,978	16,240	15,506	16,613	20,251
Value of Land and Buildings £'000	4,780	5,457	5,828	6,671	7,726
Value of Plant and Machinery £'000	2,811	2,999	3,330	3,124	3,707
Horse-power of Engines Ordinarily in Use .. H.P.	9,504	9,863	10,522	11,375	13,293

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 1958-59 to 1962-63 are shown below :—

VICTORIA—MINERAL OILS

Particulars	1958-59	1959-60	1960-61	1961-62	1962-63
Number of Factories	18	17	19	20	20
Number of Persons Employed ..	1,459	1,476	1,397	1,341	1,274
Salaries and Wages Paid £'000	1,863	2,099	2,055	2,044	1,993
Value of Power, Fuel, &c., Used					
£'000	3,476	3,776	3,230	2,756	2,733
Value of Materials Used £'000	45,732	51,482	49,632	50,589	55,890
Value of Production .. £'000	19,275	19,888	16,250	15,682	19,938
Value of Output .. £'000	68,483	75,146	69,112	69,027	78,561
Value of Land and Buildings £'000	7,635	5,576	5,356	5,116	4,847
Value of Plant and Machinery £'000	32,691	31,717	29,474	27,882	27,586
Horse-power of Engines Ordinarily in Use .. H.P.	44,799	47,233	48,130	48,241	44,176

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 1,274 persons were employed in 1962-63 and the horse-power of engines used totalled 44,176.

Outstanding expansion has taken place in Industrial Metals, Machines, and Conveyances, &c., which is by far the largest of the sixteen classes into which secondary industry is divided. This development was accelerated by the necessity of meeting war requirements. Victoria now produces a very wide range of goods including motor vehicles, construction and earth-moving equipment, precision instruments, aircraft, &c., and many other types of manufactures 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, 1962-63

Particulars	Factories	Persons Employed	Salaries and Wages Paid	Value of—						Horse-power of Engines Ordinarily in Use
				Power, Fuel, and Light	Materials Used	Production	Output	Land and Buildings	Plant and Machinery	
	No.			(£'000)						
Foundries (Ferrous) ..	95	2,484	3,059	428	2,526	4,693	7,647	2,012	1,299	9,918
Plant, Equipment and Machinery, &c. ..	900	28,098	33,372	1,394	52,660	56,270	110,324	30,822	18,901	104,398
Other Engineering ..	974	11,889	13,273	570	17,888	22,266	40,724	12,157	7,624	42,417
Electrical Machinery, Cables, and Apparatus ..	403	15,781	16,891	1,002	34,502	27,962	63,466	16,083	9,289	42,546
Tramcars and Railway Rolling Stock	22	7,035	7,116	214	6,010	9,214	15,438	3,503	1,594	24,006
Motor Vehicle Construction and Assembly	16	13,487	17,992	1,613	20,882	33,509	56,004	20,991	18,193	62,004
Motor Repairs	2,617	18,588	16,534	552	16,382	25,667	42,601	27,458	4,402	20,127
Motor Bodies ..	547	7,922	9,379	440	13,677	13,210	27,327	10,843	10,624	20,193
Motor Accessories ..	102	8,103	9,023	622	15,269	13,601	29,492	6,599	8,113	29,068
Aircraft ..	16	6,942	8,717	270	5,693	10,176	16,139	6,559	4,029	19,051
Agricultural Machines and Implements ..	130	5,668	6,742	502	10,809	9,546	20,857	4,671	3,302	20,803
Non-ferrous Metals—Founding, Casting, &c... ..	163	3,823	4,147	338	8,483	7,539	16,360	4,073	2,550	12,592
Sheet Metal Working—Pressing and Stamping ..	430	10,754	11,970	653	29,180	23,587	53,420	11,877	7,810	32,647
Wire and Wire Working (Including Nails)	76	2,775	3,118	203	11,010	6,413	17,626	3,467	2,626	10,713
Wireless and Amplifying Apparatus ..	81	3,918	3,903	126	9,910	6,146	16,182	2,913	1,939	2,604
Other Sub-classes	372	14,711	17,002	1,998	37,840	25,662	65,500	17,899	25,576	118,106
Total, Class IV	6,944	161,978	182,238	10,925	292,721	295,461	599,107	181,927	127,871	571,193

Further particulars of certain of the industries listed in the table above are given on pages 611 to 613.

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

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

VICTORIA—ELECTRICAL MACHINERY, CABLES, AND APPARATUS

Particulars	1958-59	1959-60	1960-61	1961-62	1962-63
Number of Factories	439	498	457	461	484
Number of Persons Employed ..	17,361	18,862	18,531	17,950	19,699
Salaries and Wages Paid £'000	16,239	18,832	19,383	19,228	20,794
Value of Power, Fuel, &c., Used					
£'000	903	984	976	972	1,128
Value of Materials Used £'000	37,696	41,476	40,872	42,458	44,412
Value of Production .. £'000	24,432	28,608	30,413	31,890	34,108
Value of Output .. £'000	63,031	71,068	72,261	75,320	79,648
Value of Land and Buildings £'000	12,543	15,096	16,207	17,028	18,996
Value of Plant and Machinery £'000	9,612	12,233	10,211	10,613	11,228
Horse-power of Engines Ordinarily in Use .. H.P.	40,213	40,339	40,337	42,892	45,150

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	1958-59	1959-60	1960-61	1961-62	1962-63
Number of Factories	22	22	22	22	22
Number of Persons Employed ..	7,391	7,214	6,989	7,206	7,035
Salaries and Wages Paid £'000	6,429	6,862	7,011	7,325	7,116
Value of Power, Fuel, &c., Used					
£'000	222	221	220	206	214
Value of Materials Used £'000	5,479	6,136	6,250	5,998	6,010
Value of Production .. £'000	8,683	8,706	9,477	9,474	9,214
Value of Output .. £'000	14,384	15,063	15,947	15,678	15,438
Value of Land and Buildings £'000	2,138	2,215	2,351	3,446	3,503
Value of Plant and Machinery £'000	1,429	1,426	1,465	1,574	1,594
Horse-power of Engines Ordinarily in Use .. H.P.	22,881	24,104	24,369	23,964	24,006

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

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

VICTORIA—MOTOR VEHICLES

Particulars	1958-59	1959-60	1960-61	1961-62	1962-63
Number of Factories	2,756	2,899	3,044	3,200	3,282
Number of Persons Employed ..	38,212	40,548	45,421	42,553	48,100
Salaries and Wages Paid £'000	34,762	41,245	47,541	44,382	52,928
Value of Power, Fuel, &c., Used £'000	1,920	2,095	2,708	2,665	3,227
Value of Materials Used £'000	42,450	44,692	55,345	52,799	66,210
Value of Production .. £'000	59,182	67,070	73,305	71,288	85,987
Value of Output .. £'000	103,552	113,857	131,358	126,752	155,424
Value of Land and Buildings £'000	36,325	42,146	48,500	58,396	65,891
Value of Plant and Machinery £'000	17,311	18,793	30,979	33,240	41,332
Horse-power of Engines Or- dinarily in Use .. H.P.	87,777	81,936	101,655	106,423	131,392

The relative importance of each sub-class of the motor vehicle industry is shown on page 610.

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

VICTORIA—AGRICULTURAL MACHINERY AND IMPLEMENTS

Particulars	1958-59	1959-60	1960-61	1961-62	1962-63
Number of Factories	91	108	117	125	130
Number of Persons Employed ..	5,761	5,910	5,749	5,569	5,668
Salaries and Wages Paid £'000	5,802	6,246	6,106	5,906	6,742
Value of Power, Fuel, &c., Used £'000	422	437	452	473	502
Value of Materials Used £'000	8,892	10,596	9,818	10,736	10,809
Value of Production .. £'000	8,992	8,851	8,606	8,554	9,546
Value of Output .. £'000	18,306	19,884	18,876	19,763	20,857
Value of Land and Buildings £'000	2,709	2,869	3,554	4,715	4,671
Value of Plant and Machinery £'000	2,525	2,797	3,057	3,093	3,302
Horse-power of Engines Or- dinarily in Use .. H.P.	20,399	20,537	19,891	20,199	20,803

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

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

Particulars	1958-59	1959-60	1960-61	1961-62	1962-63
Number of Factories	178	178	182	168	163
Number of Persons Employed ..	3,959	3,989	4,056	3,595	3,823
Salaries and Wages Paid £'000	3,661	4,054	4,276	3,870	4,147
Value of Power, Fuel, &c., Used					
£'000	290	309	310	290	337
Value of Materials Used £'000	6,171	7,343	7,316	6,499	8,484
Value of Production .. £'000	6,483	6,778	7,084	6,731	7,539
Value of Output .. £'000	12,944	14,430	14,710	13,520	16,360
Value of Land and Buildings £'000	2,142	2,582	3,303	3,726	4,073
Value of Plant and Machinery £'000	1,548	1,687	2,284	2,398	2,550
Horse-power of Engines Ordinarily in Use .. H.P.	10,789	10,927	12,474	11,948	12,592

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	1958-59	1959-60	1960-61	1961-62	1962-63
Number of Factories	396	427	430	436	430
Number of Persons Employed ..	10,098	10,802	10,757	10,532	10,754
Salaries and Wages Paid £'000	9,380	10,887	11,352	11,228	11,970
Value of Power, Fuel, &c., Used					
£'000	544	705	579	620	653
Value of Materials Used £'000	22,287	24,964	26,107	27,735	29,180
Value of Production .. £'000	15,828	20,108	20,168	20,941	23,587
Value of Output .. £'000	38,659	45,777	46,854	49,296	53,420
Value of Land and Buildings £'000	8,018	9,791	10,667	11,374	11,877
Value of Plant and Machinery £'000	5,673	6,466	7,051	7,558	7,810
Horse-power of Engines Ordinarily in Use .. H.P.	30,688	32,414	30,305	30,850	32,647

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	1958-59	1959-60	1960-61	1961-62	1962-63
Number of Factories	87	81	82	79	78
Number of Persons Employed ..	10,995	11,691	10,985	10,441	10,816
Salaries and Wages Paid £'000	8,475	9,604	9,064	8,962	9,645
Value of Power, Fuel, &c., Used £'000	798	858	777	769	795
Value of Materials Used £'000	20,295	25,506	22,053	23,784	28,330
Value of Production .. £'000	14,047	14,508	13,565	12,931	14,525
Value of Output .. £'000	35,140	40,872	36,395	37,484	43,650
Value of Land and Buildings £'000	6,579	6,509	6,628	6,410	7,015
Value of Plant and Machinery £'000	6,386	6,679	6,496	6,802	7,312
Horse-power of Engines Ordinarily in Use .. H.P.	43,084	42,117	39,724	40,236	40,724

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 five years to 1962-63 are given below :—

VICTORIA—HOSIERY AND OTHER KNITTED GOODS

Particulars	1958-59	1959-60	1960-61	1961-62	1962-63
Number of Factories	438	482	476	462	450
Number of Persons Employed ..	15,285	16,938	17,238	16,486	17,803
Salaries and Wages Paid £'000	10,979	13,146	13,271	13,142	14,833
Value of Power, Fuel, &c., Used £'000	549	573	581	577	597
Value of Materials Used £'000	21,820	27,695	28,713	29,377	33,051
Value of Production .. £'000	20,846	23,798	24,484	25,634	27,213
Value of Output .. £'000	43,215	52,066	53,778	55,588	60,861
Value of Land and Buildings £'000	8,240	9,486	10,877	11,269	11,843
Value of Plant and Machinery £'000	6,529	6,581	7,250	7,827	8,567
Horse-power of Engines Ordinarily in Use .. H.P.	15,560	15,643	16,185	17,003	17,201

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	1958-59	1959-60	1960-61	1961-62	1962-63
Number of Factories	1,481	1,455	1,379	1,308	1,317
Number of Persons Employed ..	28,310	28,456	28,012	27,089	28,674
Salaries and Wages Paid £'000	18,127	19,664	19,859	19,639	21,375
Value of Power, Fuel, &c., Used					
£'000	389	392	396	389	414
Value of Materials Used £'000	31,257	32,712	31,289	30,941	33,600
Value of Production .. £'000	29,472	31,416	31,582	32,107	34,655
Value of Output .. £'000	61,118	64,520	63,267	63,437	68,669
Value of Land and Buildings £'000	11,769	13,072	14,542	15,053	16,041
Value of Plant and Machinery £'000	2,906	2,752	2,829	2,871	3,045
Horse-power of Engines Ordinarily in Use .. H.P.	11,599	10,629	11,560	10,794	11,171

In the following table the industries combined in the preceding table are shown in detail for 1962-63 :—

**VICTORIA—CLOTHING (DRESS), EXCLUDING WATERPROOF CLOTHING, KNITTED GOODS, AND BOOTS AND SHOES :
INDIVIDUAL INDUSTRIES, 1962-63**

Particulars	Tailoring and Ready-made Clothing	Dress-making	Millinery, Hats and Caps	Shirts, Underclothing	Foundation Garments	Handkerchiefs, Ties, and Gloves	Total
Number of Factories	562	489	68	137	31	30	1,317
Number of Persons Employed ..	11,049	8,470	985	5,807	1,891	472	28,674
Salaries and Wages Paid £'000	8,612	6,195	726	4,147	1,357	338	21,375
Value of Power, Fuel, &c., Used							
£'000	176	115	20	67	28	8	414
Value of Materials Used £'000	14,378	8,012	957	7,330	2,096	827	33,600
Value of Production .. £'000	13,728	9,967	1,197	7,201	2,019	543	34,655
Value of Output £'000	28,282	18,094	2,174	14,598	4,143	1,378	68,669
Value of Land and Buildings £'000	6,294	5,094	788	2,143	1,439	283	16,041
Value of Plant and Machinery £'000	1,318	711	88	548	334	46	3,045
Horse-power of Engines Ordinarily in Use .. H.P.	4,258	2,709	291	2,706	1,029	178	11,171

Tailoring and ready-made clothing, and dressmaking together represented 79·8 per cent. of the factories, 68·1 per cent. of employment, and 62·4 per cent. of the horse-power in use; shirts and underclothing contributed 10·4 per cent., 20·3 per cent., and 24·2 per cent. respectively.

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

VICTORIA—BOOTS AND SHOES (NOT RUBBER)

Particulars	1958-59	1959-60	1960-61	1961-62	1962-63
Number of Factories	215	196	205	201	198
Number of Persons Employed ..	11,231	11,040	11,569	11,510	11,907
Salaries and Wages Paid £'000	8,328	8,911	9,501	9,694	10,315
Value of Power, Fuel, &c., Used					
£'000	156	167	183	190	192
Value of Materials Used £'000	14,786	16,385	17,996	18,309	18,656
Value of Production	12,731	13,691	15,430	15,944	16,415
Value of Output	£'000 27,673	30,243	33,609	34,443	35,263
Value of Land and Buildings £'000	2,915	3,035	3,437	3,840	4,094
Value of Plant and Machinery £'000	2,684	2,914	3,581	3,579	3,723
Horse-power of Engines Ordinarily in Use .. H.P.	7,433	7,883	7,338	7,624	7,811

A feature of this industry is the large proportion of females employed. Numbering 6,538, they represented 54·9 per cent. of the total employed in 1962-63.

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

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

VICTORIA—CLASS IX. : FOOD, DRINK, AND TOBACCO :
INDIVIDUAL INDUSTRIES, 1962-63

Particulars	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	
	No.					£'000				
Flour Milling	28	1,224	1,382	242	18,707	3,768	22,717	2,432	1,678	14,879
Cereal Foods and Starch	23	1,346	1,361	261	6,432	3,441	10,134	1,775	2,189	11,351
Bakeries	1,096	6,271	4,973	790	14,306	10,747	25,843	9,626	5,606	10,727
Biscuits	23	2,110	2,011	179	4,262	3,256	7,697	1,623	1,215	4,437
Confectionery	69	3,203	2,855	301	8,524	4,983	13,808	3,528	3,745	18,392
Jam, Fruit, and Vegetable Canning	37	4,632	5,255	517	21,983	13,411	35,911	8,922	7,315	21,255
Butter Factories	92	3,086	3,615	941	35,482	8,635	45,058	4,332	6,232	29,448
Cheese Factories	18	934	1,176	158	10,587	2,863	13,608	2,424	2,042	5,542
Condensed and Dried Milk Factories	16	1,672	1,862	527	13,308	3,686	17,521	1,640	1,849	11,448
Condiments, Coffee, Spices	61	1,315	1,290	125	5,291	3,171	8,587	2,993	1,183	5,416
Ice and Refrigeration Aerated Waters, Cordials, &c.	109	1,315	1,520	529	374	3,125	4,028	4,335	2,372	28,472
Tobacco, .. Cigars Cigarettes, Snuff	94	1,124	1,064	99	3,219	3,475	6,793	2,191	1,702	3,116
Other Sub-classes	7	2,178	2,310	135	21,157	10,829	32,121	2,729	3,592	6,343
	316	9,015	9,775	1,652	52,866	24,124	78,642	16,796	17,020	56,806
Total, Class IX.	1,989	39,425	40,449	6,456	216,498	99,514	322,468	65,346	57,740	227,632

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

VICTORIA—BAKERIES (INCLUDING CAKES AND PASTRY)

Particulars	1958-59	1959-60	1960-61	1961-62	1962-63
Number of Factories	1,253	1,146	1,118	1,117	1,096
Number of Persons Employed ..	6,043	6,006	5,989	6,080	6,271
Salaries and Wages Paid £'000	3,820	4,238	4,483	4,739	4,973
Value of Power, Fuel, &c., Used £'000	745	779	785	766	790
Value of Materials Used £'000	12,081	12,919	13,436	14,105	14,306
Value of Production .. £'000	9,032	10,110	9,698	10,303	10,747
Value of Output .. £'000	21,858	23,808	23,919	25,174	25,843
Value of Land and Buildings £'000	7,041	7,706	8,323	9,053	9,626
Value of Plant and Machinery £'000	3,753	4,189	4,841	5,049	5,606
Horse-power of Engines Ordinarily in Use .. H.P.	8,030	8,677	11,928	9,969	10,727

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	1958-59	1959-60	1960-61	1961-62	1962-63
Number of Factories	60	56	55	55	54
Number of Persons Employed ..	4,425	4,748	4,755	5,314	5,142
Salaries and Wages Paid £'000	4,002	4,609	4,657	5,490	5,726
Value of Power, Fuel, &c., Used £'000	468	485	502	569	571
Value of Materials Used £'000	19,829	21,270	21,177	24,507	23,600
Value of Production .. £'000	8,440	10,069	10,269	13,767	14,334
Value of Output .. £'000	28,737	31,824	31,948	38,843	38,505
Value of Land and Buildings £'000	6,858	7,249	8,005	9,140	9,540
Value of Plant and Machinery £'000	5,451	6,025	6,299	7,003	7,628
Horse-power of Engines Ordinarily in Use .. H.P.	*	20,513	21,466	22,197	23,454

* 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 number of persons employed and the quantity of goods produced.

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

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

Particulars	1958-59	1959-60	1960-61	1961-62	1962-63
Number of Factories	127	131	130	127	126
Number of Persons Employed ..	5,452	5,677	5,581	5,681	5,692
Salaries and Wages Paid £'000	5,465	5,906	6,106	6,513	6,653
Value of Power, Fuel, &c., Used £'000	1,528	1,604	1,540	1,567	1,626
Value of Materials Used £'000	51,382	55,757	56,175	57,349	59,377
Value of Production .. £'000	11,799	13,681	13,277	14,134	15,184
Value of Output .. £'000	64,709	71,042	70,992	73,050	76,187
Value of Land and Buildings £'000	6,763	7,185	7,659	8,183	8,396
Value of Plant and Machinery £'000	7,995	8,351	9,004	9,781	10,123
Horse-power of Engines Ordinarily in Use .. H.P.	39,310	43,287	44,895	45,501	46,438

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 536 to 539.

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	1958-59	1959-60	1960-61	1961-62	1962-63
Number of Factories	1,816	1,843	1,814	1,758	1,760
Number of Persons Employed ..	18,991	19,558	19,218	17,979	18,311
Salaries and Wages Paid £'000	16,158	17,904	18,434	17,722	18,549
Value of Power, Fuel, &c., Used £'000	794	900	839	788	819
Value of Materials Used £'000	31,715	36,693	36,459	35,055	35,946
Value of Production .. £'000	28,170	30,644	30,606	28,922	30,680
Value of Output .. £'000	60,679	68,237	67,904	64,765	67,445
Value of Land and Buildings £'000	11,009	13,377	15,039	15,297	16,169
Value of Plant and Machinery £'000	5,892	6,121	6,566	6,456	6,598
Horse-power of Engines Ordinarily in Use .. H.P.	133,058	138,532	138,805	132,480	133,963

The following table shows the particulars of the individual industries combined in the preceding table for 1962-63 :—

VICTORIA—SAWMILLS, WOODWORKING, FURNITURE, ETC.:
INDIVIDUAL INDUSTRIES, 1962-63

Particulars	Sawmills	Joinery	Boxes and Cases	Wood Turning and Wood Carving	Furniture Making, &c.	Total
Number of Factories	457	665	62	92	484	1,760
Number of Persons Employed	6,113	6,215	632	751	4,600	18,311
Salaries and Wages Paid .. £'000	6,374	6,520	591	678	4,386	18,549
Value of Power, Fuel, &c., Used .. £'000	503	166	19	28	103	819
Value of Materials Used £'000	15,247	10,958	1,065	1,077	7,599	35,946
Value of Production £'000	11,142	10,133	898	1,209	7,298	30,680
Value of Output £'000	26,892	21,257	1,982	2,314	15,000	67,445
Value of Land and Buildings £'000	4,755	5,583	517	748	4,566	16,169
Value of Plant and Machinery £'000	3,438	1,821	155	245	939	6,598
Horse-power of Engines Ordinarily in Use H.P.	82,910	28,768	5,452	4,962	11,871	133,963

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	1958-59	1959-60	1960-61	1961-62	1962-63
Number of Factories	128	133	128	128	123
Number of Persons Employed ..	3,317	3,633	3,765	3,765	3,717
Salaries and Wages Paid .. £'000	3,471	4,063	4,652	4,563	4,766
Value of Power, Fuel, &c., Used £'000	135	144	159	161	171
Value of Materials Used £'000	8,660	9,549	9,672	9,144	9,270
Value of Production £'000	6,173	6,922	7,656	8,136	8,029
Value of Output £'000	14,968	16,615	17,487	17,441	17,470
Value of Land and Buildings £'000	2,350	2,955	3,124	3,272	3,417
Value of Plant and Machinery £'000	2,212	2,750	3,122	3,645	4,124
Horse-power of Engines Ordinarily in Use H.P.	10,020	11,171	12,018	12,152	12,331

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	1958-59	1959-60	1960-61	1961-62	1962-63
Number of Factories	539	563	581	600	618
Number of Persons Employed ..	8,515	8,619	9,034	9,452	9,719
Salaries and Wages Paid £'000	7,718	8,520	9,378	9,932	10,651
Value of Power, Fuel, &c., Used £'000	247	268	300	310	357
Value of Materials Used £'000	11,180	11,590	12,483	11,930	13,701
Value of Production .. £'000	14,217	15,445	16,754	18,217	19,431
Value of Output .. £'000	25,644	27,303	29,537	30,457	33,489
Value of Land and Buildings £'000	6,433	7,789	8,937	10,024	10,320
Value of Plant and Machinery £'000	6,155	6,653	7,384	7,734	8,287
Horse-power of Engines Ordinarily in Use .. H.P.	13,357	14,825	15,289	15,810	16,551

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	1958-59	1959-60	1960-61	1961-62	1962-63
Number of Factories	51	57	62	60	60
Number of Persons Employed ..	2,297	2,820	3,029	3,056	3,363
Salaries and Wages Paid £'000	2,024	2,616	2,876	3,118	3,453
Value of Power, Fuel, &c., Used £'000	93	115	117	136	147
Value of Materials Used £'000	7,214	9,080	9,814	10,660	12,162
Value of Production .. £'000	4,660	6,131	6,502	6,874	7,420
Value of Output .. £'000	11,967	15,326	16,433	17,670	19,729
Value of Land and Buildings £'000	2,414	2,875	3,830	3,811	4,307
Value of Plant and Machinery £'000	1,744	2,250	2,844	2,924	3,567
Horse-power of Engines Ordinarily in Use .. H.P.	4,643	6,140	6,329	6,602	6,980

The following table gives particulars of rubber goods manufacture:—

VICTORIA—RUBBER GOODS (INCLUDING TYRES MADE)

Particulars	1958-59	1959-60	1960-61	1961-62	1962-63
Number of Factories	56	52	49	48	51
Number of Persons Employed ..	6,529	6,566	6,632	6,193	6,958
Salaries and Wages Paid £'000	6,669	7,433	7,318	6,879	8,237
Value of Power, Fuel, &c., Used £'000	1,056	1,153	1,152	1,106	1,277
Value of Materials Used £'000	16,418	20,557	19,877	17,088	19,372
Value of Production .. £'000	14,066	12,974	13,666	13,639	18,336
Value of Output .. £'000	31,540	34,684	34,695	31,833	38,985
Value of Land and Buildings £'000	3,759	3,834	5,057	5,165	5,452
Value of Plant and Machinery £'000	3,855	5,966	6,676	6,939	7,255
Horse-power of Engines Ordinarily in Use .. H.P.	60,379	61,154	61,676	63,656	67,468

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	1958-59	1959-60	1960-61	1961-62	1962-63
Number of Factories	152	154	157	165	168
Number of Persons Employed ..	5,267	5,567	5,754	5,415	6,018
Salaries and Wages Paid £'000	4,934	5,726	5,890	5,511	6,521
Value of Power, Fuel, &c., Used £'000	440	492	482	487	572
Value of Materials Used £'000	13,797	16,310	14,386	13,778	16,280
Value of Production .. £'000	10,653	10,922	11,298	10,901	13,274
Value of Output .. £'000	24,890	27,724	26,166	25,166	30,126
Value of Land and Buildings £'000	3,261	4,388	4,905	5,469	5,970
Value of Plant and Machinery £'000	3,740	4,449	5,397	5,645	6,891
Horse-power of Engines Ordinarily in Use .. H.P.	20,781	22,412	24,070	25,277	31,918

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

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

VICTORIA—ELECTRIC LIGHT AND POWER

Particulars	1958-59	1959-60	1960-61	1961-62	1962-63
Number of Factories	44	44	41	41	35
Number of Persons Employed ..	3,398	3,470	3,476	3,541	3,379
Salaries and Wages Paid £'000	3,851	4,218	4,261	4,791	4,741
Value of Power, Fuel, &c., Used £'000	9,971	10,472	12,412	11,903	10,664
Value of Materials Used £'000	600	700	817	767	742
Value of Production .. £'000	18,529	17,977	16,784	16,508	18,083
Value of Output .. £'000	29,100	29,149	30,013	29,178	29,489
Value of Land and Buildings £'000	22,949	21,184	23,336	23,813	22,841
Value of Plant and Machinery £'000	70,244	74,548	83,969	92,713	92,399
Total Installed Horse-power of Engines Used to Drive Generators* H.P.	1,786,817	1,832,183	2,090,023	2,242,796	2,221,290

* Excludes engines using electricity generated in own works.

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

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

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

State Electricity Commission of Victoria

Powers

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

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

General

The supply network of the State Electricity Commission of Victoria covers most of the State and serves nearly 98 per cent. of the population. The entire area covered by the Commission's network is served by one

interconnected system, except for a few small centres in the far north-east of the State which are supplied in bulk from New South Wales.

The Commission's supply area is being progressively extended. At 30th June, 1963, about 827,000 of the 862,000 homes in the State had public electricity supply and 54,200 of a total of 71,500 farms.

By the end of the present decade (1970-71) the Commission expects that, allowing for extensions then in progress, only about 6,000 homes and fewer than 1,250 farms will be out of reach of public supply in remote and isolated parts of the State, but efforts will continue to connect as many of these as possible.

More than a million consumers are now served by Victoria's State-wide system, and, on average, about 35,000 are added to the total every year. The Commission directly supplies consumers in all areas except about 200,000 living in eleven Melbourne municipalities which have franchises for retail distribution. These are supplied in bulk from the Commission's system.

About 2,500 miles of new power lines are being added to the network on average every year. At 30th June, 1963, there were 39,600 route miles of high and low voltage lines, 18 transmission stations (transforming bulk transmission to lower voltages), and nearly 33,700 transformer sub-stations of various capacities.

Distribution

Bulk power transmission is chiefly via a 1,000 mile system of steel tower lines operated at 220,000 volts and a frequency of 50 cycles per second. A transmission ring at this voltage runs from Melbourne to Eildon, Kiewa, Dederang, Shepparton, Bendigo, Ballarat, Geelong, and back to Melbourne. (See map on page 626.)

Linked with the ring are 220,000 volt lines from the base load power stations in the Latrobe Valley and (via the transmission station at Dederang) a 330,000 volt line connecting Victoria with the Snowy Mountains Scheme and the New South Wales transmission system. There are also older 132,000 volt lines from Yallourn Power Station to Melbourne.

From the transmission ring there are two 220,000 volt extensions, one from Geelong to Terang and the other from Bendigo to Red Cliffs (near Mildura) for bulk transmission to the south-western and north-western regions, respectively.

Bulk transmission voltage is stepped down in the transmission stations to 66,000 volts or 22,000 volts for delivery to the main sub-stations for distribution. At 30th June, 1963, there were 85 main sub-stations throughout the State, of which 66 were within the main load centre of the Melbourne Metropolitan Area.

In the Metropolitan Area distribution starts from main sub-stations with capacities ranging from 20,000 kVA to 70,000 kVA. Each outgoing feeder (operating at 6,600 volts, 11,000 volts, or in some cases 22,000 volts) supplies distribution sub-stations which in turn step down the pressure to 415/240 volts (three phase) for reticulation by local low voltage mains to individual consumers.

Outside Melbourne, supply to main sub-stations (ranging in capacity from 500 kVA to 54,000 kVA) is received at 66,000 volts and

transformed to 22,000 volts, for supply direct to the distribution substations serving the low voltage reticulation lines to consumers.

In lightly settled areas the Commission uses a single wire earth return (SWER) system requiring only one overhead conductor, which operates at 12,700 volts. Loading on each SWER system is limited to 100 kVA to prevent telephone interference. The system, nevertheless, has proved both practicable and economic in many farming areas. In rural areas, for reasons of economy, considerable use is made also of single phase supply with reticulation pressures of 480/240 volts.

Control

The operation of this State-wide interconnected system is directed from one central System Control Centre in Melbourne. Manned continuously, it is equipped with mosaic type diagram panels showing the system layout. Supervisory equipment indicates automatically whether main circuit breakers are open or closed, and a load flow diagram indicates the power and reactive loading on main generating stations and transmission lines. Equipment also includes a recording instrument section and a modern loading console.

The Centre directs normal and emergency switching. It controls the economic allocation of loads to generating stations and the bringing on or off line of both hydro and thermal units. These operations are based on data compiled for both long and short terms, but are subject to variation to allow for changes in predicted weather conditions, plant performance, or availability.

With a diversity of plant in the interconnected generating system, efficient operation requires that the more economical units operate on the load curve as many hours as possible, with the less efficient plants operating generally for comparatively short intervals to assist in meeting high peak loads.

Hence the loading schedules take into account plant and boiler efficiencies, fuel costs, and water availability at the Victorian hydro stations. Output of the interstate hydro stations in the Snowy Scheme and at Hume Reservoir is also taken into account.

Liaison with Other Authorities

Operation of the system requires frequent consultation with the Electricity Commission of New South Wales, both in regard to the sharing of Snowy output and the interchange of power on the two State systems. Close collaboration is also maintained with the Melbourne City Council, which owns and operates Spencer Street Power Station as a unit in the interconnected generating system and is at the same time a large bulk buyer of electricity from the Commission.

Vital to operational control is a communications network comprising normal Post Office channels, private wire and radio, and also carrier-wave channels on some of the high voltage transmission lines.

Uniform Tariffs

Throughout all areas of Victoria served by the State Electricity Commission's system a single standard tariff schedule is now operative for all classes of consumers—domestic, industrial, and commercial.

Uniform tariffs for metropolitan and country domestic and commercial consumers were announced in the latter part of 1964. General industrial tariffs have been uniform throughout the Commission's supply area since 1946, and there has been a uniform tariff for farm industrial use since 1948.

The introduction of a single standard schedule of tariffs throughout the whole of its State-wide supply system was an objective towards which the Commission had been moving by successive stages for twenty years. Tasmania is the only other State in the Australian Commonwealth which enjoys the benefits of uniform retail electricity tariffs.

Rural electricity supply is subsidized from revenues earned in the Metropolitan Area. As a corollary, therefore, to tariff uniformity, the Commission envisages progressive acquisition of metropolitan municipal supply undertakings served in bulk by the State system.

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, 1962-63

Source	Source T = Thermal* H = Hydro	Production Million kWh.
State Electricity Commission--		
Own Generation--		
Yallourn Power Station and Briquette Factory	T	4,141
Morwell Power and Briquette Undertaking ..	T	1,011
Newport Power Station	T	902
Spencer-street Power Station (M.C.C.†) ..	T	181
Richmond Power Station	T	23
Provincial Thermal Power Stations ..	T	77
Total S.E.C. Thermal Generation ..	T	6,335
Eildon—Rubicon	H	222
Kiewa	H	323
Cairn Curran	H	2
Total S.E.C. Hydro Generation ..	H	547
Net Purchases	T and H	798
Total	T and H	7,680
Other Public Supply	T	41
Total Public Supply	T and H	7,721
Electricity Generated in Factories	T	264
Cumulative Total	T and H	7,985

* Includes Internal Combustion.

† Melbourne City Council.

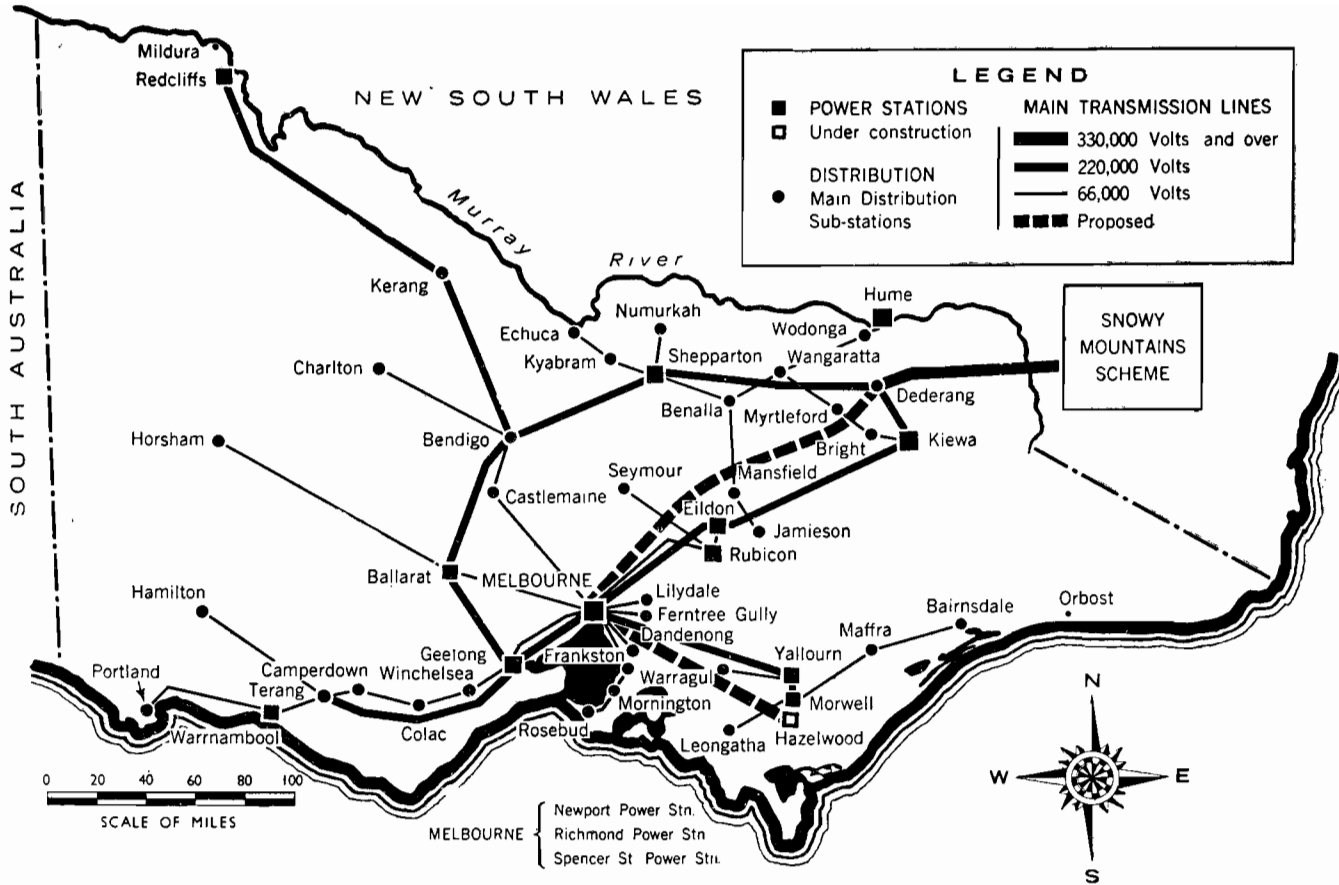
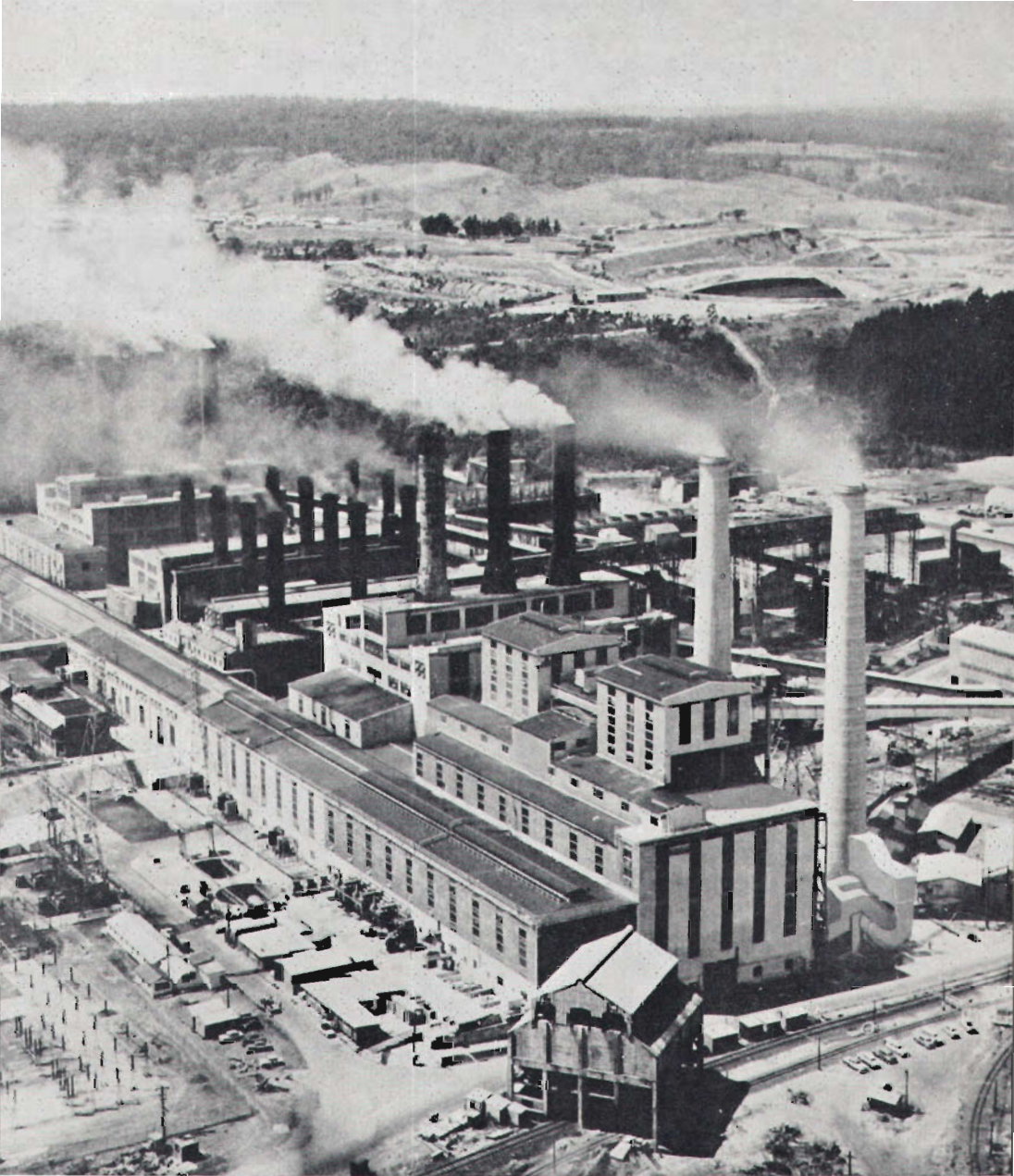


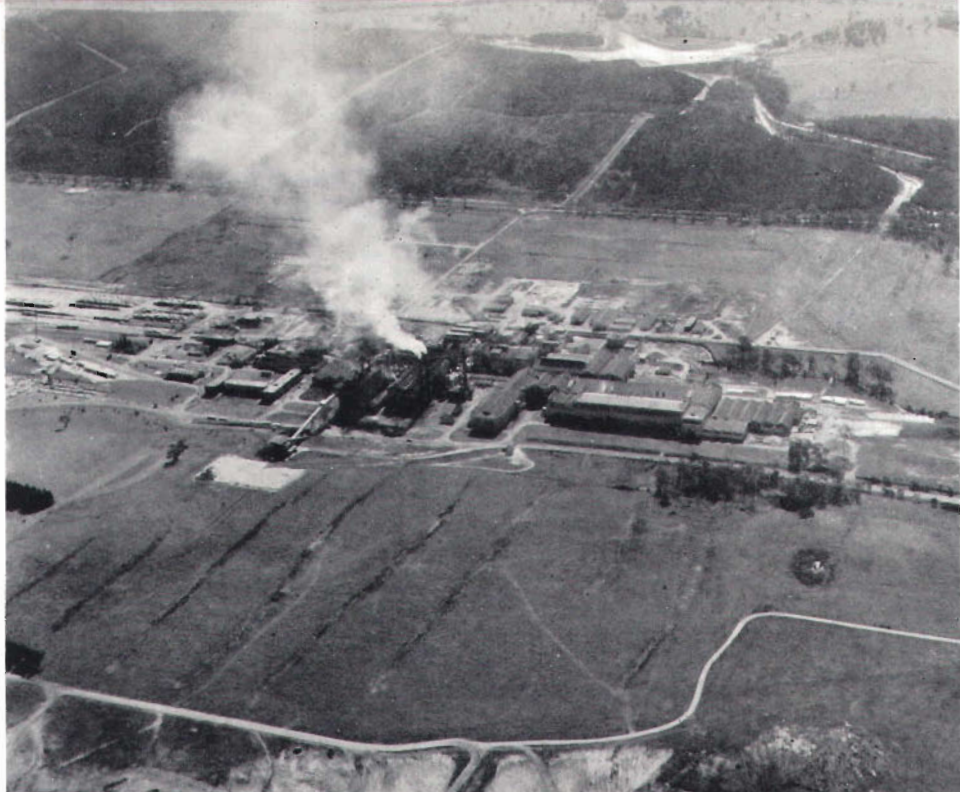
FIGURE 17.—High Voltage Transmission of Electricity in Victoria.



[State Electricity Commission of Victoria

The Yallourn Power Station provides more than half of Victoria's electricity and is the largest power station in Australia.

Victoria's Latrobe Valley



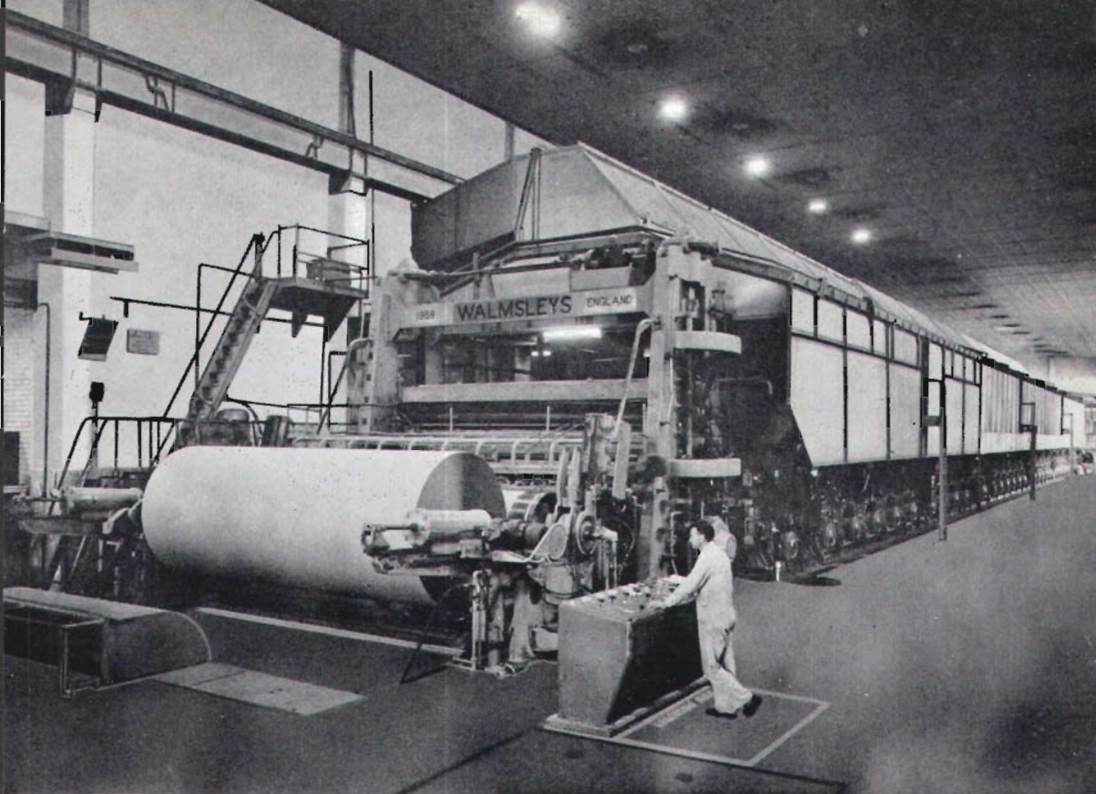
[Australian Paper Manufacturers

This aerial view shows a paper mill at Morwell, which employs over 1,000 people, and is the largest pulp producing mill in Australia.

A section of 35,000 acres planted to pine in Gippsland. The pines provide the basic raw material in the production of paper pulp used at the Morwell paper mill.

[Australian Paper Manufacturers



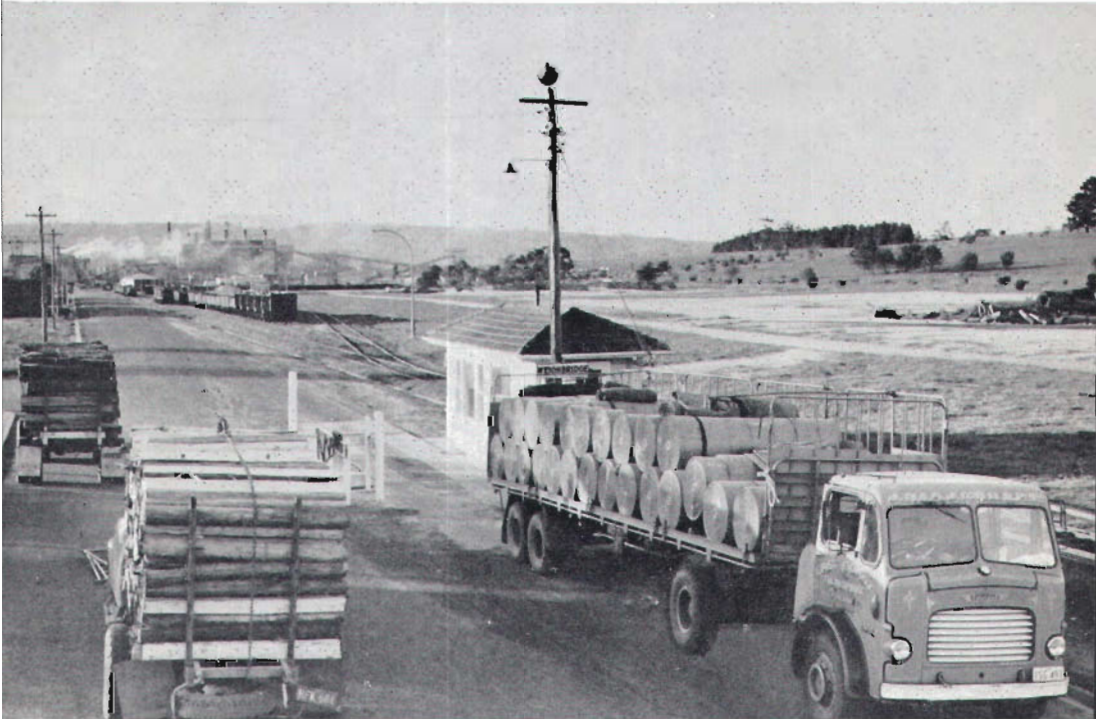


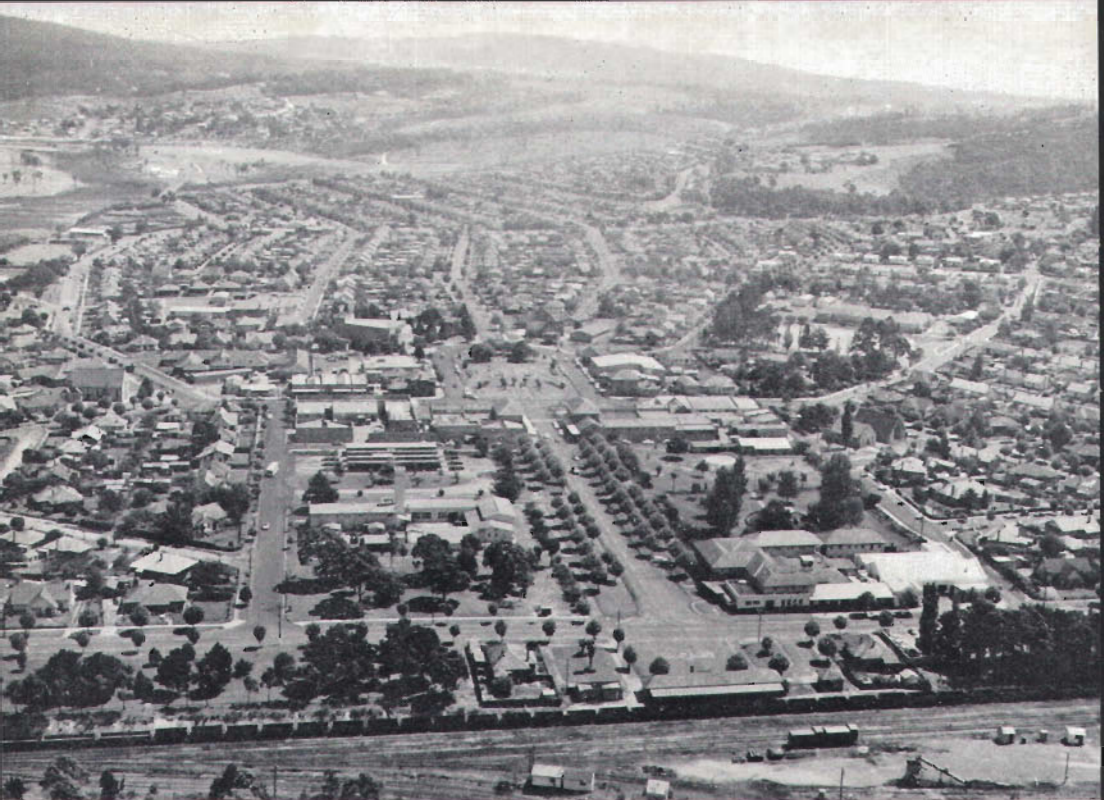
[Australian Paper Manufacturers]

Finished paper, used mainly for wrapping, is produced by this machine, which is capable of producing a roll of paper 15 feet wide at speeds up to 1,250 feet per minute.

The two ends of paper production : on the left of the photograph, trucks are seen delivering the basic raw material of pine logs to the paper mill ; on the right, a shipment of paper leaves the mill.

[Australian Paper Manufacturers]





[State Electricity Commission of Victoria]

Located within easy access of the Yallourn open cut, the power station, and the briquette works, the town of Yallourn provides good housing and modern amenities for its population of approximately 5,000.

Among the amenities provided at Yallourn is this modern public library.

[State Electricity Commission of Victoria]





{State Electricity Commission of Victoria

The present annual output of the Yallourn open cut is about 13 mill. tons, which is one of the largest outputs of any brown coal open cut in the world.

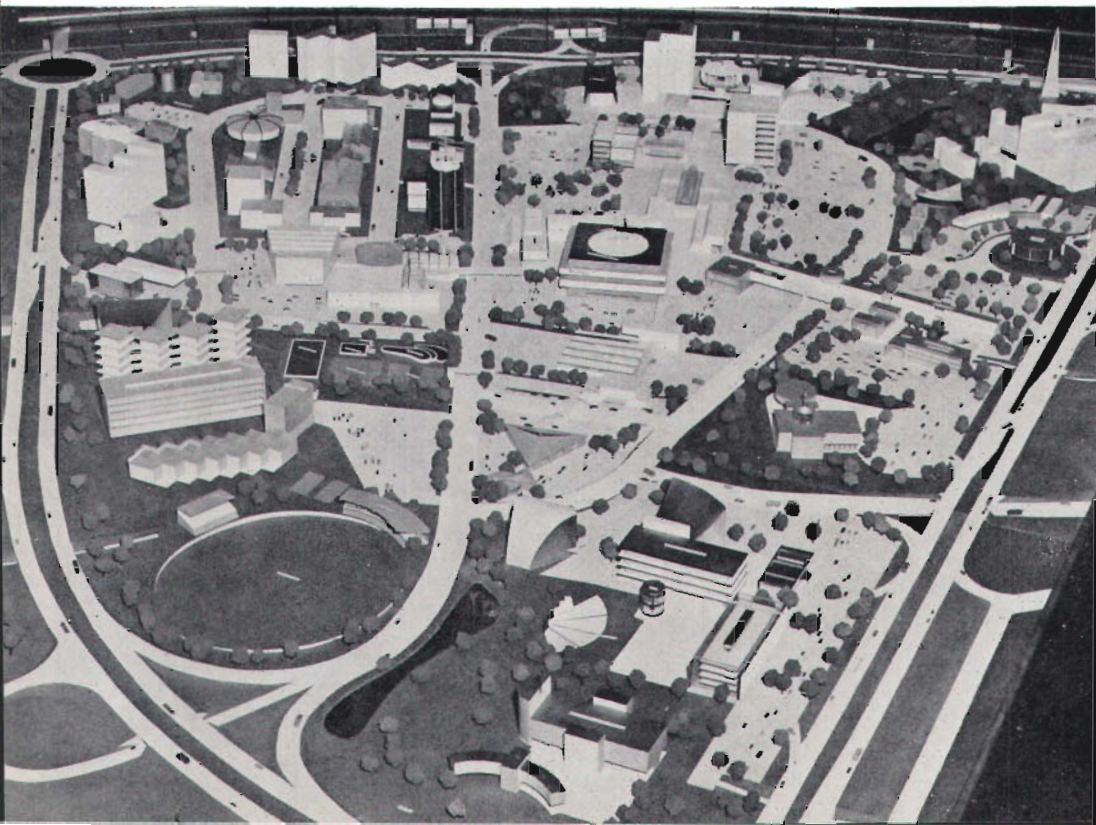


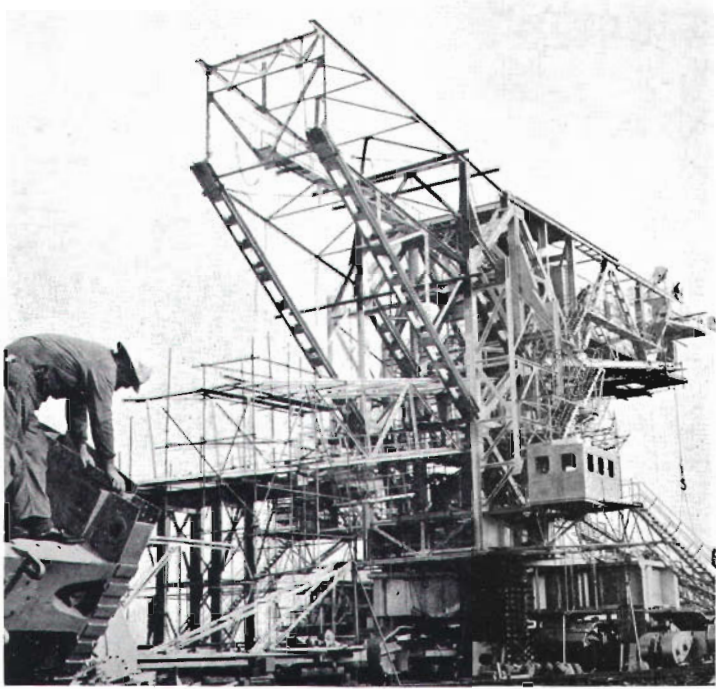
The commercial centre of the new town of Hazelwood will occupy this site. The Hazelwood Power Station can be seen in the left background, and the town of Morwell in the distance on the right of the photograph.

[Housing Commission of Victoria]

A model of the centre of the proposed new town of Hazelwood.

[Housing Commission of Victoria]



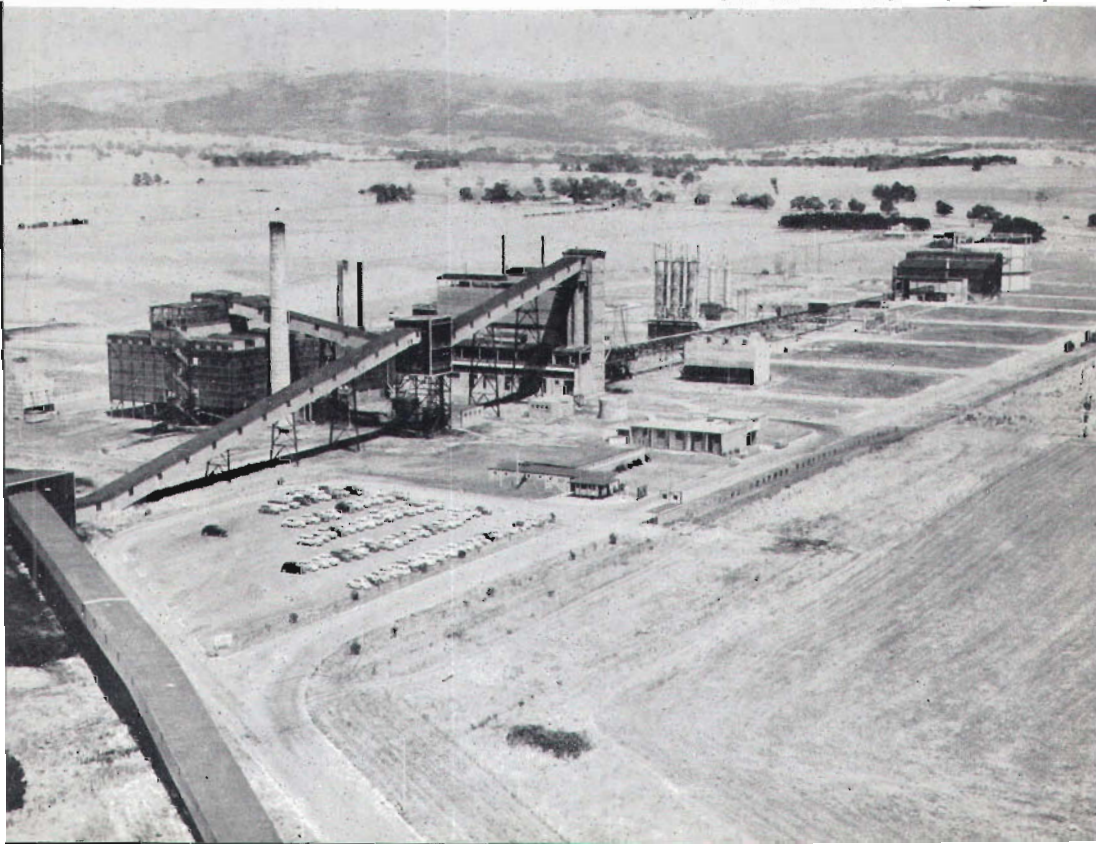


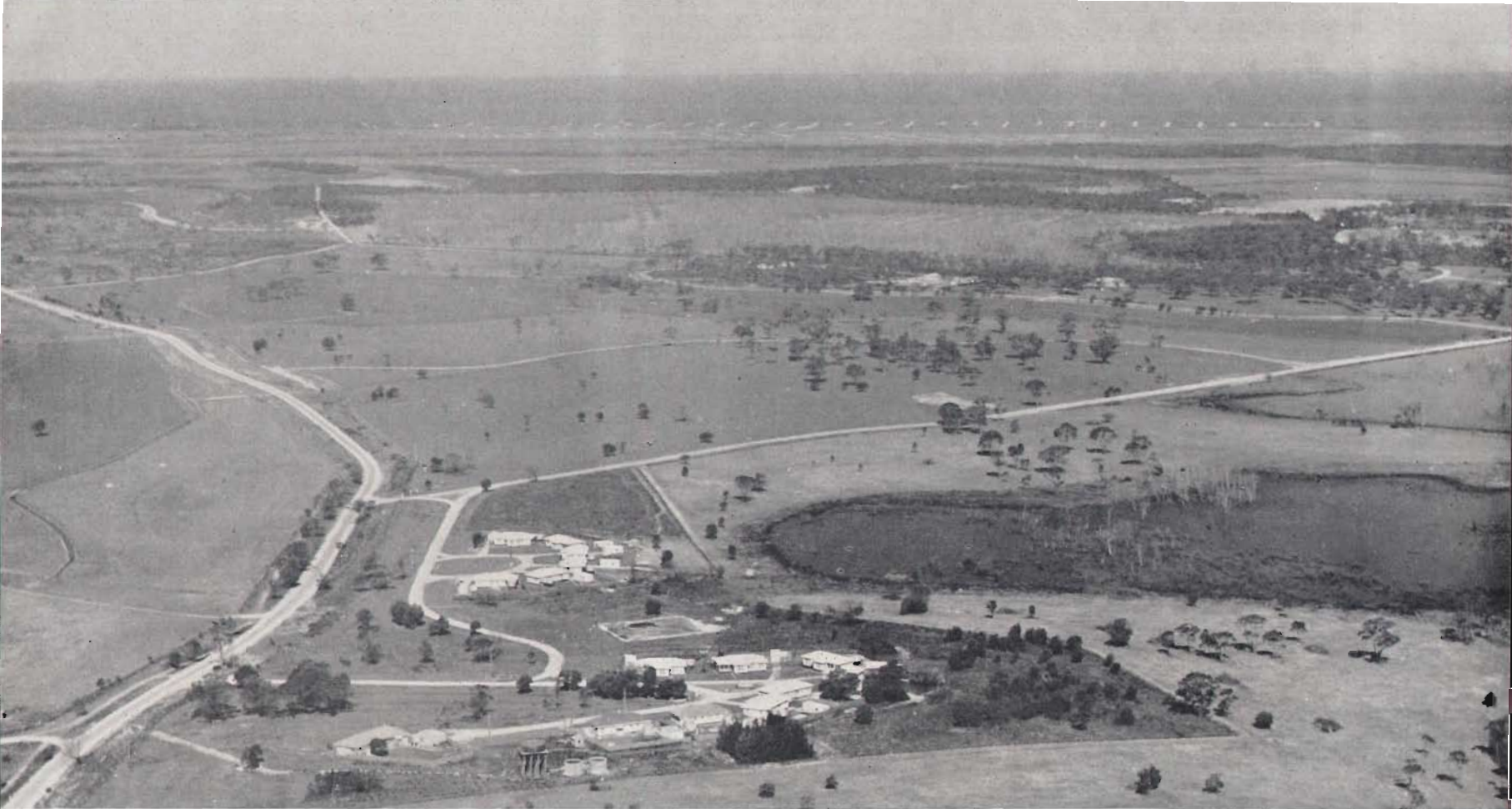
[State Electricity Commission of Victoria]

This is the State Electricity Commission's latest coal dredger under construction. When completed, the dredger will be capable of winning 1,500 tons of brown coal per hour. The coal will be used at the new Hazelwood Power Station.

The Gas and Fuel Corporation's brown coal gasification plant at Morwell supplies one-third of Melbourne's gas requirements. The conveyor belt shown in the left foreground carries briquettes three-quarters of a mile from the State Electricity Commission's factory.

[Gas and Fuel Corporation of Victoria]





[Latrobe Valley Water and Sewerage Board

An aerial view of the Dutson Downs property looking south towards the Ninety Mile Beach. Here large volumes of trade and domestic wastes from the Latrobe Valley are treated and used to improve the fertility of marginal land. The problem of disposal is thus profitably solved.

FURTHER REFERENCES

Year Book 1961 (580-583), 1962 (606-611), 1963 (636-640).

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

VICTORIA—GAS WORKS

Particulars	1958-59	1959-60	1960-61	1961-62	1962-63
Number of Factories	27	27	25	26	27
Number of Persons Employed ..	1,584	1,513	1,470	1,459	1,414
Salaries and Wages Paid £'000	1,796	1,789	1,896	1,915	1,947
Value of Power, Fuel, &c., Used £'000	397	503	524	561	591
Value of Materials Used £'000	5,800	5,471	5,323	4,875	4,351
Value of Production .. £'000	3,319	3,807	4,163	4,749	6,701
Value of Output .. £'000	9,516	9,781	10,010	10,185	11,643
Value of Land and Buildings £'000	3,284	3,031	3,969	4,192	4,214
Value of Plant and Machinery £'000	13,332	13,701	13,630	14,175	13,668
Horse-power of Engines Or- dinarily in Use .. H.P.	17,048	16,797	17,856	21,826	26,955

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

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

*Gas and Fuel Corporation of Victoria**Formation*

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

The State Government of Victoria invested £4 mill. which were held as ordinary shares in the Corporation. Three directors were appointed by the preference shareholders and the Chairman and three

other directors were appointed by the Government. Capital requirements for expansion were to be raised by means of loans on which the Government guaranteed the interest payments and loan redemptions.

Reasons for Formation

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

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

Changing Trends in Industrial Uses of Gas

Introduction

The volume of gas used by Victorian industries more than doubled between 1957 and 1962. Its average annual rate of increase now exceeds that of industrial output generally.

Although gas, as yet, supplies only a small percentage of the total therms used annually in industry, as a refined fuel it has peculiar advantages for the more sophisticated industrial processes. Emphasis in cost of fuel per unit of production rather than on direct comparison of costs per therm frequently favours the use of the more refined fuel at a higher price owing to the ability to use automatic temperature control, higher quality of production, elimination of rejects, and savings of labour and space.

Many of the new industries recently established in Victoria provide examples of the varied processes in which gas plays an essential part.

Pre-stressing Nylon Cord for Tyres

To obtain the maximum life and strength from nylon cord used in the manufacture of rubber tyres, it is necessary for the nylon to be subjected to a precise heat treatment known as pre-stressing. Gas is the fuel used for this process in a new plant in Melbourne.

Edible Casein in Gippsland

The Victorian Dairy Industry is becoming increasingly dependent on new products such as edible casein and sodium caseinate, for which there is a growing local and export market. A milk products company now well established in Gippsland has recently installed additional gas-fired plant to expand its output of these products.

Television Tubes and Fluorescent Lighting

Speed and precise control are essential requirements for the fuel used on automatic machines producing electric lamps, television tubes, and fluorescent tubes. Gas as a refined fuel meets these demands in large Melbourne factories.

Abrasive Wheels

High-grade abrasive wheels which, in the past, were largely imported, play an important part in finishing operations in many industries. The manufacture of the necessary wide variety of wheels calls for special skill and supervision. The precise heat control needed for the bonding process is effected in Melbourne in large top-hat gas furnaces.

Paper and Cardboard

The Utilization Laboratory of the Gas and Fuel Corporation recently developed a highly efficient type of burner to provide auxiliary drying in the manufacture of paper and cardboard in a large Melbourne mill.

The installation of these burners has resulted in a substantial increase in production rate combined with marked economy in production cost.

Other Examples

Many other processes in new Victorian factories might be mentioned in which gas has been chosen to boost productivity. Gas is now used in the manufacture of bricks and other clay products at Ballarat, in a pottery at Croydon, for heating private swimming pools, and for summer air conditioning.

Clean Air and Smoke Abatement

Legislation has been enacted in Victoria to ensure that industrial growth does not lead to atmospheric pollution. Incinerators and municipal destructors if not properly designed can cause heavy smoke emission. However, this can be prevented by the provision of gas after-burners whereby carbon particles in the smoke are consumed before entering the atmosphere.

Town and Country Industries

To foster the establishment of country industries, the Gas and Fuel Corporation has extended the scope of its metropolitan, industrial, and commercial gas tariffs to make them applicable to all south-eastern areas of the State served by the Corporation.

Off-peak Tariffs

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

Government Factories

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

VICTORIA—GOVERNMENT FACTORIES AND WORKSHOPS

Particulars	1958-59	1959-60	1960-61	1961-62*	1962-63
Number of Factories	147	157	168	285	306
Number of Persons Employed ..	28,988	29,326	30,542	32,290	32,178
Salaries and Wages Paid £'000	28,039	31,172	33,910	36,913	37,221
Value of Power, Fuel, &c., Used £'000	11,704	12,577	14,543	14,194	13,044
Value of Materials Used £'000	27,517	30,468	32,416	32,680	33,502
Value of Production .. £'000	51,466	51,528	54,517	57,377	62,242
Value of Output .. £'000	90,687	94,573	101,476	104,251	108,788
Value of Land and Buildings £'000	45,983	49,693	57,719	61,429	61,163
Value of Plant and Machinery £'000	107,209	121,011	133,110	143,762	141,752

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

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

In relation to the whole of Victorian factories during 1962-63, Government factories absorbed 8·1 per cent. of employment; expended 8·9 per cent. of salaries and wages ; and accumulated 7·8 per cent. of the value of production.