

MANUFACTURING

INTRODUCTION

The course of industrial development in Victoria since 1934 falls into four fairly well defined periods: the recovery from the Depression of the early 1930s; the war years; post-war expansion and diversification; and the more turbulent 1970s and early 1980s.

A useful concept that puts the details into a wider context is that of "core" and "periphery". In the world industrial system, Victoria (like the rest of Australia) must be regarded as part of the periphery in that its economic development during this half century was significantly affected by such external events as wars, booms, and recessions, as well as rising energy prices over which it has had little influence or control. Within Australia, however, Victoria and New South Wales clearly form the industrial core of the nation, whether measured by the numbers of persons employed in factories and the contribution made to gross domestic product or by the location of head offices (the focus of control and decision-making) of industrial firms operating in Australia. Finally, within Victoria the Melbourne metropolitan area has long been the economic and commercial core of the State.

The worldwide downturn in economic activity in the late 1920s was quickly felt in Victoria where factory employment fell from a record 162,000 in 1927 to 126,000 (37 per cent of the Australian total) in 1931. Most types of industrial activity were affected so that the structure of the State's manufacturing remained more or less the same. This was still the case in 1934-35 when the number of persons employed in factories, 170,000, passed the 1927 peak. In 1935, as the Employment by Industry Groups table shows, four industrial groups (clothing; industrial metals, machines, and conveyances; food, drink, and tobacco; and textiles and textile goods) provided work for over 71 per cent of the factory employees in Victoria (as against 72 per cent in 1931). Significantly, however, the proportion of females in the factory labour force rose from 32.6 per cent in 1927 to 34.2 per cent in 1935. To some extent at least manufacturers appear to have turned to relatively cheaper female labour and mechanisation as ways of reducing direct production costs.

DISTRIBUTION OF EMPLOYMENT BY INDUSTRY GROUPS: VICTORIA, 1934-35 TO 1945-46 (per cent)

Class of industry	1934-35	1938-39	1942-43	1945-46
Treatment of non-metalliferous mine and quarry products	1.2	1.6	0.8	1.0
Bricks, pottery, glass, etc.	2.0	2.3	1.0	1.4
Chemicals, dyes, explosives, paints, oils, grease	3.7	4.2	9.8	4.7
Industrial metals, machines, conveyances	22.1	25.7	37.8	34.5
Precious metals, jewellery, plate	1.0	1.2	0.5	0.6
Textiles and textile goods (not dress)	13.0	13.3	11.1	11.7
Skins and leather (not clothing or footwear)	2.6	2.3	1.7	1.9
Clothing (except knitted)	22.5	19.3	12.8	15.1
Food, drink, and tobacco	13.7	13.4	11.6	13.2
Sawmilling, joinery, boxes, etc., wood turning and carving	4.1	3.7	3.2	4.0

DISTRIBUTION OF EMPLOYMENT BY INDUSTRY GROUPS:
VICTORIA, 1934-35 TO 1945-46—*continued*
(per cent)

Class of industry	1934-35	1938-39	1942-43	1945-46
Furniture of wood, bedding, etc.	2.3	2.4	1.1	1.5
Paper, stationery, printing, bookbinding, etc.	7.3	6.9	4.6	5.4
Rubber	2.2	1.5	1.1	1.4
Musical instruments	0.1	—	—	—
Miscellaneous products	1.2	1.3	1.9	2.6
Heat, light, and power	1.2	1.1	0.9	1.2
Total employment (a)	100.0 (169,691)	100.0 (201,831)	100.0 (262,357)	100.0 (256,249)

(a) The figures in brackets indicate the number of persons employed.

Geographically, manufacturing activity remained very concentrated. In 1934-35, 83.7 per cent of the State's factory labour force—80.3 per cent of the male and 90 per cent of the female employees—had their jobs in the Melbourne metropolitan area (which comprised the 1,125 square kilometres within 20 kilometres of the GPO). Even more strikingly, 49.8 per cent of Victoria's factory employees (42.1 and 64.2 per cent, respectively, of the males and females) worked in four local government areas, defined as the "inner core". While the male factory workers there were engaged in a wide range of activities, most of the females were engaged in manufacturing clothing, textiles, and food products.

GEOGRAPHICAL DISTRIBUTION OF EMPLOYMENT IN MANUFACTURING:
VICTORIA, 1934-35 TO 1945-46

Area	1934-35		1938-39		1942-43		1945-46	
	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent
Melbourne metropolitan area—								
Inner core LGAs (a)—								
Factories	3,388	37.2	3,402	36.8	3,299	37.8	3,594	35.3
Workers	84,457	49.8	93,533	46.3	94,837	36.1	98,727	38.5
Adjacent ring of LGAs (b)—								
Factories	1,953	21.5	2,010	21.7	1,927	22.0	2,182	21.4
Workers	37,923	22.4	49,457	24.6	81,030	30.9	73,815	28.8
Remainder of metropolitan LGAs—								
Factories	1,008	11.1	1,055	11.4	1,076	12.3	1,340	13.1
Workers	19,597	11.5	27,942	13.8	47,722	18.2	38,589	15.1
Total metropolitan area (c)—								
Factories	6,349	69.8	6,467	69.9	6,302	72.1	7,116	69.8
Workers	141,977	83.7	170,932	84.7	223,589	85.2	211,131	82.4
Remainder of Victoria—								
Seven urban areas (d)—								
Factories	853	9.4	845	9.1	739	8.5	883	8.7
Workers	14,906	8.8	15,864	7.9	21,950	8.4	21,884	8.5
Other areas—								
Factories	1,898	20.8	1,938	21.0	1,697	19.4	2,196	21.5
Workers	12,808	7.5	15,035	7.4	16,818	6.4	23,234	9.1
Total Victoria—								
Factories	9,100	100.0	9,250	100.0	8,738	100.0	10,195	100.0
Workers	169,691	100.0	201,831	100.0	262,357	100.0	256,249	100.0

(a) Local government areas (LGAs) Melbourne, Fitzroy, Collingwood, Richmond.

(b) LGAs Brighton, Camberwell, Caulfield, Footscray, Hawthorn, Kew, Malvern, Port Melbourne, Prahran, St Kilda, South Melbourne, Williamstown.

(c) As defined by the Commonwealth Bureau of Census and Statistics, 1934-35.

(d) Ballarat (including Ballarat City and Ballarat Shire); Bendigo (including Bendigo City and Eaglehawk Borough); Castlemaine City; Geelong (including Geelong City, Corio Shire, Geelong West City, and Newtown and Chilwell City); Mildura City and Shire; Shepparton City and Shire; Warrnambool City and Shire.

The ring of local government areas around the inner core had 22.4 per cent of Victoria's factory labour force, a proportion that had changed little during the previous decade. The part of South Melbourne immediately south of the Yarra River was one of the leading

industrial districts, many of the factories having been established on Crown land. An almost continuous industrial belt extended from the north-western part of the central business district, westerly and southerly between the Williamstown railway and the Yarra River. Here were located the Railway Workshops at Newport, ship repair yards, power stations, and plants making chemicals, fertilisers, rope, glassware, and metal products.

Factories elsewhere in the Melbourne metropolitan area provided jobs for a further 11.5 per cent of the manufacturing labour force. Some, like the establishments making bricks, tiles, and pottery in Brunswick and agricultural machinery at Sunshine, dated back to the nineteenth century. Others, like those at Oakleigh, marked the beginning of the move by new industrial enterprises into more distant suburbs where entrepreneurs could purchase land cheaply and recruit their labour force locally. Even so, areas like Broadmeadows to the north and Dandenong to the south-east, which were to become major industrial areas, had at this time only a handful of industrial premises, most of which were legacies of the past.

The other 16.3 per cent of Victoria's factory labour force had jobs outside the Melbourne metropolitan area. Two tendencies were evident. First, the proportion of factory employees outside the metropolitan area had been gradually declining for half a century or more. During the late 1890s the non-metropolitan area had about 25 per cent of Victoria's factory labour force and in the 1920s about 18 per cent. This was the result of a series of political, economic, and technological influences including, for example, the centralisation in Melbourne of activities ranging from the maintenance of railway engines and rolling stock to the manufacture of flour, butter, and beer. Second, seven urban areas (listed in the Geographical Distribution table on page 372) were able to retain existing industries or gained new ones; hence, together they provided 53.8 per cent of the non-metropolitan factory jobs in 1934-35 as against 49.8 per cent in 1926-27. The leaders were Geelong and Ballarat. Geelong, long established as a major textile producing centre (largely because of the abundance and softness of river water), had attracted other major firms including the Ford Motor Company of Canada Ltd which in March 1925 acquired a site on which it erected a plant capable of assembling 30,000 motor vehicles annually and employing over 500 employees.

Other centres were reaping benefits of tariff changes imposed during the 1920s. For instance, from September 1925 the British Preferential Tariff (BPT) on woollen yarns was increased from 10 per cent *ad valorem* to 20 per cent, and a specific duty of "one shilling per square yard" BPT was imposed on imported shoddy and cotton tweeds, and this, along with the optimism of local residents, led to new mills being set up at Wangaratta, Stawell, Sale, and Daylesford. Other tariff changes had encouraged Messrs I. and R. Morley to erect a factory in Ballarat in 1927 to make underwear, while a new company—Hanro (Australia) Knitting Mills—was formed in 1926 to take over the Bendigo Knitting Mills and extend its range of products to include underwear as well as outerwear. But while the major centres, taken together, improved their industrial status, employment in manufacturing elsewhere in the country areas declined.

1935 TO 1939

During the four years immediately prior to the Second World War, manufacturing in Victoria made further, if not very spectacular, progress: even though employment rose by 32,000 to reach nearly 202,000 in 1939, the number of factories increased by only 150 to 9,250. Victoria lost ground relative to the rest of Australia, which enlarged its share of the nation's factory labour force from 62.3 per cent in 1935 to 64.3 per cent in 1939.

All the major industrial groups expanded their activities but the main advances were in general engineering, motor vehicle construction and assembly, the manufacture of agricultural implements, textiles, and foodstuffs. Several influences were important. First, under the tariff proposals agreed to at the Imperial Economic Conference in Ottawa, which came into force on 14 October 1932, the United Kingdom accorded increased preference to some Australian products. While this mainly benefited primary producers, it also aided processing industries like butter-making and fruit-preserving in which Victoria was pre-eminent.

Second, Australian tariff policy also encouraged local production of goods previously

imported. Thus, in the early 1920s a tariff structure was introduced which discriminated against the importation of motor car chassis from the United States. As indicated already, the Ford Motor Company established an assembly works at Geelong in 1925. A year later General Motors Corporation took over Holden's Motor Body Builders Ltd in Adelaide and then in the mid-1930s the renamed company, General Motors-Holden's Pty Ltd, obtained Crown land at Fishermens Bend for a factory which was opened on 5 November 1936 and became the headquarters of the company's operation in Australia. Similarly, tariff policies during the 1920s and 1930s also encouraged import replacement in the agricultural equipment industry: in 1939, for instance, the International Harvester Co. of Australia Pty Ltd opened a plant at Geelong that employed 250 persons manufacturing farm machinery.

Third, some industrial expansion was engendered by the increasingly tense international political situation, although it is impossible now to assess the real importance of this factor. Nonetheless, one specific example was the formation in 1936 of the Commonwealth Aircraft Corporation Pty Ltd by a group of leading Australian companies; this produced its first aircraft at Fishermens Bend during March 1939.

Fourth, the increasing complexity of manufactured products encouraged the growth of specialist firms supplying components (such as batteries and other electrical equipment) to assemblers and replacement parts to consumers, making service equipment, and undertaking repairs such as panel beating. As one example, each year during this period 375 additional employees were taken on by motor vehicle repairers alone.

In contrast, activities like the manufacture of textiles, clothing and foodstuffs, which had traditionally provided job opportunities for women and girls, grew more slowly than the male dominated heavy industries already described. As a case in point, in 1939 there were only 234 females in the 5,488 strong labour force constructing and assembling motor vehicles, and only 60 among the 3,210 engaged in repairing them. The re-orientation of Victoria's manufacturing industry led to a decline in the proportion of females in the factory labour force from 34.6 to 32.5 per cent. Even so, female labour was much more important in Victoria's factories than in those elsewhere in Australia: in New South Wales the proportion of females was 26.7 per cent and in South Australia only 17.7 per cent.

The relative share of Victoria's industrial activity—measured by the number of factories, employment, salaries and wages paid, and value of production—in the Melbourne metropolitan area continued to grow. By 1939 this part of the State contained 84.7 per cent of the factory labour force (81.8 per cent of the males and 90.7 per cent of the females).

However, the geographical distribution of industry within the Melbourne metropolitan area was beginning to change. While the four inner core local government areas (covering about 46 square kilometres) were still attracting industrial jobs, their combined share declined relative to other parts of the metropolitan area. This resulted from the slower growth of traditional inner core activities like the manufacture of clothing, the rising costs of land and buildings, the development and application of town planning controls, and the desire by entrepreneurs in the newer industries to erect single storey premises. Attention focused, in particular, on land to the west and south of inner Melbourne: the local government areas of Williamstown, Footscray, Port Melbourne, and South Melbourne (covering 51.5 square kilometres) together attracted 43 more factories (examples of which have already been given) and over 9,000 additional workers.

Outside the Melbourne metropolitan area, Geelong remained the leading industrial centre with 250 factories and 7,300 workers. The Geelong Harbor Board played an active role in attracting firms and making land available. But, overall, non-metropolitan Victoria failed to make much progress industrially.

1939 TO 1946

The Second World War boosted manufacturing industry in Victoria and, just as importantly, widened its base from a reliance on a narrow range of highly protected activities. Whereas 46 per cent of the 202,000 factory workers in 1939 were occupied in making clothing, textiles, and foodstuffs, these more traditional industries provided jobs for only 40 per cent of the 256,000 employees in 1946.

The outbreak of war had two immediate impacts on manufacturing. First, employment in several industries (such as clothing and furniture making) declined, thus releasing about 13,000 persons for manufacturing activities more closely related to the war effort. In addition, a further 48,000 persons took up factory work during the four years to mid-1943 to bring the total employed in all manufacturing activities to 262,000. Most of this influx was channelled into establishments engaged in engineering or the manufacture of munitions, explosives, aircraft, ships, and motor vehicles. At the beginning of the war there were three munitions establishments in Victoria (two at Maribyrnong and the other at Footscray); other ordnance factories were quickly put into operation at Bendigo, Horsham, Hamilton, and Stawell; an additional explosives plant was built at Geelong; and a gun-cotton factory was established at Ballarat. Apart from these government establishments, thirty-eight private firms and institutions erected annexes to make products as diverse as mortar bombs, mines, marine diesel engines, and optical equipment.

The period from 1943 to 1946, during which factory employment in Victoria declined from 262,000 to 256,000, saw a reversal of some of the changes that had occurred earlier in the war. For example, there was a marked reduction, totalling about 24,000, in the labour force making explosives, weapons, and related material, whereas more resources were again deployed manufacturing clothing, foodstuffs, and paper products. By 1943, the Commonwealth and State Governments were actively planning for post-war reconstruction, although no resources were spared during the war itself for reconverting factories. The basic aim of retaining the more diversified industrial structure and broader range of skills that had been attained was reinforced by the need to create employment opportunities to absorb the large inflow of ex-servicemen and migrants anticipated after the war. A crucial document that expressed the thinking of the time and formed the basis of much official decision making for the next two decades was the White Paper entitled *Full employment in Australia*, presented to the Commonwealth Parliament on 30 May 1945. The Depression and the Second World War had both dramatised Australia's isolation and peripheral location at times of crisis and strengthened the arguments for greater self-sufficiency. As one example, the Commonwealth Government pursued its attempts to promote interest in the production of a complete car in Australia: when it issued an invitation along these lines on 5 October 1944, positive responses were received from four North American manufacturers: Ford Motor Company of Australasia Pty Ltd, General Motors-Holden's Pty Ltd, International Harvester Co. of Australia Pty Ltd, and Chrysler Australia Ltd. The further investment subsequently made by the first three of these firms in Victoria had a major impact on its industrial progress.

Another legacy of the war was a continuation of the co-operation and consultation between government and private enterprise. Central to the management of the transition from military to peacetime production was the Secondary Industries Commission (1943 to 1949) which established a series of two-way formal and informal channels of communication between industry and government. The Commission made recommendations to a sub-committee of the Commonwealth Cabinet, which itself kept in touch with the States.

An important effect of the war was to halt the decline of manufacturing activity in non-metropolitan areas, which by 1946 had 17.6 per cent of Victoria's factory labour force as against 15.3 per cent in 1939. Important, too, was the fact that many of the factories set up to supply goods as diverse as ball bearings and dehydrated food were located in the smaller country towns. Employment in most of the larger centres was boosted considerably because places like Geelong (where the factory labour force during the 1939 to 1946 period increased by 2,180 persons), Ballarat (1,630) and Bendigo (1,060) had the resources and basic infrastructure to accommodate more readily the sudden upsurge in industrial activity.

Within the Melbourne metropolitan area itself, more than 60 per cent of the 40,200 workers that joined factory payrolls during the 1939 to 1946 period had jobs in the ring of suburbs around the central core. In particular, Footscray, Williamstown, South Melbourne, and Port Melbourne gained over 20,000 additional factory workers, many of them employed making munitions and aircraft in large plants such as those of General Motors-Holden's Pty Ltd, the Commonwealth Aircraft Corporation Pty Ltd, and the Government Aircraft Factory.

1946 TO 1968

Background

This period was marked by substantial growth in population and production, and improvement in living standards. The number of persons engaged in manufacturing also increased almost continuously. Developments in manufacturing industry in Victoria were, of course, greatly influenced by events in the Australian economy as a whole, including booms and recessions and the various forms of intervention by government to contain the severity of these oscillations and achieve the goals of full employment, stable prices, and rapid population growth. The immigration programme, for instance, quickly alleviated post-war manpower shortages and boosted demand: whereas only 29,000 migrants arrived during 1947-48, an average of 132,000 entered Australia during each of the next three years. Directly, and through children born in Australia, immigrants since 1947 have been responsible for about 59 per cent of the nation's population growth.

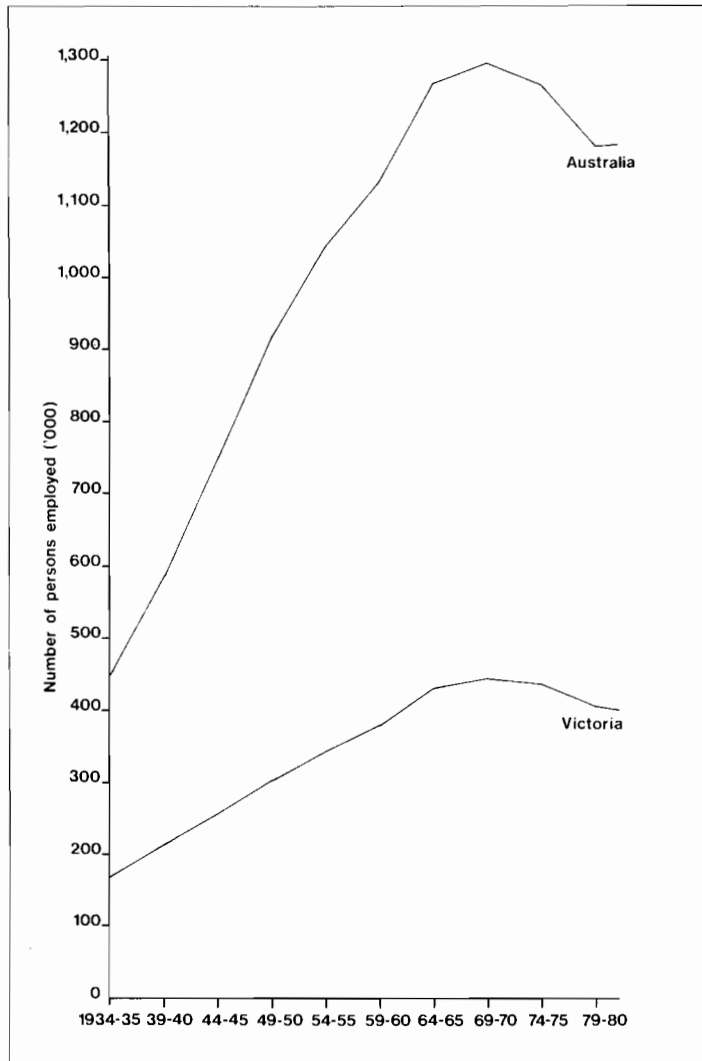


FIGURE 24. Australia and Victoria—Persons employed in all manufacturing establishments, 1934-35 to 1981-82. (Average number of persons employed over whole year including working proprietors.)

Foreign investment was encouraged by the Commonwealth and State Governments. Although it added only about 10 per cent to domestic investment, the contribution it made was much greater because it was concentrated in leading sectors and introduced new technologies and skills. About half the inflow of overseas direct investment funds from all sources went into manufacturing industry and especially into machinery, metal products, vehicles, oil refining, and petrochemicals. Many of the projects required large-scale plants and hence "lumpy" investments which were beyond the capital resources and technological skills then available locally.

The continuing shortage of foreign exchange necessitated considerable government involvement in the management of the economy. One central aim of post-war policy was import replacement, which was at first implemented by direct exchange and production controls. Then, in 1952, in the wake of the Korean War boom, import restrictions were introduced, especially on luxury items and those that could be produced in Australia. Early in 1960 import licensing was virtually abandoned and the tariff once again became the principal instrument of industry policy. It became the subject of debate in the early 1960s and in its 1966-67 Annual Report, the Tariff Board was critical of traditional tariff making procedures because, as the economy had become more complex, inter-industry tariff effects were of increasing importance. The growth of mineral exports during the second half of the 1960s reduced the balance of payments constraints on economic policy and exposed many of the deficiencies of the industrial structure that had been fostered since the Second World War.

Motor vehicle industry

Of particular significance to Victoria were the policies relating to the motor vehicle industry. Late in 1945, the Commonwealth Government accepted the proposal by General Motors-Holden's Pty Ltd to build an Australian-made car, and during the following year officially endorsed the manufacturing programmes submitted by Ford, Chrysler, and International Harvester. In November 1948, the first Holden was made at Fishermens Bend and mass production began early in 1949. Import licensing introduced in 1952 considerably reduced the inflow of assembled chassis and bodies and gave British manufacturers an incentive to expand local production as their share of the Australian market fell from 40 per cent in 1952 to 32 per cent in 1955. By mid-1959, Victoria had 22,275 of the 54,600 persons in Australia making and assembling motor vehicles, motor bodies, and motor accessories. The lifting of quantitative restrictions in 1960 led to a rise in the number of fully assembled cars and the value of automotive components entering Australia (the latter causing the Australian content of locally made vehicles to fall from 77 per cent in 1957-58 to 67 per cent in 1962-63). Then followed a series of plans that attempted to raise local content of the cars being built in Australia and, through tariff measures, discourage imports of completely built-up vehicles. During 1967-68 plants in Victoria turned out 117,990 finished cars (44 per cent of the Australian total) as well as a wide range of components and accessories.

The number of persons working in Victoria's factories grew by 193,700 from 1946 to a total of 450,000 in 1967-68. Whereas the traditional activities (food, beverages, and tobacco; textiles, clothing, and footwear; and tanning and leather goods) had together provided jobs for 42 per cent of the factory labour force in 1946, they absorbed only 31 per cent in 1968. In contrast, the group embracing industrial metals, machines, and conveyances increased its share from 34 to 43 per cent. Leading industries within this group were the manufacture of plant, equipment, electrical machinery and cables, and the production of motor vehicles and accessories.

The number of persons working in the latter industry, 36,350 (8 per cent of those in Victoria's factories in 1968), belied its significance to the State's economy because of the work generated for countless firms in other industries such as those supplying glass, paint, plastic goods, trim, and tyres. (It is noteworthy that the plastics industry was virtually a creation of the post-war era, growing in the 1950s and achieving a high level of diversity and output by the end of the following decade.) In detail the post-war development of the passenger car industry in Victoria is complicated because of the way firms gradually extended and rearranged their production facilities and, in some cases, changed the whole

focus of their activities. For example, assembly of Volkswagen vehicles began at Clayton in 1954. In 1968 Motor Producers Ltd, a wholly owned subsidiary of Volkswagenwerk AG, was set up to assemble Volkswagen, Datsun, and Volvo vehicles. Similarly, the Standard Motor Company (Australia) Pty Ltd was formed in 1949 to assemble Standard cars at a plant completed in 1951 at Fishermens Bend. Standard Motor Products, an associated company, came into being in 1952 with Australians holding a controlling interest; in 1958, renamed Australian Motor Industries Ltd, it continued operations at the original plant and then in 1963 began assembling Toyota vehicles.

As indicated already, General Motors-Holden's Pty Ltd began mass producing cars early in 1949; the principal manufacturing activities were undertaken at Fishermens Bend, although all body building was carried out at the company's plant in Adelaide. In August, 1954 the company announced the first of a series of expansion plans which included the development of a factory complex on a 62 hectare site at Dandenong to accommodate three plants: spare parts and accessories distribution centre, 23,680 square metres (transferred from Fishermens Bend); Frigidaire, 34,125 square metres (shifted from Sydney); and an assembly shop, 50,600 square metres, with a capacity for an annual production of 36,400 car bodies and 40,300 complete vehicles (transferred from Fishermens Bend, where the space thus made available was used for additional manufacturing capacity). All three plants came into operation in January 1957 with a total payroll of 3,000. At about the same time the Ford Motor Company of Australia Ltd bought a site of 162 hectares at Broadmeadows and invested \$18m in an assembly shop which opened in January 1960 with a daily capacity of 200 cars, trucks, and tractors, and a labour force of 2,750. In another major development International Harvester Co. of Australia Pty Ltd opened a large plant at Dandenong in 1952 to build commercial motor vehicles.

The number of motor vehicles on the register in Victoria increased from 249,000 in 1946 to 621,000 in 1956 and to 1,081,000 in 1966. This boosted the demand for repair shops and service stations, and the consumption of oil and petroleum.

Petroleum industry

For many decades Australia imported most of its petroleum needs in refined form. In 1924, Commonwealth Oil Refineries (jointly owned by the Commonwealth Government and the Anglo-Persian Oil Co. Ltd) commissioned a small refinery at Laverton on the western outskirts of Melbourne. In 1952 the Commonwealth sold its interest in this firm to its partner, which in 1954 became British Petroleum Co. Ltd; in 1955, the latter company brought its large Kwinana refinery on stream in Western Australia and ceased operations at Laverton. Another small refinery, mainly producing lubricating oils, was built at Altona by the Standard-Vacuum Refining Co. Ltd in 1949; this was the antecedent of a new plant that began production in December 1954, bringing into operation Australia's first catalytic cracking unit in a crude oil refinery. Furthermore, the use of alkylation and catalytic reformers within the Altona plant enabled the local production of high octane aviation spirit in March 1956. (In 1962, Standard-Vacuum Refining Co. Ltd changed its name to Petroleum Refineries (Aust.) Pty Ltd, in which a 76 per cent interest was held by Mobil Oil Aust. Ltd and the balance by Esso Standard Oil (Australia) Ltd—renamed Esso Australia Ltd in 1971.) The output of the refinery also became the basis, in the 1950s and 1960s, of a substantial petrochemical complex. Meanwhile, in March 1954 the Shell Oil Company's refinery at Geelong, costing \$18m, came into operation. The initial annual capacity of one million tonnes was expanded to about 1.8 million tonnes in August 1955 when the catalytic cracker came on stream. Then in May 1963, BP Refinery (Westernport) Pty Ltd was registered to build a \$30m refinery at Crib Point on the west coast of Western Port Bay, opposite French Island. This complex, with an initial annual capacity of 1.5 million tonnes, was brought into operation in 1966 and was connected by a 39 kilometre pipeline to a bulk petroleum installation at Dandenong. Victoria thus had three of the ten refineries operating in Australia. Together, the complexes—Petroleum Refineries (Aust.) Pty Ltd at Altona, BP Refinery (Westernport) Pty Ltd at Crib Point, and Shell Refining (Australia) Pty Ltd at Geelong—have a refining capacity of 12.8 million tonnes per annum, or about 36 per cent of the Australian total.

Energy

Demand for energy rose steeply after most restrictions on the use of electricity were removed in 1952. Sales to industry and commerce rose from 1,474 million kWh in 1953-54 to 5,669 million kWh (about 58 per cent of all sales) in 1968-69, but the State Electricity Commission had to compete against the aggressive marketing techniques adopted by the oil companies. The manufacture of briquettes from brown coal began at Yallourn in 1924 in the form of an integrated enterprise with electricity production. The fuel shortage during and after the Second World War led to plans for the expansion of the brown coal briquetting-electricity complex in the La Trobe Valley. A new briquette plant was constructed at Morwell, but by the time this came into operation in 1960 supplies of black coal from New South Wales had become more reliable and petroleum fuel more competitive. Another competitor, natural gas, became available in March 1969. The Yallourn works was closed in 1971 and all briquetting was carried out at the Morwell plant which had sufficient capacity to meet all likely future needs.

While most large industrial firms have their own standby generators to meet emergencies, few have sufficient capacity to provide their day to day needs. An exception, however, was Alcoa of Australia Ltd which opened a 150 MW generating station at Anglesea in 1969 to produce electricity for its aluminium smelting and semi-fabricating works at Point Henry, Geelong. When opened in 1963 this smelter had a capacity of 20,000 tonnes.

Geographical distribution and decentralisation

The boundaries of the Melbourne metropolitan area were redefined for statistical purposes at the beginning of 1954 and again in mid-1966. The data in the following table have all been compiled on the basis of the boundary adopted in 1966; this explains why some of the figures for 1945-46 in this table differ from those shown in the table on page 372.

GEOGRAPHICAL DISTRIBUTION OF EMPLOYMENT IN MANUFACTURING: VICTORIA, 1945-46, 1954-55, AND 1967-68

Area	1945-46		1954-55		1967-68	
	Number	Per cent	Number	Per cent	Number	Per cent
Melbourne metropolitan area—						
Inner core LGAs (a)—						
Factories	3,594	35.3	4,099	25.8	3,334	18.5
Workers	98,727	38.5	103,341	29.8	88,419	19.7
Adjacent ring of LGAs (b)—						
Factories	2,182	21.4	3,520	22.2	3,233	17.9
Workers	73,815	28.8	95,473	27.5	90,052	20.0
Rest of metropolitan LGAs—						
Factories	1,655	16.2	4,012	25.3	6,541	36.3
Workers	42,635	16.6	85,280	24.6	192,257	42.7
Total metropolitan area (c)—						
Factories	7,431	72.9	11,631	73.3	13,108	72.7
Workers	215,177	83.9	284,094	81.9	370,728	82.4
Remainder of Victoria—						
Seven urban areas (d)—						
Factories	883	8.7	1,194	7.5	1,464	8.1
Workers	21,884	8.5	31,107	9.0	36,546	8.1
Other areas—						
Factories	1,881	18.4	3,036	19.2	3,458	19.2
Workers	19,188	7.5	31,447	9.1	42,671	9.5
Total Victoria—						
Factories	10,195	100.0	15,861	100.0	18,030	100.0
Workers	256,249	100.0	346,648	100.0	449,945	100.0

(a) Local government areas (LGAs) Melbourne, Fitzroy, Collingwood, Richmond.

(b) LGAs Brighton, Camberwell, Caulfield, Footscray, Hawthorn, Kew, Malvern, Port Melbourne, Prahran, St Kilda, South Melbourne, Williamstown.

(c) As defined on 1 July 1966 for statistical purposes.

(d) Ballarat (including Ballarat City and Ballarat Shire); Bendigo (Bendigo City and including Eaglehawk Borough); Castlemaine City; Geelong (including Geelong City Corio Shire, Geelong West City, and Newtown and Chilwell City); Mildura City and Mildura Shire; Shepparton City and Shire; Warrnambool City and Shire.

In the years immediately after the war, the Melbourne metropolitan area lost ground industrially compared to the rest of the State. The shortages of manpower and building materials provided an incentive for industrialists to shift into ex-munitions factories in country towns. In this way the gun-cotton factory at Ballarat was taken over as a paper coating plant by Associated Pulp and Paper Mills Ltd; Bruck Mills (Australia) Ltd set up a large rayon-weaving mill in a wartime aluminium fabricating plant at Wangaratta; Prestige Ltd and Frost Engineering Co. Ltd took over, respectively, the former ordnance factories at Horsham and Hamilton; and the ball bearing plant built at Echuca in 1944, with assistance from the Lease-Lend Agreement with the United States, was maintained in production by the United Bearing Corporation Pty Ltd.

These were some of the first fruits of a more positive approach by the Victorian Government to encourage decentralisation of economic activities. There was concern about the concentration of population and jobs in one relatively small part of the State while employment opportunities elsewhere were dwindling for a variety of reasons, including the mechanisation of farming and farm related activities and the centralisation of social and commercial services. Thus successive State Governments offered various forms of financial and practical incentives, assistance, and advice.

Among firms that set up plants in country areas were Cleckheaton Ltd which shifted its spinning plant in 1949 from the United Kingdom to Shepparton, and Campbell's Soups (Aust.) Pty Ltd which opened a 15,000 square metre processing plant at Lemnos in November 1961.

Despite many examples of this kind that could be cited, the various post-war decentralisation programmes have been criticised on the grounds that they were not sufficiently selective as to the types of enterprise assisted, where they were located, or the nature of the assistance provided. Thus, continuing subsidies (such as payroll tax rebates and transport concessions) as distinct from subsidies to aid initial establishment costs, run the risk of encouraging activities that become perennial applicants for such subsidies. In general, labour intensive industries in Australia receive above-average protection, and in Victoria particularly, the enterprises most responsive to regional incentives in the 1950s and 1960s tended to be the labour intensive ones like clothing and textiles. In 1967-68, firms in these two groups alone provided 18 per cent of the jobs in non-metropolitan factories.

The 1960s, therefore, saw the emergence of a conflict between the aims of those wishing to reduce protection and of those wishing to promote decentralisation. Another criticism was the support being provided to numerous small establishments in many small country towns rather than the more specific support of a few centres that had already, as a result of natural advantages, achieved some degree of development which, it was argued, with only a moderate amount of support and encouragement could reach a "take-off" point from which further growth would be self-sustaining. Apart from the 18,900 factory workers at Geelong (which because of its proximity to Melbourne had special advantages), the main industrial areas outside the metropolitan area in 1967-68 were Ballarat (6,850 factory employees), Morwell (4,100), Bendigo (3,150), Yallourn Works Area (2,850), Warrnambool (2,450), Shepparton (2,305), and Wangaratta (2,150). While many of these places had advanced industrially, none appears to have reached the point where natural and self-sustaining growth could be anticipated.

During the early post-war years the trend towards industrial concentration in the Melbourne metropolitan area was temporarily reversed. Thus, the proportion of the factory labour force outside the metropolitan area increased from 16 per cent in 1946 to 18.1 per cent in 1955 (a period during which the job opportunities in manufacturing there increased by an average of 4.4 per cent annually), but then again declined to 17.6 per cent by 1968 (employment in factories in country areas having increased at an average rate of only 1.8 per cent annually).

In the mid-1950s, the number of factories and factory workers in the four inner core local government areas in Melbourne reached a peak and then began to decline at a rate, in the case of factory employment, of about 1.2 per cent annually. One reason for this trend was the decline of various activities like the manufacture of clothing, footwear, and furniture, which had long been prominent in these inner areas. Another was that the competing demands for space led to rising land prices; changes in the ownership and use

of buildings; redevelopment schemes; a decline in the role of this area as a market and supply focus; and a change in the nature and characteristics of the labour force residing in or near the centre of the city. Such factors squeezed some small firms out of business altogether and encouraged larger ones to move to less expensive but more spacious accommodation in the outer suburbs. A similar decline, although at a slower rate, occurred in the adjacent ring of local government areas. One example, already cited, was the shift to Dandenong by General Motors-Holden's Pty Ltd of some labour intensive operations from its Fishermens Bend site and the gradual introduction there of more capital intensive production, such as the V8 engine plant, which commenced operations in 1969.

Suburban areas became increasingly attractive to industrial firms because of the availability of spacious sites, labour (including married women), and infrastructure. Thus International Harvester Co. of Australia Pty Ltd bought land at Dandenong in 1948 and opened a plant making commercial vehicles in 1952. Meanwhile, H.J. Heinz Company Australia Ltd had shifted to a 40 hectare site there from Richmond, where it had begun making canned and bottled food products in 1935. Among its requirements, apart from labour, were access to a railway especially for the delivery of brown coal, good roads for the transport of perishable products, availability of water (of which 4.5 million litres a day were required at times of peak production), and waste disposal facilities. The third large firm to commence operations at Dandenong was General Motors-Holden's Pty Ltd in 1957 and this was followed by others such as the sheet glass plant of ACI in 1962.

A similar kind of development occurred at Broadmeadows; the 1960s saw the opening there of plants by the Ford Motor Company of Australia Ltd, Rowntree and Co. (Australia) Pty Ltd, and Courage Breweries Ltd.

The 1960s also witnessed the construction of port facilities at Western Port on the eastern side of the Mornington Peninsula which came into use in July 1966 when the first cargo of crude was delivered to the oil refinery newly built by BP Refinery (Westernport) Pty Ltd. Plans were also in train for two other major projects. One was the construction by Esso-BHP of a plant to process the "wet" fractions and crude oil components, delivered by pipeline from the Bass Strait natural gas processing centre at Dutson in Gippsland, into ethane, propane, and butane. This came into operation in 1970. The other was for a fully integrated iron and steel works to be built in three stages. John Lysaght (Australia) Ltd in association with Broken Hill Pty Ltd brought the first stage of this endeavour—a cold strip mill—into production in 1973.

The period from 1946 to 1968 was characterised by profound changes in manufacturing industry in Victoria. First, there was a significant growth of large-scale, capital intensive, and technologically advanced activities supplanting Victoria's long standing emphasis on small-scale and labour intensive industries which had benefited from various forms of protection that had limited their exposure to external changes in the world's industrial, trading, financial, and corporate systems. Second, considerable emphasis was placed on the immediate creation of job opportunities in activities and at locations which depended for their survival on the maintenance of protection against imports and various forms of direct and indirect assistance. Third, there was a considerable shift of manufacturing activity within the Melbourne metropolitan area towards the outer suburbs. These absorbed 96 per cent of the 155,550 additional factory jobs created in the metropolitan area between 1945-46 and 1967-68. Some of these employment opportunities resulted from the expansion of existing enterprises but most were in establishments that had shifted from the inner suburbs (such as the textile mill of Yarra Falls Ltd, which was moved from Collingwood to Dandenong in 1946), or which were entirely new investments in Victoria (such as the plant of British Nylon Spinners (Australia) Pty Ltd, which commenced operations at Bayswater early in 1958).

1969 TO 1982: BEGINNINGS OF CHANGE

Until the late 1960s there were few signs that the role of manufacturing in the Australian economy was likely to change. At the population censuses of 1954, 1961, and 1966 the proportion of the labour force engaged in manufacturing remained at about 27 per cent. In the Melbourne metropolitan area industry occupied 36.5 per cent of the total labour force in 1947 and 36.9 per cent in 1966, while in the rest of the State the equivalent figures

were 13.6 and 18.9 per cent, respectively. High tariffs, negligible inflation, rapid population growth, sustained net inflows of migrants and investment capital, mineral discoveries, and increasing affluence all helped to divert attention from indications that major long-term structural changes were on their way. One indication was the recognition early in the 1960s that international trading arrangements were changing and that exports of Australian made goods, especially in new markets outside Europe, should be greatly expanded. Another was the shift in several Asian countries towards the growth of export orientated industries mainly based on their comparative advantage in labour intensive goods. The post-war import controls and tariffs had led to a structure of manufacturing that was in many respects artificial.

Thus, tariffs designed to support particular activities stunted the growth of user industries at the next stage of production because their input costs were raised to the point where they could neither compete against imports nor develop export markets. Moreover, the increase of mineral exports (at an annual average rate of 23 per cent from 1964 to 1974 on a constant price basis) had two effects. First, it undermined the argument that Australia needed a high tariff for balance of payments reasons. Second, the accumulation of large reserves of foreign currency led to an appreciation of the exchange rate which, in turn, weakened the competitive position of import-competing industries. Other domestic circumstances affecting manufacturing included lower expectations about the rate of growth and size of the Australian population by the year 2000 and rising labour costs which led to a reassessment of expansion and marketing plans and the mix of inputs.

Three aspects of labour costs were especially important. First, female wage rates increased faster than those for males (in Victoria during the 1970s weekly wage rates rose by an average of 15.3 per cent for adult females as against 12.5 per cent for adult males). Second, rates for unskilled work increased more rapidly than those for skilled jobs, and this was one of the factors that contributed to a shortage of skilled tradesmen. Third, labour related costs increased as a result of longer holidays, long service leave, and other entitlements.

During the 1970s Victoria, like the rest of Australia, began increasingly to feel the impact of international events such as the disintegration of the Bretton Woods international monetary arrangement, and the stand by the OPEC countries which led to a 355 per cent increase in oil prices in the two years to January 1974. This was one of the factors triggering off a world recession with inflation and unemployment reaching levels, particularly in the developed countries, that had not been encountered for several decades. Australia, too, was facing increased pressure from developing countries, especially in South-east Asia, to reduce restraints on trade and to help effect international agreements aimed at increasing the share of world industrial production located in developing countries.

As the 1970s progressed, the impact of international economic changes on Australia, and therefore Victoria, became increasingly apparent. One of the first pointers towards a new financial configuration was the arrival of multinational companies (this had already begun in the 1950s as far as manufacturing was concerned), and later of international banks with their merchant banking affiliates—a new phenomenon in the 1970s. The fact that these overseas based financial enterprises had access to large sums of money enabled credit to be readily available for manufacturing, property development, construction, and other necessities. However, as overseas interest rates began to climb at the end of the decade, the effect carried into the local financial area and it became clear that Victoria was no longer sheltered from overseas financial trends. Another of the effects of these merchant banks was their involvement in mergers of companies and this facilitated large-scale rationalisation in many industries historically important to Victoria, e.g., food, textiles, rubber, and paper.

Employment in manufacturing in Victoria increased at an annual average rate of only 1.8 per cent from 431,651 in 1968-69 to 469,838 in 1973-74; it then declined by an average of 2.9 per cent each year to reach 401,197 in 1978-79. Over the next three years employment declined by an average rate of 0.4 per cent each year to reach 400,294 in 1981-82. (These figures and all others cited in this section of the Chapter were compiled on the basis of the Australian Standard Industrial Classification [ASIC]. ASIC was introduced for the 1968-69 economic censuses and constituted a complete break in the statistical series relating to manufacturing in Australia. The classification defines for statistical purposes all

industries in the economy by a set of standard rules for identifying statistical units and then for coding them to the industries of the classification. A revised version of ASIC was introduced after 1976-77 but for present purposes the changes involved are insignificant.)

The increase of 38,200 factory jobs during the first five years of this period was largely concentrated in a few industries, especially motor vehicles and parts (12,200), appliances and electrical equipment (6,600), plastics and related products (4,200), meat products (3,600), other fabricated metal products (2,400), and basic iron and steel (2,100). Most other industrial activities made some gains but clothing and footwear both continued their long-term decline with a loss in each case of about 2,500 jobs. On the whole, this was a period of consolidation and extension of activities in existing plants rather than the appearance of new large ventures. There were, of course, some exceptions, such as the completion of a cold strip mill at Western Port in 1973 and of a floatglass plant at Dandenong in 1974.

This period saw a decline in the proportion of Victoria's factory labour force in the Melbourne metropolitan area from 85.5 per cent in 1968-69, to 83.3 per cent in 1978-79, and to 83.2 per cent in 1981-82. The reason appears to be that employment in many of the industrial activities that are concentrated in the Melbourne area grew only slowly and, in some instances, metropolitan based factories appear to have been more adversely affected by the downturn in economic activity and other factors than those in the country. Thus, whereas Melbourne's employment in clothing and footwear making declined from 58,800 to 37,000 (35 per cent) during the period, elsewhere in the State it increased from 5,200 to 7,000 (35 per cent). The shares of manufacturing employment in the metropolitan and non-metropolitan areas are detailed in the table on pages 385-6. When it is recalled that in the 1970s Melbourne had about 71 per cent of the population of Victoria, the table illustrates the "disproportionately" high concentration there of employment in a wide range of industries, and especially those that have the greatest potential for dynamic growth in the future.

Aspects of the debate about decentralisation and the significance of factory activities to the economy of some country towns are illustrated by the data in the table on pages 387-8. This is especially so in the case of textiles, clothing and footwear, the manufacture of which in mid-1981 occupied 18 per cent of the non-metropolitan factory labour force in Victoria (a significantly higher proportion than in any other State). In Wangaratta, for instance, 57 per cent of the factory labour force was occupied in making "textiles, yarns and fabrics" in mid-1981; or, again, in Warrnambool 33 per cent were making clothing. Two aspects of this are important. First, the majority of activities employing more than 10 per cent of the factory workers in these towns are not based on local resources (other than labour). Second, most of the industries listed in the table on pages 387-8 as employing a considerable proportion of the local labour force are subject to high levels of tariff or quota protection.

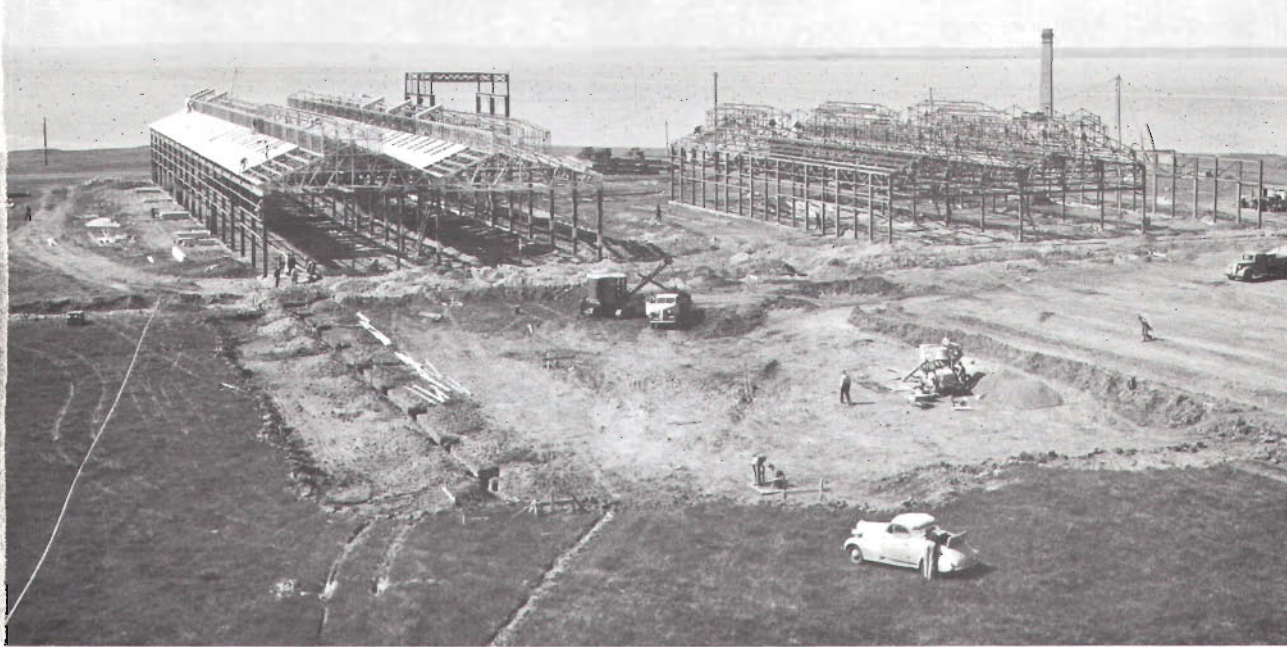
Within the Melbourne metropolitan area, the trends evident in the 1950s and 1960s continued. The factory labour force in the four inner core local government areas (LGAs) declined by about 2,500 each year between 1968-69 and 1973-74, by 3,900 annually between 1973-74 and 1978-79, and by 1,200 during each of the next three years. Although nearly half the total decline during the decade was concentrated in the textile, clothing, and footwear industries, most types of manufacturing activity were involved, as is shown in the table on page 389. This suggests that, while specific industry factors were involved, the inner area of Melbourne was becoming a less congenial district for manufacturing activities. In a period of more intensive competition, the problems of an inner area location became more critical. In particular, small factories in old buildings suffered because of rising land values, rates and taxes, and hence, increasing rentals; lack of vehicle access and parking facilities; unsatisfactory working conditions; and lack of flexibility to rearrange accommodation to suit new technologies. Furthermore, developments in the field of data processing and transmission systems during the 1970s reduced the need for production facilities to be located near administrative offices. Much the same story applied to industry in the adjacent ring of suburbs: factory employment there declined by an annual average of 1,500 and 2,500 persons, respectively, during the 1969 to 1974 and 1974 to 1982 periods. Industrially, the remainder of the Melbourne metropolitan area had mixed fortunes. Employment there increased by 49,000 during the first five years and then declined by

STRUCTURE OF MANUFACTURING (a): VICTORIA, 1968-69, 1973-74, 1978-79 and 1981-82

ASIC code	Industry sub-division	1968-69				1973-74				1978-79				1981-82			
		Establishments		Employment(b)		Establishments		Employment(b)		Establishments		Employment(b)		Establishments		Employment(b)	
		Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent
21	Food, beverages and tobacco	1,351	11.7	57,134	13.3	1,205	10.0	63,668	13.6	1,135	9.8	55,704	13.9	1,223	9.7	53,649	13.4
23	Textiles	376	3.3	28,559	6.6	420	3.5	29,337	6.3	364	3.1	19,194	4.8	395	3.1	19,293	4.8
24	Clothing and footwear	1,691	14.6	63,998	14.8	1,613	13.4	60,096	12.8	1,205	10.4	45,335	11.3	1,233	9.8	44,006	11.0
25	Wood, wood products, and furniture	1,531	13.2	19,801	4.6	1,569	13.0	20,921	4.5	1,738	15.0	19,705	4.9	1,912	15.1	21,599	5.4
26	Paper, paper products, printing, and publishing	1,145	9.9	33,582	7.8	1,238	10.2	35,470	7.5	1,202	10.3	32,381	8.1	1,315	10.4	33,659	8.4
27	Chemical, petroleum, and coal products	363	3.1	21,944	5.1	373	3.1	23,175	4.9	353	3.0	21,751	5.4	373	3.0	20,418	5.1
28	Non-metallic mineral products	434	3.8	13,868	3.2	472	3.9	15,659	3.3	495	4.3	12,972	3.2	544	4.3	12,777	3.2
29	Basic metal products	218	1.9	10,807	2.5	219	1.8	13,181	2.8	205	1.8	12,891	3.2	223	1.8	14,918	3.7
31	Fabricated metal products	1,499	13.0	36,745	8.5	1,553	12.9	39,061	8.3	1,544	13.3	35,943	9.0	1,714	13.6	37,681	9.4
32	Transport equipment	444	3.8	53,274	12.3	507	4.2	64,982	13.8	554	4.8	61,550	15.3	595	4.7	59,940	15.0
33	Other machinery and equipment	1,524	13.2	63,528	14.7	1,740	14.4	71,297	15.2	1,685	14.5	55,737	13.9	1,869	14.8	54,228	13.6
34	Miscellaneous manufacturing	987	8.5	28,411	6.6	1,161	9.6	32,991	7.0	1,136	9.8	28,034	7.0	1,229	9.7	28,126	7.0
Total all manufacturing		11,563	100.0	431,651	100.0	12,070	100.0	469,838	100.0	11,616	100.0	401,197	100.0	12,625	100.0	400,294	100.0

(a) Includes all manufacturing establishments irrespective of size.

(b) Average over whole year (except for single establishment enterprises with less than 4 employees, which are collected only at June). Includes working proprietors.

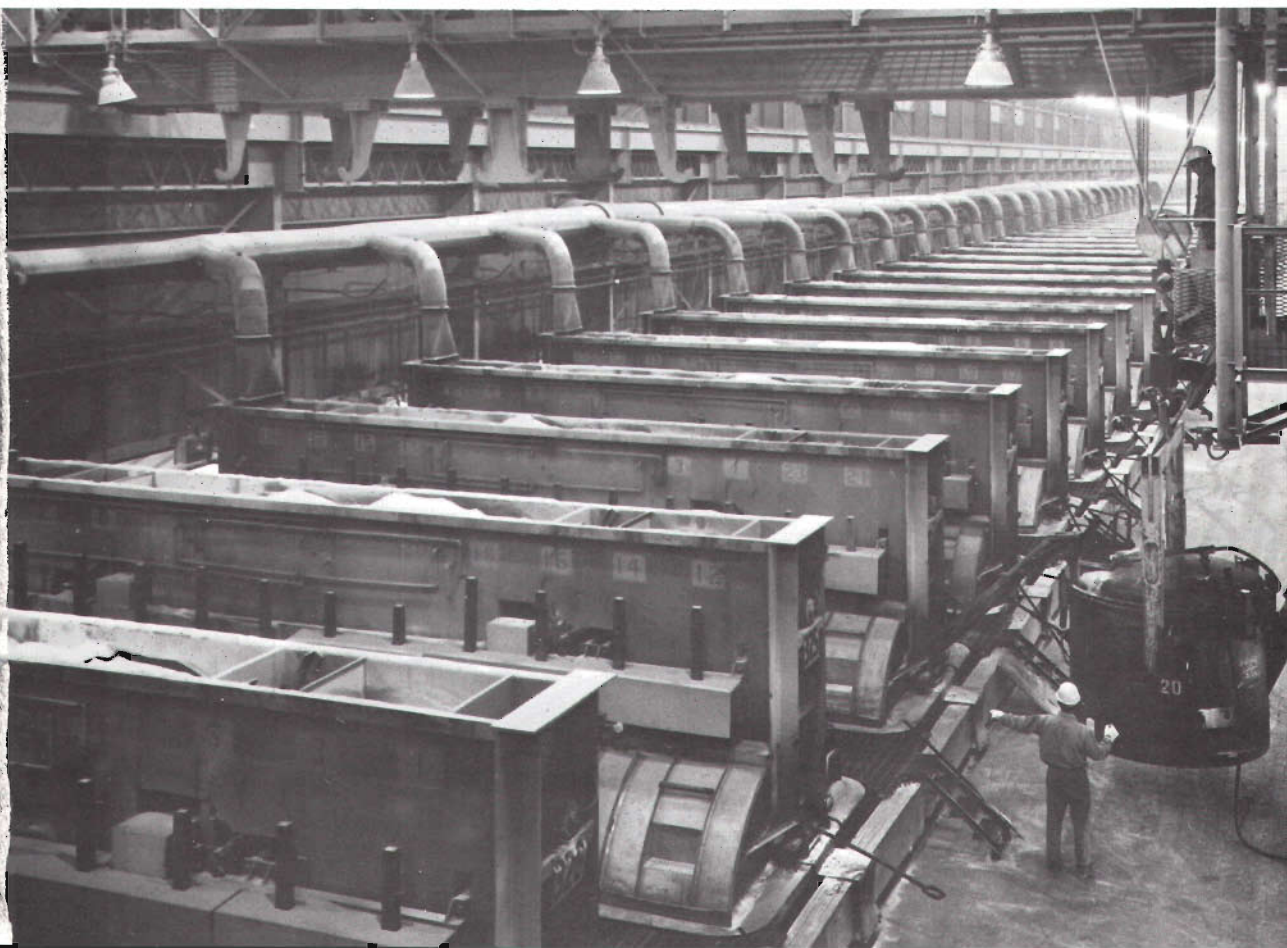


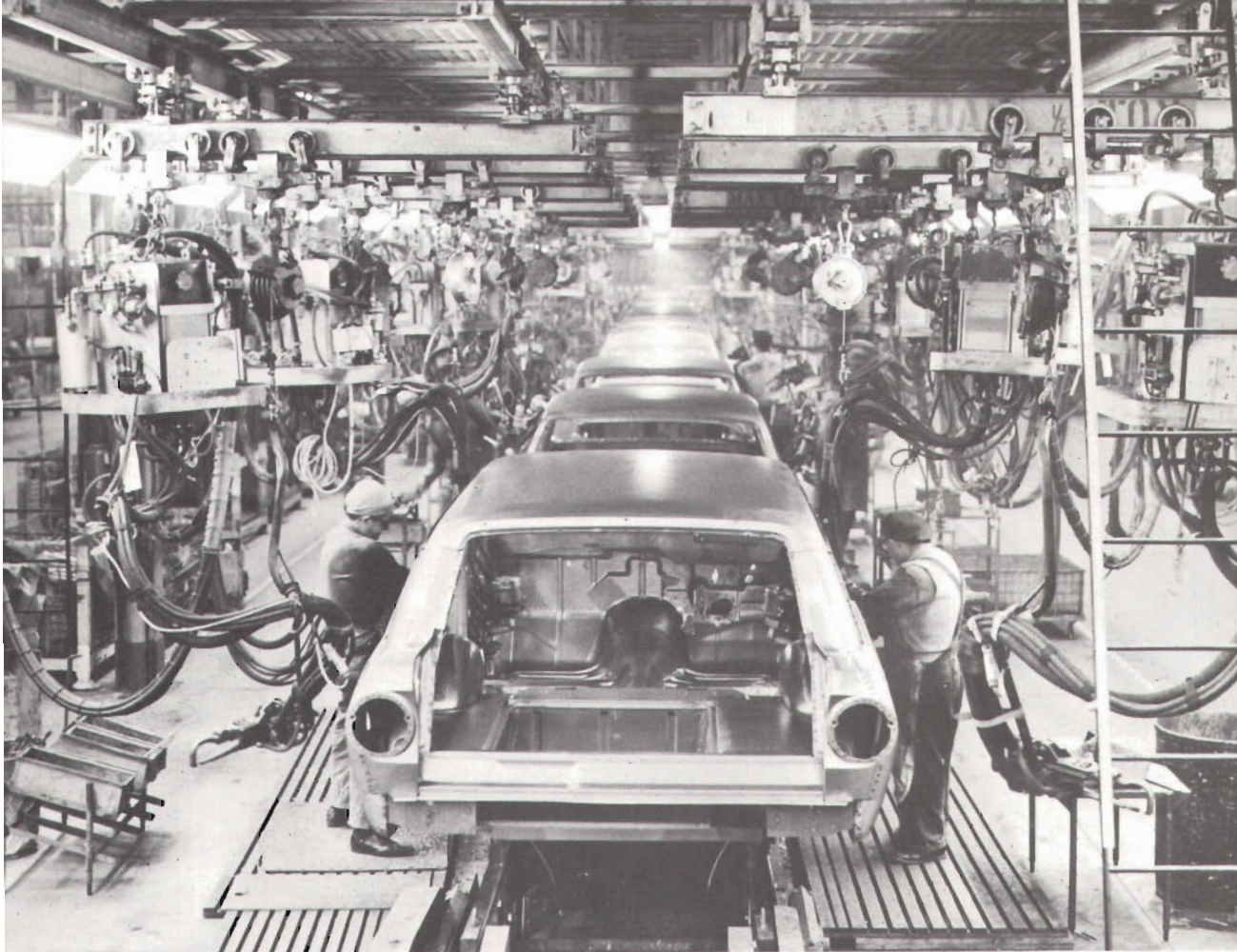
Construction of the International Harvester Australia Ltd manufacturing plant at North Geelong in 1938.

Geelong Historical Records Centre

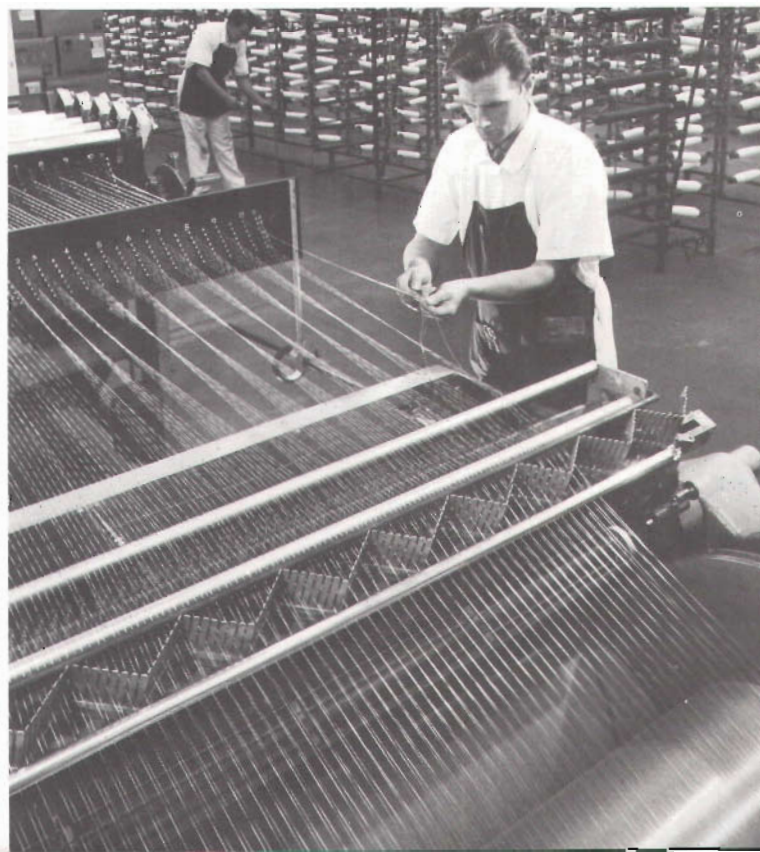
The smelting furnaces or "pots" at the Point Henry works of Alcoa of Australia Limited, installed in 1969.

Alcoa of Australia Limited

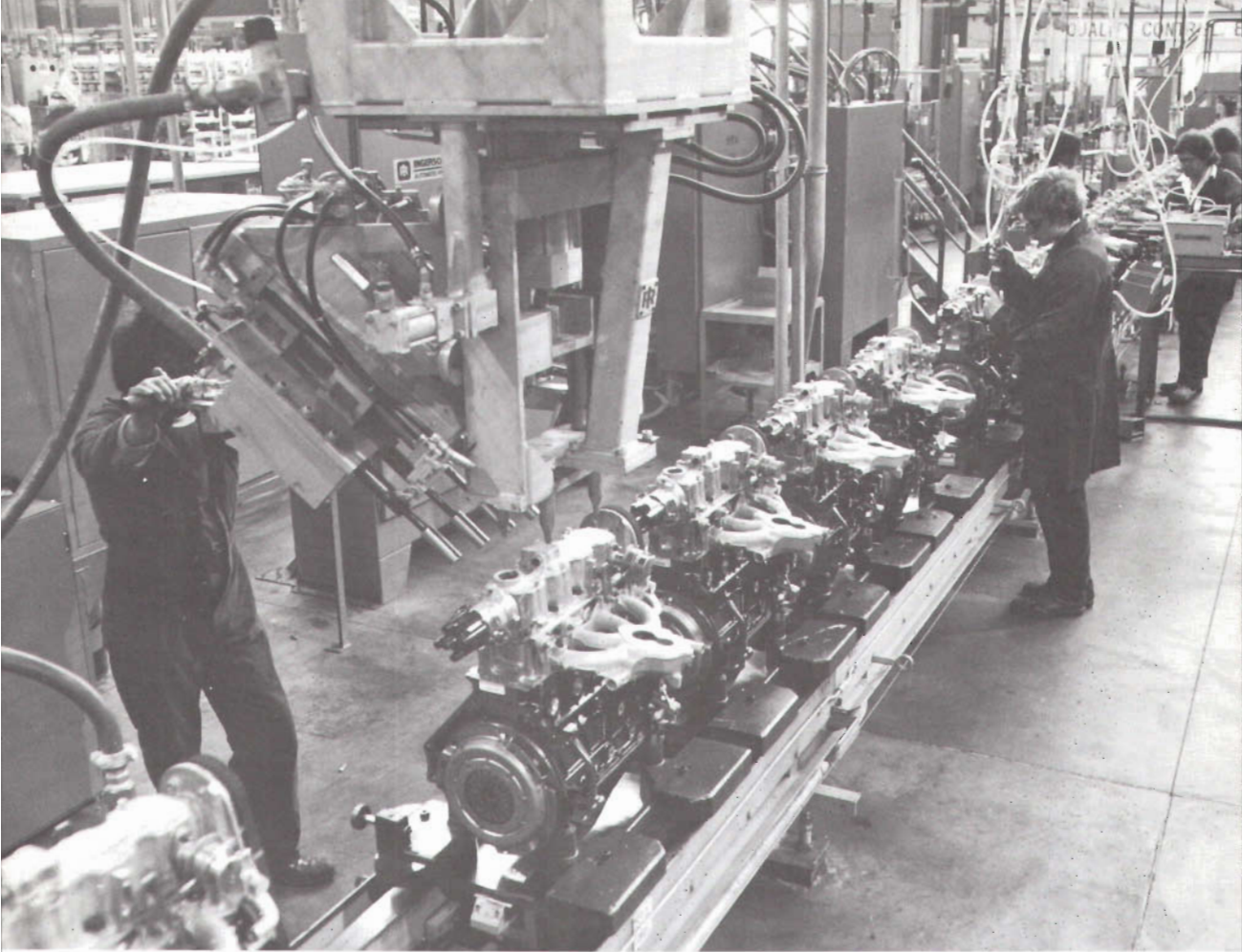




Car bodies being spot welded at the Broadmeadows car assembly plant of Ford, 1967.
Ford Motor Company of Australia Limited

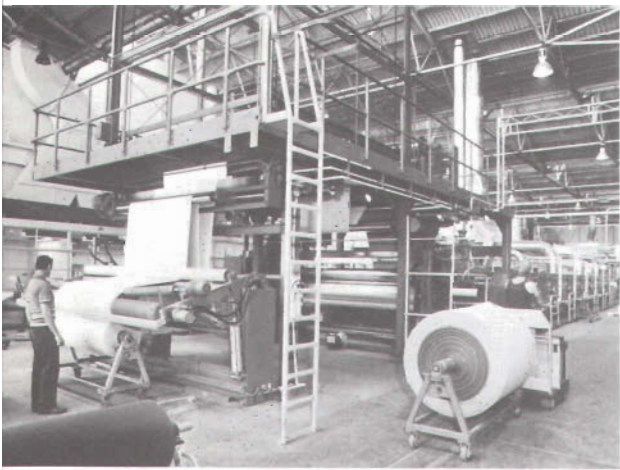


An operator joins two threadlines of yarn used in the manufacture of tyres.
Fibreknakers Ltd



Semi-automatic assembly of motor car engines at the General Motors-Holden's engine plant at Fishermens Bend.

General Motors-Holden's Ltd



(Above) Fabric finishing at the Wangaratta mill of Bruck (Australia) Limited.

Jan Roberts

(Below) The landscaped grounds of the Fletcher Jones and Staff Pty Ltd clothing factory in Warrnambool. The factory opened in 1952.

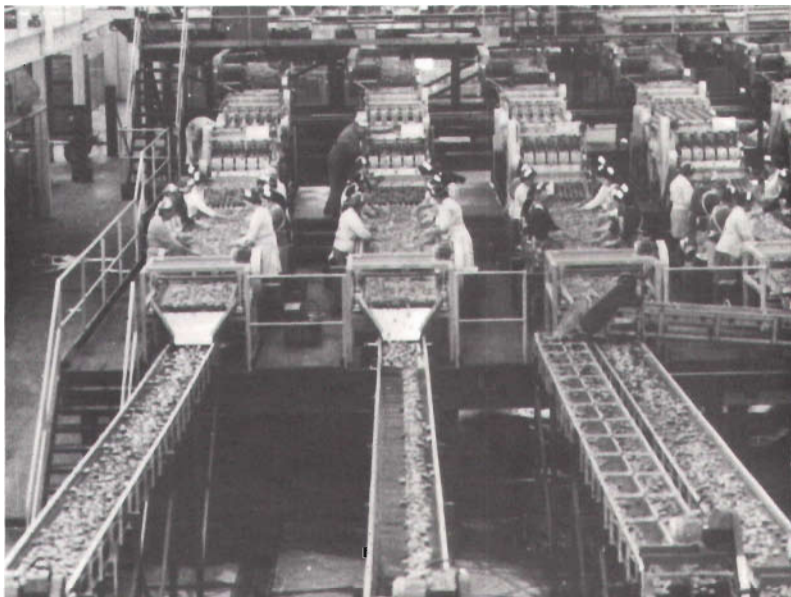
The Herald and Weekly Times Ltd





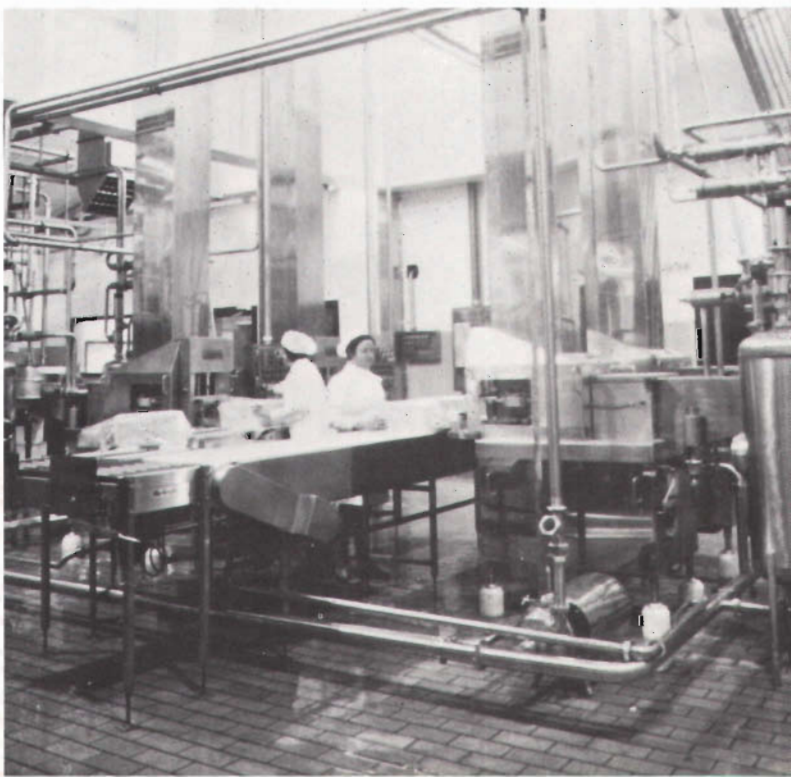
The staff and buildings of the Shepparton Butter Factory in 1933.

Ibis Milk Products Limited



Processing and canning peaches at Shepparton.

S.P.C. Limited



A Wincanton Tower cheese block former in operation at a cheese factory at Stanhope.

Ibis Milk Products Limited



Rolling steel strip at the Hot Strip Mill of John Lysaght (Australia) Limited at Western Port.

John Lysaght (Australia) Limited

The Alcoa aluminium smelter site at Point Henry, Geelong, commenced operations in 1962.

Alcoa of Australia Limited





The plant of Altona Petrochemical Company which is engaged in chemical, synthetic rubber, and plastic production.

Exxon Chemical Australia Ltd

Flower show on David Jones' ground floor, Melbourne, celebrating the opening of the remodelled store.

David Jones (Australia) Pty Limited



EMPLOYMENT IN MANUFACTURING ESTABLISHMENTS IN VICTORIA AND PROPORTIONS IN MELBOURNE
 STATISTICAL DIVISION AND REST OF STATE: 1968-69, 1973-74, 1978-79, AND 1981-82

Industry group	Employment (a)				Per cent in Melbourne Statistical Division				Per cent in rest of State			
	1968-69	1973-74	1978-79	1981-82	1968-69	1973-74	1978-79	1981-82	1968-69	1973-74	1978-79	1981-82
Food, beverages, and tobacco —												
Meat products	13,504	17,059	13,701	11,949	74.6	70.7	65.0	67.9	25.4	29.3	35.0	32.1
Milk products	9,000	9,114	8,995	7,945	42.3	47.8	47.8	46.1	57.7	52.2	52.2	53.9
Fruit and vegetable products	6,499	6,704	5,355	4,771	59.8	60.6	59.2	53.9	40.2	39.4	40.8	46.1
Margarine, oils, fats; flour mill and cereal food products	2,695	2,431	2,246	2,314	81.8	n.p.	n.p.	80.8	18.2	n.p.	n.p.	19.2
Bread, cakes, and biscuits	9,631	9,846	8,650	8,993	73.5	73.7	79.8	79.5	26.5	26.3	20.2	20.5
Sugar and other food products	7,746	9,007	8,650	9,509	87.1	85.1	78.2	78.7	12.9	14.9	21.8	21.3
Beverages, malt; tobacco products	8,059	9,507	8,107	8,168	86.1	n.p.	n.p.	81.5	13.9	n.p.	n.p.	18.5
Total	57,134	63,668	55,704	53,649	71.3	71.6	69.4	69.9	28.7	28.4	30.6	30.1
Textiles —												
Textiles, yarns, woven fabrics	22,156	21,885	12,815	12,724	70.8	71.3	69.7	69.6	29.2	28.7	30.3	30.4
Other textile products	6,403	7,452	6,379	6,569	84.3	79.7	79.9	80.3	15.7	20.3	20.1	19.7
Total	28,559	29,337	19,194	19,293	73.9	73.5	73.1	73.3	26.1	26.5	26.9	26.7
Clothing and footwear —												
Knitting mills	13,653	14,816	11,245	10,236	91.0	87.1	81.5	80.5	9.0	12.9	18.5	19.5
Clothing	37,476	34,955	25,965	25,730	92.1	87.7	86.0	84.6	7.9	12.3	14.0	15.4
Footwear	12,869	10,325	8,125	8,040	92.0	88.9	85.0	86.8	8.0	11.1	15.0	13.2
Total	63,998	60,096	45,335	44,006	91.9	87.7	84.7	84.1	8.1	12.3	15.3	15.9
Wood, wood products, furniture —												
Wood and wood products	13,117	13,287	12,145	12,673	61.2	58.4	55.6	54.1	38.8	41.6	44.4	45.9
Furniture and mattresses	6,684	7,634	7,560	8,926	97.9	97.4	95.9	95.1	2.1	2.6	4.1	4.9
Total	19,801	20,921	19,705	21,599	73.6	72.6	71.1	71.1	26.4	27.4	28.9	28.9
Paper, paper products, printing and publishing —												
Paper, paper products	10,287	11,441	9,863	8,811	82.9	84.1	n.p.	n.p.	17.1	15.9	n.p.	n.p.
Printing, publishing	23,295	24,029	22,518	24,848	91.4	91.5	n.p.	n.p.	8.6	8.5	n.p.	n.p.
Total	33,582	35,470	32,381	33,659	89.0	89.1	87.5	87.1	11.0	10.9	12.5	12.9
Chemical, petroleum, coal products —												
Basic chemicals	6,830	7,174	7,922	7,126	85.6	89.3	88.6	85.5	14.4	10.7	11.4	14.5
Other chemicals and related products	13,833	14,667	12,350	11,716	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
Petroleum refining; petroleum, and coal products	1,281	1,334	1,479	1,576	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
Total	21,944	23,175	21,751	20,418	91.8	92.7	91.0	89.2	8.2	7.3	9.0	10.8

EMPLOYMENT IN MANUFACTURING ESTABLISHMENTS IN VICTORIA AND PROPORTIONS IN MELBOURNE STATISTICAL DIVISION AND REST OF STATE: 1968-69, 1973-74, 1978-79, AND 1981-82— *continued*

Industry group	Employment (a)				Per cent in Melbourne Statistical Division				Per cent in rest of State			
	1968-69	1973-74	1978-79	1981-82	1968-69	1973-74	1978-79	1981-82	1968-69	1973-74	1978-79	1981-82
Non-metallic mineral products —												
Glass, glass products; other non-metallic mineral products	4,505	4,732	5,263	5,091	85.9	84.6	n.p.	86.3	14.1	15.4	n.p.	13.7
Clay products and refractories	4,796	5,479	4,099	4,119	82.1	87.3	83.3	79.7	17.9	12.7	16.7	20.3
Cement and concrete products	4,567	5,448	3,610	3,567	72.1	73.2	n.p.	52.0	27.9	26.8	n.p.	48.0
Total	13,868	15,659	12,972	12,777	80.0	81.6	76.4	74.6	20.0	18.4	23.6	25.4
Basic metal products —												
Basic iron and steel products	6,607	8,690	8,780	9,720	75.1	74.7	n.p.	n.p.	24.9	25.3	n.p.	n.p.
Non-ferrous metal basic products	4,200	4,491	4,111	5,198	68.0	65.2	n.p.	n.p.	32.0	34.8	n.p.	n.p.
Total	10,807	13,181	12,891	14,918	72.3	71.5	71.2	70.0	27.7	28.5	28.8	30.0
Fabricated metal products —												
Fabricated structural metal products	7,833	7,661	6,304	7,879	80.2	88.7	86.3	81.4	19.8	11.3	13.7	18.6
Sheet metal products	11,122	11,245	10,310	11,072	95.1	95.6	92.5	91.8	4.9	4.4	7.5	8.2
Other fabricated metal products	17,790	20,155	19,329	18,730	89.8	88.9	89.1	91.1	10.2	11.1	10.9	8.9
Total	36,745	39,061	35,943	37,681	89.4	90.8	89.6	89.3	10.6	9.2	10.4	10.7
Transport equipment —												
Motor vehicles and parts	35,521	47,768	45,649	44,556	87.0	84.8	84.3	n.p.	13.0	15.2	15.7	n.p.
Other transport equipment	17,753	17,214	15,901	15,384	90.1	90.1	92.9	n.p.	9.9	9.9	7.1	n.p.
Total	53,274	64,982	61,550	59,940	88.0	86.2	86.5	87.5	12.0	13.8	13.5	12.5
Other machinery and equipment —												
Photographic, professional and scientific equipment	4,571	5,205	4,670	3,782	99.0	97.7	97.0	96.4	1.0	2.3	3.0	3.6
Appliances, electrical equipment	26,524	33,121	24,563	24,358	97.4	97.1	95.8	95.9	12.6	2.9	4.2	4.1
Industrial machinery, equipment	32,433	32,971	26,504	26,088	83.3	81.4	80.3	82.8	16.7	18.6	19.7	17.2
Total	63,528	71,297	55,737	54,228	90.3	89.9	88.6	89.6	9.7	10.1	11.4	10.4
Miscellaneous manufacturing —												
Leather and leather products	2,800	2,268	1,303	1,612	99.0	96.3	94.3	79.9	1.0	3.7	5.7	20.1
Rubber products	7,806	8,334	8,048	7,272	98.0	99.8	95.9	96.2	2.0	0.2	4.1	3.8
Plastics and related products	12,071	16,261	13,814	14,433	97.4	96.7	96.2	96.2	2.6	3.3	3.8	3.8
Other manufacturing	5,734	6,128	4,869	4,809	98.7	97.4	96.0	94.9	1.3	2.6	4.0	5.1
Total	28,411	32,991	28,034	28,126	98.0	97.6	96.6	95.1	2.0	2.4	3.4	4.9
Total all manufacturing	431,651	469,838	401,197	400,294	85.5	84.7	83.3	83.2	14.5	15.3	16.7	16.8

(a) Employment in all manufacturing establishments irrespective of size. Average over whole year (except for single establishment enterprises with less than 4 employees, which are collected only at June). Includes working proprietors.

PERSONS EMPLOYED IN MANUFACTURING IN URBAN AREAS WITH MORE THAN 1,000 FACTORY WORKERS:
VICTORIA, AT THE 1981 POPULATION CENSUS

Urban area	Factory labour force						ASIC industry group with more than 10 per cent. of factory labour force in each urban area							
	Number			Percentage of total labour force			Males				Females			
	Males	Females	Total	Males	Females	Total	ASIC code	Description	Number of workers	Percentage of male factory labour force	ASIC code	Description	Number of workers	Percentage of female factory labour force
Ballarat (Ballarat, Ballarat, and Sebastopol LGAs)	3,862	856	4,718	27.9	10.4	21.4	294	Basic iron and steel	568	14.7	245	Clothing	158	18.5
							323	Motor vehicles and parts	493	12.8	246	Footwear	94	11.0
											323	Motor vehicles and parts	109	12.7
Bendigo (Bendigo, Eaglehawk, Marong, and Strathfieldsaye LGAs)	3,240	1,162	4,402	18.4	22.1	12.5	211	Meat products	384	11.9	244	Knitting mills	268	23.1
							316	Other fabricated metal products	580	17.9	245	Clothing	208	17.9
Moe (Moe, Morwell, and Narracan LGAs)	1,332	959	2,291	8.2	13.3	9.8	263	Paper and paper products	316	23.7	234	Textile fibres, yarns, and woven fabrics	141	14.7
											244		148	15.4
							314	Structural metal products	151	11.3	245	Knitting mills	148	15.4
										335	Appliances, electrical equipment	203	21.2	
Wodonga (Rural City)	1,215	480	1,695	22.2	16.7	20.3	211	Meat products	195	16.0	217	Other food products	51	10.6
							217	Other food products	211	17.4	245	Clothing	109	22.7
							264	Printing and allied industries	140	11.5	335	Appliances, electrical equipment	78	16.3
Warrnambool (City and Shire)	1,202	481	1,683	23.4	14.8	20.1	212	Milk products	345	28.7	234	Textile fibres, yarns, and woven fabrics	82	17
							234	Textile fibres, yarns, and woven fabrics	166	13.8				
							245	Clothing	275	22.9	245	Clothing	281	58.4

PERSONS EMPLOYED IN MANUFACTURING IN URBAN AREAS WITH MORE THAN 1,000 FACTORY WORKERS:
VICTORIA, AT THE 1981 POPULATION CENSUS— *continued*

Urban area	Factory labour force						ASIC industry group with more than 10 per cent of factory labour force in each urban area							
	Number			Percentage of total labour force			Males				Females			
	Males	Females	Total	Males	Females	Total	ASIC code	Description	Number of workers	Percentage of male factory labour force	ASIC code	Description	Number of workers	Percentage of female factory labour force
Wangaratta (City and Shire)	1,090	551	1,641	27.7	21.7	25.3	234	Textile fibres, yarns, and woven fabrics	658	60.4	234	Textile fibres, yarns, and woven fabrics	283	51.4
											245	Clothing	167	30.3
Shepparton (City and Shire)	1,266	403	1,669	21.8	11.5	17.9	211	Meat products	142	11.2	211	Meat products	45	11.2
							212	Milk Products	146	11.5	213	Fruit and vegetable products	73	18.1
							213	Fruit and vegetable products	360	28.4	234	Textile fibres, yarns, and woven fabrics	52	12.9
							245	Clothing			245	Clothing	43	10.7
Geelong (Minor) (Geelong, Geelong West, and Newtown LGAs)	3,240	888	4,128	32.7	15.2	26.2	323	Motor vehicles and parts	802	24.8	235	Other textile products	108	12.2
											245	Clothing	121	13.6
											246	Footwear	131	14.8
Geelong (Major) (Geelong, Geelong West, Newtown, Corio, Bannockburn, Barrabool, Bellarine, and South Barwon LGAs)	15,110	3,711	18,821	36.0	16.2	29.0	295	Basic non-ferrous metals	1,759	11.6	245	Clothing	540	14.6
							323	Motor vehicles and parts	3,915	25.9	246	Footwear	546	14.7

**GEOGRAPHICAL DISTRIBUTION OF EMPLOYMENT^(a) IN MANUFACTURING ESTABLISHMENTS:
VICTORIA, 1968-69, 1973-74, 1978-79, and 1981-82**

ASIC code	Industry sub-division	Inner core ^(b)				Adjacent ring of LGAs ^(c)				Rest of Melbourne metropolitan area				Total Melbourne				Rest of Victoria			
		1968-69	1973-74	1978-79	1981-82	1968-69	1973-74	1978-79	1981-82	1968-69	1973-74	1978-79	1981-82	1968-69	1973-74	1978-79	1981-82	1968-69	1973-74	1978-79	1981-82
21-22	Food, beverages, and tobacco	8,605	8,003	6,427	6,553	10,016	n.p.	6,843	7,311	22,118	n.p.	25,400	23,653	40,739	45,571	38,670	37,517	16,395	18,097	17,034	16,132
23	Textiles	5,028	3,873	1,988	2,782	5,581	5,027	4,028	2,969	10,484	12,651	8,019	8,383	21,093	21,551	14,035	14,134	7,466	7,786	5,159	5,159
24	Clothing and footwear	27,161	19,979	12,668	11,151	9,732	n.p.	5,714	4,802	21,895	n.p.	20,095	21,045	58,788	52,715	38,477	36,998	5,210	7,381	6,858	7,008
25	Wood, wood products, and furniture	2,168	1,834	1,209	1,245	n.p.	1,690	1,387	1,494	n.p.	11,670	11,484	12,612	14,568	15,194	14,080	15,351	5,233	5,727	5,625	6,248
26	Paper, paper products, printing, and publishing	12,821	12,282	10,615	9,367	n.p.	4,610	3,417	3,750	n.p.	14,724	14,349	16,213	29,873	31,616	28,381	29,330	3,709	3,854	4,000	4,329
27	Chemicals, petroleum, and coal products	4,005	n.p.	3,651	2,342	5,387	4,496	4,035	3,372	10,752	n.p.	12,105	12,504	20,144	21,474	19,791	18,218	1,800	1,701	1,960	2,200
28	Non-metallic mineral products	n.p.	550	689	488	3,003	3,439	2,468	2,326	n.p.	8,789	6,773	6,720	11,100	12,778	9,930	9,534	2,768	2,881	3,042	3,243
29	Basic metal products	n.p.	1,667	1,822	2,597	1,387	524	451	384	n.p.	7,229	6,882	7,464	7,817	9,420	9,155	10,445	2,990	3,761	3,736	4,473
31	Fabricated metals products	4,997	4,615	3,812	3,764	6,044	5,329	3,959	3,385	21,794	25,511	24,567	26,500	32,835	35,455	32,338	33,649	3,910	3,606	3,605	4,032
32	Transport equipment	3,727	n.p.	2,501	1,891	20,374	20,034	18,160	18,230	22,787	n.p.	32,651	32,343	46,888	56,004	53,312	52,464	6,386	8,978	8,238	7,476
33	Other machinery and equipment	8,093	7,275	4,296	4,187	n.p.	8,274	5,970	5,249	n.p.	48,535	39,164	39,168	57,354	64,084	49,430	48,604	6,174	7,213	6,307	5,624
34	Miscellaneous manufacturing	5,492	4,392	2,815	2,439	7,448	7,001	6,874	5,435	14,891	20,809	17,221	18,860	27,831	32,202	26,910	26,734	580	789	1,124	1,392
	Total all manufacturing	84,428	71,946	52,493	48,806	85,881	78,392	63,306	58,707	198,721	247,726	218,710	225,465	369,030	398,064	334,509	332,978	62,621	71,774	66,688	67,316

(a) Average over whole year (except for single establishment enterprises with less than 4 employees which are collected only at June). Includes working proprietors.

(b) LGAs Melbourne, Fitzroy, Collingwood, Richmond.

(c) LGAs Brighton, Camberwell, Caulfield, Footscray, Hawthorn, Kew, Malvern, Port Melbourne, Prahran, St Kilda, South Melbourne, Williamstown.

22,000 during the next eight years. The data in the table on page 389 indicate the industry groups in which the main changes occurred. The net effect was to boost the share of factory employment in the rest of the Melbourne metropolitan area from 54 per cent in 1969 to 67 per cent in 1982.

CONCLUSION

The fifty year period from 1934 witnessed a change in the industrial structure of Victoria from a dependence on the more traditional types of manufacturing to those based on new technologies. In some respects the prosperity of Victorian manufacturing has become more dependent on that of Australia as a whole, as exemplified by the many firms directly and indirectly engaged in the production of motor vehicles, the sales of which have—in many of the more industrialised countries—become a “barometer” of national economic prosperity. Yet, in other ways, Victoria has become less dependent on supplies of basic materials from other parts of Australia as it now has facilities making steel and aluminium components, petrochemicals, and related products. Although these new developments are providing the basis for a greater diversification of industrial activity, events during the last decade have emphasised that manufacturing in Victoria is increasingly becoming a part of the global industrial system.