



INDUSTRIAL DEVELOPMENT IN AUSTRALIA

1920-1930

Thesis Submitted for the Degree of
Doctor of Philosophy
at the
Australian National University



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August 1959

This thesis is my own work.

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ACKNOWLEDGEMENTS

The writing of this thesis would have been impossible without the active co-operation of a large number of industrial firms. Many sent copies of their Annual Reports to the Australian National University, and these formed the beginnings of a Business Archives collection. Several firms - Broken Hill Proprietary Coy Ltd, Metal Manufactures Ltd, Bond's Industries Ltd and General Motors-Holden's Ltd - supplied further material. Broken Hill Proprietary Coy Ltd, through its Commercial Research Section, was particularly helpful. Other organisations - the Woollen and Worsted Textile Manufacturers' Association, the Australian Industries Protection League and the Electrical Trades Union - made records available for research. I would like to express my appreciation for the assistance given by all these bodies.

I wish also to thank the library staffs of the following institutions: the Commonwealth National Library in Canberra, the Public Libraries of New South Wales and Victoria, the Commonwealth Court of Conciliation and Arbitration, the Industrial Registrar of New South Wales, J.B. Were and Son, and the Stock Exchanges of Melbourne and Sydney.



PRECIS

This thesis is a study of industrial development in Australia between 1920 and 1930. The study has been conducted at several levels of analysis. Chapters II to VI examine the growth of some of the leading industries and firms engaged in manufacturing; their selection is based on an assessment - for which support is offered - of the character and conditions of the industrial expansion during this decade. In chapters VII to IX some of the more general problems and processes associated with this growth are examined. The introductory chapter reviews the industrial development of the twenties as a whole.

PREFACE

Industrial history in Australia is a neglected field, and Brian Fitzpatrick scarcely exaggerated with his comment: 'There is no literature of Australian manufacturing.'¹ A study of the development of manufacturing, therefore, could not draw on established work, but had to commence ab initio.

For the pioneer in this field there are a number of ways in which this subject can be approached. They range from the study of the firm at one extreme to the study of the industrial sector as a whole at the other. Each extremity has certain advantages and certain drawbacks, but it was felt that the most useful purpose would be served by making the investigation as wide in scope as possible. The choice of the firm as the unit of study does permit depth and detail of analysis, but such a work must lack perspective: a history of a firm can be given significance only within a broader picture. On the other hand, the study of an industrial sector leads to the raising of the more

1

Quoted by C. Hartley Grattan in his edited work, Australia (1947), p.427. Grattan comments: 'His reference is to critical historical studies.'

important general questions concerning industrial growth, and, at the same time, indicates lines along which future research can proceed.

It was intended, at first, that the main emphasis should be on a statistical analysis of industrial growth in the 1920s, with the chief source material being the official statistics of the Commonwealth and state statisticians. However, as the work progressed it was felt - primarily for two reasons - that the results would be of limited value. One reason lay in the statistics themselves: their classification, range and accuracy all circumscribe any conclusions which may be reached. More important was the growing belief that the development of manufacturing is much more complex than any statistical survey can suggest. On the one hand, many factors are qualitative and cannot be measured; on the other, totals conceal significant diversity in components.

2

It is worthwhile repeating P.T. Bauer's comments on this problem in Economic Analysis and Policy in Underdeveloped Countries (1957). He writes (pp.11-12): 'The depth and significance of economic generalization depend on the quality of the underlying observation and analysis. In certain branches of economics, notably in the study of underdeveloped countries, the importance of direct observation and the importance of the quality of observation have been underrated in recent years. By direct observation I mean, in this context, gathering of information personally or reliance on comparatively unprocessed material, such as files of business firms and government departments, locally published reports..., proceedings of representative assemblies, newspapers, advertisements, market reports, auction notices, and the like.' A



The result was the use of a combination of methods: industry studies, which it was felt would be interesting in their own right, and an examination of some of the broader aspects of industrial growth as a whole. Not all industries could be included, and the selection was intended to emphasise the more important features of the development of the 1920s, and, at the same time, cover as wide a range as possible. It includes, therefore, 'heavy' industry, motor vehicles, electrical manufactures, textiles and some building materials. These industries are examined in chapters II to VI.

From these industry studies it was possible to examine in depth and bring perspective to some of the problems and processes of industrial growth in the twenties. The first of these centres around the acquisition of a labour force which was adequate both in quantity and quality for secondary industry. The second relates to the sources of finance and the methods used to channel savings into industrial growth. Finally, an examination was made of the success of industrial growth both in raising output per head, and in meeting overseas competition. These topics form the subjects of chapters

2 (continued)

major reason for the underrating of direct observation 'has been the emphasis on quantification' (p.12), and 'not only is the quantification of a situation necessarily an abstraction, but it may also be unrepresentative of some of its most important aspects' (p.13).

VII to IX. The introductory chapter to this work brings together these various aspects of growth, and attempts to look at the industrial development of the twenties as a whole.

Industrial development is a broad subject. Not all features can be covered here, particularly given the poverty of Australian research in this field. The writer must endorse the remarks of G.C. Allen about a similar work in Britain:

In a book planned on this scale, many important questions necessarily receive inadequate treatment, while some large matters (e.g. industrial relations) cannot be considered at all. I am fully conscious of these deficiencies. My hope is that this edition... will be regarded as an introduction (and not more than an introduction) to the study of certain aspects of British industry which are of economic rather than of technical interest.³

Finally, once again, a warning should be given concerning the statistics relating to the 1920s. Many of them are poor in quality. They are therefore used in this thesis with severe reservations, usually to indicate the nature of problems, rather than to provide solutions.

3

G.C. Allen, British Industries and their Organisation (1951), p.x.

Chapter I

INTRODUCTION

In the development of the Australian economy there have been several periods of marked industrial growth. One lay between the mid-1860s and seventies, another in the decade before the first world war, a third in the 1920s and the fourth since the second world war. In this sense the 1920s are not unique, but the growth in the decade was characterised by special features.

.....

Writing in 1900, the N.S.W. Government Statistician, T.A. Coghlan, expressed the opinion that 'the progress of the manufacturing industry in Australasia has been slow and fitful, even in the most advanced colonies....'¹ In this view Coghlan appears to have been mistaken, misled perhaps by the territorial expansion of population over a vast continent, and by the critical importance of export industries based on rural production and mining. In fact, later research indicates

¹

T.A. Coghlan, A Statistical Account of the Seven Colonies of Australasia, 1899-1900 (Sydney, 1900), p.597.

that, following the concentration of activities on gold in the 1850s, manufacturing expanded very rapidly from a mere 4.3 per cent of output in 1861² to 11.8 per cent in 1877;³ for the rest of the century it fluctuated around a slight upward trend and averaged 13 per cent of output for the five years ending in 1900.⁴ Rapid growth was renewed in the new century. At the first Commonwealth census of 1901 the percentage of the working population employed in manufacturing was 18.4 per cent and this had grown to 21.3 per cent by the next census of 1911.⁵

Accompanying this expansion of manufacturing was a substantial change in the composition of output. Here, Coghlan's description of the position in 1900 is well-founded:

The greater portion of the manufactories of Australasia may be classified as domestic industries - that is to say, industries naturally arising from the circumstances of the population, or connected with the treatment of perishable products; but there are nevertheless a fair number of industries of a more complex character which have been firmly established.⁶

2

N.G. Butlin, 'The Shape of the Australian Economy, 1861-1900', Economic Record, April 1958, p.17.

3

Ibid., p.18.

4

Ibid., p.20.

5

Colin Clark, 'Tertiary Industries in the Economy', ch.XIV of Australia, ed. C. Hartley Grattan (1947), p.215.

6

T.A. Coghlan, loc. cit.

Basically, it was the development of the 'more complex' industries - increasingly in competition with imports - that accounted for the growing relative importance of manufacturing in the twentieth century. In part their development resulted from the expansion of the market as population grew from 3.8 million in 1901 to 5.4 million in 1921, in part from government assistance in reducing import competition. These influences were gradual, but a definite change in the pattern of growth came with the impact of the 1914-18 war.

The immediate effects of the war on Australian industry were not as far-reaching as in many other countries. Australia was too remote from the scenes of conflict and her industries were insufficiently developed for the demands for war material and equipment to make much impression on the economy. In fact, employment in manufacturing did not exceed the 1913 figure until 1918-19. The most important influence of the war was felt in the pattern of production, which was affected principally by changes in the availability of imports. For various reasons - mainly shortage of shipping space and pre-occupation with the war - Australia's traditional suppliers of manufactured goods were unable to meet the demand; to some degree this shortage of goods was met from new overseas sources of supply, particularly America and Japan, but at the same time many new avenues of production



were created for Australian manufacturers. The extent of the response to this opportunity was limited. There are always difficulties in establishing new industries and these were accentuated during the war; in Australia's position the development of new lines of manufactures almost inevitably meant the obtaining of some form of overseas assistance, but between 1914 and 1918 supplies of overseas capital, equipment or men were almost unprocurable. Perhaps the most significant development was the establishment of the iron and steel industry, for which the foundations had been laid before the outbreak of hostilities. Nevertheless, much pioneering was done, vested interests were created for the maintenance of the new avenues of production and manufacturers were shown in an obvious way the possibilities of growth if the supply of imports was limited. In similar manner, the war demonstrated to the Commonwealth government the strategic weakness of reliance on foreign supplies of manufactured goods. These developments combined to inspire the tariff of 1920 which was designed both to consolidate the gains in manufacturing which were made during the war and to promote further growth.⁷

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For a more extensive discussion of the effects of the war, see C. Forster, 'Australian Manufacturing and the War of 1914-18', Economic Record, Nov. 1953, pp.211-30.

With the adoption by the Commonwealth government of a deliberate policy of industrialisation, this decade marks the opening of a new phase in Australian development. In part, as we have seen, this policy found its origins in circumstances arising out of the war 1914-18, but its roots lie deeper: developments in world and local agriculture were creating a surplus rural population, while at the same time, for various reasons, a rapidly growing Australian population was being encouraged by a policy of assisted migration. In these circumstances, to raise income, or at least to maintain it, resources had to be directed into secondary industry.

Yet in the twenties the problem was not seen in this way. The growth of manufacturing was regarded as one solution for the worrying problem of sustained unemployment. At the same time, it was still hoped that, in the Australian tradition, further extensive agricultural settlement could take place. This view was encouraged by the British government. Resettlement of British people in Australia meant for the British government land settlement, the extension of the market for British manufactures and an increased supply of primary produce. British assistance for migration and encouragement for Australian borrowing were closely associated with these aims. However, the land settlement schemes of the twenties were dismal failures, and this decade marks the end of attempts to

encourage labour into primary industry on a large scale. Henceforth, the emphasis was on industrialisation.

Industrialisation meant, as always in Australian development, import replacement. Government policy was therefore directed, in the main, at improving the competitive position of Australian manufacturers. This was done through tariffs and some less important measures such as preference in government contracts and bounties. Tariffs were not a new development. They had been used extensively by the Victorian government to give protection before federation, but in the first Commonwealth tariff in 1901 tariffs were used primarily to raise revenue. Tariff changes thereafter tended to be for protective purposes, but it was only with the tariff imposed in March 1920, that the emphasis in the tariff was firmly placed so as to encourage industrial development.

Yet, if the opportunity for expansion in agriculture was limited, the growth of industry took place under some pronounced difficulties. The twenties were a period of aggressive world trading. International sentiment was unsympathetic, particularly as compared with attitudes today, to the attempts of underdeveloped countries to industrialise. Moreover, the Australian competitive position in the twenties was weak, with a cost structure at a much higher level than Britain, the chief source of manufactured imports. Other difficulties

centred around the size and stage of development of the Australian economy: the total population was only some five millions and it was grouped over a vast continent (being on the seaboard it was also very accessible for imports); the range of experience of the work-force (including entrepreneurs) was limited; and the financial organisation of the community, appropriate for a commercial-agricultural economy, was not ideally arranged to direct savings into manufacturing.

However, there were favourable aspects to the Australian position which encouraged industrial growth. The basic economic framework was that of an advanced country: there was an established manufacturing base from which expansion could take place; basic services were well developed, particularly transport, and the unsatisfactory situation in electric power was met by governments in the first years of the decade; the market situation was not as bad as the size of population suggests - at least total numbers and incomes were growing rapidly. The resource base for expansion was good, particularly in iron ore and coking coal for heavy industry, and black and brown coal for power.

Australia was also favoured in its close economic and cultural ties with Britain. This was an important factor in obtaining migrants for industry and in encouraging both British and American firms to establish branches in Australia.

With the 1920s large-scale foreign investment in Australian manufacturing begins. Investment took place especially in the 'new' industries of the twenties, but the inflow of capital, men and techniques benefited industry as a whole. Apart from the advantages of private investment, the problems of the decade were smoothed to a great extent by large-scale government borrowing overseas. This borrowing - some £250 million in the decade - was associated to a large degree with migration and land settlement, but it reduced general pressures on the balance of payments and incomes.

The selection of industry case studies in this work has been based on a general impression - for which some support is offered - of the character and conditions of industrial growth in the 1920s. In general terms, in a still relatively underdeveloped country, with a high rate of importing, much of Australian industrial development has been set in the context of 'infant industry' growth. The selection of industries has, therefore, been influenced by the contrasting roles of government intervention in different industry groups: by tariffs, preferences and contracts and the general stimulus of expenditure on public works. Here, perhaps the most important was in 'heavy industry' where the iron and steel industry, established on a large scale during the war, was expanded and consolidated in the twenties. Its growth is

examined in Chapter VI. But one can overstress the importance of infant industry problems. Australia's economic development fitted into a world pattern and, to a considerable extent, industrial growth followed the transmission of innovations, foreign capital and entrepreneurial skill in the 'new' industries. Within this group, the range of novel consumer durables expanded enormously in the twenties and, most striking of all was the coming of the automobile, mass produced for mass markets. Hence the growth of this industry has received special attention in Chapter II. In a similar way, the electrical industry, based on the demand for industrial and communications equipment as well as domestic appliances, was established in Australia - as examined in Chapter V. Other forms of basic technological change were important in a different direction: building methods were transformed by the introduction of new building materials. Hence cement is studied in Chapter III and structural steel in Chapter VI. Innovations, foreign capital and skills, the stringent application of the tariff, all were important in the rapid expansion of the woollen and knitting industries examined in Chapter IV.

The character and speed of the industrial growth set problems and imposed certain processes of growth. Only several of the more important can be examined here. In the

seven years to 1926-7 the labour force in manufacturing rose by more than one quarter. How this labour force was acquired in sufficient quantity and of the right quality for the various industries in which growth was taking place is examined in Chapter VII. To provide for this growth in employment, fixed assets in manufacturing doubled in value over the same period; the source of finance for this expansion and the manner in which it was channelled into manufacturing is studied in Chapter VIII. Finally, in Chapter IX, an assessment is made of the efficiency with which resources were used in manufacturing and the degree of success obtained in meeting overseas competition.

This introductory chapter brings together these threads, and attempts to look at the industrial development of the twenties as a whole.

.....

The Position at the Beginning of the 1920s

By the beginning of the twenties manufacturing had become an important part of the economy. Its significance as an employer compared with other sectors is indicated by the census of 1921 which portrays in broad outline the occupations of the working population. Unfortunately, the census included a large group of 'undefined industrial workers', so that precision in classifying occupations is impossible.



Colin Clark has attempted to overcome this difficulty by distributing this group between manufacturing, building and transport, and the result is set out below:

Distribution of Persons in Industry by Percentage

Census of 1921

Primary (except mining)	21.9
Mining	2.9
Manufacturing	22.3
Building and construction	7.8
Transport and communication	11.2
Property and finance	2.0
Commerce	13.9
Public administration, professions, and entertainment	8.6
Personal and domestic	<u>9.4</u>
Total	100.0

Source: Colin Clark, 'Tertiary Industries in the Economy', ch.XIV, in C. Harley Grattan (ed.) Australia (1947), p.215.

This was the first census in which numbers employed in manufacturing had exceeded those in primary industries, excluding mining. In terms of output, the value of manufacturing production in the five years 1919-20 to 1923-4 was 30 per cent of the value of output of all primary industry, including mining;⁸ however, this relationship is not very informative since the manufacturing figure relates to the value

8

Commonwealth Production Bulletin, no.19.

added in the process of manufacturing while primary industry refers to the total value of output.⁹

Within manufacturing, the distribution of labour and value added in the different industrial groups gives some conception of the variety of industries and their relative importance at the opening of the decade:

Class of Industry	1920-1			
	Employment Number	%	Value £'000	Added %
1. Treating of Raw Materials, Product of Agricultural and Pastoral Pursuits, etc.	10,494	2.7	3,727	3.4
2. Treating Oils and Fats, Animal, Vegetable, etc.	2,848	0.7	1,310	1.2
3. Processes in Stone, Clay, Glass, etc.	18,311	4.7	5,599	5.1
4. Working in Wood	31,942	8.3	8,632	7.8
5. Metal Works, Machinery, etc.	80,550	20.8	22,378	20.3
6. Connected with Food and Drink, etc.	57,599	14.9	22,583	20.4
7. Clothing and Textile Fabrics, etc.	88,577	22.9	16,930	15.3
8. Books, Paper, Printing, and Engraving	27,522	7.1	8,321	7.5
9. Musical Instruments, etc.	1,065	0.3	336	0.3
10. Arms and Explosives	1,504	0.4	414	0.4
11. Vehicles & Fittings, Saddlery & Harness, etc.	16,334	4.2	3,619	3.3
12. Ship and Boat Building and Repairing	6,702	1.7	1,882	1.7
13. Furniture, Bedding and Up- holstery	11,827	3.1	2,742	2.5

(continued on next page)

9

It is not possible to follow this relationship further because of the inadequacy of the statistics. However, it is interesting to note that in 1928-9, when an estimate is available, net manufacturing production was 79% of net primary production. C. Clark and J.G. Crawford, The National Income of Australia (1938), p.24.

(continued)

Class of Industry	1920-1			
	Employment Number	%	Value £'000	Added %
14. Drugs, Chemicals and By- Products	6,805	1.8	2,603	2.4
15. Surgical and Other Scientific Instruments	548	0.1	130	0.1
16. Jewellery, Timepieces, & Platedware	2,707	0.7	676	0.6
17. Heat, Light & Power	12,770	3.3	6,613	6.0
18. Rubber Goods and Leatherware, n.e.i.	2,191	0.6	500	0.5
19. Other Industries, n.e.i.	<u>6,343</u>	<u>1.6</u>	<u>1,438</u>	<u>1.3</u>
Total	386,639	99.9	110,434	100.1

Source: Commonwealth Production Bulletin, no.21.

The above classification of industries is the official one of the Commonwealth Statistician, but it is of limited use only, even for giving a general impression. Official statistics in Production Bulletins subdivide these industrial classes into a further hundred or so industries, but even these subheadings often cover the production of a great number of commodities. Succeeding chapters will examine some of these industries in more detail.

In considering manufacturing in Australia, attention is directed almost entirely to the states of New South Wales and Victoria. In 1920 these two states, with 66 per cent of the population, provided 75 per cent of the factory employment (N.S.W., with 38 per cent of the population, had 39 per cent of the factory employment and Victoria had 28 per cent

of the population and 36 per cent of the factory employment).¹⁰
 Within these states, manufacturing was heavily concentrated
 in the metropolitan centres of Sydney and Melbourne.

Possibilities for Growth

The Australian market for manufactures was expanding rapidly during the twenties. Population was growing at the rate of 1.9 per cent per annum, so that total numbers rose from 5,304,000 at the end of 1919 to 6,414,000 at the end of 1929; net immigration was equal to roughly one-third of this increase. As total numbers were rising, so did real incomes per head. Just how much incomes were increasing it is difficult to say, given the inadequate statistics of the period, but it seems that the rise in the twenties was very substantial. For example, if we compare the two years 1920-1, 1921-2 with the two years at the end of the decade, 1928-9, 1929-30, Clark and Crawford's figures suggest that real income produced per head of population rose 28 per cent, while domestic consumption and investment per head rose 40 per cent.¹¹

These expanding incomes took place under circumstances which encouraged spending on manufactured goods. The

¹⁰

Demography Bulletin, no.47, and Production Bulletin, no.20.

¹¹

Clark and Crawford, op. cit., p.65.



development of a mass market for motor vehicles and electrical manufactures was one of the most significant developments for manufacturing in the twenties. Moreover, this market was extended to the lower incomes in the community by the development of the hire-purchase system. As the Sydney Morning Herald remarked:

Of late there has been a tremendous growth in what is popularly known as the time-payment system of buying.... So tremendous has been its growth, so extensive has been the volume of trading done by its means, and so great has been the financing involved by its activities that it constitutes one of the outstanding commercial events of recent times.... Today the operations of the system are not confined to any one class or section of the people, they are widespread. It is no longer popularly regarded as pernicious; few are ashamed to admit that they take advantage of the facilities it offers;...and the great portion of the purchases made by its means is not clothing, nor furniture, nor general household goods, but motor cars, player pianos, wireless sets, electric carpet sweepers, and jewellery.¹²

It was this domestic market that concerned Australian manufacturers - exports were unimportant¹³ - and it was a market for which they competed with imports. This situation was typical for Australian manufacturing; having developed,

¹²

Financial and Commercial Supplement, 8 Feb. 1927, p.2.

¹³

Manufactured exports were some 5% or 6% of total exports at the beginning of the twenties according to the Commonwealth Year Book, no.15, pp.490-1, but since this does not take full account of processed primary products it is a slight understatement. Exports were only one-third to one-half of the value of manufacturing output.

in the main, after the industrial revolution in Britain and after the introduction of cheap sea transport with the steam ship, Australian manufacturing has grown in the face of import competition. This competition became increasingly severe in the twentieth century as more countries industrialised and sought overseas markets, and it was particularly pronounced in the 1920s. In this decade the expansion of population in Australia meant that markets normally supplied by local manufacturers were growing; but the vigorous growth of domestic production depended on making inroads into imports, especially since the expanding incomes of the twenties were associated with new consumer durables of the type of manufacture normally supplied from overseas. It is impossible to calculate with any great accuracy the extent to which imports met the total demand for manufactured goods in Australia, but one estimate places it as high as 43 per cent in the pre-war period 1911 to 1913.¹⁴ This rough measure may serve as an indication of the stage of development of Australian manufacturing and the possibilities for growth at the expense of imports.

In the twenties then, Australian manufacturers faced an expanding level of consumption as population and incomes

¹⁴

Colin Clark, The Conditions of Economic Progress (1951), p.361.

rose, and new methods of finance extended the market for the new types of manufactured durables. At the same time, since imports met a substantial portion of the demand, particularly in the types of commodities for which demand was rapidly expanding, the growth of domestic production depended, to a large extent, on import replacement.

The Growth of Manufacturing

It is very difficult to describe in a satisfactory manner the growth of manufacturing as a whole; once the attempt is made it is clear that such a description conceals at least as much as it reveals. The growth of manufacturing as a whole is the sum of the movements of the different individual industries, and it is partly for this reason that a large part of this thesis is devoted to an examination of development at the industry level. Moreover, growth as a whole is difficult to describe because it can be looked at from so many points of view. For our purpose attention is directed to three aspects - capital equipment, employment and output.

(a) Capital Equipment

The decade of the twenties was a period of great capital expansion in manufacturing: official statistics show the value of fixed assets - 'land and buildings', 'plant and machinery' - to have more than doubled. These values are

recorded annually in Production Bulletins, but it is difficult to use them as a measure of net additions to capital equipment because of certain qualifications.

(i) The values would normally be depreciated book values, but we do not know the extent to which depreciation was provided by individual reporting firms.

(ii) The values would be affected by asset revaluation. Undoubtedly this was carried on to some extent throughout the twenties, but a study of company balance sheets suggests that the really significant period of revaluation followed the war and was accomplished by 1920-1. This difficulty can therefore largely be ignored from that date.

(iii) Valuations were made at 30 June, and so may not be representative of the position during the year. This could be important, for example, in a time of depression when many firms were failing, but it does not seem to be significant during the twenties.

(iv) To obtain the value of equipment, the value of 'land' must be separated from 'land and buildings'. Following

15

These problems are discussed in more detail by Roland Wilson, 'Public and Private Investment in Australia' (A.N.Z.A.A.S. Paper, 1939), Appendix.

16

Changes in value may represent transfers to and from other sectors of the economy, and rentals from other sectors. These considerations are important if investment is being considered.

17

the practice of P.H. Douglas this has been attempted and the results are set out in the table below:

Year 30 June	Buildings		Plant and Machinery	
	£'000 Value	% Change on Previous Year	£'000 Value	% Change on Previous Year
1920	35,030	-	58,468	-
1921	40,202	14.8	68,450	17.1
1922	44,480	10.6	77,891	13.8
1923	49,202	10.6	85,927	10.3
1924	54,432	10.6	96,486	12.3
1925	60,092	10.4	105,351	9.2
1926	63,208	5.2	111,163	5.5
1927	67,744	7.2	115,735	4.1
1928	70,536	4.1	119,350	3.1
1929	73,422	4.1	122,679	2.8
1930	75,602	3.0	125,637	2.4

Source: Production Bulletin, nos 14-24. The figures have been adjusted to make the series consistent - see Appendix 1. Land has been excluded - see footnote 16.

However, even given the qualifications made above, some important conclusions can be drawn from the table. It indicates a massive building-up of capital equipment in manufacturing. It also suggests a definite pattern in the rate of growth of the value of this capital equipment. In both types of capital equipment - 'buildings' and 'plant and machinery' - there is a very high rate of growth in 1920-1,

 17

Using separate returns for six Victorian industries, P.H. Douglas and M.L. Handsaker found the value of land to be roughly one-third of the value of land and buildings: 'The Theory of Marginal Productivity Tested by Data for Manufacturing in Victoria', Quarterly Journal of Economics, vol.52, p.21.

and then for the next four years, although the rate has fallen, it is still at the high level of 10 to 11 per cent per annum. The sharp break in the rate of growth comes in 1925-6 when it is halved to 5 to 6 per cent and then it tends to fall away to reach only 2 to 3 per cent in the final years of the decade. This suggests that the boom in manufacturing, as measured by the rates of change in the value of capital equipment, finished in the mid-twenties, which is a good deal earlier than other measures of growth in the twenties indicate. It indicates a falling away of entrepreneurs' expectations about the profitability of investment in manufacturing well before there were obvious signs of general depression in the economy. There were, of course, industries in which capital equipment continued to grow rapidly in value after this date, such as the motor vehicle, rubber and some clothing industries, but they were insufficient to keep the rate of growth for the industrial sector as a whole up to the level of the early twenties.

Even in a general picture of the growth of capital equipment for industry we cannot ignore the special position occupied by the electricity industry. The value of capital equipment in this industry made up a substantial and growing part of the total equipment in manufacturing during the twenties: between 1919-20 and 1929-30 the value of its

buildings grew from 4 per cent to 6.8 per cent of the total, while its plant and machinery increased from 10.2 per cent to 19.8 per cent of the total.¹⁸ This industry can hardly be considered as fitting within the general definition of a 'factory'; it is primarily a service industry for the rest of the economy, which requires very large amounts of capital yet in its operations it employs relatively little labour and raw materials. Moreover, it is an industry in which government investment dominates¹⁹ and in which government controls are most important. For these reasons it is worth considering changes in the value of capital equipment excluding the electricity industry. When this is done, although there is not much change in the rates of growth of buildings, the picture as far as plant and machinery are concerned is different.

Percentage Change in Valuation of Plant and Machinery

Year	Including Electricity	Excluding Electricity
1920-21	17.1	16.6
1921-22	13.8	11.8
1922-23	10.3	9.1
1923-24	12.3	9.8
1924-25	9.2	6.9
1925-26	5.5	6.3
1926-27	4.1	4.6
1927-28	3.1	0.6
1928-29	2.8	2.3
1929-30	2.4	0.1

18

Production Bulletin, nos 14-24.

19

See ch.VIII.



It can be seen that if the electricity industry is excluded, the high rate of growth of capital equipment might be said to have ended as early as 1923-4; there are then three years of modest but declining growth followed by a sharp fall in 1927-8. In two of the final three years of the decade, growth has almost ceased.

What is the explanation of this changing rate of growth of capital equipment in industry? Operating throughout the whole of this period there was the influence of two major technological advances - motor vehicles and electricity. However, neither of these was sufficient to sustain growth at a high level after the mid-twenties. We have seen that electricity did make up a large proportion of the total, particularly in the late twenties, but the fact that this innovation did not have even greater effects within manufacturing was a result of the stage of development of manufacturing in Australia. Local industry could produce only a small proportion of the complex electrical equipment that was needed, so that imports felt the effects more strongly than home production. The position was similar with motor vehicles.

The rate of growth was high in the first years of the twenties for a number of reasons. First, there was a backlog of demand for manufactured goods from the war which

induced firms to expand their capital assets. Second, the 'normal' demand of firms to expand their plant and buildings had accumulated during the war and was put into operation early in the twenties. Third, the war had encouraged new industries to develop. Finally, these industries, along with others, were encouraged to expand by the tariff of 1920-1. By the middle of the decade these forces had spent themselves. Indeed, it seems possible that in the mood of optimism resulting from the end of the war, buoyant conditions and tariff increases, many firms provided themselves with capital equipment in excess of that required by the market, and in excess of that required for the normal growth of their markets. There was, therefore, a greater than normal periodicity in the demands of industry for equipment, which began to show in the falling rate of growth after 1924. Further advance depended principally on technological change showing itself in new methods, products and industries, or on making greater inroads into imports. We have seen that the first of these continued to operate, but although it was a large proportion of the total increase in capital equipment, it was insufficient to maintain the growth of the first half of the decade. In their competition with imports, Australian manufacturers may have been improving their position slightly as against Britain; but after the return to gold in 1925,

other foreign competition was more severe,²⁰ and further tariff increases were necessary simply to maintain the existing situation. If this were the situation, then continued expansion depended only on the expansion of total demand, and, if we can accept Clark and Crawford's estimates, this²¹ ceased to grow after 1926-7.

(b) Employment

The great expansion of capital equipment in manufacturing permitted a rapid increase in employment:

<u>Employment</u>			
Year	Average No. Employed Over Whole Year	1919-20 = 1000	Percentage Change on Previous Year
1919-20	350,629	1000	-
1920-21	360,051	1027	2.7
1921-22	370,905	1058	3.0
1922-23	388,002	1107	4.6
1923-24	405,157	1156	4.4
1924-25	418,338	1193	3.3
1925-26	428,421	1222	2.4
1926-27	445,753	1271	4.0
1927-28	436,278	1244	-2.1
1928-29	437,094	1247	0.2
1929-30	405,947	1158	-7.1

Source: Production Bulletin, no.24, adjusted as in Appendix 1.

Factory employment reached its peak in 1926-7 when it was 27.1 per cent above 1919-20. This is a high rate of

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See ch. IX.

²¹

Clark and Crawford, op. cit., p.65.

growth, averaging 3.5 per cent per annum; moreover, growth was sustained with no year falling below an increase of 2.4 per cent. This achievement is put into perspective when it is appreciated that employment in manufacturing was growing substantially faster than the population in the 15-64 years age groups: 3.5 per cent as compared with 2.3 per cent per annum. It is apparent that the world-wide slump around 1921-2 is not reflected in any obvious way in manufacturing employment in Australia. The peak of the boom in employment is clearly 1926-7; not only is employment at the highest level for the decade, but the absolute increase in employment is also the highest. Employment turns down slightly in the following year but is then maintained during 1928-9. The slide into the depression of the thirties does not begin until 1929-30 when employment falls 7.1 per cent. However, in spite of the rapid rate of growth up to 1926-7, at no stage was the state of full employment achieved by the economy. In fact, the lowest percentage of trade unionists²² unemployed in any year was 6.5 per cent in 1926-7.

What was the pattern of growth of employment in the different industries? Because of the great number of individual

22

The significance of unemployment in the different industries, and the different positions of the skilled and the unskilled workers are examined in ch.VII.

industries it is impossible to deal with them all in detail. In the circumstances of the 1920s, a useful line of approach is the classification of industries developed by the National Bureau of Economic Research.²³ This classification is most useful when applied to output in manufacturing, but even with employment - the only volume measure available in Australia - it does group industries in a meaningful way and suggest the lines of development that were possible at this time. The rate of growth in employment to 1926-7 was greatest in consumer and producer durable goods, where the major innovations of the period occurred, followed by consumer semi-durables and consumer perishables. The great growth in consumer durables was mainly a reflection of the rise of the motor vehicle industry, and the effect of this would have been much greater if the complete industry had been established instead of only parts of it. The growth in producer durables was dominated by work in transport equipment in the government-owned railway and tramway workshops; but the effect of development on the producer durables group as a whole was limited by the extent to which industrial plant and machinery came from overseas. The main basis for the growth of consumer semi-durables lay in the expansion of woollen and

23

See Simon Kuznets, Commodity Flow and Capital Formation, vol.1 (1938), Introduction.



knitted goods and rubber tyres. There was, of course, only modest scope for growth in consumer perishables. The rate of decline in these industrial groupings in 1929-30 was directly proportional to their previous increase. Construction materials do not fit into the general pattern of industrial growth; their behaviour is linked with the building cycle and employment ceases to expand after 1923-4 and then turns down sharply after 1926-7.

(c) Output

The great increase in industrial equipment and employment in Australia led to a rapid growth in industrial production. The extent of this growth is impossible to judge. In terms of value, production rose 64 per cent between 1919-20 and 1926-7, was stable for the next two years and then fell 7 per cent in 1929-30.²⁴ However, although there is evidence of a substantial increase in labour productivity, the change in the volume of production cannot be measured in total in any satisfactory way in Australia.²⁵ All that can be done here is to mention some of the developments in output in the more important industries which are discussed in later chapters. This necessity is something of a virtue, since

²⁴ Production Bulletin, nos 14-24.

²⁵ This problem is discussed in detail in ch.IX.

for many uses a description of the parts is much more informative than a knowledge of their sum.

One of the major development of the twenties was the firm establishment of the iron and steel industry. Output of steel was negligible before the war; by 1920 it had risen to just over 200,000 tons and by the last years of the twenties it was established at over 400,000 tons a year. This, of course, had considerable implications for the growth of dependent industries. In textiles the production of 'tweed and cloth' of 2.4 million yards in 1913 had doubled by 1920 and redoubled by the end of the decade, while at the same time the range of production was extended in quality. The position was similar with the production of yarn for knitted goods; no yarn was produced before the war, but by 1922-3 production reached 2.8 million pounds and by the end of the twenties 7.7 million pounds. In the new motor vehicle industry the Australian production of motor bodies rose from a few hundred at the end of the war to 90,000 in the peak year of 1926-7; almost all cars were assembled here and by the end of the twenties imports of tyres were very small. Electricity production increased four and a half times during the decade, while in the same period cement output increased three-fold to three-quarters of a million tons.

Problems of Growth

(a) Import Replacement

It has been emphasised that Australian industrial growth was taking place in the face of vigorous import competition. This competition came chiefly from the United Kingdom, and looking broadly at the competitive position of the two countries, the twenties do not appear to have been a favourable decade for Australian expansion. For example, in the mid-twenties wages in Australia were between 50 per cent and 100 per cent higher than in Britain. This difference in wages was similar before the war, but the gap between the two narrowed to become almost non-existent by 1919; then the greater wage rise in Australia in 1920 and the greater fall in Britain in 1921-2 re-established the pre-war position for the rest of the twenties. The failure of prices and wages to fall very substantially, and the absence of a general depression in manufacturing in Australia in 1921-2 are in striking contrast with the experience in Britain and the United States. Australian manufacturers were therefore at a considerable disadvantage with their wage costs, and this disadvantage was felt more severely as they moved into the production of goods which had traditionally been supplied from imports. Nor was this position improved significantly by manufacturing efficiency: although the productivity of

labour in manufacturing may have been growing at a slightly faster rate in Australia than in Britain, the level of productivity appears to have been substantially lower.²⁶ Given this position, there was little cause to expect that manufacturing production would make inroads into imports and therefore growth would depend principally on the general expansion of the market. To accomplish this former task, some outside action had to be taken to direct Australian demand away from imports. This was the main role of government policy.

Aspects of government policy are dealt with elsewhere²⁷ but since nowhere is its protectionist policy looked at as a whole, it is worth examining in some detail here. The principal instrument of government policy, which encouraged the expansion of manufacturing, was the tariff. The landmark and starting point of tariff policy for the twenties was the tariff of 1920-1 which, as we have seen, arose principally out of war-time developments. More broadly the Prime Minister, Mr W.M. Hughes, stated: 'This Tariff will protect industries born during the war, will encourage others that are desirable,

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Productivity and prices in Britain and Australia are discussed in detail in ch.IX.

27

For example, migration is dealt with in ch.VII, and finance for industry in ch. VIII.

and will diversify and extend existing ones.'²⁸ From this time the voice of free trade was no longer heard with any authority in parliament.²⁹ The effectiveness of the tariff in developing manufactures is best shown in examining specific industries, and this is attempted in succeeding chapters. At the same time something can be done to measure the level of the tariff as a whole. This has been attempted by A.T. Carmody, who overcomes many of the problems associated with this type of measurement.³⁰

Indexes of Tariff Levels (1919-20 = 100)

All imports excluding Group 1

Year	British Preferential Tariff	General Tariff
1907	70	57
1913	75	61
1914	88	78

(continued on next page)

28

As quoted by the Minister for Trade and Customs, W.M. Greene, Parliamentary Debates, vol.XCI, p.700.

29

Agricultural interests were represented in parliament mainly by the newly formed Country Party, which, rather than enter the hopeless fight against the principle of protection, often attacked the level of protection and favoured 'protection all round' - including primary products.

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There are a great many difficulties to be overcome in the preparation of such an index. Perhaps Carmody's most important contribution to realism in the index is to weight the commodities imported according to their total consumption in Australia. See A.T. Carmody, 'The Level of the Australian Tariff. A Study in Method', Yorkshire Bulletin of Economic and Social Research, vol.4, no.1, pp.51-65.

Indexes of Tariff Levels (continued)

Year	British Preferential Tariff	General Tariff
1918-19	78	71
1919-20	100	100
1920-21	105	104
1921-22	106	108
1922-23	107	108
1923-24	107	107
1924-25	108	107
1925-26	117	114
1926-27	118	116
1927-28	122	118
1928-29	122	118
1929-30	166	155

Source: A.T. Carmody, op. cit., p.63. Group 1 is made up of 'Food, Drink and Tobacco', and has been excluded because of its special relationship with primary industry (Carmody, p.52).

The table suggests that the effectiveness of the tariff declined during the war as rising prices meant that fixed duties fell as a proportion of total value. The reconstruction of the tariff during 1920-1 raised the British Preferential Tariff about 35 per cent and the General Tariff about 45 per cent, which was well above the level that operated before the war. The tariff level was then fairly steady until September 1925, when there was a substantial increase, particularly for the textile and engineering industries. During the next three years the tariff grew slowly, until in 1929-30 there were enormous increases to counter the effects



of the onset of the depression. It can be seen that even if the cost-price situation in Australia during the twenties was not favourable to industrial growth, and was no better than before the war, the competitive position of the local producer was improved by the government's tariff policy. Other tariff measures were also important: anti-dumping legislation was more vigorously enforced; it was made more difficult for goods to come within the provisions of the British Preferential Tariff; and a Tariff Board was set up to ensure (amongst other aims) that changes in the competitive situation of an Australian industry could receive more prompt attention.³¹ As well as the tariff, a limited system of bounties on manufactured products was introduced.³²

Less well known, but of great importance to industry was the preference given to Australian manufacturers in government contracts. This was particularly significant in

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The Tariff Board's view of its own role is indicated in a letter (dated 9 Aug. 1926) from one of the members (Herbert Brookes) to his friend, Professor F.W. Taussig. He writes: 'Although we are a fact-finding and non-partisan body, our facts are sought only with the object of improving the Protectionist System our Country has adopted, and not with the idea of improving it out of existence. We are non-partisan because we have been selected by a Government of a Country 95% of whose representatives are protectionists. We are four protectionists - God helping us, and you will add, God helping our country.'

32

The main bounties were on galvanised iron, wire netting and fencing wire. These are discussed in ch.VI.

Australia because of the dominant role of government in such fields as railways, tele-communications and electricity.

Such preference was by no means new,³³ but in the twenties its application became much more general and the vital part it played in many industries is emphasised time and again in succeeding chapters. The Commonwealth government was not obliged to pay customs duty but in comparing local with overseas tenders, it added to the overseas tender the amount of the tariff plus some preference for the Australian producer. The amount of this preference, although substantial, varied from department to department.³⁴ The Commonwealth Stores Supply and Tender Board reflected the general tendency when it stated: 'It has been the Board's practice to allow a preference up to 20% over and above the tariff to Australian made articles.'³⁵ The board refused to publicise this fact in its tender schedules in case foreign producers would be

33

For example, such preference was given by the N.S.W. Department of Railways in the 1870s. See The Railways of New South Wales 1855-1950 (published by the Dept. of Railways, N.S.W.), pp.152 and 154.

34

In 1919 a survey of the preferences given by the various Commonwealth departments was made. They varied from a 'distinct preference' by Home and Territories to 'as much as 50%' by Works and Railways. Commonwealth Stores Supply and Tender Board, Business Paper, 11 May 1925 (C.P.370, series 4).

35

Ibid., Minutes of Meeting, 14 Sept. 1925, p.4.

discouraged from competing, but the conduct did not go unnoticed overseas. For instance, the Economist reported:

The Commonwealth Government has finally decided that, notwithstanding the wide difference between the lowest English and the lowest Australian tender for fourteen railway locomotives, the contract is to go to the Australian tenderer at £136,200. The lowest British tender is...£83,099. Duty would have been about £22,067 extra. The subject was in suspense for some time, pending the return of Mr Bruce.... The decision has been welcomed in Protectionist circles, but criticism from another point of view is that, apart from the burden of extra cost, it was unfair that British manufacturers should have been invited to tender for such a result.³⁷

In this protectionist victory pressure from the trade unions played an important part.³⁸

Similarly, most state governments gave some form of preference. In 1926 the N.S.W. Premier (Mr J.T. Lang) stated that his government would give a preference to local manufactures of 30 per cent over foreign goods and 20 per cent over British goods, such preference to be inclusive of the tariff; this, he claimed, was an increase of 10 per cent over previous practice.³⁹ Not to be outdone, the Victorian Premier

36

Ibid., Minutes of Meeting, 30 Mar. 1925, p.5.

37

10 May 1924, p.963.

38

Amalgamated Engineering Union, Souvenir, 25th Anniversary, 1945, p.107. See also p.105 for an example of pressure on the Queensland government.

39

Argus, 15 Apr. 1926, p.12.



responded with special instructions to his departments to scrutinise carefully any overseas orders.⁴⁰ The Minister for Railways went so far as to readvertise tenders where there was no Australian tenderer, and even to communicate with Australian manufacturers and inform them of the limit to the amount by which they could exceed specific overseas tenders if they wanted the contract; the Railway Commissioners were driven to make a public statement disassociating themselves from these practices.⁴¹ Preferential treatment was extended even further in the twenties so that state governments favoured manufacturers in their own state. After stating that the N.S.W. government would prefer Australian made goods to imports, Lang continued: 'Of course, in all cases, a further sympathetic preference will be given to goods manufactured in New South Wales.'⁴² The Premier of Victoria claimed that this specifically local preference often amounted to 15 per cent in New South Wales, Queensland and South Australia.⁴³ This sort of behaviour naturally led to much bickering and retaliatory action among the states. Pressure

40 Argus, 31 May, 1927, p.10.

41 Ibid., 24 Jan. 1928, p.15.

42 Ibid., 29 Apr. 1926, p.4.

43 Ibid., 18 Dec. 1928, p.15.



was even extended to the Commonwealth government in an attempt to have the manufacturing done in the state where the final public works were being executed.⁴⁴

Another development which was intended to divert Australian demand from imports to home production centred around attempts to popularise Australian goods. A strong national feeling was encouraged by the war, and went hand in hand with the desire to industrialise. How effective such activities can be it is hard to say, but some idea of their extent can be gained from the activities in Victoria of one of the more important organisations which were established for this purpose - the Australian Industries Protection League.

The motto of this organisation (which was financed in its early years mainly by B.H.P. and H.V. McKay),⁴⁵ was: 'My Country First - Protect its Industries - Buy its Goods - Be Australian - Buy Australian-made Goods'. Its activities were mainly those of a pressure group, aimed at influencing parliamentarians and at assisting to bring evidence before the Tariff Board, but it also indulged in widespread publicity

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See, e.g. a letter to the Prime Minister from the secretary of the Ironmasters' Association of Queensland, 2 May 1927 (file G.27/776).

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From conversation with the secretary, Cecil Puzey.

work. In 1922 it launched the 'Made in Australia' movement, the members of which signed this pledge: 'I the undersigned hereby covenant with my country to buy and use its products wherever possible; and on such occasions as I am unable to obtain a suitable article of Australian production, to insist on being supplied with one of British origin.' This movement formed a council, on which were representatives of the Chamber of Manufactures, the Australian Natives Association, the A.I.P.L., the Railways Department and the Education Department. The council carried out extensive advertising and propaganda, films were made, a supplement was added to the State School Paper, and 'Made in Australia' shopping weeks were constantly held throughout the state.⁴⁶

With similar aims The Australian-Made Preference League was formed in N.S.W. in 1924.⁴⁷ One of its more spectacular activities, with the assistance of a government subsidy, was the organisation of an exhibition train of Australian-made goods which toured N.S.W. in the mid-twenties.⁴⁸ It is interesting to see how another example of Sydney enterprise was reported in England.⁴⁹

⁴⁶ Australian Industries Protection League, Annual Reports, 1921-9.

⁴⁷ The Australasian Engineer, 29 Nov. 1924, pp.3-4.

⁴⁸ Industrial Australian and Mining Standard, 9 Jul. 1925, p.37.

⁴⁹ Times Trade Supplement, 23 Jul. 1921, p.369.

An 'All Australia Week' has just been held in Sydney. The Chamber of Manufactures combined with the retailers to display in lavish fashion a great variety of locally made goods. Practically every shop in Sydney dressed its windows, and the public, moved by sentiment worked up in the newspapers, co-operated wholeheartedly with the movement. For a week at least, 'Made in Japan' and 'Product of U.S.A.' signs were placed in the background. That the movement was not confined to flags and advertising matter is indicated by the retailers' report of record business. The old-time prejudice against articles of Australian manufacture has been broken, and it now remains for the manufacturer to 'deliver the goods'.

(b) The Supply of Labour

To permit the industrial growth of the twenties a supply of labour had to be obtained of a certain quantity and quality. The total increase in the working age groups came from two sources - migration and natural increase; of these two, permanent immigrants were the most important, being about 60 per cent of the total. Not all of these were additions to the urban work-force: those migrants selected by governments for assisted passage to Australia were intended primarily for work on the land. However, the urban work-force was substantially increased by the movement out of country areas into cities, which, during the twenties, amounted to some 100,000 workers. In broad quantitative terms, the supply of labour was more than adequate: there was always a substantial amount of unemployment both in the manufacturing sector and in the economy as a whole. However, this

general picture conceals shortages of skilled labour in many industries, and to this extent, the labour problem was not solved. To some degree this was inevitable, but it was aggravated by an institutional wage structure which favoured the unskilled worker at the expense of the skilled. Nevertheless, there were margins for skill, and an additional incentive for a worker to enter a skilled trade was in the greater security of employment. Training of workers was carried out in numerous ways: the great bulk of the semi-skilled obtained their skills on the job; for a higher level of training, government technical schools were available and the numbers attending increased greatly and in excess of facilities. More advanced skills and experience were often obtained overseas, sometimes as part of a firm's training scheme. The final major source of trained workers lay with immigrants, who were particularly important in new industries in which Australian experience was limited.

Financing Industrial Growth

Reinvested profits were the main source of long-term finance for the expansion of general manufacturing (excluding electricity and gas) in the 1920s. This was particularly

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A detailed discussion of problems in the supply of labour is made in ch.VII.

so with private concerns which could not call on the public for funds. However, a feature of the twenties was the growing importance of public companies registered on the stock exchanges; these provided the finance for about one-quarter of the growth and their public issues of shares were of almost the same value as their retained profits. The role of the banks in the provision of long-term finance was very small. Foreign companies, it was estimated, provided about one-seventh of the expansion in general manufacturing; not all of this finance, of course, was an inflow from overseas, for undoubtedly a very large portion represented, as with Australian companies, reinvested profits. If investment in distribution is included, then the finance required for the growth of the electricity industry amounts to more than one-fifth of total manufacturing. Roughly five-sixths of this investment in electricity was carried out by governmental undertakings, and taking into account other government ventures, the finance provided by governments was almost one-quarter of the total. The important role of governments was, of course, almost entirely the result of their activities in the provision of electricity. Ultimately, however, a large portion of this finance for electricity may be considered as being provided from overseas, since at least half

of state government loans during the twenties (state governments being the principal agencies in electricity) was raised
51
abroad.

(d) Supply of Materials and Equipment

The relationship between industrial growth and the supply of materials and equipment is complex and opens up a field which is not dealt with in a general manner elsewhere in this study. Here we will mention four aspects.

(i) We have seen how the industrialisation of the twenties showed in marked fashion in the building-up of capital equipment in manufacturing. Was this equipment supplied from within Australia, or was the main influence felt overseas and supplies obtained through imports? This question is a fundamental one in gauging the effects of industrialisation on the Australian economy, but there is no easy or very accurate way in which it can be answered because of the inadequacy of Australian statistics. The best method is to compare the value of imports of plant and machinery for factories with the gross additions to equipment in use in factories, but the final result can only be regarded as an approximation.

51

The quantity and sources of finance for the industrial growth in the twenties are studied in detail in ch.VIII.

The following procedure was adopted: imports of equipment for manufacturing were separated from other equipment by examining their purpose;⁵² their landed duty-paid value was obtained by taking their f.o.b. value, adjusting it by the true exchange rate,⁵³ adding freight and importing expenses⁵⁴ and duty.⁵⁵ To this total was added an allowance of 20 per cent to cover selling and miscellaneous charges between the dock and the factory,⁵⁶ so as to give a value which was comparable to that of plant and machinery in the Production Bulletins. Changes in classification of imports permitted this method to be applied only from 1922-3. The following result was obtained:

Final Value - Imports of Plant and Machinery for Factories

Year	£'000
1922-23	8,190
1923-24	8,386
1924-25	8,059
1925-26	8,666
1926-27	10,234
1927-28	9,432
1928-29	8,239
1929-30	8,692

52

Overseas Trade Bulletin, nos 20-7.

53

Roland Wilson, Capital Imports and the Terms of Trade... (1931), p.13.

54

Ibid., p.18.

55

Overseas Trade Bulletin, nos 20-7.

56

Roland Wilson, 'Public and Private Investment in Australia' (1939), p.20.

An estimate of the additional equipment added to the stock of plant and machinery in use in factories was made by taking the annual changes in their valuation and adding to it an estimate of their depreciation.

Plant and Machinery in Factories - £'000

Year	Increase in Value	Estimate of Depreciation	Total
1920-21	9,982	4,219	14,201
1921-22	9,441	4,801	14,242
1922-23	8,036	5,297	13,333
1923-24	10,559	5,947	16,506
1924-25	8,865	6,494	15,359
1925-26	5,812	6,852	12,664
1926-27	4,572	7,134	11,706
1927-28	3,615	7,357	10,972
1928-29	3,329	7,562	10,891
1929-30	2,958	7,744	10,702

Source: The 'Increase in Value' was obtained from the annual values of plant and machinery in Production Bulletin nos 14-24. These can be seen also on p.19. The 'Estimate of Depreciation' was made as in ch.VIII.

We are now in a position to estimate what proportion of the gross additions to equipment in factories was provided through imports.

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Difficulties associated with this method are set out on pp.17-18.

Year	Gross Additions to Equipment in Factories - £'000 (a)	Imports of Equipment for Factories - £'000 (b)	(b) as % of (a)
1922-23	13,333	8,190	61
1923-24	16,506	8,386	51
1924-25	15,359	8,059	52
1925-26	12,664	8,666	68
1926-27	11,706	10,234	87
1927-28	10,972	9,432	86
1928-29	10,891	8,239	76
1929-30	10,702	8,692	81
Total	102,133	69,898	68

Various aspects of this table require comment. First, some part of the increase in the value of imports resulted simply from increased tariffs: for example, the difference between imports in 1922-3 and 1929-30 was almost entirely the result of increased duty. Second, the high level of gross additions in 1923-4 and 1924-5 was the result mainly of expansion in electricity which did not bring with it any expansion in imports of electricity machinery, so that imports as a percentage of the total were very low; this failure of imports to expand may be related to the fact that much of the developmental work in electricity projects may have been charged to plant and machinery. Finally, the rise in imports in 1926-7 and 1927-8 was to a large degree brought about by an increase of general machinery (not electric or motive power machinery), particularly for metal working and textiles.

It has been emphasised that one of the most important aspects of this period of industrial growth was the doubling in value of equipment in Australian factories. However, the table indicates that the actual production of this equipment was felt to only a limited extent by Australian industry: in the eight years between 1922-3 and 1929-30 68 per cent of this equipment was obtained from overseas. This figure is, of course, an estimate, yet it receives considerable support from work done by Roland Wilson. His main interest was in investment in the 1930s and he adopted a method, quite different from the one used in this study, which was more suitable for the available statistics of that decade. However, he extended his findings back to the last two years of the twenties and found that imports of 'machinery, plant and equipment' for 'industry and commerce' were 72 per cent of imports plus Australian production in 1928-9 and 73 per cent in 1929-30.⁵⁸ This compares with our figures of 76 per cent and 81 per cent for industry alone.

(ii) What was the effect of industrial growth on the volume of manufactured imports? So many factors affect the

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Roland Wilson, 'Public and Private Investment in Australia', p.20. It is worth emphasising again that Wilson's method was quite different to the one used above: it involved making estimates of Australian production of 'machinery, plant and equipment'.

volume of manufactured imports, that it is impossible - at least for any fairly short period - to give a conclusive answer. Yet it is interesting to see what an index of volume suggests; the table below applies to all trade, but since exports were negligible it can be applied roughly to imports:

Australia - Quantum Index of Trade in Manufactured Articles -

1913 = 100

1906-10	63.9
1911-13	92.2
1921-25	70.2
1926-29	102.0

Source: League of Nations, Industrialisation and Foreign Trade (1945), p.163. Years end on June 30. The price index relates to British exports and imports of manufactured goods.

It can be seen that, if we compare the twenties with the period immediately before the war, imports of manufactures were actually lower in the first half of the twenties and only some 11 per cent higher in the second half. Both periods were similar in their experience of rapid economic development, but population and incomes were much larger in the twenties. It suggests that, despite the necessity to import plant and machinery, industrialisation had reduced the dependence on manufactured imports.

(iii) To what extent did the industrial growth in Australia rely on local raw materials? Those industries which were most important in the expansion were based on Australian raw materials: the main ones were based on iron and steel and on wool, but it was also true of a host of minor industries such as copper manufactures, motor bodies, cement, confectionery, sugar and alcoholic liquors. However, the industrialisation of the twenties was also associated with changes in demand and the development of new products on a world scale which, although they stimulated development in Australia, also became increasingly important imports. These chiefly centred around motor vehicles, electricity and silk and artificial silk; their increasing importance in imports is set out in the table below:

	<u>Percentage of Total Imports</u>		
	1909 to 1913	1919-20 to 1923-4	1924-5 to 1928-9
Oils	2.7	5.0	6.7
Motor Vehicles	2.1	4.3	7.4
Rubber and Rubber Manufactures	1.5	1.5	2.5
Electrical Machinery and Appliances	2.2	3.3	4.8
Silk and Art. Silk Piece Goods	<u>1.5</u>	<u>3.0</u>	<u>4.0</u>
Total	10.0	17.1	25.4

Source: Overseas Trade Bulletin, nos 7-11, 17-26.

(iv) These developments led to a great change in the geographical pattern of Australian import trade.

Australian Imports - Percentage from Various Countries

	1904-8	1909-13	1919-20 to 1923-4	1924-5 to 1928-9
<u>Declining</u>				
United Kingdom	60.4	59.8	47.1	42.2
Germany	7.0	6.4	0.3	2.4
New Zealand	5.5	3.9	1.7	1.5
<u>Increasing</u>				
U.S.A.	11.6	11.4	21.7	24.5
Canada	0.7	1.3	3.2	2.6
Japan	1.0	1.2	3.2	3.0
Netherlands East Indies	0.7(a)	1.2(a)	4.6	4.1

(a) Java only.

Source: Overseas Trade Bulletin, nos 2-11, 17-26.

Trade with Germany declined partly as a result of the war, and partly because of factors which also affected United Kingdom trade - and these are discussed below. The decline in imports from New Zealand reflects only the fall in gold exports from that country. Of more significance for our purpose is the increased percentage of imports from Canada, Japan and the Netherlands East Indies - reflecting Australian demand for motor vehicles, silk and oil respectively. But the industrial developments of the twenties (and the effects of the war) are summed up in the change in the fortunes of

the United Kingdom and the U.S.A. On the whole, those industries which were expanding in Australia were replacing imports in which the United Kingdom share of the market was very high. On the other hand, in the new and expanding industries, particularly those associated with motor vehicles, the British competitive position was weak. Thus, in spite of tariffs which strongly favoured Britain, its share of the Australian market by the end of the twenties had fallen to almost two-thirds of the pre-war position. The U.S.A. benefited from these developments; it doubled its share of the market because of its exports of motor vehicles, petroleum products and machinery.

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A British analysis of the position can be seen in the Report of the Senior British Trade Commissioner in Australia, R.W. Dalton, Economic and Trade Conditions in Australia to August, 1929 (H.M.S.O., 1930), pp.131-42.

Chapter II

MASS MARKETS FOR CONSUMER DURABLES: THE IMPACT OF MOTOR VEHICLES

Introduction

One of the great economic developments of the twentieth century, which had profound consequences not only in manufacturing but throughout all economic and social life, was the introduction of the automobile. The introduction was gradual, but in the 1920s - in the decade between the war and the depression - the change was striking: the motor car was transformed from a custom-built to a mass-produced article and a mass market was created. This was largely an American innovation and American influences continued to dominate the motor industry.

The impact was felt throughout the Australian economy - the number of motor vehicles rising to over half a million by the end of the twenties. This enormous car market was based in part on great improvements in the quality and performance of cars. At the same time, with rising incomes and a falling price their purchase became easier, particularly as the application of the hire-purchase system brought



their ownership increasingly within the range of lower incomes.

At the end of the war the population of Australia was only five and a half millions and the scope of manufacturing was limited. It is therefore probable that the impact of the motor car on Australian manufacturing would have been slight, if its arrival had not coincided with the entry of the country into an era of high protection. Even so, the degree of protection required to make possible the Australian manufacture of the engine and chassis unit was too great, and the local industry was confined to the production of vehicle bodies and the assembling of vehicles from imported parts. Out of a great mass of small manufacturers one Australian body builder (backed by an American company) emerged to dominate the industry and produce half of all the local car bodies, while in assembling, although there were many firms, two American subsidiaries stood out as the largest and most dynamic. From the beginning, the manufacturing process was influenced considerably by American techniques, but this influence became more pronounced when American capital began to enter the industry in the middle twenties. The predominance of American cars meant that the Australian industry was always, to some degree, an appendage of the American industry, but the growth of the Australian market

made it inevitable that foreign manufacturers would take a greater interest in manufacturing operations in Australia, and the ease with which American companies appropriated much of this field emphasised the satellite nature of the Australian industry.

The direct impact of motor vehicles on manufacturing was not limited to assembling and body building. As the twenties progressed, local manufacturers supplied an increasing proportion of the materials needed for the body building industry and also miscellaneous parts and accessories. In addition, the manufacture of rubber tyres emerged as a major industry, and here three Australian firms and one American subsidiary obtained nearly the whole market.

In general, with overseas competition severely limited by the tariff, the market situation for manufacturers within the motor industry and its subsidiaries was extremely favourable, and there was little difficulty in obtaining the funds for expansion. In part, the growth in output came from Australian firms, and in part from foreign firms forced by the tariff to begin production in Australia. Such a rapid growth of output was not without problems, but the novelty of the products and the spread of technique from America encouraged a break with traditional attitudes, both of management and unions. As a result, the new methods of production

in the motor industry set an example for Australian manufacturing as a whole.

The Use of Motor Vehicles in the 1920s

At the end of the war, motor vehicles in Australia were still regarded as a curiosity and were in the hands of the privileged few: within ten years a revolution in transport had taken place and the automobile dominated the roads. In 1930 there were more vehicles per head of population only in the United States, Canada and New Zealand, while in total numbers of vehicles, Australia, with its population of six and a half millions, ranked sixth in the world. ¹ Statistics of vehicle registration are available for all states only from 1921-2, and these are set out in the table below.

Registrations

Year	Motor Cars	Commercial Vehicles	Total Vehicles
1921-22	99,270	(a)	99,270
1922-23	116,658	13,438	130,096
1923-24	168,568	18,056	186,624
1924-25	221,441	26,116	247,557
1925-26	282,199	37,892	320,091
1926-27	364,384	50,914	415,298
1927-28	419,131	62,006	481,137

(continued on next page)

¹

Commonwealth Year Book, no.23, pp.219-20.



(continued)

Year	Motor Cars	Commercial Vehicles	Total Vehicles
1928-29	474,359	71,851	546,210
1929-30	466,930	104,487 ^(b)	571,471

- (a) Included with motor cars. Some commercial vehicles are included with motor cars in later years.
- (b) Until 1929-30 Victoria included only 'motor buses' with commercial vehicles. In that year all commercial vehicles were included.

Source: Commonwealth Year Book, nos 16-24.

It can be seen that the use of motor vehicles became general in the twenties. In 1921-2 there was 1 vehicle to every 55 persons, but in only 8 years, by 1929-30, the ratio had changed to 1 vehicle to every 11. Over the same period the number of motor vehicles increased by almost half a million, the increase in one single year, 1926-7, being almost 100,000.

The Basis of the Demand for Vehicles

In circumstances where cars appeared as highly desirable goods, manufacturers were engaged in a process of improving quality and reducing prices, at once increasing attractiveness and bringing cars within the budgets of a broader market. At the same time, while rising real incomes encouraged the demand for cars, those on lower incomes were increasingly brought into the market by the extensive application of

hire-purchase. Thus both technology and financial enterprise worked together to create a mass market for cars.

The general improvement in the quality of cars which took place in the 1920s is well known. Two of the more notable advances were the introduction of balloon tyres and the self starter between 1922 and 1924. The change from the high pressure fabric tyres to the low pressure cord tyres brought a revolution in cost and comfort, and was probably a necessary precondition to the motor boom of the twenties. For its part, the self-starter, by removing the difficulties associated with cranking, made ownership of cars more attractive, particularly to women and elderly people. Comfort was also increased by the use of the closed car, which became a serious rival to the open model from about the mid-twenties. At first it was thought that the Australian climate did not warrant closed cars, but by 1923 it was claimed that 'the great bulk of motor owners have awakened to the fact that the open car is a mistake'.²

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The Australian Motor Owner, May 1923, p.64. The same observer saw the advantages of the closed car thus: 'The beauty of the closed car is that it can be made whatever the purchaser desires - a drawing room or smoking room, the fittings being as secure from weather conditions, sun perishing, dust etc., as in the home itself.' (Ibid., p.66.)

At the same time as this general improvement in quality was taking place, the development of new manufacturing techniques associated with standardisation and mass production made possible a considerable reduction in car prices. Because of the quality changes it is difficult to measure this fall in price, but it has been claimed that in the United States, 'a typical 4-cylinder closed car of from 106- to 110-inch wheel base which cost \$1500 in 1913, could be bought for \$760 in 1920 and \$600 in 1927'.³ The reduction in price in Australia was not so great because of the tariff on imports and the higher costs of local manufacture, but it did fall sufficiently, as we shall see, to bring cars within the means of a large portion of the population.

In Australia there were some particular circumstances accounting for the widespread use of cars. The great area of the country and the dispersion of the population, by contrast with a country like England, made cars especially useful. On the other hand, low population density made road building costs high per head, and in the early twenties, even around the suburbs of the principal cities, the roads

³ Recent Economic Changes in the United States, published for the National Bureau of Economic Research Inc. by the McGraw-Hill Book Company Inc., New York, 1929, vol.1, p.62. 'These comparisons take into account the change in the purchasing power of money.'

were often unsuitable for motor traffic.⁴ However, strenuous efforts were made to improve the position and this led to a fundamental change in the pattern of public investment. In the first years of the twenties investment in roads amounted to about 12 per cent of total public investment and this had increased to 26 per cent by 1929-30.⁵ By the end of the decade the quality of the roads was considerably improved, although many of the 'main' roads were of gravel or dirt construction; 90 per cent of the hard surface roads were macadam, the high initial cost of concrete roads being the major limitation to their more extended use.⁶

However, the improvements in cars and their suitability for Australian conditions would have meant little, unless the community had been wealthy enough to afford them. In fact, in terms of national income per head, Australia ranked among the first half-dozen countries in the world. Not only

⁴ 'The state of the roads around Sydney suburbs is all against motor traffic, but the enterprising bus owners struggle on, and although occasionally absolutely indecent [sic] streets have to be avoided, they bog through triumphantly.' The Australian Motor Owner, July 1922, p.8.

⁵ W.A. Sinclair, 'Public Capital Formation in Australia 1919-20 to 1929-30', Economic Record, November 1955, p.303.

⁶ See C.F. Baldwin, The Automotive Market of Australia, Trade Information Bulletin, no.611, United States Department of Commerce, Bureau of Foreign and Domestic Commerce, 1929, p.46.



was income per head high, but during the twenties it appears to have been rising at a very rapid rate,⁷ and the high income elasticity of demand for consumer durables meant that a large proportion of the increasing income was spent on cars.⁸ The distribution of this income made it possible for the ownership of cars to extend to wage earners. For example, in 1926 the average wage for adult males in full work was at the rate of approximately £250 per annum,⁹ while new Ford and Chevrolet tourers could be bought for a little less than £200.¹⁰ The novelty and desirability of cars brought a radical change in the pattern of spending as expenditure was diverted from articles lower on the consumers' preference scale. The hardest hit was naturally the car's closest competitor - the horse-drawn vehicle,¹¹ but the passion for cars

⁷ See ch.I, p.14.

⁸ There are no contemporary studies of demand but Colin Clark in The Conditions of Economic Progress (Macmillan & Co., London 1951), p.386, in a study of Queensland family budgets in 1939-40 found an income elasticity of demand for new cars and household equipment of 1.49.

⁹ Commonwealth Year Book, 1927, p.524.

¹⁰ Advertisements in Argus, October 1926.

¹¹ Employment in the coach manufacturing and allied industries fell from 8,693 in 1919-20 to 4,253 in 1928-9 (Production Bulletin, nos 14-23). But as early as 1924 the coach had been quite overshadowed: 'Perhaps the most striking thing in the Sydney show was the eclipse of the horse-drawn vehicle exhibit.... It could not be found. About half the space in the new building was given to motors. The rate, 3/6 per square foot, precluded the use of space for horse-drawn vehicles.' The Coach and Motor Body Builder for Australia and New Zealand, 15 May 1924, p.23.

diverted expenditure from all types of durable goods, including houses,¹² while one observer claimed that 'thousands of people are "actually economising in their eats" in order to keep their cars'.¹³

In spite of high incomes, the market for cars would have been much less extensive in Australia if the hire-purchase system had not been adopted generally in the motor industry. It was not a new method of payment, but its widespread use was a development of the twenties and it brought about a transformation of the market, not only for cars, but for a whole range of durable goods.

To many the growth of this system was a cause for alarm; for instance, here in purple prose is one unrestrained comment:

Obviously...there are tens of thousands of motor car owners in Australia today who, in a more conservative age, would be regarded by their fellow citizens, as reckless prodigals for indulging their passion. Practically every business man, every small tradesman, even, has an automobile: and countless owners pay for their cars by instalments on the hire purchase system, out of savings effected at the expense of household necessities foregone.¹⁴

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An Englishman visiting the coal areas in 1928 was struck by the fact that many of the workers in rough homes owned cars. 'This carelessness about their homes is apparent in all classes of Australians: motor cars come first.' R.W. Thompson, Down Under: An Australian Odyssey (Duckworth, 1932), p.246.

13

Industrial Australian and Mining Standard, 12 Jan. 1928, p.29.

14

Ibid.

But even more sober bankers, preoccupied as they were in the twenties, with the distinction between spending on luxuries and necessities, felt that the application of the hire-purchase system to motor cars was going too far.¹⁵

The development of specialised hire-purchase institutions for the motor trade began in the early twenties, as car agencies found themselves unable to accommodate their increasing trade.¹⁶ In November 1921, commenting on the prospectus of the Motor Vehicle Mortgage and Trading Company, Limited, Jobson stated that the business of financing the purchase of motor cars on a large scale was an untried one in Australia.¹⁷ In 1924 the oddity of this type of finance for motor cars was still sufficient to invite comment,¹⁸ but by 1926 so many new companies had entered the field that there was speculation as to whether they would be able to employ all their funds,¹⁹ and by 1927 competition had forced a weakening in interest rates.²⁰

¹⁵

There are many instances of this opinion, but see, e.g. the statement by the chairman of the Bank of New South Wales at the ordinary general meeting on 30 November 1926. Australian Insurance and Banking Record, 21 Dec. 1926, p.1124.

¹⁶

Jobson's Investment Digest, 1927, p.245.

¹⁷

This was apparently the first public company in the business. Ibid., 1921, p.333.

¹⁸

Ibid., 1924, p.294.

¹⁹

Ibid., 1926, p.253.

²⁰

Ibid., 1927, p.245.



The terms and the extent of the hire-purchase system naturally fluctuated throughout the decade. But in 1929 it was stated that the generally accepted new car terms were one-third down, with the balance to be paid over 18 months; interest rates worked out at 6.5 per cent flat for 12 months²¹ and about 10 per cent pro rata over the full period. The precise extent to which the hire-purchase system was used will never be known. One authoritative opinion in 1925 estimated that about 50 per cent of motorists 'paid as they rose',²² while in 1929 it was stated that the number of cars and trucks sold on hire-purchase amounted to 'a very considerable proportion'²³ of total sales.

The Supply of Motor Vehicles

(a) General - Imports and Australian Production

Most of the motor vehicles in Australia were produced by the joint efforts of local and overseas manufacturers. No complete motor cars were made in Australia; the basic engine and chassis unit was always imported, and the Australian

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Baldwin, op. cit., p.21.

²²

This was the view of a group of 'prominent Melbourne dealers'. The Coach and Motor Body Builder..., 15 June 1925, p.46.

²³

Baldwin, op. cit., p.21. General Motors-Holden's Ltd has suggested that the % of new vehicles sold on hire-purchase in the twenties may have been as high as 70% compared with 24% today (letter dated 3 Apr. 1957).

industry was confined to providing the less complex articles of manufacture. This dependence on overseas had some important implications. It meant that the Australian industry was particularly open to the influence of overseas techniques and methods of production, while the fact that foreign manufacturers supplied the basic chassis unit meant that they held a dominating position in the industry: these points will be discussed in later sections of this chapter. The inability of the Australian industry to provide a complete car also had important effects on both the volume and direction of Australian trade.

Imports - Motor Cars and Parts Thereof

Year	£'000	Country of Origin - %				'% to total Imports (exc. gold)
		U.K.	Canada	U.S.	Other	
1920-21	4,238	20	14	60	6	2.6
1921-22	3,058	15	26	41	18	3.0
1922-23	6,632	11	31	48	10	5.0
1923-24	11,001	12	19	61	8	7.8
1924-25	11,603	18	11	63	8	7.9
1925-26	11,978	22	8	65	5	7.9
1926-27	14,178	24	8	65	3	8.6
1927-28	8,257	17	3	77	3	5.6
1928-29	10,677	14	18	67	1	7.5
1929-30	6,795	22	10	67	1	5.3

Source: For value and country of origin, see 'Principal Imports from Countries', Overseas Trade Bulletin, vols 22 and 27.

From being insignificant before the war, motor vehicles became a major import of the twenties, comprising almost 8 per

cent of total imports in most of the years after 1922-3, but the total impact of the motor car was much greater if account is also taken of rubber and oil imports. In spite of substantial preferences in favour of the United Kingdom, it can be seen that the American car dominated the Australian market. Motor vehicles, then, were one of the major causes which, in the twenties, turned Australia away from the United Kingdom, her traditional supplier of imported manufactures.

The dominance of American cars in Australia was, in part, a reflection of the world-wide dominance of America in the export car market during this decade. It was also the result of the basic similarity between Australian and American geographic conditions, so that little adaptation of the product was required. This superiority was combined with excellent distributing organisations, including follow-up services to buyers, on a scale not attempted by European distributors.²⁴

Just how much of the total value of the car represented imports is difficult to say; it would vary between different makes, and it became less as the twenties drew to a close. However, in 1929 General Motors claimed that 65.05 per cent

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Baldwin, op. cit., pp.2-3.

of the price of a Chevrolet tourer 'remains in Australia',²⁵ while Garratt's Ltd stated that 82.6 per cent of the price of a Whippet four-cylinder sedan represented Australian expenditure, being customs duty, purchase of Australian bodies, tyres, batteries, springs, shock absorbers etc. and the costs of assembly and distribution.²⁶

Although they did not cover all aspects of car production, manufacturing operations in Australia were extensive and grew at a very rapid rate. In part, their growth resulted from the rapid increase in the number of cars, and in part from a process of development of Australian manufacturing which replaced imports with the local articles. However, official statistics in Production Bulletins give little detail concerning these operations: motor body building, vehicle assembly and repair work are all combined along with operations related to bicycles and motor cycles under the industry heading of 'cycles and motors'. Some idea of the growth in this heterogeneous group may be gained from employment figures which increased from 6,599 in 1919-20 to a peak for the twenties of 23,022 in 1926-7.²⁷ However, this industrial

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Australia Builds a Motor Car, a brochure of General Motors (Aust.) Pty Ltd, circa 1929, p.6.

26

Garratts Ltd, Report of the Directors for year ended 31. Jan. 1930.

27

Production Bulletin, nos 14-24. It is only in 1926-7 and 1927-8 that statistics for 'motor body building and repairing' are given separately. Its contribution to total employment in the group in 1926-7 was 9,283.

group does not measure in full the direct effect of motor vehicles on manufacturing. Other industries were also important, particularly those associated with the provision of parts and accessories, tyres and petrol.

The effect of motor cars on Australian manufacturing will now be examined, with particular attention being given to the main section of the industry - motor body building and assembly work.

(b) Motor Body Building

(i) The Growth of the Industry

Before the war, body building in Australia had been carried out to a very limited extent; operations were confined to the replacement of worn out bodies and a few individual orders for custom-built bodies. A condition for the establishment of the industry was the limitation of imports, and this was carried out by the 'luxury embargo' of August 1917.²⁸ All imports of motor bodies were prohibited under this embargo, but the Australian industry was unable to cope with the rush of orders and the prohibition was modified in various ways until in 1918 permission was granted to import one body with every two chassis; thus the local industry was

28

For a general discussion of the embargo, see C. Forster, 'Australian Manufacturing and the War of 1914-18', Economic Record, November 1953, pp.219-21.



29

guaranteed half the trade. This control of imports continued to operate until eight weeks had elapsed after the introduction of the 1920 tariff.³⁰ But the tariff meant no relaxation on the restriction of imports; on the contrary, the rates imposed were extremely high with the intention of giving the entire market to the Australian industry, which was now in a condition to cope with the demand for most types of bodies.³¹ In general, the manufacturers were quite satisfied with the level of the duties and they remained unaltered for the rest of the decade.

Statistics of output of motor bodies for the industry as a whole are very incomplete, but the table below gives some idea of the growth of the industry and the relative importance of imports.

29

Mr J.A. Jensen, Parliamentary Debates, vol.LXXXIV, 16 May 1918, p.4758.

30

The reason for the extra 8 weeks was to ensure that those dealers who had ordered bodies from overseas in large numbers in anticipation of the lifting of the embargo would not profit over their rivals. Statement by Mr W.M. Greene, Minister for Trade and Customs, Parliamentary Debates, vol.XCI, 24 Mar. 1920, p.719.

31

The duties imposed were:

		B.P.T.	I.T.	G.T.
Item 359D (1)	Single-seated bodies each	£30	£35	£40
(2)	Double-seated bodies each	£50	£55	£60
(3)	Bodies with fixed or movable canopy tops, e.g. laundaulette, limousine, taxi-cab and similar types, & n.e.i each	£65	£70	£75
	or A.V.	40%	50%	55%

whichever rate returned the higher duty.

Motor Bodies

Year	Output	Imports
1922-23	N.A.	5,936
1923-24	25,000 ^a	13,310
1924-25	32,760 ^a	12,861
1925-26	41,345 ^a	12,090
1926-27	88,876 ^b	12,843
1927-28	58,955 ^b	9,593
1928-29	72,193 ^b	14,546
1929-30	46,409	6,556

^a South Australia only.

^b Excludes Queensland and Tasmania.

Source: Imports from Overseas Trade Bulletin, vols 21-7.
Output from Production Bulletin, nos 20-4,
apart from 1923-4 and 1924-5, which are from
the South Australian Statistical Register,
1924-5.

Statistics of output are reasonably complete only from 1926-7. Even then, Queensland and Tasmania are not included, but output in these states was probably slight since the Production Bulletin records that there was no output there in 1929-30. Imports remained only a small proportion of the local output, but the outstanding fact is that from a production of only a few hundred bodies in 1918, the industry expanded to produce around 90,000 in 1926-7. This year saw the end of the motor boom, and in the succeeding years motor trading was very difficult. In part, this was the result of a general decline in demand, associated with a restriction of bank credit, particularly to car finance



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 companies; but the difficulties were aggravated by the special position of the Australian market. On the one hand, traders placed their orders overseas for chassis well in advance of requirements so that a boom supply of chassis continued to arrive in times of slump;³³ on the other hand, it was claimed that some overseas factories enforced a quota system of ordering on their Australian distributors.³⁴ Thus in the last three years of the decade there was extreme competition in the motor trade as dealers tried to dispose of their increasing stocks of both new and used cars.³⁵ These conditions reacted back into the body building industry, and were particularly felt by those firms which both traded in cars and built bodies.

(ii) The Firms and Their Product

For the first five or six years after 1917 the body building industry went through a transitional period as the emphasis in production changed from the individually ordered custom-built body to the standardised factory-built body. These few years were a twilight period for many coach

32

The Australian Motorist, 1 Jan. 1929, p.259.

33

Report by R.W. Dalton, H.M. Senior Trade Commissioner in Australia. Department of Overseas Trade - Economic and Trade Conditions in Australia to August, 1929 (H.M. Stationery Office), p.238.

34

Baldwin, op. cit., p.25.

35

Ibid.

builders who transferred their activities to building motor bodies to their own design and their customers' orders, so that in 1923 it was claimed that 'body building is now no longer a trade - it has become an art and a craft'.³⁶ The opportunity for both the beautiful and the grotesque under this system can be imagined.

The tendency of the time is for car users to have their bodies built to their own liking. Instead of buying standard bodies they purchase a chassis and then state the particular special items they desire in the body, look through a few score of designs, finally pick out the type that appeals to them most, and ask for that, plus their own specially required features.³⁷

It seems probable that this freedom to fit bodies of any design to well-known makes of chassis resulted from the war years when car bodies were unprocurable and dealers were glad to obtain any at all so as to sell their imported chassis. There is also the possibility that the dealers considered that local body builders could make bodies better suited to local conditions.³⁸

36

The Australian Motor Owner, May 1923, p.64.

37

Ibid.

38

Under this system bodies became known by the names of their Australian builders, and the original maker of the chassis would hardly be recognised. 'Even plain little Jinny Wren Ford, fitted with an Australian made body, became a thing of beauty that would not be recognised in the country of its origin as one of the Ford family...'. (Ibid., Jan. 1923, p.31.)

While the output of custom-built bodies was expanding, the output of standardised bodies was growing at a much faster rate, and by the end of 1924 the doom of the order body builder was apparent.³⁹ Even in 1921 there was a great difference in price between the two types of bodies: one manufacturer was turning out standardised bodies at under £50 each, while custom-built bodies for similar models could cost up to three times as much.⁴⁰ However, by 1924, not only was there still a large price differential, but the gap in quality had been greatly narrowed by extensive improvements in standardised bodies. Apart from a general advance in quality, there was a wider range of body designs and colours to choose from, so that the custom-built body had little in its favour.⁴¹

Out of a mass of small firms, several large-scale producers of standardised bodies had emerged by the middle

39

The Coach and Motor Body Builder..., 15 Dec. 1924, p.193 commented: 'While business continues good in the manufacture of bodies both for standardised and business vehicles, complaint is being heard on all quarters of slackness in the order body trade. The fear is being expressed that conditions are developing in the motor industry which may ultimately have the effect of seriously limiting, if not ultimately squeezing out, this hitherto important branch of the motor industry.'

40

Mr Richard Foster, Parliamentary Debates, vol.XCVI, 30 June 1921, pp.9573 and 9576.

41

The Coach and Motor Body Builder..., 15 Dec. 1924, p.193.

twenties. Among the largest of these were Holden's Motor Body Builders Ltd and T.J. Richards and Sons Ltd, both of South Australia, Allied Motor Interests Ltd of Melbourne and Smith and Waddington Ltd and Garratt's Ltd of Sydney. They were joined in 1925 by a powerful new competitor - the Ford Motor Company of Canada. In October 1924, this company announced its intention to establish in Australia five assembly plants and one body building plant at an estimated cost of £1,400,000.⁴² It is an illustration of the Commonwealth government's eagerness to encourage foreign firms to establish branches in Australia, that negotiations for this event were initiated in Canada by government representatives and the company was promised every tariff assistance.⁴³ The company's reasons for this move were the importance of the Australian market and 'the necessity of establishing ourselves in a direct way in this country'.⁴⁴ However, this did not mean new manufacturing activity in Australia, but simply that work formerly done by Australian companies was now performed by Ford. In March 1925, a site was acquired at

42

Argus, 14 Oct. 1924, p.11.

43

Ibid., 15 Oct. 1924, p.18.

44

The secretary of the Ford Motor Company of Canada. Ibid., 31 Mar. 1925, p.19.

Geelong for a body building and assembly plant, which was de-⁴⁵signed to produce 30,000 bodies per annum and employ 500.

The entry of the Ford company made the position of the Australian companies more difficult and once the demand for bodies ceased to grow, as it did after 1926-7, it was inevitable that losses would result. Smith and Waddington, Garratt's and Allied Motor Interests, all had to write substantial amounts off their shareholders' capital in these⁴⁶ years. However, even without these special problems, the Australian market was not large enough to support more than one or two mass producers of car bodies, and to a large degree this position was seized by Holden's which made roughly half the bodies produced in Australia in the twenties.

Holden's entered the body building industry in 1917 and its meteoric rise accompanied the growth in the use of cars in Australia. In terms of rate of growth, size and

45

Sites for assembly plants were also acquired in the next few years in Sydney, Brisbane, Perth and Adelaide. Two Ford companies were formed, one to manufacture and the other to distribute, each with an authorised capital of £1,500,000, all of which was to be provided by the Canadian company. Twenty experts were brought out from Canada to supervise the establishment of the business, and development was so rapid that by August 1926, the Ford organisation employed about 1,000 in Australia. (Ibid., 31 Mar.1925, p.19; 10 Aug. 1926, p.4.)

46

Annual Reports of these three companies between 1927 and 1930.

efficiency, this was one of the outstanding companies in Australian manufacturing during the decade.⁴⁷ The firm developed out of a partnership of Holden and Frost in the coach and leather business in Adelaide. Difficulties in their own trade and the prohibition of motor body imports turned their attention to motor body building in 1917, and in the last two months of that year two bodies were constructed. In 1920 Holden's Motor Body Builders Ltd was formed with a capital of £130,000, with H.J. Holden as chairman of directors until his death in 1926, and his son, E.W. Holden, as managing director. The growth in the firm's output of motor bodies is set out in the table below:

Holden's Motor Body Builders Ltd^a

Year	Output of Motor Bodies	Year	Output of Motor Bodies
1917	2	1924	22,060
1918	587	1925	32,292
1919	1,595	1926	36,171
1920	3,077	1927	34,309
1921	2,338	1928	34,696
1922	6,661	1929	17,890
1923	11,827	1930	9,292

^a The name adopted in 1920.

Source: Supplied by General Motors-Holden's Ltd, letter dated 8 Apr. 1957.

47

The company made a great impression on contemporary observers. See, e.g., the report of a visitor to the factory, in Coach and Motor Body Builder..., 15 Oct. 1922, pp.387-8.



In the early years of the twenties the company did not specialise solely in the manufacture of motor bodies; tram cars and other rolling stock of a similar nature were also produced.⁴⁸ But the great demand for motor bodies combined with the advantages of specialisation made 1924 the last year for the production of these sidelines.⁴⁹ However, because of difficulties in obtaining supplies necessary for production, Holden's were forced to develop several lines of manufacture that would not have been necessary in a more industrialised economy.⁵⁰ To produce this output employment grew to between 3,000 and 3,500 in the period 1926-9, with up to 4,300 in peak periods. Even so, during the summer months of 1926-7 it was necessary to work seven days a week and three shifts a day to meet the demand.⁵¹

Holden and Frost were a South Australian firm and Holden's remained in that state. At first the plant was in

48

Directors' Report for Year Ended 30 Jun. 1924.

49

Evidence of A.B. Barker before Commonwealth Arbitration Court. Amalgamated Engineering Union and Others v. Metal Trades Employers Association and Others. Transcript of Evidence, 25 July 1929, p.5918.

50

Thus the factory included departments for die and spring making, the largest nickel-plating plant in Australia, a smithy department for handling all sorts of drop forgings, and a panel department for the die stamping of panels. Baldwin, op.cit., p.39.

51

Directors' Report for Year Ended 30 Jun. 1927.

King William Street, Adelaide, but in 1923-4 a large modern factory was built at Woodville, just outside Adelaide, and gradually the King William Street property was abandoned. Why did the firm persist in its South Australian location and not move to one of the major markets at Sydney or Melbourne? No doubt the accident of the original location of the firm and the costs of a move were the major reasons, but E.W. Holden also thought that two other factors weighed against a transfer: first, the relative freedom in South Australia from labour troubles - he considered Sydney the worst place in Australia from that point of view. Secondly, the transport of bodies interstate required a tremendous amount of freight space, and it was always possible to get back loading out of Adelaide whereas it was very difficult in both Sydney and Melbourne.

Holden's reached its dominating position in the industry for a variety of reasons. Most important was the brilliant management provided by both the Holdens, father and son, and particularly the son who was managing director for the whole decade. They grasped the opportunity provided by the import

52

Evidence of E.W. Holden, South Australia - Royal Commission on Manufacturing and Secondary Industries, 1st Progress Report (The Leather Trade) Together with Minutes of Evidence and Appendices, South Australia - Proceedings of Parliament and Papers, 1926, vol.2, para.53.

embargo, and saw that success could only lie in quantity production of a standardised body. Moreover, it was claimed that the firm had the foresight to predict the embargo, about which there had been much previous discussion, and so were the only ones in Australia who had sufficient steel and other materials to immediately launch into production.⁵³ By March, 1918, it was reported, probably with more enthusiasm than accuracy, that the firm could produce at the rate of 2,000 standardised bodies a year, and with a greater work-force could produce 6,000.⁵⁴ This initial seizure of the market was of great importance and made it difficult for competitors to enter the field on a large scale.⁵⁵ But E.W. Holden

53

This claim was made by the Hon. W.R. Foster, The Advertiser, 27 May 1919, p.10. However, taking into account the small production of the firm in 1917 and 1918 not too much importance should be attached to it. Foster also stated that when the firm began, it got the dealers to agree to a standardised type of body and to place orders at the rate of at least 2,000 p.a. as a condition to the firm expanding and providing bodies at a certain price (Parliamentary Debates, vol.XCVI, p.9576). Once again, the fact that the firm did not reach production of 2,000 p.a. until 1921 militates against attaching too much weight to the claim.

54

The Advertiser, 27 May 1919, p.10.

55

In 1926 E.W. Holden stated: 'Our success is due to the fact that we put in early and obtained the big production, which meant that we were able to reduce prices to such an extent that the small men cannot compete with us. If many firms had started in our line of business at the same time not one of them would have got the turnover necessary for success.' 1st Progress Report, S.A. Royal Commission, para.17.

claimed that the threat of competition, of some other large-scale producer becoming firmly established, was a major factor in the firm's pricing policy. 'We could charge more but we let the other fellow grow.'⁵⁶

The prices charged by the firm for its bodies were, however, still adequate to enable it to pay high dividends and maintain large reserves. This, in turn, made easy the provision of funds for its rapid expansion. In 1920-1 an 8 per cent dividend was paid, for the next three years 10 per cent and for the succeeding four years 15 per cent. At the same time, Jobson considered that the dividend policy was 'conservative',⁵⁷ and up to 1926-7 at least half the profits appear to have gone to depreciation and other reserves. Shareholders' capital was still only £130,000 in June 1923, but by public issue this had been increased to £1,174,000 by June 1928.⁵⁸

In spite of its favourable start, Holden's would not have maintained its premier position during the twenties, unless it had developed into a most efficient firm. To reach

56

Ibid., para.18.

57

Jobson's Investment Digest, 1925, p.544.

58

Information in this paragraph as to profits, dividends, reserves and shareholders' capital is from the accounts in the Directors Reports of various years.

this position, and to maintain it, certain problems had to be overcome. These problems might be summarised under the headings of labour and plant.

The basic labour problem was that of obtaining a large and efficient labour force for a new industry in a relatively short period. Here Holden's was particularly successful. The skills required in body building were very similar to those of the established trade of coachmaking, but not only were there insufficient skilled workers available for the body industry, but Holden's wished to go further and break down the skilled tasks and put their factory on a mass production basis where most of the labour would be unskilled or only semi-skilled. In this task the firm was able to win the active co-operation of the union concerned,⁵⁹ an achievement not equalled by many in these years. Firstly, the union agreed to the employment of men in the industry who were not skilled members of the union, and these men were then trained by Holden's on the job.⁶⁰ But the training they received was not in skilled tradesmen's work but in the

59

The Australian Coach, Motor Car, Tram Car, Waggon Builders, Wheelwrights and Rolling Stock Makers Employees Federation.

60

Evidence of E.W. Holden S.A. Royal Commission, 1st Progress Report, paras 39-40.

functions of a modern factory worker under mass production conditions.⁶¹ This achievement was vital to the organisation of the factory, it depended on the co-operation between the union and management,⁶² and was achieved in few other factories in the metal trades during this decade. Holden's organisation of the labour force impressed visitors as one of the most striking features of the factory.⁶³

61

'We have really broken down the skill required by specialising the work, so that there was no extreme amount of skill required. I want to acknowledge publicly the assistance that the Union has been to us in that respect. When we first discussed going into this question, we knew that there was not a sufficiency of skilled men available for this class of business in Australia. We discussed the matter with officials of the Union and they agreed to the dilution of labour, and we have worked most amicably under these conditions.' Evidence of E.W. Holden in August 1929 at Commonwealth Arbitration Court, Australian Coachmakers etc. Union & Holden's and Others (re standard hours). Transcript of Evidence, p.319.

62

The reasonable approach of the Union was extended to its attitude to wage claims. 'We are not out to want anything which will kill the industry. We recognise Overseas competition. Some of our men say that bricklayers and carpenters are getting more than them, but I always reply you cannot import a house but you can import motor bodies. It would not matter if we were getting £12 or £15 a week, if there was no work to do.' Evidence of Mr Percia, Union Federal Secretary in 1927 to Commonwealth Arbitration Court, Australian Coachmakers etc. Union and Holden's, 1927. Transcript of Evidence, p.165.

63

E.g., 'Perhaps the first and strongest impression was the type of workmen, and the efficient manner they went about their work. They were Australians but where did they spring from? Had Mr Holden solved the problem of the apprentice? Little incidents in passing from one machine to the other

The plant was organised on the most up to date lines. In 1924 the firm introduced cost accounting, material control and production systems,⁶⁴ and it constantly purchased new equipment and reorganised the methods of production; for instance, in 1928 a reorganisation scheme was completed costing £460,000.⁶⁵ Almost every Directors' Report notes the purchase of new machinery, usually from the United States. It was natural that Australian eyes should turn to that country: it was the home of mass production and, in the motor industry in particular, efficient production methods were developed there to a very high level. Holden's especially applied American methods as far as they were appropriate.

As early as 1919 a visitor to the works described the method of production as 'American',⁶⁶ and another in 1922 remarked that the American influence was noticeable throughout the works, particularly in the labour saving machinery.⁶⁷

63 (continued)

seemed to indicate that the pride in the gigantic concern which was so evident in Messrs. Holden, senior and junior, was reflected in the men, for the men in every department seemed to take a pride in demonstrating to visitors the efficiency of their methods of work.' Coach and Motor Body Builder..., 15 Oct. 1922, p.388.

64

Directors' Report for Year Ended 30 Jun. 1924.

65

Directors' Report for Year Ended 30 Jun. 1928.

66

The Advertiser, 27 May 1919, p.10.

67

The Coach and Motor Body Builder..., 15 Oct. 1922, p.388.

But the most startling innovation was the moving line organisation of production, the assembly of the bodies taking place on a moving line so that any hold-up in the flow could immediately be traced to inefficient labour or bad organisation.⁶⁸ Formerly all moving had been done by hand, and E.W. Holden claimed that in the paint shop this took up one-third of the effective labour; not only that, but many bodies became dented and men had to be put on the job of knocking the dents out.⁶⁹ By putting in the special machinery required for each job, E.W. Holden considered that his labour costs were no higher than those in America,⁷⁰ while by 1929 the labour costs per body were only one-fifth of the level they were in 1917-18.⁷¹

Basic to the organisation of the plant and the expansion of production after 1923 was the association formed with General Motors Corporation.⁷² Until 1924, distributors of

68

E.W. Holden in evidence before S.A. Royal Commission, 1st Progress Report, op. cit., paras 39-40.

69

Evidence to Commonwealth Arbitration Court, 1927, p.161.

70

Evidence to S.A. Royal Commission, 1st Progress Report, op. cit., para.38.

71

Evidence to Commonwealth Arbitration Court, Coach Makers Union..., p.321.

72

The information in this paragraph and the following table was supplied by General Motors-Holden's Ltd, letters dated 3 Apr. and 8 Apr. 1957.

General Motors' vehicles imported chassis from the United States and ordered bodies from various Australian body builders, including Holden's. However, in 1924, agreement was reached between Holden's and General Motors under which Holden's agreed to supply all Chevrolet and Buick bodies needed by General Motors' Australian distributors. The relationship between the two firms was very close: General Motors provided a permanent liaison officer, supplied experts to instruct Holden's staff on American production methods, furnished machinery and tools which could not be obtained locally, kept Holden's informed of prospective chassis changes and bought supplies for Holden's where these could be more cheaply purchased by the General Motors' organisation. This was not altruism on the part of General Motors. It benefited from the improvement in production methods and the lowering of costs since the agreement provided that the prices charged by Holden's to General Motors would be on a cost plus basis.

The importance of the supply of General Motors' motor bodies in Holden's total output after 1924 is shown in the table on the following page.

However, in spite of its efficiency, Holden's was not able to succeed as an independent company. Organised as it was for the mass production of large numbers of bodies, the

Holden's Motor Body Builders LtdProduction of Motor Bodies

Year	For General Motors	Total	General Motors as % of Total
1924	11,060	22,060	50.1
1925	20,000	32,292	61.9
1926	22,000	36,171	60.8
1927	20,407	34,309	59.5
1928	19,134	34,696	55.1
1929	11,050	17,890	61.8
1930	6,000	9,292	64.6

fall in demand associated with the depression placed it in a hopeless position. The table above shows the extreme dependence on the General Motors' contract, and this became increasingly important as output fell. In 1931 Holden's were absorbed by General Motors, the combination was named General Motors-Holden's Limited, and the Australian interest was retained in the form of preference shares.

(iii) The Supply of Materials for Body Building

It is a commonplace that the motor industry is a most important source of demand for the products of a vast range of industries; on a smaller scale this was true of the body building industry in Australia in the twenties. In Holden's first year the value of materials used was £84,000, 45 per cent of which was Australian; in 1928 their value had risen

73

Jobson's Investment Digest, March 1931, p.92.



to £1,500,000, 75 per cent of which was Australian material.

The requirements of the industry in terms of types of material, their volume and country of origin, is suggested by the table below:

Approximate Volume Supplies Required Annually by Holden's

Materials	Quantity	Country
Timber	3,000,000 sup.ft.	Australia
Timber	1,000,000 sup.ft.	New Zealand
Leather	1,200,000 sq.ft.	Australia
Duco	30,000 gals	"
Thinners	25,000 gals	"
Undercoats	16,000 gals	"
Cloth	37,000 sq. yds	"
Cloth	30,000 sq. yds	England
Castings	300 tons	Australia
Nails	50 tons	"
Bolts	1,250,000	"
Screws	200,000 gross	"
Hood Lights	31,000	"
Curtain fasteners	3,500,000 pieces	"
Chipboard	150 tons	"
Leather-Cloth, Hood Material and Fabrikoid	600,000 sq. yds	"
Upholstery padding	300 tons	"
Glass products	250,000 sq. ft.	"
Rubber products	175,000 lbs	"
Wire	1,000 tons	"
Bar steel	200 tons	"
Sheet steel	40%	England
Sheet steel	60%	America
Burlap	330,000 sq. yds	England
Bow covering	200,000 sq. yds	"
Carpets	40,000 sq. yds	"
Thread	5,000 lbs	"

Source: Australia Builds a Motor Car, p.10.

The growing importance of local factories as a source of supply of materials for the body building industry was partly the result of the general industrial development taking place in Australia. For instance, the bolt and nut, paint and rubber industries received a great stimulus from the war and were expanding their range of products in the twenties. The manufacture of screws was begun on a large scale in Australia by Nettlefolds Pty Ltd, which had formerly been Australia's chief supplier from the United Kingdom,⁷⁵ while the establishment of cotton manufacturing in the twenties meant that this industry could supply cotton padding for seats.⁷⁶ In several cases the manufacture of products was associated more directly with body building. Broadcloth for car upholstery was manufactured by Foy and Gibson for the first time in 1927.⁷⁷ In two cases large foreign firms set up factories largely to meet the demands of this industry. At the cost of £400,000, Leathercloth Pty Ltd was established at Deer Park, Melbourne, by the joint enterprise of Imperial Chemical Industries and Du Pont de Nemours. The plant was

75

Tariff Board Report, Screws for Wood and Screw Hooks, Eyes and Rings, 21. July 1925, passim.

76

Australia Builds a Motor Car, p.19. And see ch.IV.

77

Ibid., p.14.

capable of producing 1,250,000 yards of leathercloth and 500,000 yards of rubber-cloth annually, of which a large portion was for car upholstery and hoods.⁷⁸ The same two firms co-operated with British Australian Lead Manufacturers to erect a factory for the production of the newly discovered⁷⁹ duco. The factory was erected at Cabarita in 1928 at a cost of £200,000.⁸⁰

However, in spite of the industrial expansion in Australia, imports still provided 25 per cent of the materials for body building at the end of the decade. One of the main reasons was the reliance on overseas suppliers for special quality steel plates for panelling, and this dependence was enhanced by the growing popularity of the closed car which required twice as much metal work as an open car.⁸¹

(c) Car Assembly

An important part of the motor industry in the twenties was the assembling of the imported chassis and the fitting of it to the Australian-made body. Chassis were imported in

⁷⁸ Argus, 19 July 1929, p.5.

⁷⁹ Ibid., 25 Oct. 1928, p.9.

⁸⁰ Australia Builds a Motor Car, p.12. Whereas it previously took ten days to paint a car ducoing took only two.

⁸¹ Tariff Board Report on Motor Body Panels, 1935, p.13.

the unassembled state because of a small tariff preference over the assembled chassis, and because of the lower freight charges involved. There were three different movements taking place in the tariff on chassis in this decade: first, the tariff on both assembled and unassembled chassis was being lowered - at least until 1925. At the same time the small tariff preference in favour of the unassembled chassis was increased, while the margin of the British Preferential Tariff over the General Tariff was increased in a determined but relatively unsuccessful attempt to turn the market to the United Kingdom. However, the freight differential was more important than the tariff in establishing assembly works in Australia; chassis are very bulky and the freight on one assembled chassis was equal to that on three unassembled chassis. This fact also accounted for assembly works in all the capital cities rather than at one central site.

82

Tariff % on item 359(D)(4) - Chassis etc.		B.P.T.	I.T.	G.T.	
1920 -	(a) Unassembled	a.v.	7½	12½	17½
	(b) Assembled	"	10	15	20
1921 -	(a) Unassembled	"	5	7½	10
	(b) Assembled	"	7½	10	12½
1925 -	(a) Unassembled	"	0	7½	12½
	(b) Assembled	"	5	20	25
1927 -	(a) Unassembled	"	0	12½	17½
	(b) Assembled	"	5	20	25

83

Statement by Senator T.W. Crawford, Parliamentary Debates, vol.113, 10 Jun. 1926, p.2873.

For the first half of the period all assembling was done by Australian firms, but a large proportion of the work was taken away from them when Ford began to set up assembly plants in 1925 and General Motors in 1926. This move caused considerable resentment in those firms which had previously carried out this work; for instance, in November 1926, S.A. Cheney Motors Ltd announced that they had switched from General Motors' to British cars and were beginning a series of double page illustrations in daily and weekly papers to advertise the fact. ⁸⁴ Many of these firms now rediscovered their sentimental attachment to the motherland.

The establishment of American assembly plants was of considerable importance to Australian manufacturing, since they were a means of demonstrating the latest American methods in manufacture which had reached their peak in the automobile industry. The plants were models of efficiency. Methods of management and operation developed in the United States were applied in Australia and the assignment of work, handling of parts and operation of the assembly line were on the same lines as any large plant in Detroit. ⁸⁵

84

Argus, 2 Nov. 1926, p.14.

85

Baldwin, op. cit., p.41.

Some idea of the American methods can be gained from this brief description of the Geelong works of Ford by an Australian visitor:

Interest in the assembly plant centres upon the 'line', for which the Ford organisation is famed. The incoming parts are received at the south side of the factory, a 65 foot crane bay serving for reception and primary distribution purposes. Preliminary work, such as partial assembly, etc., goes on in preparatory south-to-north lines, all components arriving at the main line at the point where they are required for final assembly.

The main 'line' consists of a parallel chain drive, set at a convenient height for working, and running from west to east at a speed of approximately 18 in. per minute.

From the western end, where the chassis frame is assembled, the 'line' moves the assembly steadily forward, components being added and secured in position, until springs, engine, transmission, axles, etc., are placed. The 'line' then takes an upward grade before the wheels are fixed, obviating the need for workers to stoop while carrying on these operations. Finally the body...is swung into position on the chassis by an electric hoist.⁸⁶

General Motors assembly plants were conducted on similar lines, and in 1929 the company could boast that 'three years ago...the trained workman of today's assembly line was practically undreamed of'.⁸⁷

86

'Ford Motor Company's Australian Activities - Building Bodies and Assembling Cars at Geelong, Victoria', Engineering and Manufacture, vol.3, no.5, Nov. 1926, p.145.

87

Australia Builds a Motor Car, p.5.

The decision of the Ford Company of Canada to establish branches in Australia, and the growth of the organisation has already been discussed.⁸⁸ The behaviour of General Motors was very similar, except that it remained content with its Australian body builders and did not set up its own body plant; its Australian branch, General Motors (Australia) Pty Ltd began establishing its first assembly plant in Melbourne in July 1926,⁸⁹ and this was followed by assembly plants in the other capital cities, except Hobart. In all, 35 to 40 Americans were brought to Australia to assist in the installation of the plants and to train Australians.⁹⁰ By 1929 investment in these plants amounted to approximately £400,000,⁹¹ and the company gave direct employment to 2,041 Australians.⁹²

(d) Parts and Accessories

Although Australian industry was unable to cope with the production of the chassis, it did endeavour to produce some of the vast range of parts and accessories that go to

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See pp. 72-3.

⁸⁹

Argus, 28 July 1926, p.10.

⁹⁰

Information supplied by General Motors-Holden's Ltd, letter dated 8 Apr. 1957.

⁹¹

Australia Builds a Motor Car, p.5.

⁹²

Argus, 6 Sep. 1929, p.11.

make the complete car. Naturally these efforts were more successful with the less complex parts, and by 1929 the production of the following had reached considerable proportions: springs, gears, gear wheels, bumper bars, mud guards, shock absorbers, king pin and shackle bolts, spark plugs, bushings and bearings, windscreen parts, storage batteries and wind-
 shield equipment.

It is an illustration of the development of this business that the Chamber of Manufacturers of N.S.W. formed an Automotive Parts and Accessory Manufacturers' Section which, about 1928, published a Reference Book of Australian Made Motor Accessories, Replacement Parts and Garage Equipment. It was claimed that the publication was necessary because the local production of these goods had 'far outgrown the dimensions
 of a casual trade'.

93

Baldwin, op. cit., p.42. Other minor parts and accessories manufactured in quantity included 'motor cushions, top fittings, hood lights, tops, horns, lamps, jacks, luggage carriers, meters, tire covers and other accessories' (ibid., p.43).

94

Automotive Parts and Accessory Manufacturers' Section of the Chamber of Manufactures of N.S.W. - Reference Book of Australian Made Motor Accessories, Replacement Parts and Garage Equipment (circa 1928), p.2. In a chapter in this volume 'The Replacement Parts Industry in Australia' by C.A. Jeffries and John Storey (p.33), it is stated: 'The genesis of the spares and replacement parts industry dates back to some six years ago, when the number of replacement parts made in Australia was negligible....today it is a conservative estimate that places the annual output of the industry on the floor of the factories at over half a million sterling.'



The first efforts of the Australian manufacturers were directed towards obtaining the market for replacement parts; the next step was the right to supply the parts for the original equipment. To a considerable degree the first step had been accomplished by the end of the twenties and, in part, this development was the result of pressure on the American companies from Australian manufacturers and the Commonwealth government. ⁹⁵ This pressure from the Commonwealth government to manufacture whenever possible in Australia, was typical of the twenties, and it was a pressure to which the American car companies were particularly vulnerable, since there was always the possibility of a tariff diversion of trade to the United Kingdom. As a result these companies never ceased to emphasise that a large portion of

95

In 1927 a conference took place between the Automative Parts and Accessory Manufacturers' Association and the Australian management of General Motors. As a result a circular was sent by the secretary of the N.S.W. Chamber of Manufactures to the representatives of all car manufacturers, stating, inter alia, 'We have been assured that as soon as it is possible to alter factory and consignment arrangements the entire trade in certain replacement items will come to those Australian manufacturers who can show to General Motors that they can deliver the goods in the requisite volume and to definite standards.... In our negotiations with General Motors the manufacturers were supported wholeheartedly by the Federal Government.... Seeing that General Motors, after mature deliberation, have decided upon this change of policy, the Automative Parts and Accessory Manufacturers' Association urges that your firm do likewise; and I am directed to ask you to give your views on the question of the

the total value of their cars represented work carried out in Australia.

When the manufacture of a particular part had reached a certain stage, the local manufacturers would appeal to the Tariff Board for protection, partly to ensure the replacement trade, but also to bring pressure on the importers to use Australian parts in the original equipment. Some measure of their success can be gained from the tariff changes. The definition of a chassis, on which there was only a revenue duty, did not include rubber tyres in the 1920 tariff; in 1926 storage batteries were excluded, in 1927 shock absorbers and bumper bars, in 1928 sparking plugs and in 1929 springs. As these parts were excluded from the definition of a chassis, high protective duties were placed on them.

The development in the production of these parts may be illustrated by using storage batteries as an example. In 1926, without reference to the Tariff Board, the Commonwealth parliament excluded batteries from the chassis definition and imposed a tariff on batteries of B.P.T. 27.5 per cent, I.T. 35 per cent and G.T. 40 per cent. Dissatisfied with the level of this protection, the three major companies -

95 (continued)

use in entirety by your organisation of those replacement parts which are manufactured in quantities and on a mass production basis in Australia.' Times Trade Supplement, 12 Nov. 1927, p.3.

United States Light and Heat Corporation (Aust.) Ltd, Clyde Engineering Coy Ltd and Massey Batteries Ltd - appealed to the Tariff Board for an increase in 1927. The board considered that the Australian price was very competitive with imports in the 'replacement' battery trade, but because of reputation, good salesmanship and advertising, the imported battery was obtaining a fairly large share of the business. For this trade only a small increase in duty would be necessary to give the entire business to the local manufacturers, but for 'equipment' batteries the competition of imports was much more severe and would require a higher duty. The board concluded that it would be worthwhile imposing these higher duties since the increase in output would enable the Australian manufacturers to lower their price - and this they promised to do.⁹⁶ In the event, duties were raised to B.P.T. 40 per cent, I.T. 47.5 per cent, G.T. 60 per cent.⁹⁷ These increased duties seem to have succeeded in their purpose. By 1929, for instance, two-thirds of the batteries in General Motors cars were Australian-made, whereas in 1927 all were imported.⁹⁸ The increase in production

96

See generally, Tariff Board Report on Storage Batteries, 1927, passim.

97

These were the duties imposed by parliament. The Tariff Board had recommended B.P.T. 40%, I.T. 47% and G.T. 55%. (Ibid.)

98

Australia Builds a Motor Car, p.23.

in Australia was partly achieved by a method which was typical after a tariff increase, namely, the movement of a foreign firm to Australia. The English Exide Company invested heavily in the Massey Company which then began the manufacture of Exide batteries. A works manager was sent out from England and in six months output had been raised from about 400 batteries per week to about 2,500 per week.

99

(e) Rubber Tyres

The manufacture of rubber tyres in Australia grew in spectacular fashion with the use of motor vehicles. Few statistics are available specifically for tyre manufacture, as these are generally included along with all other rubber goods in the 'rubber industry'. However, the growth of tyre manufacture in the twenties was the main reason for the rapid expansion of the industry as a whole.

Rubber Industry

Year	Employment	Value of Land and Buildings £'000	Value of Plant and Machinery £'000
1919-20	3,353	291	426
1920-21	3,781	427	625
1921-22	3,591	652	840
1922-23	3,649	722	881
1923-24	3,785	740	891
1924-25	4,348	731	1,069

(continued on next page)

99

P.H. Chapman, Works Manager of the Massey Battery Coy Ltd, in evidence before the Commonwealth Arbitration Court, Amalgamated Engineering Union and Others v. Metal Trades Employers Association, Transcript of Evidence, 27 Mar. 1929, p.798 et seq.

(continued)

Year	Employment	Value of Land and Buildings £'000	Value of Plant and Machinery £'000
1925-26	5,048	715	1,185
1926-27	6,192	1,055	1,259
1927-28	7,437	1,612	1,744
1928-29	7,223	1,879	1,872
1929-30	6,804	2,250	2,276

Source: Production Bulletin, nos 14-24.

Employment in the industry grew from 3,353 in 1919-20 to a peak for the twenties of 7,437 in 1927-8, but the period of very rapid growth is after 1923-4 when employment was only slightly greater than the first post-war year. Investment in both land and buildings and plant and machinery increased greatly after the war as expansion, delayed during the war years, was carried out. Investment for several years was then stationary as was employment, then in 1924-5 both employment and investment in plant and machinery increased together, followed, after a lag of two years, by investment in land and buildings. It will be shown later that this phase of very rapid expansion in the middle twenties was directly related to tyre manufacture. Investment continued in the final years of the twenties as a result of the establishment of a foreign company in Australia. Even making allowance for difficulties in interpreting these statistics, it is obvious that the rubber industry was

transformed in the twenties by a very high rate of investment.

For the manufacture of rubber goods, Australia had to rely almost entirely on imported raw materials, but this was not a great comparative disadvantage since other countries with rubber-manufacturing industries were in the same position. Although there are no figures of volume of output for this industry, imports of rubber give some idea of its ¹⁰⁰ growth.

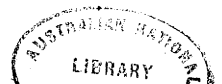
Imports - Crude Rubber, Rubber Waste, etc.

Year	'000 cwt.
1922-23	27
1923-24	65
1924-25	69
1925-26	120
1926-27	207
1927-28	200
1928-29	257
1929-30	188

Source: Overseas Trade Bulletin, vols 21-7. There are no volume statistics earlier than 1922-3.

100

The other major raw material for tyres was cotton, which was also wholly imported. There are no separate statistics for these imports but although prices of both cotton and rubber fluctuated greatly, some idea of their relative importance can be gained from the position in 1935, when the relation of the cost of rubber to fabric in a 'typical' tyre was 6 to 4.3. Tariff Board Report on Pneumatic Rubber Tyres and Tubes for Motor Vehicles, 1935, p.7.



As far as tyres specifically are concerned, the expansion in Australian production was based on two factors: the growth of the market as a whole and the substitution of local production for imports. The growth of the market is obvious from the statistics of vehicle registration,¹⁰¹ and these show that the motor boom really got under way in about 1923, a year or two after which the replacement trade in tyres began to reach considerable proportions. This is the basis of the expansion of the rubber industry in the middle twenties. Imports did not share in the growth of the market. After an initial rise in 1923-4, imports of tyres and tubes showed only a slight tendency to increase for two years and then declined rapidly after 1925-6. The position is set out below.

Imports - Tyres Pneumatic - '000 lbs

Year	Covers	Tubes
1922-23	5,132	654
1923-24	8,210	1,050
1924-25	8,072	1,135
1925-26	8,951	1,299
1926-27	7,690	1,016
1927-28	5,045	498
1928-29	2,456	273
1929-30	1,405	185

Source: Overseas Trade Bulletin, vols 21-7.

101

See pp.54-5.

The development of the tyre industry was accomplished with the aid of substantial tariff assistance amounting to B.P.T. 25 per cent, I.T. 35 per cent and G.T. 40 per cent. These duties, which were set in March 1920, were not altered for the rest of the decade, and although they were sufficient for the local manufacturers to obtain most of the replacement tyre trade, there was difficulty in securing the right to supply tyres with the original chassis equipment. Manufacturers of tyres overseas supplied equipment tyres at well below their replacement prices in the hope that satisfied users would return to the same brand, and a purchaser insisting on Australian tyres would thus have to pay more. The Dunlop Rubber Company of Australia Ltd broke into the equipment trade about the end of 1924, and by September 1925, had obtained 'a large amount of this business'.

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If the covers weighed over $2\frac{1}{2}$ lbs or the tubes weighed over 1 lb. then there was an alternative rate of - per lb. B.P.T. 1/6; I.T. 2/- and G.T. 2/6, whichever rate returned the higher duty. See Tariff Item 333(A), 1920.

103

This policy of the overseas tyre companies came under considerable attack in Australia. See, e.g., three articles in the Age, 8 Apr. 1924, p.8; 9 Apr. 1924, p.11; 16 Apr. 1924, p.12.

104

Industrial Australian and Mining Standard, 18 Jun. 1925, p.802. This journal called it a 'surprising and totally unexpected development'.

105

Dunlop Rubber Company of Australia Ltd, Chairman's Address at Ordinary General Meeting for Year Ended 30 Sep. 1925, p.6.

This was followed by a further success in April 1926, when the contract for the equipment tyres for Ford vehicles was obtained.¹⁰⁶

The principal reason why Dunlop was able to enter this field was undoubtedly its decision to compete for equipment tyres in the same manner as the overseas suppliers: namely, to supply equipment tyres at a large discount. Thus the firm reported that there was little profit in this trade but that it was carried on in the hope of expanding the number of customers.¹⁰⁷ Another reason probably lay in the realisation by the overseas car companies that the Commonwealth government was determined to put the equipment tyre trade in the hands of the local manufacturers.¹⁰⁸

106

Age, 21 Apr. 1926, p.15.

107

Dunlop Rubber Company of Australia Ltd, Chairman's Address at Ordinary General Meeting for Year Ended 30 Sep. 1926, p.7.

108

E.g., in 1926 the Minister for Trade and Customs (Mr H.E. Pratten) was pressed to put a prohibitive duty on the import of equipment tyres. He replied: 'The question of the manufacture of tires in Australia is receiving the earnest attention of the department. Although I am unable to say so definitely, I am of the opinion that the Australian tire factories are already working to their utmost capacity. I understand that further developments are projected...the Tariff Board will keep closely in touch with developments, and...I shall have no hesitation whatever in submitting to the Government any proposal considered necessary in the interests of Australia.' Parliamentary Debates, vol.113, 26 Mar. 1926, pp.2092-3.

Along with the growth of the industry went substantial changes in the quality of the product. The major developments which took place in the years 1922 to 1924 were revolutionary, and consisted of the change from the fabric to the cord tyre and from the high pressure pneumatic tyre to the balloon tyre. Although these innovations caused considerable difficulties for the manufacturers - for example, writing off outdated stock meant a loss for Barnet Glass Rubber Coy Ltd in 1924¹⁰⁹ - they were essential for the motor boom and for the demand for tyres to develop in the manner in which they did.

A problem for the tyre industry, which was common to many Australian industries with their limited markets, was the variety of sizes and types which it was necessary to produce. In the first half of the decade the great variety was maintained by the imported equipment tyre, the design of which the Australian manufacturers had to follow. As a result, tyre moulds rapidly became obsolete and had to be written off as valueless.¹¹⁰ However, the position improved greatly when British and American manufacturers adopted a standard schedule of sizes after 1927.¹¹¹

¹⁰⁹ Chairman's Address as reported in Jobson's Investment Digest, Nov. 1924, p.540.

¹¹⁰ Dunlop - Chairman's Address, 30 Sep. 1925, p.7.

¹¹¹ Dunlop - Motor and Cycling Notes for Weeks Ending 19 Nov. 1927 and 18 Feb. 1928.

The rapid growth of the industry in the four years after 1923-4 required a doubling of the labour force. What strains did this place on the industry? It was not a highly skilled trade: there were no apprentices and most of the employees were process workers, so the normal method of recruitment was to take workers off the street and put them on the easiest tasks.¹¹² Since unskilled workers were not difficult to obtain, the labour force could be increased with ease. However, within the scope of process work there are still degrees of difficulty, and an experienced man is always much more useful than an inexperienced one,¹¹³ so that the nature of the work force must have meant some lowering of efficiency in these years of expansion. It is probable that the strains of expansion were felt more acutely at the higher levels of management. Thus, after the merger of the Australian and English Dunlop companies,¹¹⁴ the English company

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Evidence of A. Fenton (Director of Perdriau Rubber Company) in 1925 before the Commonwealth Arbitration Court, The Federated Rubber Workers Union of Australia & Dunlop Rubber Coy. of Aust. Ltd, Transcript of Evidence, pp.136-7.

113

In commenting on the advantages of continuity of employment in 1925, the chairman of Dunlop stated: 'In other years it has been necessary at times to reduce hands by considerable numbers, and when the time has come for again increasing production it has not been possible to re-engage the experienced workers, whose services are thus lost to the Company, and a large proportion of the offering men have to be trained for their work which is new to them.' Chairman's Address, Sept. 1925, p.10.

114

See p.107.

sent to Australia a new factory manager and 'other members of their staff'.¹¹⁵

Statistics are too incomplete to attempt any measure of the productivity of the labour force, but once the difficulties of expansion in the middle twenties had been overcome, a rapid increase in productivity could be expected for several reasons. First, the labour force was almost entirely on piece work,¹¹⁶ and it has been shown that there were increasing quantities of machinery available per employee, while at the same time, the horse-power per employee was also increasing.¹¹⁷ Secondly, there were the general advantages associated with a larger scale of production. Thirdly, there was the stimulation resulting from the entry of foreign firms with the latest methods into production in Australia. Finally, rationalisation of production was carried out by the Australian firms themselves.

115

Dunlop - Chairman's Address, 30 Sep. 1928, p.15.

116

Justice Powers accepted the statement that 90% of the employees were on piece work. 23 C.A.R., p.356.

117

Actual horse-power of engines used in the rubber industry per employee was roughly 2 between 1919-20 and 1926-7; it then began to increase and was approximately $3\frac{1}{2}$ by 1929-30. (Production Bulletin, nos 14-24.) In 1929 in the U.S.A. the comparable figure was between 6 and 7. See Harry Jerome, Mechanisation in Industry, National Bureau of Economic Research, New York, 1934, p.457.

For the greater part of the twenties tyre manufacturing in Australia was completely dominated by three firms: Barnet Glass Rubber Coy Ltd, Perdriau Rubber Coy Ltd and Dunlop Rubber Coy of Australia Ltd. The great bulk of the shareholding in all three companies was Australian, and between 1920 and 1928 their rapid expansion was largely financed by Australian funds. The basic market situation facing these companies was extremely favourable, but two factors detrimentally affected their profits. One was the change in tyre design between 1922 and 1924 and the other the enormous fluctuations in the prices of their raw materials, particularly rubber and cotton. For instance, the price of raw rubber between 1924 and 1926 varied from 9¹/₈d. per lb. to 4/8 per lb.

The smallest of the three companies was Barnet Glass Rubber Coy Ltd of Melbourne. For four years, between 1921-2 and 1924-5 no ordinary dividends were paid and £90,000 of the shareholders' capital had to be written off. However, there was a recovery in the second half of the decade: 10 per cent dividends were paid in three years and the £90,000 of funds written off were restored. Between June 1926 and June

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Were's Statistical Service 1934 - Dunlop Perdriau Rubber Coy Ltd, p.2.

1928, the issued share capital was increased from £405,000 to £737,000, and total assets rose to over £1 million.

Perdriau Rubber Company Ltd of Sydney was the most successful company and grew at the most rapid rate. For 7 of the 9 years between 1919-20 and 1927-8 12.5 per cent dividends were paid, and a bonus dividend of about 11 per cent was paid in 1923. Over the same period shareholders' capital rose from £349,000 to £1,206,000 and total assets increased to almost £2 millions.

Dunlop Rubber Coy of Australia Ltd of Melbourne was the largest company. A reconstruction of the company and a bonus share issue of £292,000 in 1920 raised the share capital to £1,691,000. Thereafter it was not conspicuously successful. Although dividends were paid in every year to 1926-7, the highest was 10 per cent which was paid only once, and in 1927-8 a loss was incurred and no ordinary dividend was paid. However, by June 1928, shareholders' capital had grown to almost £2½ millions while assets were a little over £3 millions.

Dunlop formed an English connection in 1925, when it linked up with the North British Rubber Coy of

119

Barnet Glass Rubber Coy Ltd, Annual Reports, 1920-8.

120

Perdriau Rubber Coy Ltd, Annual Reports, 1920-8.

121

Dunlop Rubber Coy of Australia Ltd, Annual Reports, 1920-8.

122

Edinburgh to manufacture rubber footwear in Australia.

Much more important was the association established in 1927 with the Dunlop Rubber Coy of England: the English company acquired 500,000 ordinary shares at 25/- each (roughly one-third of existing ordinary shares), and was given an option over a further 500,000 at 30/- each. ¹²³ In recommending this union to its shareholders the board of the Australian company stated that a 'policy of isolation is fraught with danger', and emphasis was placed on the technological advantages to be gained through the use of the English company's research organisation and on the economies of bulk buying of raw materials. ¹²⁴ One immediate result, as we have seen, was the dispatch of English staff to Australia.

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North British Rubber Coy was one of the principal suppliers of the Australian market. The decision to establish a factory in Australia was regarded in England as 'the necessary outcome of the Commonwealth's high tariff policy'. (Financial Times as reported in Argus, 1 May 1925, p.19.) In the joint venture, Dunlop provided the cash while North British provided its established Australian connection, information concerning lay-out plans and installation of plant, and the technical and leading hands for the factory. (Dunlop - Chairman's Address, 30 Sep. 1925, p.7.) By 1929 Dunlop had taken over sole control of the shoe company and North British allied itself with the Hardie Rubber Coy Ltd (Sydney Morning Herald, 16 May 1929, p.13).

123

Dunlop - Chairman's Address, 30 Sep. 1927, p.7.

124

Argus, 18 July 1927, p.15.

These three companies, Dunlop, Perdriau and Barnet Glass combined their interests in the first months of 1929. Dunlop and Perdriau merged to form the Dunlop Perdriau Rubber Coy Ltd, and this new company bought a controlling interest in Barnet Glass, which, however, continued to trade as a separate entity. For the companies there were many advantages to be obtained from this alliance, including a reduction of overheads, the elimination of competition¹²⁵ and advantages associated with the bulk buying of raw materials. But, more important, the rubber industry in Australia had reached a crucial stage where it could now meet almost all the tyre requirements of the Commonwealth, while two new companies, both with foreign connections, were entering the field.

The Rapson Tyre and Rubber Co. (Aust.) Ltd was formed in 1926 and erected a factory at Launceston, but it was not until November 1928 that production began in any quantity. All subscribed share capital was Australian, but the Rapson Tyre and Jack Company of England transferred to the Australian company its patent rights and trade name, for which it

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As the chairman of Barnet Glass stated: 'The rubber manufacturing trade of Australia, throughout its career, has indulged in heavy competitive waste.' Chairman's Speech at the Extraordinary Meeting of Shareholders (undated but apparently 23 Jan. 1928).

received £10,000 in cash and 50,000 £1 ordinary shares.¹²⁶
 The managing director came from the English company as well as certain other skilled workers, and he chose Launceston as a site rather than Sydney or Melbourne because of the equable climate, cheaper power, fewer labour troubles and less likelihood of the introduction of the 44 hour week.¹²⁷
 But probably a more important inducement was the guarantee by the Tasmanian government, under certain stringent conditions, of the interest payment on £200,000 8 per cent preference shares.¹²⁸

Total share capital of the company was £500,000, but for various reasons including the unsuitability of the site, and heavy promotional and developmental expenditure, the venture was never able to get into full production. After limited production began in November 1928, a flood closed the works in April 1929, and then for several years output was intermittent, being carried on by creditors after the liquidation in 1930.¹²⁹ The company was able to fulfil the

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Tasmania - Journals and Papers of Parliament, vol.XCIII, 1925-6, Paper no.51, Rubber Industry Encouragement Bill, 1926 (no.119). Report of Joint Committee of Both Houses of Parliament with Minutes of Proceedings, Evidence, and Bill as Redrafted. Evidence of E.M. Jonson, p.5.

127

Ibid., evidence of H.L.J. Butler, p.6.

128

Rubber Industry Encouragement Act, 1926.

129

Jobson's Investment Digest, Oct. 1930, p.501.



conditions of the Tasmanian government's guarantee to the extent of obtaining payment on the preference shares for 15 months.¹³⁰ Perhaps the major irony of this dismal failure

was the fact that in spite of the large payments to the English Rapson company, no tyres of that model were ever¹³¹ made.

A much stronger potential rival to the established Australian companies was the Goodyear organisation. In 1915 a subsidiary of the Goodyear Tire and Rubber Company of Akron, Ohio, was established in Australia as an importer of the American made products. In 1926 the company claimed that sales of 'Goodyear' products were expanding and had reached £750,000 in that year, but because of the Commonwealth government's well-defined tariff policy it had decided¹³² to establish a factory in Australia. In fact, the Goodyear price for tyres was about 20 per cent above the price¹³³ of the Australian-made tyres and its large sales probably existed only through the inability of the local producers

¹³⁰

Ibid., Sep. 1931, p.373.

¹³¹

Ibid., Oct. 1930, p.471.

¹³²

The Goodyear Tyre and Rubber Company (Australia) Ltd, Prospectus, 30 Nov. 1926.

¹³³

Tariff Board Report on Pneumatic Tyres and Tubes, p.6. Evidence of B. Howard for the Goodyear company.

to meet all the demands of the market, so that if the company wanted to maintain its Australian market it had little choice but to establish a factory here. In 1926 a new company was formed, The Goodyear Tyre and Rubber Company (Australia) Ltd, with a share capital of £800,000; all the ordinary shares to the value of £500,000 were taken up by the American company and the preference shares to the value of £300,000 were allotted to the Australian public.¹³⁴ The factory was erected at Granville, Sydney, and was officially opened in October 1927.¹³⁵

The company was very successful. After a developmental year in 1927, £131,000 profit was made in 1928 and £249,000 in 1929. After payment of the preference dividends all profits were reinvested in the expansion of the business as well as additional advances by the parent company of £618,000, so that by the end of 1929 total assets had reached £1.8 millions on a share capital of £800,000.¹³⁶

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Goodyear - Prospectus, 30 Nov. 1926. The American holding was paid for in cash, but it is not recorded how much was paid to the distributing subsidiary which was taken over.

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On this occasion, Australians lived up to their reputation as speechmakers: 'As part of the proceedings, his Excellency released a huge balloon, a ceremony which he touched upon in his speech at the luncheon, when, having taken due note of the wind's direction, he predicted that it might come to earth on Norfolk Island. The length of the speeches, however, gave the wind time to change, and when the balloon was ultimately released, it floated off in the general westerly direction of Cookamidgera.' Sydney Morning Herald, 28 Oct. 1927, p.12.

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Goodyear - Annual Reports, 1927-30.

Part of the success of the Goodyear company can be attributed to price agreements made with the Australian companies.¹³⁷ The threat of Goodyear competition was one of the reasons inducing the Australian companies to combine, but when the company was being established it stated that it did not propose to enter into 'destructive competition'¹³⁸ with the Australian manufacturers. The company was successful in its aim, and early in 1928, Perdriau, Dunlop, Barnet Glass and Goodyear issued uniform tyre price lists¹³⁹ to the trade throughout Australia.

Conclusion

The last years of the 1920s saw the end of an era in the Australian motor industry - the great car boom was over. After years of continuous growth the number of registered vehicles fell substantially in 1930-1, and it was not for another 22 years that the great increase of 1926-7 was equalled. The decade of the twenties had seen the establishment and very rapid development of a motor industry, which although limited in its scope, had become capable of large-scale

¹³⁷

Other factors were, of course, important - for example, the factory was a modern one under the supervision of a staff trained at the Akron (Ohio) works. Goodyear - Prospectus, 30 Nov. 1926.

¹³⁸

Ibid.

¹³⁹

Jobson's Investment Digest, Mar. 1928, p.115.

production to meet the demands of a mass market. Some patterns within the industry were now set. When it began it was in the hands of a large number of small Australian firms assembling the imported parts or building custom bodies to order, but the economies associated with standardised production on a large scale meant that the industry would eventually be dominated by a few firms. This had been accomplished by 1930. However, not only were the numbers reduced, but the small Australian producer was largely replaced by the large American firm. The dependence on overseas' manufacturers for the supply of the engine and chassis unit precluded the development of an Australian-owned industry, and the end of Holden's as an independent firm put the seal on what had been obvious for a considerable period. Similar pressures were at work within the tyre industry; here the three Australian companies combined and linked with an English company to face the entry of new foreign competitors. Apart from these changes within the industry, the developments of the twenties had broader implications. An industrialised economy was just emerging in Australia, and the motor industry was one of the principal ways in which foreign capital and techniques of production were introduced into Australian manufacturing.

Chapter III

STRUCTURAL CHANGES IN BUILDING MATERIALS:

THE GROWTH OF THE CEMENT INDUSTRY

Introduction

A distinguishing feature of the 1920s in Australia was the widespread use of two new building materials - cement and structural steel.¹ Within the building industry these materials had revolutionary repercussions on building methods and costs, and on the demand for traditional building materials, particularly bricks.

For the greater part of the decade the cement industry in Australia was characterised by the growth of output and capacity as demand for cement rapidly increased, but late in the twenties when demand ceased to grow, large-scale excess capacity emerged for the first time. Unlike such industries as chemicals, electrical manufactures and automobiles, the manufacture of cement posed no special problems for Australian entrepreneurs, and the expansion of production was carried out almost entirely by Australian firms.

¹

Structural steel is discussed in ch.VI.

The oligopolistic nature of the cement industry, which was given special characteristics in Australia by the pattern of resource and population location, induced a form of price co-operation between the firms in the industry. Such co-operation was easy for most of the decade, but it became both more vital for the firms and more difficult to organise as excess capacity emerged. As with most Australian manufacturing industries, freight gave insufficient protection from overseas competition, and the industry relied on the Commonwealth government for a high protective tariff. The industry also depended to a great extent on government purchases of cement for public works, but, unlike the heavy metal industries, the tariff gave adequate protection from overseas competition and further preference in government contracts was unnecessary.

The Demand for Cement

The use of Portland cement on a large scale has been a development of the twentieth century. After its discovery in the early nineteenth century, its widespread application waited upon the invention of the rotary kiln in the 1890s, which made possible a great reduction in cost as well as a standardisation of product. The rise in consumption in Australia was remarkable. By 1913 it had reached 325,000 tons, then, after a decline during the war, it rose again to

a peak for the 1920s of over three-quarters of a million tons in 1927-8.

A major source of this demand for cement lay with public authorities, particularly for such works as dams, irrigation channels and pipes, and water supply and sewerage.² By 1914 the Interstate Commission considered that the demands of the various state governments had reached 'exceptional proportions',³ and these demands increased with the active developmental role played by governments in the twenties and the necessity of constructing a road system to cope with the flood of cars unleashed in this decade. In New South Wales, in the six years up to 1926, the consumption of cement for state purposes, including the requirements of the Public Works Department, the Metropolitan Board of Water Supply and

² Many of the cement products for public works were manufactured by private firms, which depended on government spending for their main market. Perhaps the most important was the principal manufacturer of concrete pipes in Australia, Hume Pipe Company (Australia) Ltd. The manufacture by this firm of centrifugally spun reinforced concrete pipes was based on a process invented by the brothers W.R. and E.J. Hume. The invention revolutionised pipe manufacture and the rights were sold throughout the world. (Directors' Reports, 1920-1 to 1929-30.) One of the firm's subsidiaries placed such value on the inventive activities of W.R. Hume that it insured his life for £20,000. (Hume Steel Ltd Directors' Report, year ended 30 Sep. 1929.)

³ Interstate Commission, Tariff Investigation, Portland Cement Report, 26 May 1915, p.4. (Parliamentary Papers, 1914-17, vol.VII.)

Sewerage, the Sydney Harbour Trust and the Railway Commis-
 sioners averaged 60,000 tons per annum,⁴ while in one year,
 1923-4, it was over 70,000 tons.⁵ If the other states con-
 sumed cement at the same rate per head as N.S.W., total de-
 mand from state governments in the middle twenties would
 have been about 200,000 tons, or two-fifths of the total
 Australian consumption. These N.S.W. figures probably do
 not include cement purchases by local authorities, so that
 total purchases by public authorities would be higher by that
 amount.

It was not only in the public sector that the use of
 cement increased. In the twenties the construction of build-
 ings was revolutionised by the application of reinforced
 concrete. Until then, in Sydney at least, legislation had
 limited the use of this material,⁶ and the first building of

⁴ Report of Parliamentary Standing Committee on Public Works
 on Proposed Works for the Manufacture of Portland Cement at
 a Site at Carlos Gap, 18 Nov. 1926, p.vii. (N.S.W. Parlia-
 mentary Papers, 1926-7, vol.II.)

⁵ R.T. Ball, Minister for Public Works, N.S.W. Parliamentary
 Debates, 24 Sep. 1924, p.2210.

⁶ As one contractor complained: 'In Australia the use of
 cement is in its infancy; our builders are builders of iron,
 stone, and brick. As far as Sydney is concerned, the Build-
 ing Act forbids the economic use of reinforced concrete.
 Amend this Act, then our architects will soon show how great
 roomy buildings will be erected without such ponderous room-
 destroying walls, as are being reared in Sydney today.'
 Evidence of James Angus, Appendix to Interstate Commission
 Report, op. cit., p.29.

reinforced concrete was not constructed there until 1919 - this was Angus and Coote's premises facing the central entrance of the Queen Victoria markets.⁷ As the advantages of reinforced concrete and the technique of its construction became more widely known its use rapidly extended.⁸ In the cities it was also used in conjunction with another new building process - the steel frame - to erect the large buildings that high land values made necessary. Both these developments completely altered methods of building construction and opened new avenues for the utilisation of cement.

The demand for cement, therefore, was much more buoyant than for traditional building materials such as bricks. It was supported from two sources: bricks relied principally on general private building, while cement found equal support from public investment. In the depression, of course, both these props were to prove weak. But in the twenties not only was the base for the demand broader, but the improvements in the quality of cement, the spread in knowledge of its

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Australasian Manufacturer, 3 May 1919, p.20.

8

In the twenties the advantages of concrete over other building materials were seen to be in cost, strength, durability, maintenance and freedom from fire. See, e.g. Australasian Concrete, Mar. 1921, p.5, and Australasian Engineer, 31 July 1925, p.5.

usefulness and the increasing number of uses to which it could be put, meant that it was replacing other building materials as well as creating new demands.

Under these influences the consumption of cement expanded at a different pace and in a different pattern as compared with other building materials. For instance, brick output in the twenties grew to 807,000,000 in 1923-4, fell a little in the next two years and then reached a peak for the twenties of 838,000,000 in 1926-7, only slightly higher than the 1923-4 figure.⁹ Cement output, on the other hand, grew continuously from 1923-4 to 1927-8 and during this period increased over 50 per cent.

In many uses cement is complementary to other building materials, but bricks and wood undoubtedly felt its effect as a competitive material. This effect is hard to demonstrate as inter-commodity competition was only one, and not the most important, influence on the price and output patterns of building materials. However, contemporary observers thought they saw the influences of this competition; for instance, in 1924, the Age noted with pleasure that the brick combine in Melbourne had been forced to reduce its prices, and it thought that the prime reason must be 'the use

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Production Bulletin, no.23, p.148.

of reinforced concrete in the building of large premises'.¹⁰
 Also, although competition from cement would be felt mainly by bricks, Jobson, in discussing the depressed conditions in the timber trade, noted that 'timber is not now as favoured as it was for buildings, and the preference for any construction of importance is for steel and cement'.¹¹

The Industry Before the War

To meet the rapidly rising demand, local production expanded to reach an estimated 200,000 tons by 1913.¹² Official statistics are few, but a picture of this growth can be given for New South Wales; there, production was 13,400 tons in 1902, 68,333 tons in 1908, 108,390 tons in 1911 and 127,981 tons in 1913.¹³ However, notwithstanding the expansion of their plant, local manufacturers were unable to meet the demand, and imports grew from 25,700 tons in 1907 to 125,600 tons in 1913.¹⁴

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Age, 10 Sept. 1924, p.9.

¹¹

Jobson's Investment Digest, Aug. 1928, p.388.

¹²

Interstate Commission Report, op. cit., p.4. The Commission considered that this figure was calculated with 'fair accuracy'.

¹³

Annual Report of the Dept. of Mines, N.S.W., for the year 1918, p.49. N.S.W. Parliamentary Papers, 1919, vol.3.

¹⁴

Overseas Trade Bulletin, nos 5 and 11.

The local industry had the double protection from overseas competition of a high tariff and the high transport costs of cement. The importance of this protection in 1913 can be seen in the table below:

Imports of Portland Cement

	Origin	
	Continental	United Kingdom
F.o.b. cost per cask	5/-	5/-
Freight and other charges	<u>3/6</u>	<u>4/3</u>
	8/6	9/3
Duty	<u>3/4</u>	<u>2/6</u>
On wharf at Sydney per cask	<u>11/10</u>	<u>11/9</u>
Thus freight, etc., as percentage of f.o.b. value	70%	85%
Thus duty as percentage of f.o.b. value	66.7%	50%

Source: Interstate Commission Report, op. cit., p.3.

With such a high level of protection, local manufacturers were in a favourable position, and it was only because of their inability to expand at a sufficient rate that imports were continued. The price of imports was used to set the price in the market; thus the secretary of the Commonwealth Portland Cement Company stated that 'our policy has always been to keep just under the imported price'.¹⁵ This sellers' market meant that the price of cement in Australia

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Interstate Commission Report, op. cit., p.5.

was over double that in the United Kingdom, and that there was no inducement for Australian producers to compete amongst each other. In New South Wales there were two producers: the Commonwealth Portland Cement Co. Ltd with an output of around 100,000 tons and Goodlet and Smith, a much smaller producer. These two companies had a 'loose arrangement' as to price, and always knew each other's quotes for government business.¹⁶

This market situation made cement manufacture a very profitable undertaking, and just before the war several new firms entered the industry. Although the war reduced import competition to a minimum, the demand for cement also fell since there was a decline in the quantity of public works and building. However, the new entrants in the industry did not drastically upset the relationships between the firms; the Interstate Commission in 1919 found 'there is no formal agreement between the cement manufacturers, but there is an understanding between the principal manufacturers and they fix prices'.¹⁷

¹⁶

Ibid., p.4.

¹⁷

Interstate Commission, Prices Investigation, No.12 Report, Rents, 24 Apr. 1919, p.34. Parliamentary Papers, 1917-19, vol.V.

The Growth of the Industry in the Twenties

Output figures are available for New South Wales during the twenties, but they were collected for the Commonwealth as a whole only from 1923-4. Even after that year there are no separate statistics published for the other states.

Cement

('000 Tons)

Year	Output		Imports	Consumption ¹
	N.S.W.	C'wealth		
1919-20	92	n.a.	6	n.a.
1920-21	160	n.a.	27	n.a.
1921-22	163	n.a.	24	n.a.
1922-23	201	n.a.	45	n.a.
1923-24	224 ²	492	29	521
1924-25	272 ²	578	26	604
1925-26	306	605	23	628
1926-27	365	638	19	657
1927-28	432	754	23	777
1928-29	415	708	22	730
1929-30	423	697	15	712

¹ Consumption taken as output plus imports

² Calendar year ended six months previously.

Sources: N.S.W. output from N.S.W. Statistical Register, 1919-20 to 1929-30, and N.S.W. Year Book, 1926-7, p.346.
Commonwealth output from Production Bulletin, vols 18-24.
Imports from Overseas Trade Bulletin, vols 17-27.

The growth in output for the Commonwealth was rapid; it increased by roughly one half in the four years between 1923-4 and 1927-8, and probably increased about threefold between 1920 and 1927-8. New South Wales was the most

important State, producing over half the total output. Local production met nearly all the demand and imports were limited to certain high-grade cements.¹⁸ The exclusion of imports was assisted by the freight and by a high tariff of B.P.T. 1/-, I.T. 1/-, G.T. 1/6 per cwt, which had been imposed originally in 1914. Because of the war it had not been needed and it was left unaltered in the general tariff adjustment of 1920 at the request of the cement manufacturers, not because they thought it unimportant, but because they thought it was already sufficient to exclude foreign competition.¹⁹

The expansion in production was the result both of the growth of existing firms and of new firms entering the industry. The profits of established companies were very satisfactory and acted as a strong inducement to new firms. For instance, Kandos Cement Co. Ltd paid 10 per cent dividends for every year of the twenties;²⁰ after it became a public company in 1924 Australian Cement Ltd paid between

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Parliamentary Standing Committee on Public Works, op. cit., Minutes of Evidence, p.4, evidence of G.W. Mitchell, General Manager, State Industrial Undertakings.

19

Statement by W.M. Greene, Minister for Trade and Customs, Parliamentary Debates, vol.XCV, pp.9126-7.

20

Kandos Cement Co Ltd, Directors' Reports, years ended 30 June 1921 to 30 June 1930.



10 per cent and 15 per cent,²¹ while the Adelaide Cement Co. Ltd between 1921-2 and 1929-30 normally paid 15 per cent and also made a bonus share issue in 1924-5 of £55,000 to a shareholders' capital of £126,000.²² However, entry into the cement industry was not easy, since large amounts of capital were needed and the established firms were formidable prospective rivals.

In New South Wales, at the beginning of the decade, there were two companies in existence and these remained the major producers. The Commonwealth Portland Cement Co. was a private company in which the entire shareholders' funds were held in England; by 1928 these funds amounted to £600,000, assets were £1,448,000 and the capacity of the works at Portland was about 200,000 tons per annum.²³ This company remained the only one in which there was a substantial foreign shareholding. Kandos Cement Company Ltd was roughly the same size and its works at Kandos also had a capacity of about 200,000 tons per annum.²⁴ Three other companies

21

Australian Cement Ltd, Directors' Reports, years ended 30 Nov. 1925 to 30 Nov. 1930.

22

Adelaide Cement Co. Ltd, Directors' Reports, years ended 31 May 1920 to 31 May 1930.

23

Jobson's Investment Digest, Mar. 1928, p.106.

24

Ibid.

were established in New South Wales to manufacture cement. One was the Standard Portland Cement Co. Ltd which began production in 1926-7,²⁵ and which had a capacity of about 100,000 tons.²⁶ This firm was also at Kandos, so that Commonwealth, Kandos and Standard were all on the Mudgee railway line, Portland being 112 miles from Sydney and Kandos 154. In this area the necessary raw materials - limestone, shale and coal - were all adjacent to one another as well as being close to transportation by rail. The two other New South Wales cement works were established by powerful companies whose major interests lay outside this industry. The Sulphide Corporation Ltd had refining works for base metals at Cockle Creek; there it established cement works which, by the end of the decade, had a capacity of about 100,000 tons.²⁷ Southern Portland Cement Ltd was situated at Berrima and was formed jointly by Australian Iron and Steel Ltd and Howard Smith Ltd; it began production in 1929 and capacity was scheduled to be 120,000 tons.²⁸

25

Standard Portland Cement Co. Ltd, Directors' Report, year ended 30 June 1927.

26

Jobson's Investment Digest, Mar. 1928, p.106.

27

Ibid.

28

Ibid., Sep. 1928, pp.397-8.

In Victoria there was virtually only one producer, Australian Cement Ltd, with works at Fyansford, near Geelong. This company was formed in 1925 to take over an existing company, Australian Portland Cement Co. Pty Ltd, and its capacity towards the end of the twenties was about 200,000 tons.²⁹ Alarmed by the development of new companies in New South Wales the company made a policy of consistently maintaining capacity in excess of demand so as to discourage potential competitors.³⁰

The size of the companies was much smaller in the other states. In South Australia there were two established companies - Adelaide Cement Co Ltd (40,000 tons) which began production in 1914, and South Australian Portland Cement Co. Ltd (30,000 tons), dating back to 1891. In Queensland there was only one firm - Queensland Cement and Lime Co. Ltd (55,000 tons), which began production during the war.³¹ In Western Australia, the Western Australian Portland Cement Co. Ltd was formed in 1918 and produced its first cement in 1920; in 1927 it was reconstructed into a new company - Swan Portland Cement Ltd.

²⁹

Ibid., Mar. 1928, pp.106-7.

³⁰

Australian Cement Ltd, Directors' Report, year ended 30 Nov. 1925.

³¹

Capacity estimates given in brackets relate to 1928 and are from Jobson's Investment Digest, Mar. 1928, pp.106-7.

It was in Tasmania that the only unprofitable cement venture took place. National Portland Cement Ltd was established at Maria Island off the east coast of Tasmania and began production there in 1924. For several years in the mid-twenties production averaged around 30,000 tons, but there were continual difficulties and operations finally ceased in 1929.³² In a general way, the firm suffered from the failure of Tasmania to develop as rapidly as expected, but there were also more particular setbacks: the cost of establishment exceeded estimates, delivery of machinery was delayed and the first limestone quarry opened up proved faulty.³³ Almost all the shareholders' funds were lost in this undertaking. When the works were ultimately sold to Australian Cement Ltd, payment was made in the latter's shares and amounted to only 1/9 in the pound on £100,000 preference shares and 8d. in the pound on £279,000 ordinary shares.³⁴ Another small Tasmanian company, Tasmanian Cement Pty Ltd, began production in 1925 at Railton in Northern Tasmania, where over £200,000 had been invested in plants for cement

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See National Portland Cement Ltd, Directors' Reports, years ended 30 June 1923 to 30 June 1928.

³³

Report in Melbourne Herald, 3 Oct. 1928. A press cutting seen at the Melbourne Stock Exchange.

³⁴

Jobson's Investment Digest, Dec. 1929, p.731.



manufacture and shale oil retorting.³⁵ However, in 1924, agreement had been reached with Dorman, Long and Co. Ltd, the English firm in charge of the construction of the Sydney Harbour Bridge, by which Dorman, Long took over the management of the firm, invested 'a large sum of money in the works', while the firm became responsible for the supply of cement for the bridge.³⁶ The output of the firm was not large, reaching about 25,000 tons per annum by 1928.³⁷ In that year the firm expanded into a public company, Goliath Portland Cement Co. Ltd and Dorman, Long continued to direct the management.³⁸ Capacity of the plant was increased to 135,000 tons by 1930,³⁹ and it was the intention of the company to sell a large proportion of this cement on the Melbourne market.⁴⁰

³⁵ Age, 30 July 1925, p.11.

³⁶ Industrial Australian & Mining Standard, 30 Oct. 1924, p.639. It is not known how much money was invested by Dorman, Long in the original company in 1924, but in 1934, out of 255,857 ordinary shares of Goliath, Dorman, Long held 22,578. (Shareholders' List at Melbourne Stock Exchange.)

³⁷ Prospectus of Goliath Portland Cement Company Ltd,
³¹ July 1928.

³⁸ Argus, 17 July 1928, p.14.

³⁹ Jobson's Investment Digest, Oct. 1929, p.555.

⁴⁰ Ibid., Sep. 1928, p.400.

Technological Development

Portland cement came into popular use with the development of the rotary kiln about the turn of the century. Subsequent technical developments within this industry up to 1930 included a great increase in the size of the rotary kilns, a reduction in fuel consumption, mechanisation of the production process, including quarrying, packing and distribution,⁴¹ and the creation of new types of cement for special purposes. These innovations had their origins abroad, but it seems that the Australian industry quickly adopted them. The rapid growth of the industry in the twenties meant that most of the equipment was up to date; new firms established themselves with new plant while the profits of the established firms enabled them to make very adequate provision for replacement. That the new equipment purchased was of the most modern type was assured by the position of the firms supplying the equipment. This industry was dominated by a few large firms which kept a leading position in the development of technology for making cement, and provided buyers with designs for new factories and the technical knowledge for production.⁴²

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See, e.g. Ingar Svennilson, Growth and Stagnation in the European Economy (United Nations Publication, 1954), p.156.

42

Ibid., pp.156-7.

Rotary kilns were operated in Australia as early as 1908⁴³ by the South Australian Portland Cement Co., and it is possible that the two main companies in Victoria and New South Wales had them even earlier. All further installations were of this type, and the development in their size was most marked. The attitude of one of the older companies to technical development can best be shown by this description of its works:

A contract has been let by the Australian Portland Cement Co. to the Monier Concrete Co. to build four silos at the terminus of the Fyansford railway for the storage of the company's cement. Each silo will be 75 feet in height, with a diameter of 35 feet, and will have a capacity of 1,500 tons. The cement company's packing house will be alongside, and will be equipped with machines capable of bagging the cement at the rate of $2\frac{1}{2}$ tons per minute. The silos will be automatically filled with cement by means of conveyors from the works. The cost of the new silos, about £20,000, is only an item in the expenditure which the cement company has in view. Its policy has always been to keep ahead of the demand, and while the output has increased twentyfold in the last eighteen years, the plant has been entirely replaced by improved machinery on three occasions within that period, and it is contemplated by the directors to lay out about £250,000 during the next two years in effecting further improvements.⁴⁴

In the cement industry capital costs per unit of output were always high, while labour costs were low, and the ratio

43

Brighton Cement Handbook 1892-1952 (issued by the South Australian Portland Cement Co. Ltd), p.7.

44

Age, 7 Jan. 1924, p.5.

between the two was further increased by the mechanisation of production which was taking place in the twenties.⁴⁵

An outstanding development in the industry was the production of a quick hardening cement. This new type of cement greatly affected the uses to which cement could be put, since in two or three days it gave the strength only obtained from ordinary cement in three or four weeks.⁴⁶ Production began in Australia in the last few years of the decade, and brands of cement blossomed with such names as 'Celerite', 'Speedite', 'Quickardo', 'Rapidite' and 'Rapidard'.

A distinct advance was made in cement packaging through the development of paper bags as an alternative to jute. It was claimed that paper bags were cheaper, gave better protection against the weather and were more convenient to handle.⁴⁷ Production was begun in 1926 by an Australian company, Bates

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See, e.g. the evidence of F.E. Morton, Engineer of Australian Cement, in evidence to the Commonwealth Arbitration Court in *Amalgamated Engineering Union and Others v. Metal Trades Employers' Association and Others*, 7 Aug. 1929, Transcript of Evidence, p.3808. '...we have been spending a great deal of money on the works in one way or another. We have been improving them and we find that we want fewer men, and that will be more so in the future.'

46

For a general description of the development of quick hardening cement, see evidence of G.W. Mitchell to Parliamentary Standing Committee on Public Works, op. cit., p.3.

47

South Australian Portland Cement Co. Ltd, Directors' Report, half-year ended 30 June 1927.

(A/Asia) Ltd, which used wholly Australian raw materials to produce a multi-walled bag 'composed of five separate walls of tough pliable water-resisting paper - bound, glued and sewn on top and bottom'.⁴⁸

Excess Capacity

The cement industry is one in which excess capacity typically arises. Rapid technical improvements have meant a high rate of obsolescence for existing equipment, but after amortisation old equipment may still be capable of operation because of the very low labour costs per unit of output. Technical improvements have increased also the size of kilns; some in Australia had a capacity of over 50,000 tons by 1930 and these kilns, of course, required 24 hours a day and seven days a week operation for maximum efficiency. In addition, seasonal and cyclical fluctuations are important general causes of excess capacity, but in Australia the seasonal fluctuations in building are not important because of the mild winters, while in the twenties excess capacity began to develop in a period in which demand was growing.

However, apart from the technical developments in the industry, there were some special factors in Australia which encouraged the development of excess capacity. One was the

48

Advertisement in Adelaide Advertiser, 26 July 1927, p.17.



division of the country into six separate states, in each of which the economy and economic policy were, in some degree, different from the others. Cement factories were set up in each of the states, and this was probably warranted by the pattern of population and the freight on cement. It meant, however, that the natural tendency to excess capacity was encouraged in six separate places. The establishment of the cement works in each state was further encouraged by the preference often given by state authorities in their contracts to local factories. For example, in 1926, a considerable stir was caused by the allotment of a Victorian contract to companies established in New South Wales and Tasmania; it was claimed that in retaliation against these states for discriminatory practices, one-third of the contract should be allotted to a Victorian company.⁴⁹ Again, in 1927, the sewerage committee of the Melbourne and Metropolitan Board of Works recommended sharing a contract between five tenderers, three of which were interstate. The board, however, overruled the committee and allocated the contract to the two⁵⁰ Victorian companies.

49

Argus, 27 Oct. 1926, p.24.

50

Ibid., 31 Aug. 1927, p.23.

It was natural, too, that in each state existing firms should deliberately create excess capacity in order to discourage potential rivals from establishing a business there. This was the admitted policy of Australian Cement,⁵¹ while in 1923 Kandos hopefully stated that additional machinery had been installed 'giving an output which will meet the probable requirements of the State for some considerable time'.⁵² The Queensland company expressed the same hope.⁵³

Excess capacity was encouraged also by the fact that public expenditure and building construction behaved in a different fashion in the various states. For example, building continued at a high rate in the final years of the twenties in Sydney. Cement output in New South Wales did not reach a peak until 1927-8 and then remained practically constant until 1929-30. In South Australia, on the other hand, economic difficulties were pronounced after 1926-7, and the output of cement of the South Australian Portland Cement Company fell steadily from 26,741 tons in 1926-7 to 13,501 tons in 1929-30.⁵⁴

51

Australian Cement Ltd, Directors' Report, year ended 30 Nov. 1925.

52

Kandos Cement Co. Ltd, Directors' Report, year ended 30 June 1923.

53

Queensland Cement and Lime Co. Ltd, Annual Report, year ended 31 July 1922.

54

Brighton Cement Handbook..., p.14.

As well as the division of Australia into separate states, the optimistic expectations of the local producers led to the provision of capacity in excess of the demand. Cement was in short supply for the first years of the twenties and, as recent experience in the coal industry has demonstrated, it is easy to over-estimate the size of a shortage. Undoubtedly this caused manufacturers to expand capacity beyond actual requirements while, at the same time, since plans were based also on the rapid rise of demand in the past, even a slowing down in this rate would disappoint expectations. Further, as will be shown below, the price policy of the existing firms induced new firms to enter the industry.

How great was this excess capacity and at what rate did it develop? Capacity is extremely difficult to define and more difficult to measure even where an abundance of statistical material is available. In Australia there is no such material, so the treatment of this subject must be in general terms. Cement was in short supply for the first few years of the decade and manufacturers found it impossible to meet the demand. This condition persisted into 1922 and for the next two years there appears to have been a rough balance between supply and demand, until the possibility of over-⁵⁵production began to appear about the end of 1924. In June

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See, e.g. Argus, 20 Nov. 1924, p.15.

1925, when output was at the rate of approximately 600,000 tons per annum, the chairman of Australian Cement Ltd claimed that the plant capacity of Australia could produce 785,000 tons.⁵⁶ By the middle of 1926 the Industrial Australian and Mining Standard estimated that capacity had risen to 831,500 tons and there were a further 160,000 tons under construction.⁵⁷ These figures suggest that excess capacity began to develop in the industry from about the middle twenties. The problem was not acute as long as demand rose quickly, as it did until 1927-8, but growth then ceased at the same time as two new companies placed their product on the market. It seems probable that by 1930 the industry could have produced 1,000,000 tons with ease but the output in 1930-1 was only 389,000 tons.

Co-operation Within the Industry

Problems of excess capacity in the cement industry throughout the world have normally been met by some form of agreement limiting competition. The industry in Australia was no exception. Even before the beginning of the decade of the twenties the principle of co-operation by the firms within the industry in fixing prices was firmly established.

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Industrial Australian and Mining Standard, 4 June 1925, p.741.

⁵⁷

As reported in Jobson's Investment Digest, June 1926, pp.307-8.

As long as local industry did not have the capacity to meet the demands of the market, as was the position before the war, imports were the price leader and co-operation was easy. This situation continued for the first few years of the twenties. It was not until the end of 1924, when over-capacity began to appear, that co-operation raised problems. The emergence of excess capacity was, in part at least, the result of the successful co-operation between the existing firms in keeping prices at a high level and thus inducing new firms to enter the industry. The manager of the Commonwealth company had to agree with a member of the Tariff Board when he stated: 'What I am putting to you is not original... they [i.e. the new companies] came into existence because the flowers were blooming too prolifically, so to speak. The thing appeared to be too attractive'.⁵⁸ On the other hand, although co-operation encouraged the emergence of excess capacity, the excess capacity itself made co-operation all the more necessary for the firms involved.

In New South Wales the relation between price co-operation and the entry of a new firm into the industry was quite direct. In this state the two producers, the Kandos and Commonwealth companies, were faced with a powerful buyer,

58

Tariff Board Supplementary Report on Portland Cement,
6 Mar. 1936, p.4.



which, because of the large amounts of cement it consumed, was in a position to bargain. This buyer was the state government. At the end of 1920 the Dooley Labour Government entered into a contract with the Commonwealth company for the supply of cement at the rate of £5/8/- per ton. In 1924, in defence of the price, Mr Dooley claimed that in 1920 cement was almost unprocurable, and that the cheapest price on the market was £8/10/- per ton, while some was being sold at £10 and £11 per ton.⁵⁹ The difficulty concerning price in 1920 was not disputed, but the contract had other objectionable features. Delivery did not start until 17 months after the contract was made and it then operated for two years, except on certain public works where it had to be used until the job was completed.⁶⁰

With the expiration of this contract in 1924, tenders were called for the supply of cement at the rate of 50,000 tons per annum and the two existing New South Wales companies submitted almost identical tenders. Although some conditions were different, each required a five-year contract with adjustment for any wage changes, but the unacceptable feature

59

N.S.W. Parliamentary Debates, vol.97, 3 Sep. 1924, p.2151.

60

Ibid., p.2162. Statement by R.T. Ball, Minister for Public Works.

of their tenders was the price. The Commonwealth company's price was £4/11/6 per ton free on rail at Portland, while the Kandos company's price was £4/4/2 free on rail at Kandos. The difference between the two prices would be much smaller when allowance is made for the higher freight from Sydney to Kandos, and both prices would probably have been a little over £5 a ton delivered in Sydney.

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The state government took the view that the tenders were far too high and that no real competition was taking place between the two companies. It therefore took the unusual step of allotting the contract to a company which was formed solely in the hope of obtaining the contract and whose main assets were the rights to the raw material. This company was Cement Products Ltd, and after obtaining the contract it proceeded to float Standard Portland Cement Co. Ltd, with the contract as its main inducement to investors, while it sold its assets to the new company for 75,000 shares. The contract was for three years and was at the price of roughly £3 a ton free on rail at the works near Kandos and £4 a ton delivered in Sydney.

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Allowance was made for wage changes,

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Ibid., pp.2208-9.

62

Standard Portland Cement Co. Ltd Prospectus, as reported in Jobson's Investment Digest, Apr. 1924, p.152.

63

R.T. Ball in N.S.W. Parliamentary Debates, vol.97, p.2211.

but the price was at least £1 a ton below the tenders of the two established New South Wales companies.

Co-operation between the existing companies continued. The Standard company did not start production until January 1927, and then most of its output was absorbed by the government contract. Sulphide corporation began production in April 1925, but only at the rate of 30,000 tons per annum and output was not expanded for another two years.⁶⁴ Thus for a Victorian government contract in 1926 there were three tenders, all the same price;⁶⁵ and again in 1927 with five tenders, prices were equal.⁶⁶ However, the outlook for price co-operation began to look more difficult in 1928: existing companies had expanded capacity, Southern Portland Cement was soon to begin production and the Goliath company had been formed in Tasmania with eyes on the Melbourne market. With these developments in mind the chairman of one of the major companies warned against a price war:

Today we are holding our cement prices at a steady level. The Kandos Company is making its price a standard price - with concessions for such public utilities as roads - and is keeping it there. The company will not declare a cement price-cutting war.

64

Jobson's Investment Digest, Mar 1926, p.119.

65

Argus, 27 Oct. 1926, p.24.

66

Ibid., 31 Aug. 1927, p.23.

We will keep our prices up. If our competitors force us into a corner, which is unlikely, since there is harmony in the cement industry, we shall be in a position to meet that contingency.⁶⁷

New competitors did, however, accommodate themselves to this harmony. In June 1930, the New South Wales Minister for Local Government stated that he had to accept a price from the 'Cement Association' of £4/2/- per ton f.o.r. at any of the cement works in the state, or £4/17/6 delivered in Sydney,⁶⁸ irrespective of the origin of the cement. When the New South Wales government contract came up for renewal, this time at the rate of 65,000 tons per annum, the Standard company again refused to fall in line. The Sulphide, Southern, Commonwealth and Australian companies all tendered the same price, but the Standard company tendered a price which was lower in Sydney by 4/- to 6/- a ton, and obtained the contract.⁶⁹

By what procedure did the manufacturers reach agreement on prices? The only formal merger of interests was between two of the three largest producers. In December 1929, Kandos

⁶⁷

Mr Stewart, chairman of Kandos Cement Co. Ltd, Sydney Morning Herald, 22 Aug. 1928, p.17.

⁶⁸

M.F. Bruxner, N.S.W. Parliamentary Debates, vol.123, p.6080. 'Cement Association' were the words used by Bruxner; for a discussion of this association, see below.

⁶⁹

Ibid., p.6075. A.E. Buttenshaw, Minister for Public Works.

Cement Co. Ltd and Australian Cement Ltd combined to form Australian Portland Cement Pty Ltd, as a holding company controlling the two operating companies. Until this merger Kandos had been a large supplier of the Victorian market, but its profits had been absorbed by the freight and handling charges. After the merger, all Victorian orders on the company were supplied from Geelong.⁷⁰

The formation of an organisation of a different kind took place in 1928 when all the cement manufacturers, except the Swan Company in Western Australia, formed The Australian Cement Manufacturers' Association. According to the memorandum of association, its object was 'to promote encourage foster develop and protect by lawful means the cement industry, and to further and develop the use and demand for cement generally'.⁷¹ The cement manufacturers strenuously denied that the association had anything to do with price fixing and, after studying its activities in the early thirties, the Tariff Board accepted this argument. But the board found all the evidence of a firm agreement - including the division of the market between the manufacturers in the same proportion as they held before the depression - and it concluded

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Sydney Morning Herald, 22 Aug. 1930.

71

Tariff Board Report on Portland Cement, 22 Mar. 1936, p.6.



that the only way to reduce the price was to lower the tariff and permit import competition.⁷² There appears, then, to have been little or no formal machinery with which prices were controlled; probably, as one manufacturer claimed, it was a mixture of price leadership and 'gentlemanly understanding'.⁷³ However, notwithstanding the Tariff Board's conclusion on the Cement Association, the history of the cement industry in the 1920s gives no reason to doubt the general truth of Adam Smith's dictum about meetings of business men:

People of the same trade seldom meet together, even for merriment and diversion, but the conversation ends in a conspiracy against the public, or in some contrivance to raise prices.⁷⁴

72

Ibid., passim.

73

Ibid. Transcript of Evidence, p.57. Evidence of J. Symonds, General Manager of Commonwealth Portland Cement Co. Ltd.

74

The Wealth of Nations, ed. E. Cannan (2 vols, Methuen, London, 1925), vol.1, p.130.

Chapter IV

IMPORT REPLACEMENT: THE TEXTILE INDUSTRIES

1. WOOL TEXTILES
2. HOSIERY AND KNITTED GOODS
3. COTTON TEXTILES

General Introduction

Before the first world war Australia relied almost completely on imports for its supply of textiles. Their manufacture in Australia was established only to a limited degree, and in 1913 it is estimated that the three industries with which this chapter is concerned employed only 1.2 per cent of the work-force in manufacturing. These were not 'new' industries like motor vehicles or electricity; their growth in Australia fits into the general framework of the development of industry in a new country, in the face of import competition from well-established and efficient suppliers. One of the main features of the development of these industries during the war and the 1920s was their rapid rate of growth both absolutely and relatively compared with other manufacturing industries. Employment in them, expressed as a percentage of manufacturing as a whole, rose from 1.2 per cent in 1913 to 2.3 per cent in 1919-20 and 6.1 per cent in

1929-30. Such a rate of expansion was possible only with the assistance of substantial tariff protection.

Growth in the wool textile industry was accomplished mainly by extending the range of production into finer qualities of yarn and cloth, previously supplied by imports. The pace of the expansion and the change in quality of the product posed some special problems for the industry. The major one - the lack of skill and of advanced techniques was met, to a large degree, by the migration of trained workers from England, but for many years of the twenties skilled labour was in short supply and this was a serious hindrance to efficient production. The Australian market, protected first by the war and then by the tariff, was profitable for manufacturers and there was little difficulty in raising the funds for expansion, a significant share being provided by English manufacturers induced by the tariff to set up branches in Australia. As a result of the development of the industry, the role of imports had been reduced to supplying a very minor portion of the market by the end of the twenties.

The manufacture of hosiery and knitted goods developed in similar manner and with similar problems. But expansion in this industry was even more rapid than in wool textiles because of rising demand, based on fashion changes, new materials and innovations in hosiery manufacture. Once



again there was heavy reliance on immigrant labour for key positions, and again the tariff forced foreign firms - American and Swiss as well as English - to establish branches in Australia.

Cotton manufacturing was an infant industry of the twenties. Non-existent before the war, cotton spinning was begun in 1923 and was supported by a government bounty from 1925 as part of a general plan to establish the cotton industry - both growing and manufacturing - in Australia. Weaving of cotton towels was begun in 1925, and the range of output was gradually extended. Even so, at the end of the twenties the cotton industry - employing some 1,200 workers - was barely established.

1. WOOL TEXTILES

The Expansion of the 1920s

(a) The Basis for Growth

During the 1920s the demand for the products of the wool textile industry in Australia¹ was subject to the pressures of two opposing forces. On the one hand, population and incomes were rising, but at the same time, fashion changes, particularly in women's dress, were moving against wool textiles. These fashion changes included a preference for cotton, silk and artificial silk wear, the wearing of knitted rather than woven garments, a decrease in the amount of material per dress - three square yards less than before the war - and a fall in the demand for linings.² The net effect of these changes is difficult to estimate; certainly manufacturers were not faced with a very buoyant situation, and it

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The wool textile industry is classified in Production Bulletins as 'woollen and tweed mills'. It corresponds with this English definition: 'The wool textile industry is primarily concerned with the weaving of wool, but it is commonly taken to include also the earlier stages of wool preparation and spinning, and the later finishing processes (when carried on in close connection with weaving) - all of which are essential to the production of fully manufactured cloth.' Committee on Industry and Trade, Survey of Textile Industries (H.M.S.O. 1928), p.161.

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Ibid., p.212, and footnote, p.213. Demand was also reduced by the rise in price associated with the application of tariffs.

is possible that demand may not have been higher than pre-war. The real lines of expansion for Australian manufacturers were, therefore, in the replacement of imports of cloth, and in the production of woollen yarn for the expanding knitting mills.

There was a firm basis from which the expansion of the industry could take place. It was solidly established before the war and had a long history of development, so that both management and workers had the necessary experience and skill.³ Further, the industry had experienced a very prosperous period during the war, as a result of which confidence had been increased and hopes were high.⁴ After the war it was some time before English woollens re-entered the

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In 1913 the wool textile industry employed 3,090 workers in 22 mills. The emphasis in production was placed on woollens rather than worsteds, and in 1913 production amounted to 2,387,000 yards of tweed and cloth, 5,565,000 yards of flannel and 878,000 blankets, rugs and shawls to a total value of £918,000. (Production Bulletin, no.7.) This production gave the local manufacturers almost the entire market in flannel and blankets, but in the three years, 1911-13, the average output of cloth of £325,000 was only about one-eighth of imports; most of the imports came from the U.K. Overseas Trade Bulletin, vol.II.

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Output, almost all of which was requisitioned by the Commonwealth government, increased substantially during the war. In the three years 1915-17, the 22 mills realised a net profit of 31.3 per cent per annum on their paid up capital. Interstate Commission. Prices Investigation. No.11 Report. Clothing, pp.38-9 (Parliamentary Papers, 1917-19, vol.V).

Australian market in quantity, profits of the local manufacturers remained high and the possibilities for expansion still appeared very bright. For example, the chairman of directors of Foy and Gibson noted that 'there was a scarcity of woollen goods, and we could get any prices during the whole of 1919 and for part of 1920'.⁵ This relative freedom from import competition continued into 1922, and many mills noted high profits and record output.⁶

Accompanying the freedom from import competition at the end of the war was a national enthusiasm for the promotion of home manufactures, which found one of its chief expressions in a desire to see the growth of local woollen mills. As we have seen, there were substantial grounds for this emphasis on woollen manufactures, but additional force was given by the argument that since wool was on the spot in abundance, it was therefore 'wrong' to send it overseas to be manufactured and then imported. This movement found its main official spokesmen in the Bureau of Commerce and Industry,

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J. MacLellan, chairman of directors of Foy and Gibson Pty Ltd, in evidence to the Commonwealth Arbitration Court, Amalgamated Engineering Union & J. Alderdice and Others, Enquiry re Standard Hours, 26 Oct. 1926, Transcript of Evidence, p.2955.

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See, e.g., Queensland Woollen Manufacturing Coy Ltd, Directors' Reports for years ended 30 June 1920, 1921 and 1922.

and it is worth examining the actual language used by the director of the bureau, when discussing imports of woollen goods, in order to appreciate the emotional appeal of the arguments commonly used.

The figures are merely illustrations of what appears to me to be -

Economically - a farce
 Industrially - a tragedy
 Nationally - a humiliation

It is a farce - no other word is fitting - when it is remembered we produce the wool, ship it, plus dirt, thousands of miles, let others add the value to it, and then buy it back at their price, not ours; and meantime we have lost the added value, and pay our good money to buy the wool back. Industrially it is a tragedy, because we want people, and our only means of getting them is to employ them; but we employ Americans, Canadians, Japanese, Frenchmen, Czecho-Slavokians [sic], Roumanians, Poles, Austrians, and Germans to manufacture our wool into woollen goods instead of employing Australians. It is nationally humiliating, because by doing so we are deliberately choosing to continue 'the hewers of wood and drawers of water' to those nations who use OUR wool to create THEIR wealth.⁷

The director of the bureau also produced a scheme on a grand scale for a chain of woollen mills throughout
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 Australia, but although the idea was seriously considered for a period nothing resulted. A similar scheme was partially implemented by a private company, but the degree of

⁷
 Bureau of Commerce and Industry, Annual Report, year ended 30 June 1922, p.22. These could be the words of an early English mercantilist.

⁸
Ibid., year ended 30 June 1920, Appendix 11.

success and the method of operations that resulted were very different from the anticipations of the promoters. Their prospectus was entitled 'A Chain of Mills - For Australia',⁹ and it was their intention that each mill in the chain should specialise, in the English manner, on one or two of the processes of manufacture.¹⁰ However, for most of the twenties, the 'chain' consisted of two self-contained mills engaged in a continuous struggle for existence.

The desire to see an expansion of the woollen mills in Australia found further expression in a campaign, maintained throughout the twenties, to persuade the public to buy Australian woollens. This was not easy as the English and Scottish goods had a considerable reputation which was often used by retailers as a selling line.¹¹ Moreover, the newer Australian mills usually experienced teething troubles, and

⁹ Prospectus of Amalgamated Textiles (Australia) Ltd,
1 Sep. 1923.

¹⁰ Ibid., p.2.

¹¹ E.g., a government inspector followed through to its sale wool manufactured into cloth by the Australian Woollen Mills. He 'went to Messrs. Davidson and Norton and asked an assistant if he stocked Australian goods. He said "No, we only stock the best imported articles." He also said: 'We have a very nice line here.' and he produced about 40 yards in a role, and said the price was £13/13/- to make a suit of it. The assistant said "They cannot make stuff like this in Australia."' The cloth, of course, came from Australian Woollen Mills. Sydney Morning Herald, 1 May 1920, p.13.

there was often much to complain of in the quality of their
 cloth.¹² It is difficult to ascertain what success this
 campaign had, but it is apparent that, whether the quality
 justified it or not, some people retained a prejudice against
 Australian manufactures and insisted on imports.¹³ However,
 the propaganda campaign for Australian woollens was con-
 tinuous; it paid particular attention to quality and price,
 as well as using general arguments which were economic,
 social and nationalistic. An example of this type of ad-
 vertising was a monthly essay competition in the Textile
 Journal of Australia entitled 'Why we Wear Australian-Made
 Textiles', which was 'open to every school girl in the Com-
 monwealth'. As the editor commented on the winner of the
 first month's competition: 'A fine spirit of patriotism
 glows in each of the paragraphs...'.¹⁴

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Looking back on the first years of one mill, it was re-
 ported that 'poor cloth came with maddening frequency from
 wool and machinery that was [sic] the best that money could
 buy'. And 'there was a time when Mr. Brown, the secretary,
 hated to open his morning mail, so many were the bitter
 complaints of dissatisfied purchasers of Goulburn cloth'.
 Article entitled 'Woollen Mills Round the Corner' in
Textile Journal of Australia, 15 Nov. 1926, p.457 (from the
Southern Morning Herald).

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E.g., 'The old time prejudice against the local article
 is gradually disappearing...', Dalgety's Annual Wool Review,
 1924-5, p.72. Compare this with 'Strangely enough, the old
 prejudice by Australians against Australian-made articles
 has not disappeared entirely. There are still some people
 who will insist upon being supplied with West of England
 and Scotch tweeds...'. Dennys, Lascelles Ltd, Annual, Aug.
 1926, p.80.

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Textile Journal of Australia, 15 Apr. 1926, p.80.

However, the enthusiasm for woollen mills and the solid base for expansion gained from years of experience would have meant little unless there had been more concrete assistance in the form of protection from overseas competition. This was given in the tariff of March 1920. The great bulk of the imports had always come from the United Kingdom and the tariff rates against that country were 30 per cent on woollen piece goods, 25 per cent on blankets and rugs, and 10 per cent on woollen yarn. Apart from woollen yarn, which was 5 per cent higher, these rates were simply a confirmation of those imposed in 1914; but the 1914 rates, which were an increase on the 1908-11 duties, had not been tested effectively because of the intervention of the war.

The end of the war, therefore, did not mean that overseas competition would wipe out the advances made by the industry. Indeed, the reasons for expansion seemed stronger than in 1914, and the increased ability to obtain textile machinery from abroad made expansion physically possible.¹⁵

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Increased output during the war came from more intensive use of existing capacity. Initially, textile manufacturers had considered the war would last only a short period, but as a long war became certain, they found it almost impossible to import machinery. Interstate Commission Report on Clothing, op. cit., p.6.

(b) The Course of Development

A description of the rate of development in the woollen and tweed mills is restricted by the nature of the official statistics. Some measure of investment can be obtained from valuations of 'land and buildings' and 'plant and machinery', but there are no total figures for Australia because they were normally combined with another industry - 'knitting factories'. However, figures can be obtained for the principal states, Victoria and New South Wales, although here there is a difficulty about the inclusion in the industry of establishments making wool tops. In 1927-8 two such establishments in N.S.W. were transferred to 'woollen and tweed mills' from 'woolscouring and fellmongering',¹⁶ without any comment in the Commonwealth Production Bulletins, so that figures for that state are not continuous; where these establishments are placed in Victoria is not at all clear. Nevertheless, a general outline of the pattern and rate of investment is indicated by the table below:

Woollen and Tweed Mills

Year	Value of Land and Buildings £'000		Value of Plant and Machinery £'000	
	N.S.W.	Victoria	N.S.W.	Victoria
1913	119	141	171	263
1918-19	159	212	242	361
1919-20	190	377	338	743

(continued on next page)

¹⁶ N.S.W. Year Book, 1928-9, p.309.

(continued)

Year	Value of Land and Buildings £'000		Value of Plant and Machinery £'000	
	N.S.W.	Victoria	N.S.W.	Victoria
1920-21	222	462	384	851
1921-22	248	619	448	1,246
1922-23	307	742	488	1,755
1923-24	329	843	599	2,035
1924-25	333	1,013	646	2,233
1925-26	341	1,003	678	2,088
1926-27	N.A.	1,047	N.A.	2,255
1927-28	N.A.	1,045	N.A.	1,970
1928-29	541	1,069	1,023	1,852
1929-30	601	1,136	1,048	1,836

Source: Commonwealth Production Bulletin nos 8, 13-24.

In Victoria it can be seen that there was a great burst of investment in the first years of the decade, but this almost entirely ceased after 1924-5; the value of plant and machinery actually declined. The position was probably very similar in N.S.W. - there was a very rapid rate of growth up to the mid-twenties, and the sharp increase in 1928-9 is probably the result of the inclusion in the industry of the woolcombing establishments.

Fairly complete statistics are available for the volume of output from this industry, but they do not cover the production of wool tops for export. Export figures are published for wool tops and these have been included in the table of output, but it should be noted that yearly production figures would not coincide with yearly exports, and that

it is not until 1927-8 that N.S.W. (the main top export centre) includes this industry with woollen and tweed mills.

Year	<u>Exports £'000</u> Wool Tops	<u>Value</u>			
		Tweed & Cloth	Flannel	Blankets, Rugs and Shawls	Yarn
1913	416	N.A.	N.A.	N.A.	N.A.
1918-19	935	1,175	382	418	N.A.
1919-20	2,958	1,681	343	521	N.A.
1920-21	2,050	1,996	266	626	N.A.
1921-22	1,207	1,721	628	717	N.A.
1922-23	1,413	1,523	646	741	746
1923-24	1,162	1,476	777	895	925
1924-25	1,120	1,639	668	796	1,210
1925-26	1,163	2,347	568	665	616
1926-27	823	3,066	976	757	1,426
1927-28	488	3,170	1,071	928	1,629
1928-29	167	3,230	799	751	1,913
1929-30	88	3,086	717	585	1,992

Year	<u>Exports '000lbs</u> Wool Tops	<u>Volume</u>			
		Tweed & Cloth '000 yds	Flannel '000 yds	Blankets, Rugs and Shawls '000	Yarn '000 lbs
1913	3,562	2,387	5,565	878	N.A.
1918-19	2,822	4,483	6,213	692	N.A.
1919-20	6,148	5,388	4,742	633	N.A.
1920-21	6,599	6,350	5,686	772	N.A.
1921-22	6,200	5,656	6,766	940	N.A.
1922-23	6,374	5,043	7,829	1,029	2,848
1923-24	4,988	4,940	7,617	1,206	3,638
1924-25	4,091	4,132	6,036	1,139	3,340
1925-26	5,953	5,993	6,172	937	2,309
1926-27	4,519	7,944	9,454	1,142	4,360
1927-28	2,559	9,626	10,175	1,299	4,807
1928-29	873	9,356	7,302	1,072	6,213
1929-30	552	9,887	5,994	876	7,659

Sources: Exports from Overseas Trade Bulletin, vols 11, 16-27. Production from Commonwealth Production Bulletin, nos 8, 13-24.

Until 1927-8 Victorian output of tweed, cloth and flannel was measured in linear yards, but in that year the unit of measurement was changed to a square yard. This change went unnoticed in the Commonwealth Production Bulletin and Victorian output was included, without adjustment, with the linear yards of the other states. It is difficult to be certain about the size of a linear yard in the twenties but it appears to have been equal to approximately one and a half square yards. Adjusting the above table on this basis the output for the Commonwealth changes thus:

Linear Yards

Year	Tweed and Cloth		Flannel	
	Production Bulletin	Adjusted	Production Bulletin	Adjusted
1926-27	7,946	-	9,454	-
1927-28	9,626	7,547	10,175	7,882
1928-29	9,356	7,362	7,302	5,767
1929-30	9,887	7,862	5,994	4,812

It can be seen that this adjustment is most important for an understanding of the industry in this period. Without it, output of these products appears to rise substantially in 1927-8, when, in fact, it declined. All other official tables repeat this error of the Production Bulletins.

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See, e.g., Statistical Handbook of the Sheep and Wool Industry (Bureau of Agricultural Economics, Canberra, 1956), table no.110.

In interpreting the table of output too rigid a boundary should not be drawn between each classification, since in each group there is enormous scope for differences in quality. Moreover, within limits, mills could move from the production of one commodity to another. For instance, an Australian correspondent of The Times in 1921 reported that Australian manufacturers were neglecting to supply the market with flannels and blankets, because the restriction of imports had made the production of tweeds very profitable.¹⁸

The post-war boom in the industry did not really end until 1923. The output of tweed and cloth declined after 1920-1, but the output of flannel and blankets continued to increase for several more years, so that during the 1922-3 season the local mills were enjoying a period of great prosperity.¹⁹ However, imports of woollen piece goods had risen in 1922-3 to £4.7 m. compared with £3.1 m. in the previous year, and as these goods came on the market the local mills once again appreciated how severe the effects of overseas competition could be. The depression continued for roughly two years. Dalgety noted that 1923-4 'was the worst period

¹⁸ Times Trade Supplement, 30 July 1921, p.389.

¹⁹ Dalgety's Annual Wool Review, 1923-4, p.61.

for many years past'²⁰ and that in 1924-5 trade was so slack²¹ that many of the Geelong mills were only working half time. Although output did not turn down in a marked fashion until 1924-5, unemployment began to develop in the industry at the end of 1923, when the Victorian state executive of the Textile Workers' Union complained that there were 2,000 members of the union wholly out of work and another 1,000²² working half time.

Some companies in Australia were ill prepared for the return of competitive conditions: the freedom from import competition and the high level of profits since the war had led to over-optimism and inefficiency. Such a company was the Ballarat Woollen and Worsted Company Limited, which had been paying extremely high dividends, but which had no reserves and had failed to provide for depreciation.²³ Another was the Warrnambool Woollen Mill Company Limited, which had been too ambitious in switching from woollens to worsteds

²⁰ Ibid., p.60.

²¹ Ibid., 1924-5, p.73.

²² Age, 17 Dec. 1923, p.9. The unemployment was described as arising from 'a very large increase in the importation of hosiery and woollen piece goods'.

²³ Ballarat Woollen and Worsted Coy Ltd, Directors' Reports during 1920s. See also comment in Jobson's Investment Digest, 1925, p.674.

and made a heavy loss in 1924-5.²⁴ In particular, the import competition hit severely, and in some cases mortally, the small woollen mills launched on the tide of post-war optimism. However, the depression, although felt to varying degrees throughout the industry, was general; even the large and efficient Australian Knitting Mills Limited stated that the main factor causing its fall in profits in 1924-5 was²⁵ 'excessive overseas competition'.

In their dilemma the woollen mills turned to the Tariff Board for assistance. The board first examined woollen yarn; it concluded that English yarns were selling at a price about 15 per cent below the Australian, not because the English mills were more efficient but because they paid lower wages and worked longer hours. The board therefore recommended an increase in the B.P.T. from 10 per cent ad valorem to 20 per cent.²⁶ Turning to woollen piece goods, the board found that the Australian mills could meet all the requirements for men's fabrics and that extra duties were not

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Warrnambool Woollen Mill Coy Ltd, Directors' Report for years ended 30 Sep. 1924 and 1925. Jobson commented 'this company appears to have gone ahead too fast'. Jobson's Investment Digest, 1924, p.639.

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Australian Knitting Mills Ltd, Report of Directors to 30 Sep. 1925.

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Tariff Board Report on Yarns-Woollen, 1925, passim.

required for better class material manufactured by the larger mills, apart from an additional 5 per cent to compensate for the increase in the duty on yarn. The board felt that the main competition was coming from the importation of shoddy and cotton tweeds and that this position would best be met by the imposition of a specific duty of 1/- per square yard²⁷ B.P.T. These recommendations were given effect from September 1925.

The specific duty practically amounted to a prohibition²⁸ on the lower priced woollen piece goods, and the industry was launched on a new period of very rapid expansion. The output of most of the products of the woollen mills reached a peak in 1926-7, but the production of yarn continued to increase with the demand from the knitting mills. From 1926-7 to 1929-30 the consumption of tweed and cloth appears to have declined slightly, but the main effect was felt by imports. This is illustrated in the tables below, which show how the local manufacturers obtained the greater part of the market in this decade, particularly after the tariff increases of 1925.

²⁷ Tariff Board Report on Woollen Piece Goods, 1925, passim.

²⁸ Evidence of A. Fullard, director of the mills of Foy and Gibson Pty Ltd to the Commonwealth Arbitration Court. Standard Hours Enquiry, Transcript of Evidence, 26 Oct. 1926, p.2981.

Woollen and Worsted Cloth - £'000

Year	Imports	Australian Production	Consumption ^a	Australian Production as % of Consumption
1912	2,997	321	3,318	9.7
1919-20	4,466	1,681	6,147	27.3
1920-21	7,621	1,996	9,617	20.8
1921-22	4,179	1,721	5,900	29.2
1922-23	6,008	1,523	7,531	20.2
1923-24	4,320	1,476	5,796	25.5
1924-25	4,087	1,639	5,726	28.6
1925-26	3,071	2,347	5,418	43.3
1926-27	3,267	3,066	6,333	48.4
1927-28	3,361	3,170	6,531	48.5
1928-29	2,076	3,230	5,306	60.9
1929-30	1,749	3,086	4,835	63.8

Wool Yarn^b - £'000

1922-23	1,789	746	2,535	29.4
1923-24	905	925	1,830	50.5
1924-25	1,100	1,210	2,310	52.4
1925-26	503	616	1,119	55.0
1926-27	678	1,426	2,104	67.8
1927-28	379	1,629	2,008	81.1
1928-29	341	1,913	2,254	84.9
1929-30	400	1,992	2,392	83.3

^a Consumption taken as imports plus production.

^b No production figures before 1922-3.

Source: Imports from Overseas Trade Bulletin, vols 10, 17-27.

Production from Production Bulletin, nos 7, 14-24.

(c) The Quality of Development

With the growth of total output in the twenties went a substantial change in the structure of the industry and in

the type and quality of the products. Before the war, no companies manufactured yarns for the weaving and knitting industries except where they themselves were engaged upon or interested in companies carrying on that class of work. But partly as a result of the very rapid growth of the knitting and hosiery trades in the twenties, the specialised manufacture of yarns developed into one of the major activities of the woollen mills. Not only was there a great expansion in yarn production, but there was a striking change in quality as manufacturers turned to make worsted and cashmere yarns. As early as 1920, following the establishment of the Yarra Falls spinning mills, the Age boasted that 'the day has passed when it could be said, even with a small measure of justification, that Australia was unable to produce worsted yarn as high in quality as the imported article...'.²⁹ At the same time the mills turned to the production of finer cloths, to meet the demands of the market. In 1919 and 1920 Foy and Gibson were concentrating on fairly heavy tweeds, but they found that the public returned to the imported finer goods as soon as they were available. The firm, therefore, had to change entirely the character of its mill. Whereas formerly they had been able to produce large quantities of one class

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15 Apr. 1920, p.6.

of goods, they now had to produce a greater variety of finer goods and were consequently involved in much heavier expenditure in patterns and supervision. Without this change Foy and Gibson could not have carried on their mill, and the same pressures applied to the industry as a whole.³⁰

This most important change in the scope of the industry was noticed by Alfred F. Barker, Professor of Textile Industries of the University of Leeds, when he visited Australia in the early 1920s. In a report to the Victorian government he stated that the Australian wool manufacturing industry had passed through three stages: the first was that of gradual growth which finished several years before the war. The second period reached a climax during the war and covered about ten years, during which time large-scale manufacture was encouraged under government stimulus. In the third period, which began with the end of the war, 'firms with European experience are erecting factories almost wholesale to produce the finer goods which Australia needs'.³¹ In

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Evidence of J. MacLellan, chairman of directors of Foy and Gibson Pty Ltd, to the Commonwealth Arbitration Court. Standard Hours Enquiry, Transcript of Evidence, 26 Oct. 1924, p.2955.

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Alfred F. Barker, Report to the State Government of Victoria upon the Wool Manufacturing Industry of Victoria, upon the Educational Requirements of this Industry and upon Textile Research and Trade Standardisation (Melbourne, 1924), p.8.

terms of quality of product, Professor Barker divided the woollen industry roughly into three sections: the 'ordinary woollen', the 'finer worsted', and the 'really fine woollen and worsted' - the manufacture of the final type not being attempted in either the United Kingdom or Australia. He found that the first section was the most fully developed - 'the Australian demand for rugs, blankets etc., and woollen cloth being fairly met by the local manufacturers'³². The quality of these goods was excellent, although Europe still retained its lead in special heavy woollen novelties where special skills were required. Indeed, Professor Barker felt that the main danger in this section was that the quality of the products and the economy of production already reached by the local manufacturers might not be maintained. These comments were restated with reference to the second section, with the additional warning that here the Australian manufacturers were up against competition from 'the finest designing skill in the world - that of the Yorkshire worsted coating designers'³³.

However, having entered the field where variety is important and fashions change quickly, the local mills obtained

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Ibid.

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Ibid.

an important advantage over imports. It was now much more difficult for importers to retain a complete coverage in their stocks, so that local manufacturers often obtained orders through their ability to promise quick delivery.³⁴

The Role of Foreign Enterprise

An important part of the development in the woollen industry during the twenties was the result of foreign investment. In every case the foreign investment was English in origin. Sometimes the investment took the form of an English firm establishing a branch in Australia, and sometimes leading individuals from the English woollen trade were closely associated with the formation of a new company. Whether any English capital was invested in companies already established cannot be known, but it is unlikely to have been on a large scale since this would have brought public comment. It has been shown that the twenties were a very favourable period for an expansion in woollen manufacturing, and this was partly the result of the exclusion of foreign competition by the tariff. If, therefore, English manufacturers wished to retain their market, they had little choice but to set up in Australia; moreover, the war had demonstrated in a striking manner how the connection with an overseas market could be

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Evidence of J. MacLellan, Standard Hours Enquiry, Transcript of Evidence, 26 Oct. 1926.



completely severed. It is thus perhaps surprising that English capital was connected with the establishment of only five companies,³⁵ but in terms of size and in the manufacture of fine quality products previously not made in Australia, their importance in the industry was greater than their number would indicate.

The smallest of these companies, Kelsall and Kemp (Tasmania) Ltd, was registered in Australia in 1920. The factory, which was established at Launceston, did not begin operations until 1923, and the main line of production was flannels. The firm was established by Kelsall and Kemp Ltd of Rochdale, England, and the parent company provided skilled workmen, detailed technical information and the plant and machinery which it otherwise would have been impossible to obtain without considerable delay. It was intended that the share capital should consist of 50,000 £1 preference shares to be offered to the Australian public, and 100,000 ordinary shares of £1 each. Of the ordinary shares, the parent company was to hold 51,000 (46,000 to be paid for and 5,000 for services), the directors of the English company were to subscribe to 15,000 personally, and the Australian public were to be offered the remaining 34,000. In fact, for the rest of the

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It is possible, but unlikely, that there were more.

decade the issued share capital remained at 41,000 preference and 93,000 ordinary shares; these funds were, however, insufficient to sustain the business, and the Australian company remained in debt to the parent company to the extent of approximately £40,000.³⁶

Another woollen mill was established at Launceston by Paton and Baldwin Ltd of Halifax, England, to concentrate on the production of knitted wools. Before the war, this British firm, or two firms as it was then, controlled almost all the imports of manufacturing yarn and knitting wool into Australia.³⁷ Little public information is available concerning the Australian mill but it appears that the first yarn was produced in 1923.³⁸ In 1924 it was stated that the premises had cost £100,000 and the mill as a whole was valued at 'some hundreds of thousands of pounds',³⁹ while by 1928⁴⁰ employment had grown from 150 in 1924 to over 1,000.

³⁶ Information concerning the formation of the company obtained from Prospectus of Kelsall and Kemp (Tasmania) Ltd, 21 Sep. 1920. For developments during twenties see Directors' Reports of this company.

³⁷ Interstate Commission of Australia, Prices Investigation, No.11 Report, Clothing, p.10, Commonwealth Parliamentary Papers, 1917-19, vol.V.

³⁸ Paton and Baldwin's (Aust.) Ltd. - Prospectus, 25 June 1951, p.2.

³⁹ Industrial Australian and Mining Standard, 7 Feb. 1924, p.200.

⁴⁰ Textile Journal of Australia, 15 Dec. 1928, p.601.

One of the largest woollen mills in Australia during the twenties was that of Yarra Falls Ltd, which was established in 1917. The company was formed initially to spin yarn, principally for the Australian Knitting Mills, and it was the first company to manufacture fine worsted yarns on a large scale. The initiative in the formation of the company had been taken by A.K.M., which had unsuccessfully tried to interest British spinners in the establishment of mills in Australia as early as 1912.⁴¹ But success came during the war years when Saltaire Ltd of Yorkshire agreed to join in the venture; this company provided experts, technical information, layout plans and the latest plant and machinery from Britain so that from the beginning Yarra Falls was one of the most efficient mills in the country.⁴² By the terms of the agreement establishing the company, Yarra Falls' shareholders were given the right to 22,500 shares in A.K.M., and when Yarra Falls finally became a public company in 1924, of a total of 750,000 shares, 318,500 were held by A.K.M., while H. Whitehead, A.J. Hill and E.H. Gates, the principal proprietors of Saltaire, held 76,357 shares each.⁴³ Expansion

41

Textile Journal of Australia, 16 Apr. 1928, pp.90-1.

42

Modern Developments in the Australian Woollen Industry, a brochure of 'The Associated Enterprises of Yarra Falls Spinning Co. Pty. Ltd. and Australian Knitting Mills Ltd.', passim (no date).

43

List of shareholders at Melbourne Stock Exchange, dated 22 May 1924.

was rapid: the company soon began manufacturing worsted cloth on a large scale and it supplied yarns to various weaving and knitting mills. Total share capital grew from £690,000 in June 1924 to £900,000 in June 1930, as the company enlarged its interests by taking over the Globe Worsted Mills of Sydney, while both it and A.K.M. had important interests in the newly formed Austral Silk and Cotton Mills and in Julius Kayser (Aust.) Pty Ltd.

Lincoln Mills (Aust.) Ltd was formed in 1922 as a holding company to control two private Melbourne companies, one engaged in spinning and the other in knitting, but the company had its origins in 1913 when T.N. Rowlands began the manufacture of knitted goods on a very small scale. Output expanded rapidly during the war, but real development took place after 1918 when Rowlands was able to interest a Bradford spinning magnate, W.C. Gaunt, in the enterprise. Gaunt put up a large proportion of the share capital as well as supplying men from his own mills in England. Nevertheless, the venture was not a success and of a total paid-up share capital

44

Yarra Falls Ltd, Report of Directors for years ended 30 June 1924 to 30 June 1930.

45

Press cutting seen at office of J.B. Were and Son, dated 14 June 1924, p.18.

46

Prospectus of the Lincoln Mills (Australia) Ltd, 23 Mar. 1922.

of £800,000 in 1926, £320,000 was written off as lost.⁴⁷ The main English connection was lost in 1928 when Gaunt sold to Australian investors his holding of 116,900 preference shares and 300,000 ordinary shares.⁴⁸

English enterprise was responsible for the erection of the Valley Mills Pty Ltd at South Geelong in 1924, and the nucleus of the staff was experts brought out from Bradford.⁴⁹ Not much is known about the establishment of this mill; it was referred to in the trade as 'the mystery mill' and W.C. Gaunt was said to be the proprietor.⁵⁰ However, the growth of the mill was rapid: by August 1926 employment was 400⁵¹ and by 1930 it exceeded 600.⁵²

⁴⁷ Lincoln Mills (Australia) Ltd, Directors' Report for year ended 30 June 1926. It seems probable that failure was the result of inefficient management by Rowlands who found employment in the firm for a number of his 'mining cobbers'. Gaunt sent out an investigator from England, Mr R. Fether: 'Mr. Rowlands was invited to set down the names of the men at the works whose presence was indispensable. He made a careful list. Fethers, it is said, took the list and sacked the lot.' (Press cutting seen at J.B. Were, dated 14 June 1924, p.18.)

⁴⁸ Argus, 26 Sep. 1928, p.15.

⁴⁹ Geelong: Its Advantages and Opportunities (issued by Geelong Publicity Council, 1930), p.43.

⁵⁰ Press cutting seen at J.B. Were, dated 14 June 1924, p.18.

⁵¹ Dennys, Lascelles Ltd, Annual, 1926, p.80.

⁵² Geelong: Its Advantages and Opportunities, p.43.

In the five cases discussed above, the English influence in providing the funds and the technical knowledge has been made clear; sometimes the firms also pioneered the manufacture of types of woollen products not previously made in Australia. The English principals also provided key workers at all levels of manufacture. This aspect will be discussed, together with the general importance of skilled migrants, in a later section on the supply of labour for the woollen mills.

The Funds for Expansion

It has been shown how English investors were an important source for the funds required in the establishment of five woollen mills. Another very important source was in the easy profits of the war and post-war periods. The Interstate Commission showed that total profits of the woollen mills in the three years 1915-17 were approximately equal to share capital, and in their report dated 31 December 1918, it was stated that 'with one exception all additions to capital since 1914 have been made from profits'.⁵³ In the years immediately following the war many mills made further bonus share issues. Detailed information is available for only six companies that existed during the war and of these, five made additions to share capital from profits. The South

53

Interstate Commission Report, op. cit., p.38.



Australian Woollen Company Limited made two bonus issues; one in 1920 of £14,000, raising share capital to £50,000, and another in 1922 of £25,000;⁵⁴ Queensland Woollen Manufacturing Company Limited made a bonus issue of £19,000 raising share capital to £56,000 in 1920;⁵⁵ Australian Knitting Mills capitalised reserves of £90,000 in 1921 to raise share capital to £330,000;⁵⁶ Ballarat Woollen and Worsted Company Limited made a bonus issue in 1920 of £120,000, thus doubling share capital;⁵⁷ in 1921 Castlemaine Woollen Mills purchased a plant for the manufacture of worsteds at a cost of £50,000, 'all of which has come out of the profits of the company'.⁵⁸

The Commonwealth government assisted in the provision of funds for the establishment of two woollen mills. One was the Commonwealth government's own woollen cloth factory at Geelong, which had begun operations in 1915. After providing government authorities with cloth substantially below the trade prices, this company had by 1922 repaid the total capital invested in it, and in June 1923 it was sold for

⁵⁴ Were's Statistical Service, 1934.

⁵⁵ Jobson's Investment Digest, 1920, p.58.

⁵⁶ Were's Statistical Service, 1934.

⁵⁷ Argus, 30 Oct. 1920, p.17.

⁵⁸ Age, 26 Sep. 1921, p.6.

£239,000 to a syndicate consisting mainly of Geelong business men.⁵⁹ The other mill was the Geelong Returned Soldiers and Sailors Woollen and Worsted Cooperative Manufacturing Company Limited. The establishment of this mill was financed by the gratuity payments of ex-servicemen who held almost the entire shareholding; these funds proved to be insufficient, however, and the company was assisted by a relatively cheap loan from the Commonwealth government of £60,000.⁶⁰

General aspects of the development of woollen mills in country areas, which was such an interesting phenomenon of the twenties, will be discussed later. Here it is important to note that these mills tapped a new source of funds for their development - the savings of the people in the country area surrounding each mill. But, as might be expected, these mills were often short of money and individual investments were usually small. For instance, it took 2,600 shareholders to subscribe to the 115,607 shares of the Western Australian Worsted and Woollen Mills Limited, and, as one observer complained, the list suggested subscriptions to a war memorial rather than to an industrial company.⁶¹

59

Dennys, Lascelles Ltd, Annual, August 1926, p.80.

60

Jobson's Investment Digest, 1929, p.77.

61

Mr C.W. Harper, chairman of directors of Westralian Farmers Ltd, as reported in the Primary Producer, 20 Mar. 1925, p.1.

For the old established mills in the main centres of production, Melbourne, Geelong and Sydney, the twenties must have been a most prosperous period - with the exception of 1924 and 1925 for the less efficient firms - and they would have had little difficulty in raising the funds for expansion. Certainly the accounts for Yarra Falls, A.K.M. and Federal Woollen Mills Ltd show a consistent high level of profits; and Yarra Falls was able to make a bonus issue in 1924 of one in five amounting to £105,000,⁶² while Federal Woollen Mills raised their share capital by bonus issues of £31,000 in the second half of the decade.⁶³

The Supply of Labour

Most tasks in the textile industry require a certain amount of training, experience and skill on the part of the operative in order to be performed competently. In England, during the 1920s, the majority of recruits to the industry came untrained from the elementary schools and obtained their experience on the job.⁶⁴ The time taken to gain experience varied between the various jobs; for instance, one Australian

⁶²

Were's Statistical Service, 1934.

⁶³

Document on accounts of this company, dated 6 July 1936, seen in J.B. Were's library.

⁶⁴

Committee on Industry and Trade, Survey of Textile Industries (H.M. Stationery Office, 1928), p.186.

manufacturer suggested it was three or four months before a girl became a competent weaver, but that six weeks was enough for top making.⁶⁵ Since total numbers in the English industry were relatively stable between 1851 and 1921, this method of recruitment and training did not cause great inefficiency, and the proportion of wholly unskilled and semi-trained persons remained very small.⁶⁶

In Australia, on the other hand, the position in the 1920s was vastly different. The number employed in the industry grew rapidly - from 3,090 in 1913 to 4,087 in 1918-19 and to 11,843 in 1929-30⁶⁷ - and for long periods there was a serious shortage of competent operators. This shortage was particularly marked after the tariff increases of 1925; in one year, between 1925-6 and 1926-7, the number employed in the industry rose by 27 per cent from 8,735 to 11,068.⁶⁸ The Textile Journal of Australia suggested that the mill-owners should take joint action to obtain labour from England,

⁶⁵ Evidence of L.A. Degaris, director of Central State Worsted Ltd, Mount Gambier, to South Australian Royal Commission on Manufacturing and Secondary Industries. 1st Progress Report Together with Minutes of Evidence and Appendices. S.A. Proceedings of Parliament and Papers, 1926, vol.11. It is probable that at Mount Gambier standards were not high and that this is an understatement.

⁶⁶ Committee on Industry and Trade, op. cit., p.166.

⁶⁷ Production Bulletin, nos 8, 13 and 24.

⁶⁸ Ibid., nos 20 and 21.

even to the extent of sending over their own doctor to examine prospective migrants. However, the owners did not agree, and 'now from all directions are heard complaints of the shortness [sic] of suitable labour'.⁶⁹

As a result of this rapid growth in employment, the proportion of unskilled and semi-trained operatives in the work-force was always high and must have been a serious drag on efficiency. For instance, in September 1925, Kelsall and Kemp obtained a rush of orders, but 'the increase in production was extremely slow.... New labour had to be trained - a very slow process -...'.⁷⁰ Mills in country areas were particularly hard pressed: often their operatives did not even have any general factory experience. As one country mill owner complained:

When you have raw recruits who have come into the factory practically off farming lands it is impossible to put them on the same level as the west of England people where the industry has been going on for hundreds of years.⁷¹

The overwhelming majority of the new mill hands was, of course, trained on the job, but this system could not turn

⁶⁹ Textile Journal of Australia, 15 Dec. 1926, p.486.

⁷⁰ Kelsall and Kemp (Tasmania) Ltd, Report of the Directors for the year ending 25 May 1926.

⁷¹ Evidence of L.A. Degaris to S.A. Royal Commission on Manufacturing, op. cit., para.3110.

out quickly enough the leading hands, the foremen, the managers, the pattern designers etc., and to obtain these the mills turned most often to the United Kingdom. The extent of this dependence on skilled labour from overseas is difficult to estimate precisely, but it appears to have been very great. In each of the five large mills with which English capital was connected the pivot hands were brought out to Australia, and used to train local labour. This was also the case in new Australian companies: Central State Worsted Ltd,⁷² Goulburn Woollen Mills Ltd,⁷³ Amalgamated Textiles (Australia) Ltd,⁷⁴ Stawell Woollen Mills Ltd,⁷⁵ Western Australian Worsted and Woollen Mills Ltd⁷⁶ - all these mills employed Englishmen in leading positions and they often brought out trained workers from England. The examples given illustrate the role of English labour; certainly Bradford experience was held in very high esteem and to have had this background was often necessary and even sufficient to

72

Ibid.

73

Textile Journal of Australia, 15 Nov. 1926, p.457.

74

For the mill at Albury, see Dalgety's Annual Wool Review, 1924-5, p.73. For the mill at Orange, see Amalgamated Textiles (Aust.) Ltd, Directors' Report for year ended 30 Sep. 1926.

75

Jobson's Investment Digest, Dec. 1921, p.405.

76

West Australian, 2 Dec. 1924, p.6.



obtain responsible positions in Australian mills. Sometimes, of course, as the experience of the Goulburn mill shows, it did not guarantee good management.⁷⁷

An alternative to importing these skilled men was to train them in schools in Australia, but in the twenties no such school existed. There was considerable pressure in Victoria for the erection of a textile training school, as a result of which the Victorian government asked Professor A.F. Barker to advise on the matter.⁷⁸ In his report, presented in 1924, he strongly recommended the establishment of such a school in Melbourne, to be run in conjunction with the university.⁷⁹ However, Geelong felt it deserved the school, and so no finality was reached on the site; moreover, the state government considered that the Commonwealth government should contribute towards the cost and, as a result, nothing was done.

77

Jobson's Investment Digest, June 1927, p.378.

78

See also p.165.

79

A.F. Barker, Report to the State Government of Victoria, op. cit.

The Location of the Industry

Woollen and Tweed Mills

Percentage of Employment in Each State

Year	N.S.W.	Vic.	Q'land	S.A.	W.A.	Tas.
1913	25	58	4	6	-	7
1919-20	29	57	5	4	-	5
1929-30	27	56	3	2	1	11

Source: Employment figures from Commonwealth Production Bulletin, nos 8, 14 and 24.

In terms of employment, the location of the industry in the various states did not change very substantially during the period 1913 to 1929-30. Victoria remained the centre of the industry, employing between 55 per and 60 per cent of the total numbers, while N.S.W. employed between 25 per cent and 30 per cent. In these states, the capital cities, with their concentration of population, were the main centres of production, but in Victoria there was also a cluster of mills at Geelong. This city was a centre for wool sales, and before the war four mills had been established on the north bank of the Barwon River, the waters of which were found to be very suitable for the treatment of wool. In 1915 the Commonwealth government opened its own mill there and in the twenties the Returned Soldiers' Mill and the Valley

Mill were also established. Geelong hopefully referred to itself as 'The Bradford of Australia',⁸¹ and the woollen mills were certainly its major industry. But employment there was not as great as in Melbourne, and in 1926, when total employment in the woollen mills in Victoria was 5,585, Geelong⁸² employed 1,771 and Melbourne 2,571.

One of the more interesting developments in this period was the growth of the industry in Tasmania. This was assisted particularly by the establishment of two English companies - Kelsall and Kemp and Paton and Baldwin - at Launceston. This city was chosen because of cheap electric power and favourable climatic conditions,⁸³ and Launceston did its part by making its water supply more suitable for the industry. Formerly, the water was good for scouring but not for bleaching and dyeing, so a filter plant was installed to remove⁸⁴ the undesirable elements.

While there was a relative decline in the industry in South Australia and Queensland, in Western Australia a mill

81

See, e.g., ibid.

82

Report of the Chief Inspector of Factories and Shops for year ended 31 Dec. 1926 (Vic. Parl. Papers, 1927, vol.II), p.27.

83

Textile Journal of Australia, 15 Dec. 1928, p.601.

84

Ibid., 15 Apr. 1926, p.77.

was established for the first time. It seems probable that in these states one of the mainstays of the industry was the patronage of the state governments - giving preference to the local firm over inter-state mills. Certainly a large proportion of the Queensland Woollen Manufacturing Company's business was with the Queensland railways, police and charitable institutions,⁸⁵ while the state government was the Western Australian mill's 'best customer'.⁸⁶

Country Mills

An important locational change in the early twenties was brought about by the establishment of numerous country mills. Towns in which mills were set up during this decade included Orange, Goulburn, Albury, Wangaratta, Stawell, Sale, Daylesford, Mount Gambier and Albany. In each case, the mill was the only one in the town and was some distance away from its principal market. The development of these mills is worth studying in some detail; although not a consciously planned experiment it was a large-scale attempt at the decentralisation of an industry, and was recognised as such at the time. Moreover, many of the problems encountered by the country mills are as relevant today as they were then.

85

Ibid., 15 Nov. 1929, p.551.

86

Ibid., 16 Sep. 1926, p.360.

The motives behind the establishment of the country mills were various: the country towns especially were the victims of the optimism that prevailed after the financial success of the woollen mills between 1914 and 1923. The prospectuses of these companies usually cited the recent successful history of the industry.⁸⁷ Typical was the claim of the promoters of the Wangaratta mill: 'the demand for woollen goods is far greater than the supply, and it is not likely that there will be any serious competition for many years to come'.⁸⁸ Similarly, to far off Western Australia the success of the eastern mills appeared fabulous,⁸⁹ and a mill was established at Albany. If, then, the operation of a mill could be a financial success, here was an opportunity for local patriots and businessmen to check the movement of population to the capital cities.

Unfortunately, hopes were not realised and the mills were almost uniformly a failure - either they closed

87

See, e.g. Prospectus of Amalgamated Textiles (Australia) Limited, 1 Sep. 1923.

88

Prospectus of the Wangaratta Woollen Mills Limited, 8 June 1920.

89

See, e.g. two articles in West Australian by 'Sissena'. 'Why Not Local Mills?', 29 Apr. 1922, p.11, and 'Local Clip for Local Mills', 8 May 1922, p.6.

completely or had to write off large amounts of the share capital. They really had little chance of success. We have seen above how share capital was usually inadequate, with the result that the companies often had to seek an accommodating bank.⁹⁰ Amalgamated Textiles was in difficulties because of the location of some of its share-holders in a particular country town. Finding itself short of funds, it decided not to proceed with the mill planned at Tamworth, to the great disappointment of the Tamworth residents who had subscribed capital on that understanding.⁹¹ The residents accordingly applied to the New South Wales Equity Court to have the company wound up, but the appeal was dismissed.⁹²

As well as the general difficulty in obtaining suitable labour which was experienced by all woollen mills, the country mills had a special problem arising from their location. As soon as they were trained, many workers moved off to find employment in more congenial centres and the process of training operatives had to begin over again. The Albany mill

90

E.g., the Wangaratta Woollen Mills borrowed £30,000 (Directors' Report, 1923) while at the end of the decade W.A. Worsted and Woollen Mills Ltd owed £50,000 (Directors' Report, 1930).

91

Amalgamated Textiles (Aust.) Ltd, Directors' Report for year ended 30 Sep. 1926.

92

Jobson's Investment Digest, 1927, p.61.

complained of workers moving to the eastern states,⁹³ while Kelsall and Kemp were affected by trained labour going to the mainland.⁹⁴ For the same reasons the country mills found it difficult to recruit employees in the city and bring them to their factories. Moreover, not only did the mills lose their local workers, but they could not hold the skilled operatives they had specially brought out from England.⁹⁵

Apart from difficulties associated with labour and capital, many other troubles beset the isolated country mills. Freight, on both supplies and output, was always an additional expense, though in Victoria the state government gave special discounts on railway freights.⁹⁶ Then there were

93

Primary Producer, 29 July 1926, p.1.

94

Kelsall and Kemp (Tasmania) Ltd, Report of the Directors for year ending 26 May 1926.

95

As the Sydney correspondent of the Age complained: 'Skilled textile workers have been brought to the country, and have been sent to the mills, and, after their first burst of work, have left for Sydney, and in nearly every case, fail to go back. The reason is hard to discover, for they are given work under ideal conditions. Though the spindle towns of England may be larger...the English workers have had less leisure. There is no reason why they should sniff at working in townships as ideally situated as tourist resorts, and rush to the city... The textile factories in the country may be brought to failure unless some means can be devised for keeping the skilled worker there. The Big Brother and the Big Sister movements are all very well in their way, but we want a means of making our country cousins happy amid their home surroundings...'. Age, 13 July 1926, p.8.

96

For the concessions on woollen goods to various country towns see Textile Journal of Australia, 15 Apr. 1926, p.80.

the general inconveniences of small country towns - 'the many vexatious delays and difficulties' experienced by Amalgamated Textiles.⁹⁷

Some mills attempted far too much. In the tradition of Australian mills they carried out all operations from the scoured wool to the final cloth; the Albany mill even made hosiery as well as producing both woollens and worsteds.⁹⁸

But one mill which did make a success of specialisation on a more limited range of products, found that it had difficulty in maintaining its supply of tops from outside sources.⁹⁹

By the end of the decade the directors of Amalgamated Textiles were prepared to admit all these drawbacks and gain what satisfaction they could from the good that they were doing: 'Against all these disadvantages must be set the fact that the operations of the mills are contributing to the prosperity of the towns in which they are situated, and the State.' They then proceeded to write off £220,000 of the shareholders' capital.¹⁰⁰

97

Amalgamated Textiles (Australia) Ltd, Report of the Directors for year ended 30 Sep. 1926.

98

Primary Producer, 10 Apr. 1925, p.4.

99

This was the Wangaratta Woollen Mills Ltd. For its supply difficulties see Industrial Australian and Mining Standard, 15 May 1926, p.722.

100

Amalgamated Textiles (Australia) Ltd, Report of the Directors for year ended 30 Sep. 1930.



Efficiency of Production

No direct measure can be made of efficiency in this industry. Complete statistics do not exist for the numbers of spindles and looms, and the output figures include a variety of products, both in type and quality.¹⁰¹ However, it is relevant to note that the horse-power of engines per worker used in the industry was rising slowly: it was 1.4 in 1913, 1.8 in 1918-19 and 2.2 in 1929-30.¹⁰²

Enough has been said of the difficulties associated with labour, capital, location and management to suggest that some mills, particularly the country mills, were very inefficient. One specific example can be seen in the contrast between the mills at Albury and Orange; while the Albury mill was producing '51 pieces per week', that at Orange, with a similar plant, could average only 14.¹⁰³ Indeed, the main impression of the general state of efficiency in the industry is of enormous variation between firms. One expert observer in 1924 felt that efficiency was already high and that the main

101

N.M. Windett in Australia as Producer and Trader 1920-32 (O.U.P. 1933), p.231, uses the average price per yard of tweed and cloth to show rising prices in Australia. This ignores the improvement in average quality which was one of the most important developments of the decade.

102

Commonwealth Production Bulletin, nos 8, 13 and 24.

103

Amalgamated Textiles (Australia) Ltd, Report of the Directors for year ended 30 Sep. 1927.

danger lay in the possibility of a decline,¹⁰⁴ but he was probably basing this view on a survey of modern mills in Melbourne and Geelong. Certainly, in 1925, the manufacturers admitted that no extra tariff was required on the better class materials made by the larger mills,¹⁰⁵ but when the tariff was imposed it was sufficient to keep the Williamstown Mill, regarded as 'the most out of date in the State', at full pressure.¹⁰⁶

Because of the relatively small degree of specialisation, woollen mills in Australia needed to be of a larger average size than those in England in order to operate efficiently. There is some evidence that this was the case; in the United Kingdom in 1926, 18 per cent of operatives were in concerns employing less than 101,¹⁰⁷ while the comparable figure for Australia was 8 per cent.¹⁰⁸ However, greater size did not necessarily bring with it the economies resulting from the mass production of standardised products. In

104

Report of A.F. Barker to the Victorian Government, op. cit., p.8.

105

Tariff Board Report on Woollen Piece Goods, 1925, p.6.

106

Evidence of D.E. Lark, Standard Hours Enquiry, Transcript of Evidence, 19 Oct. 1926.

107

Committee on Industry and Trade, op. cit., p.106.

108

Commonwealth Production Bulletin, no.21.

England, mass production of wool textiles hardly existed, and large firms differed from smaller firms in the number of qualities and styles they produced rather than in the quantity of pieces to a particular style.¹⁰⁹ The position was similar in Australia.

Ability to standardise production was particularly important for economical production in Australia because of the small market. But the degree of standardisation in the wool textile industry is limited by the diversity in the types and quality of wool on the one hand, and by the continual changes in fashion on the other. Australian manufacturers, however, were able to take some small steps along these lines. From 1 October 1916, they agreed on certain standard sizes and weights for blankets,¹¹⁰ and it was the opinion of the Tariff Board that not only was this move a guarantee of quality to the public, but it also reduced the cost of production.¹¹¹

109

Committee on Industry and Trade, op. cit., p.184.

110

Interstate Commission of Australia, Prices Investigation, No.11 Report - Clothing, p.14, Commonwealth Parliamentary Papers, 1917-19, vol.V. Standard sizes for travelling rugs were agreed upon in February 1924. (Extracts and Notes from Minutes of The Associated Woollen and Worsted Textile Manufacturers' Association that were taken by the Federal Executive Officer.)

111

Tariff Board Report on Blankets, Rugs..., 1930, p.6.

We have seen that in some years the rapid growth of the work-force seriously lowered labour productivity, but, throughout this period, there were two favourable aspects to the labour situation. In the first place, there were almost no industrial stoppages. The secretary of the Victorian branch of the Australian Textile Workers' Union claimed that the union had always co-operated with employers and he cited with approval the prospectus of Cotton Textiles Ltd: '...there has never been any labour trouble in the textile industry in Australia'.¹¹² During the twenties all major awards of the Commonwealth Arbitration Court relating to the textile industry were consent awards. That is, agreement was reached between employers and union before entering the court, and the court simply gave legal sanction to the agreement. This indicates harmonious industrial relations; at the same time the lack of arbitration evidence removes a fertile source of information on the industry.

The other factor encouraging productivity was the extensive application of the piece work system of wage payment. This system dated back to the establishment of the industry in Australia, and during the twenties textiles were one of

112

Evidence of D.E. Lark to the Commonwealth Arbitration Court, Enquiry re Standard Hours, Transcript of Evidence, 19 Oct. 1926, p.2517.



the few industries in which piece work operated in a general fashion and did not bring industrial unrest. ¹¹³

The Associated Woollen and Worsted Textile Manufacturers' Association

This association embraced almost all the woollen textile manufacturers, and through it the standardisation of blankets was agreed upon in 1916. Some attempt was also made at price fixing, and in January of each year minimum prices were set for flannels and blankets. The price on flannels was a price below which the manufacturers agreed not to sell; it was a price that was set in relation to the lowest grade of flannel but if they desired, individual manufacturers were at liberty to sell a better quality at this minimum price. ¹¹⁴ The only limit on competition was thus a bottom level to prices and the Interstate Commission concluded that there was 'no evidence of any combined action which has resulted in the fixation of prices by the elimination of competition'. ¹¹⁵

Even this limited degree of price control was difficult to maintain once competitive conditions returned to the

113

Ibid.

114

Interstate Commission Report on Clothing, op. cit., p.13.

115

Ibid., p.7.

industry. At first the minimum price was f.o.b. or f.o.r. according to the location of the mill, but on the objection of the Tasmanian mills, which were suffering because of their geographical position, this was changed in 1925 to c.i.f. at capital ports or cities, including Launceston.¹¹⁶ This action was inadequate to meet the pressures on the agreement and the Warrnambool mill withdrew from the association because their sales had been affected by 'a few mills outside the Association selling at less than the prices fixed'.¹¹⁷ With the onset of the depression and the withdrawal of other mills from the association it was forced to abandon all attempts to control either quality or price.¹¹⁸

116

Extracts and Notes from Minutes of The Associated Woollen and Worsted Textile Manufacturers' Association, 18 and 19 Feb. 1925, and 17 and 18 June 1925.

117

Jobson's Investment Digest, 1926, p.45.

118

Extracts and Notes from Minutes of The Associated Woollen and Worsted Textile Manufacturers' Association, 10 June 1930.

2. HOSIERY AND KNITTED GOODS

119

The demand for hosiery and knitted goods expanded rapidly during the twenties. As well as benefiting from the rising incomes and population of this decade, the industry was favoured greatly by changes in fashion. Jersey suits and knitted garments of every description became immensely popular, and their very texture made them easily adaptable to the fashionable shapelessness for women. At the outbreak of the war, full-length skirts were worn, but in the twenties the hem line rose rapidly until the knees became visible; by 1926 they were 'freely shown'.¹²⁰ The exposure of the leg meant that hosiery became a much more important item of clothing, and silk and rayon fully-fashioned stockings became standard wear for women.

119

These products are classified as an industry group in the Commonwealth Production Bulletins; the classification includes all those goods made from many different types of fibre, in which the knitting technique is used. The connection between this industry and the woollen and tweed mills is very close; as classified in Production Bulletins the knitting industry obtains its woollen yarn from another industry, the woollen mills, although in many cases these two activities are carried out in separate departments of the one firm. It is therefore often very difficult to distinguish these different activities when examining the behaviour of any one firm. Moreover, many similar influences operated in both industries during this decade. For these reasons, and because the problems of expansion have already been discussed extensively in the associated industry, the knitting industry will not be studied in great detail.

120

John Montgomery, The Twenties - An Informal Social History (London, 1957), p.163.

Before the war the industry existed on a very small scale. Only one knitting company manufactured a portion of its own yarn, all the rest of the yarn being imported.¹²¹ The reduction of imports of knitted goods during the war presented the industry with a unique opportunity for expansion, which was limited only by the difficulty in obtaining supplies of yarn. This was an opportunity for local firms to expand their range of output and master technical problems of production free from overseas competition. One firm reported that 'the demand for stockings was so great that the early imperfect products found a ready market, and, by the time the trade had recovered, Bond's had learnt the finer points of the business...'.¹²² The expansion in the war period was encouraged by the very high profits earned in this time of shortage: between 1915 and 1917 the profits of 14 representative hosiery and knitting factories averaged 25.73 per cent per annum on paid up capital.¹²³ Under these conditions the industry was able to develop at a fast rate, and when

121

See, e.g. Interstate Commission of Australia, Prices Investigation, No.11 Report, Clothing (Parliamentary Papers, 1917-19, vol.V), p.21.

122

Yarn Spinner, Sep. 1926, p.5 (journal of George A. Bond and Company Ltd).

123

Interstate Commission Report on Clothing, op. cit., p.40.

statistics relating to it were first published in 1918, it employed 2,176.¹²⁴

The general pattern of the expansion that took place after the war can be seen in the table below:

Hosiery and Knitted Goods

Year	Employment	Value of Land and Buildings £'000	Value of Plant and Machinery £'000
1918-19	2,370	163	195
1919-20	3,528	267	365
1920-21	5,179	440	619
1921-22	6,943	671	899
1922-23	7,475	845	898
1923-24	6,573	891	899
1924-25	7,197	973	866
1925-26	8,409	1,072	1,042
1926-27	10,020	1,311	1,350
1927-28	9,880	1,302	1,294
1928-29	11,583	1,511	1,469
1929-30	12,447	1,574	1,620

Source: Commonwealth Production Bulletin, nos 13-24.

The industry continued to grow very rapidly until 1921-2, because of the increase in the demand for knitted goods and the slowness with which imports re-entered the Australian market. In each of the three years following the war the Chief Inspector of Factories for Tasmania noted that the demand for knitted goods exceeded the supply.¹²⁵ A

¹²⁴

Commonwealth Production Bulletin, no.13.

¹²⁵

Annual Reports of the Industrial Department on Factories, Wages Boards, Shops etc., by Henry Reynolds, Chief Inspector

description of the state of the market in mid-1920 is provided by Foy and Gibson, one of the manufacturers:

At that time there was a great scarcity of hosiery. Hosiery, which we had been selling at 3/9d a pair, was costing 7/6d for the imported article of similar quality. We had buyers waiting in hundreds outside our factory every morning until the supply came from the mills. We could only let the buyers have two pairs each and even then there was a great scramble to get the goods.¹²⁶

Further encouragement was given to the industry by the tariff of 1920. On cotton or silk socks or stockings the duty imposed was B.P.T. 30 per cent, I.T. 40 per cent and G.T. 45 per cent, while on woollen socks or stockings it was B.P.T. 35 per cent, I.T. 45 per cent and G.T. 50 per cent (tariff item 115); this was a substantial increase in the tariff on wool and silk, and it was the first time that protection had been granted to cotton hosiery. On general knitted apparel the duties were raised slightly; they were set both as fixed duties, depending on the type of clothing, and as ad valorem rates of B.P.T. 40 per cent, I.T. 50 per cent and G.T. 55 per cent - the higher duty to be applied (tariff item 110). In spite of this protection, however,

125 (continued)

of Factories for Years 1919-20 to 1921-22. Tasmanian Parliamentary Papers, 1920, 1921 and 1922.

126

Evidence of J. MacLellan, chairman of directors of Foy and Gibson Pty Ltd, to Commonwealth Arbitration Court, Enquiry re Standard Hours, Transcript of Evidence, 26 Oct. 1926.

the industry ceased to expand consistently after 1921-2. Employment and investment moved unsteadily in the next three years, and in 1924-5 employment was only slightly higher than in 1921-2.

In 1923, 1924 and 1925 the Chief Inspector of Factories for Victoria refers to trade in the knitting industry as 'dull' or 'bad'.¹²⁷ The main cause of the depression in the local industry was the return of import competition, which hit severely the inefficient firms spawned by the easy conditions after the war. Many of these were small concerns whose plant was too specialised to cope with the swift changes in demand. Thirty-six small knitting factories in Victoria were forced to close in the twelve months ending in June 1924; these factories had installed plant to meet the demand for knitted scarfs and golfers, but were unable to switch to the production of knitted costumes when these came into fashion.¹²⁸

Failures were not limited to the small firms. A spectacular liquidation was that of Gold's Hosiery Mills Ltd. This firm controlled four mills in different parts of Sydney,

127

Annual Reports of Chief Inspector for Factories for years ended 31 Dec. 1923 to 31 Dec. 1925, Victorian Parliamentary Papers, 1924, 1925 and 1926.

128

Dalgety's Annual Wool Review, 1923-4, pp.62-3.

and in mid-1922 employed just on 1,000 in the manufacture of hosiery, bathing costumes, coats and underwear.¹²⁹ By 1924 its assets amounted to £574,000,¹³⁰ and in the liquidation which began in early 1925, it seems that all the share capital of £234,000 as well as £100,000 of debentures was lost.¹³¹ The company claimed that overseas competition was the main reason for the lack of success, but the dispersed location of its operations and difficulties associated with a too rapid expansion appear to have been contributing causes.

In the face of this renewed foreign competition the manufacturers turned to the Tariff Board for increased protection. On socks and stockings the board found that the local manufacturers held almost all the 'better class' trade, and although there was some severe competition from cheap lower quality imports, the board concluded that the imposition of fixed duties would be too great an imposition on the low income groups in Australia. However, since the board had recommended increases in the duty on both wool and silk yarns, it agreed that there should be an increase in the duty on

129

Ibid., 1921-2, p.53.

130

Gold's Hosiery Mills Ltd, accounts for year ended 30 June 1924, as reported in Jobson's Investment Digest, Nov. 1924, p.553.

131

Jobson's Investment Digest, May 1926, p.251.

woollen socks and stockings of another 10 per cent, and on silk socks and stockings of an additional 5 per cent; cotton hosiery was untouched.¹³² Similarly, with general knitted goods the board found 'that the Australian manufacturer could hold his own so far as the better qualities of knitted goods were concerned'. But once again, because of the increase in yarn duties, the board was prepared to recommend an increase in the ad valorem duties on knitted goods; and this time, because of the competition from lower quality im-ports,¹³³ it also recommended an increase in fixed duties. The reasons for the Australian manufacturers' inability to obtain the market for lower quality goods were found to lie in high wages, expensive yarn and the impossibility of obtaining the economies of mass production. Parliament gave effect to these recommendations in September 1925.

With this additional assistance the industry grew swiftly until 1927-8. There was a pause in that year, but on the recommendation of the Tariff Board fixed alternative duties were added to socks and stockings,¹³⁴ while duties were increased on knitted piece goods which were being

132

Tariff Board Report on Socks and Stockings, 1925, passim.

133

Tariff Board Report on Apparel - Knitted, 1925, passim.

134

Tariff Board Report on Socks and Stockings, 1927, p.14.

imported and made up into apparel in Australia.¹³⁵ Once again the industry expanded, and when duties were further raised to an almost prohibitive level in the general tariff increases at the end of 1929, employment had reached over twelve thousand.

With the tariff rising so steeply in Australia, overseas suppliers had little choice but to set up business in Australia if they wanted to retain their markets. Two such suppliers were underwear manufacturers from Nottingham. One of them, Messrs I. and R. Morley, erected a factory at Ballarat in 1927-8,¹³⁶ the decisive factor in the move being the 1925 duties which they regarded as 'practically a prohibitive tariff on British underwear'.¹³⁷ Thirty men, all of whom were experts in their particular branch of the trade, went with the firm to train local labour,¹³⁸ and by February 1930, the company employed 150.¹³⁹ The other Nottingham firm was J.B. Lewis and Sons Ltd, which secured an unoccupied

135

Tariff Board Report on Piece Goods, Knitted, in Tubular Form or Otherwise, 1927, p.9.

136

See, e.g. Argus, 10 May 1927, p.15 and 30 June 1927, p.13.

137

Statement by W. James, a partner in the firm. Textile Journal of Australia, 15 Aug. 1928, p.368.

138

Ibid., p.369.

139

Argus, 5 Feb. 1930.

factory at Abbotsford, Melbourne in 1927,¹⁴⁰ and brought to
Australia a nucleus staff of skilled workers.¹⁴¹

The Swiss company of Handschin and Ronus, manufacturers of high class underwear, was also forced by the 1925 tariff¹⁴² to begin operations in Australia. Accordingly, a new company was formed in 1926 to take over the business of the Bendigo Knitting Mills, and the output of the mills, which previously had concentrated on knitted outerwear, was ex-¹⁴³ tended to include underwear for men, women and children. About half the share capital of £120,000 was subscribed by the Swiss; Mr C. Handschin was appointed managing director and brought with him from Switzerland 22 women and 5 men on¹⁴⁴ a five year contract to train an Australian staff.

The United States was Australia's main supplier of silk stockings, and the tariff forced two American companies, both of which had given evidence to the Tariff Board opposing the 1925 tariff, to establish Australian connections. One was

¹⁴⁰ Sydney Morning Herald, 29 June 1927, p.16.

¹⁴¹ Argus, 5 July 1927, p.16.

¹⁴² Ibid., 15 Dec. 1926, p.33.

¹⁴³ Hanro (Australia) Knitting Mills Ltd, Prospectus, 9 Mar. 1951.

¹⁴⁴ Age, 21 Dec. 1926, p.10.

Julius Kayser & Co. of New York, which, in 1929, joined Australian Knitting Mills Ltd, Yarra Falls Ltd and Marks and Saulwick Pty Ltd in establishing Julius Kayser (Aust.) Pty Ltd.¹⁴⁵ It was estimated that the expenditure on land, buildings and plant for this new venture amounted to £250,000.¹⁴⁶ In the previous year Kayser had united with A.K.M. in the formation of Rayon Pty Ltd to manufacture artificial silk underwear.¹⁴⁷ The other American company was the Holeproof Hosiery Co. of U.S.A., which entered into an agreement with Staley and Staley Ltd in early 1930.¹⁴⁸

Another American firm, Jantzen Knitting Mills, announced in 1927 that it would erect a factory in Sydney to manufacture sweaters and bathing suits.¹⁴⁹ A company was formed in Australia, Jantzen (Aust.) Ltd in which the ordinary shares

¹⁴⁵

Argus, 30 Nov. 1929, p.31.

¹⁴⁶

Ibid., 16 Jan. 1930, p.5, and 13 May 1930, p.10.

¹⁴⁷

Australian Knitting Mills Ltd, Report of the Directors for year ended 30 June 1929.

¹⁴⁸

'These arrangements which embraced the supplying to us of valuable information and technical assistance in return for certain considerations involving the formation of the Holeproof Hosiery Coy. (Aust.) Pty. Ltd. have worked happily and most satisfactorily to the advantage of our Company...', Staley and Staley Ltd, Report of the Directors for year ended 30 June 1930.

¹⁴⁹

Argus, 13 Oct. 1927, p.15.

were held by the American parent company and the preference shares were held by Australian investors. ¹⁵⁰

It can be seen that the role of foreign firms in directly supplying capital, technical knowledge and trained workers was important in the expansion of this industry, but their influence was felt mainly after 1925. By far the larger part of the expansion was the result of the growth of local firms; foremost among these was George A. Bond and Company Ltd, which, in 1925, was supplying about one-quarter of the output of the entire industry. ¹⁵¹ The phenomenal growth of this firm, which to contemporaries was surrounded with a glamour similar to that of Holden's, will be discussed in the next section on cotton textiles, the manufacture of which it pioneered in Australia. Apart from Bond's, two other Australian firms led in the development of silk stocking manufacture in the twenties; this new product accounted for a major part of the development in the knitting industry after 1926, when the emphasis was placed on flesh-coloured fully-fashioned stockings. The two firms were Prestige Ltd and Lustre Hosiery Ltd. Prestige was established in 1922, but for the

150

Jobson's Investment Digest, July 1929, p.369.

151

In 1924-5 Bond's sales were £873,000 (Directors' Report for year ended 30 June 1925), the value of output of all knitting factories was £3,785,000 (Commonwealth Production Bulletin, no.19).

first few years was unsuccessful; after 1925, however, expansion was rapid: assets of £63,000 in June 1925 increased to £296,000 in June 1930, while dividends averaged 15 per cent a year.¹⁵² Lustre's development was similar. It was founded in a small way in 1921; in 1921-2 sales were only £15,000 but by 1927-8 they had risen to £340,000, and by the end of the decade assets were worth £454,000.¹⁵³

Because the statistics are incomplete, it is impossible to be certain concerning the extent to which the manufacture of hosiery and knitted goods grew with the demands of the market, and the extent to which it replaced imports. No details can be given for individual products, but such figures as exist suggest there was substantial import replacement - imports meeting about 65 per cent of the demand in the two years 1919-20 and 1920-1, and about 25 per cent in 1928-9.¹⁵⁴ The expansion of the industry was at the cost of goods

152

Prestige Ltd, Reports of the Directors for years ended 31 Mar. 1925 to 31 Mar. 1930.

153

Lustre Hosiery Ltd, Reports of the Directors for years ended 30 June 1926 to 31 Dec. 1930.

154

In 1919-20 and 1920-1 total imports were estimated at £6,283,000 and output was £4,627,000. In 1928-9 imports were £2,100,000 and output £6,312,000. Overseas Trade Bulletin, vols 17, 18 and 26; Production Bulletin, nos 14, 15 and 23.

considerably more expensive than overseas, and in 1928-9 the duty on imports was approximately 50 per cent of their value. In part, the high price of locally made knitted goods reflected the higher cost structure in Australia as compared with, say, the United Kingdom, but it must also have resulted from a lower level of productivity in the industry.¹⁵⁵

Economies of scale in Australia - both internal and external - could not have been as great as those obtained in the British industry, but, more important, inefficiency was a product simply of the very rapid rate of growth within the industry. For example, total employment in the industry increased five-fold in ten years, and the proportion of new labour learning the job must have lowered the average level of skill. As with wool textiles, the demand for skilled labour was partly met by immigrants, some of whom were brought by foreign firms establishing branches in Australia. The extent of the migration of skilled workers cannot be known, but it was sufficient to cause complaint in the English Hosiery Trade Journal:

The Commonwealth authorities have not limited themselves to labour which is indigenous to the soil, systematic endeavours having been for some time in

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The limited range of the statistics of volume of production in this industry prohibits their use for any analysis of productivity.

progress in this country to attract some of the youngest and most skilful of British operatives to Australian territory.¹⁵⁶

Although immigration could provide many of the key workers, the greater part of the labour must have been trained on the job. Bond's stated that most of their knitting workers were trained in their own mill, as there were no reserves of skilled operators to draw upon in Australia.¹⁵⁷ Moreover, the new techniques associated with fully fashioned hosiery required a different form of training, which Prestige reported took several months.¹⁵⁸ It was not only at the level of the factory operative that the strains of expansion were felt; the experience of Bond's shows that managerial talent was also extended.

156

As reported in the Textile Journal of Australia, 15 Aug. 1928, p.367.

157

Yarn Spinner, Oct. 1926, p.5.

158

Prestige Ltd, Report of the Directors for year ended 31 Mar. 1927.

3. COTTON TEXTILES

The manufacture of cotton textiles was begun in Australia by George A. Bond and Company Ltd. In 1913 Bond was an importer dealing mainly in hosiery and underwear, but the war destroyed this trade and he set up a small hosiery mill at Redfern, Sydney. With the protection provided by the war, the enterprise prospered and was firmly established by the beginning of the twenties. Expansion in this decade was extremely rapid: in June 1919 share capital was £39,000 and sales for the past year amounted to £172,000;¹⁵⁹ by June 1927 these sums had become £700,000 and £1,252,000 respectively, while total assets were £1,582,000¹⁶⁰ and the firm employed approximately 2,600 workers.¹⁶¹ One side of the business was devoted to hosiery and underwear manufacture and the other concentrated on cotton spinning and weaving.

The decision to commence cotton manufacture was made by Bond in the early twenties. He was a man with grandiose plans; at first he said that he thought of making artificial silk from Australian timber, but the visit of the British

159

Information supplied by Bond's Industries Ltd.

160

George A. Bond and Company Ltd, Report of the Directors for year ended 30 June 1927.

161

Australasian Manufacturer, 4 June 1927, p.16.

Australian Cotton Delegation and the development of cotton growing turned his attention to cotton manufacture.¹⁶² As a result a cotton mill was established at Wentworthville,¹⁶³ N.S.W., and was completed in September 1923.

Having begun production, Bond's applied to the Tariff Board in early 1925 for tariff protection from overseas' competition. The board was most impressed with the initiative and competence of the firm which, at the time, employed over 400 in spinning cotton yarn and weaving towels, calico, canvas and duck. The board, therefore, had no hesitation in recommending a bounty of 6d. a pound on cotton lint consumed in Australia, and a deferred duty for when local production met a more reasonable proportion of the market.¹⁶⁴

Meanwhile cotton growing in Australia had developed rapidly from a production of seed cotton of 57,000 lbs in 1919-20 to 18,182,000 lbs in 1924-5,¹⁶⁵ with the stimulus of a price guaranteed by the cotton growing states (virtually only Queensland) and the Commonwealth government. The

162

Yarn Spinner, Sep. 1926, p.5.

163

George A. Bond and Company Ltd, Report of the Directors for year ended 30 June 1925.

164

Tariff Board Report on Cotton Yarn, 1925, passim.

165

Tariff Board Report on Bounty on Seed Cotton, 1926, p.22.

agreement between the governments and the growers provided that after the marketing of the cotton any profits above the guaranteed price went to the growers, while losses were met by the governments; up to 1925 there had been only losses.¹⁶⁶ Understandably, the Queensland government wished to withdraw from the scheme, and in 1926 the industry was referred to the Tariff Board, which recommended a bounty, to be paid by the Commonwealth government, as the best means of assistance to replace the guaranteed price.¹⁶⁷

The proposals of the Tariff Board were modified but given general effect by the Cotton Bounty Act of 1926. By this act the Commonwealth government hoped to firmly establish the cotton industry - both growing and manufacturing - in Australia. It was proposed to grant bounties to a total of £900,000, spread equally over 5 years: £600,000 for seed cotton and £300,000 for cotton yarn. The bounty on yarn, which varied with quality but centred around 6d. a lb., was

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The losses were in £'000 -	1920-21 -	9
	1921-22 -	30
	1922-23 -	40
	1923-24 -	93
	1924-25 -	110

Mr H.E. Pratten, Minister for Trade and Customs, Parliamentary Debates, vol.114, p.4948.

167

Tariff Board Report on Bounty on Seed Cotton, 1926,
pp.27-8.

to be paid only if half the raw material was of Australian
 168
 origin.

To cope with the development of cotton manufacture, Bond's, in 1926, set up a subsidiary company to handle this side of their activities. Share capital was £350,000, of which Bond's held all the ordinary shares amounting to £250,000, and it was proposed to increase the capacity of the weaving plant of the new firm to 200,000 dozen towels per annum.
 169
 Apart from manufacturing interests in cotton, Bond's also owned two Queensland cotton farms, both of which were failures.
 170
 But notwithstanding the findings of the Tariff Board, the financial condition of Bond's was not as healthy as it was vigorous, and in December 1927 both the companies went into liquidation.

Bad and extravagant management appear to have been the main reasons for failure, since other firms in the knitting industry were making good profits in this period. G.A. Bond was ordered by the court to repay to the company £90,000 of the fees withdrawn by him, and it was pointed out that

168

Cotton Bounty Act, No.51 of 1926, passim.

169

Prospectus of George A. Bond Cotton Mills Ltd as reported in Jobson's Investment Digest, Apr. 1926, p.194.

170

George A. Bond and Company Ltd (in liquidation), Report to 30 June 1929.

extraordinary salaries had also been paid by the company to his relatives and friends.¹⁷¹ At the time of failure, the value of stocks had reached the enormous figure of £650,000, and, as a first step, the liquidators had to write off approximately £200,000 worth.¹⁷² When the final reckoning was made, the total share capital of both ordinary and preference shareholders amounting to £700,000 had to be written off as lost.¹⁷³ However, both companies continued to be operated by the liquidators until they were eventually reconstituted as Bond's Industries Ltd in 1930.¹⁷⁴

Encouraged by the bounty, another important company entered the field of cotton manufacture. This was the Austral Silk and Cotton Mills, established at Abbotsford in 1927 by the major Victorian group of textile companies. Subscribed share capital was initially £180,000 of which one-third went to Australian Knitting Mills and its shareholders, one-third to Yarra Falls, and the balance to British interests.¹⁷⁵

¹⁷¹ Mr G.A. Francis, Parliamentary Debates, vol.123, p.1271.

¹⁷² George A. Bond and Company Ltd (in liquidation), Liquidators' Report, dated 21 Mar. 1928.

¹⁷³ Jobson's Investment Digest, Sep. 1929, p.497 and Jan. 1930, p.7.

¹⁷⁴ Ibid., Aug. 1930, p.381.

¹⁷⁵ Ibid., Mar. 1927, p.149.

Output of cotton yarn began in October 1927,¹⁷⁶ and by June 1929 union and cotton cloths were being manufactured.¹⁷⁷

The growth of the cotton spinning industry under the stimulus of the bounty is set out in the table below.

Year	Bounty £'000	Production Yarn '000 lbs	Imports	
			Yarn £'000	Yarn '000 lbs
1926-27	30	1,274	837	N.A.
1927-28	25	1,227	672	N.A.
1928-29	34	1,321	859	N.A.
1929-30	48	1,790	940	8,933

Sources: Bounty and Production from Production Bulletin, no.24.
Imports from Overseas Trade Bulletin, vols 24-7.

In the first three years of the bounty's operation, 1926-7 to 1928-9, production of yarn was fairly stable, at what was probably about one-sixth of the level of imports, while the bounty paid was only one-half the statutory limit of £60,000 per annum. In 1929-30 output increased by more than one-third but other measures of assistance were probably more important than the bounty: in November 1929, a high duty was placed on some cotton yarns, and pressure was brought

176

Austral Silk and Cotton Mill Ltd, Report of the Directors for year ended 30 June 1928.

177

Ibid., for year ended 30 June 1929. The only other company to produce cotton yarn in the twenties was Sydney Woollen Mills Ltd in one year, 1927-8.

on Australian weavers and knitters to use the local product. 178

The weaving of cotton goods was conducted on only a very small scale in the twenties, with two main products - towels and cotton tweeds. Towel production, which was able to use Australian spun yarn to a considerable degree, received support from the 1925 tariff with a duty on cotton piece goods for towels of B.P.T. 20 per cent, I.T. 25 per cent and G.T. 30 per cent. At that date Bond's was the only producer, but Commonwealth Weaving Mills and H.B. Dickie Pty Ltd began in 1927 and 1928 respectively. 179 The manufacture of cotton tweeds was begun by numerous companies after a tariff change in 1925, when substantial duties were imposed with the express intention of protecting woollen cloth from

178

The Minister for Trade and Customs, Mr F.M. Forde, stated: 'The yarn-knitters and weavers are getting effective protection, and I do not think they should go to Japan and England for the yarn they require. In order to overcome the trouble that was being experienced in regard to the supply of yarn, I convened a conference in Sydney of representatives of the Australian spinners, knitters and weavers, and an amicable agreement was reached for the supply of yarn. Certain concessions were made to the knitters which were regarded as satisfactory. It was generally agreed that it was a fair thing to give preference to Australian-manufactured yarns in the future, and I hope there will be no more complaints in that regard.' Parliamentary Debates, vol.123, p.684.

179

Tariff Board Report on Towels Cut or Uncut etc., 1932, pp.3-5. Dickie's brought out roughly 30 skilled workers from England to teach Australians the trade. See Age, 9 Feb. 1927, p.13, and Argus, 22 Mar. 1927, p.14.



180
 this cheaper material. An unexpected result was the es-
 tablishment of cotton tweed manufacture in Australia, and
 by 1932 the industry employed about 300.¹⁸¹ In this industry
 the yarns used were not of the type made in Australia.¹⁸²

Another aspect of cotton manufacture which began in
 Australia in the twenties was the production of sewing cottons
 by British Thread Mills (Australasia) Ltd. The firm was es-
 tablished by the British Thread Mills Ltd of Leicester and
 their Australian agent, Davy Pty Ltd, each of which subscribed
 half the share capital of £76,000.¹⁸³ The thread produced
 was for manufacturing, not household, purposes, and manu-
 facturing operations were confined to the finishing processes,
 the semi-processed thread being imported.¹⁸⁴ To establish
 the venture the English company sent out 25 skilled operatives,
 and these were used to train Australians.¹⁸⁵ Protection was
 given to the industry by the 1925 tariff, and by the beginning

180

Tariff Board Report on Cotton Piece Goods...which Re-
 semble Woollen Piece Goods, 1932, p.6.

181

Ibid.

182

Ibid., p.4.

183

Industrial Australian and Mining Standard, 9 July 1925,
 p.36.

184

Tariff Board Report on Sewing Threads and Sewing Cottons,
 1928, p.13.

185

Industrial Australian and Mining Standard, 9 July 1925,
 p.36.

of 1928 the capital invested amounted to £165,000, over 100 hands were employed, and the firm met about one-third of Australia's requirements; by that date also, the company was wholly Australian, the English company having been bought out.¹⁸⁶ However, the company was not a success and went into liquidation in 1929; all the share capital was lost¹⁸⁷ and the firm was eventually sold to Bond's Industries Ltd.¹⁸⁸

186

Tariff Board Reports on Sewing Threads and Sewing Cottons, 1928, pp.4 and 13.

187

Jobson's Investment Digest, Nov. 1929, p.624.

188

Tariff Board Report on Sewing Threads and Sewing Cottons, 1934, p.7.

Chapter V

INNOVATIONS IN POWER: ELECTRICAL MANUFACTURES

Introduction

The growth in the use of electricity was one of the outstanding developments of the twenties; this decade saw the large-scale conversion in Australia of lighting, of machinery and household appliances to electric power. Thus, like its contemporary development, the motor car, electricity had profound economic and social effects; here, we are principally concerned with one special aspect: the implications for the manufacture of electrical equipment.

Between 1919-20 and 1929-30 there was a four-fold increase in the consumption of electricity in Australia, a rate of growth which was comparable to that of Canada, and faster than most other countries, including the United Kingdom. The consumption per head in Australia in 1927 of approximately 300 kilowatt-hours was half as big again as that in the United Kingdom, but was less than one-third of the consumption per head in Canada.¹ The extent to which the development

¹

Committee on Industry and Trade, Survey of Metal Industries (His Majesty's Stationery Office, 1928), pp.348-55.

in the use of electricity was a post-war phenomenon can be seen in the table below.

Electric Light and Power Produced

Year	Millions of K-W Hours
1913	296
1919-20	546
1920-21	648
1921-22	802
1922-23	985
1923-24	1,375
1924-25	1,537
1925-26	1,730
1926-27	1,988
1927-28	2,194
1928-29	2,286
1929-30	2,436

Source: Commonwealth Production Bulletin, nos 8, 19 and 24.

This growth in the use of electricity has been associated with a substantial increase in the demand for a very wide range of electrical equipment. The study in the following pages is not limited simply to electrical manufactures, but includes allied industries; in particular, it covers copper refining and manufacturing, as well as general engineering where this is closely associated with electrical engineering.

Official statistics testify to the growth of the 'Electrical Apparatus' industry under the impact of this rapidly rising demand. Between 1919-20 and 1929-30 employment

increased from 1,890 to 5,635, value of land and buildings from £271,000 to £1,220,000 and value of plant and machinery from £40,000 to £636,000.² However, not all the demand was met by the Australian industry. Electrical manufactures are often extremely complex, and, at Australia's stage of development, great reliance had to be placed on supplies from overseas. The table below sets out the growth of local output and of imports, and shows the relative importance of each.

Year	Imports of Electrical Machinery & Appliances £'000	Tariff £'000	Total Value Imports £'000	Local Output 'Electrical Apparatus' £'000	Consump- tion (Im- ports Plus Output) £'000	Local Output as % of Consumption
1919-20	2,382	417	2,799	656	3,455	19.0
1920-21	4,903	967	5,870	822	6,692	12.3
1921-22	4,372	888	5,260	851	6,111	13.9
1922-23	4,590	646	5,236	972	6,208	15.7
1923-24	4,865	807	5,672	1,233	6,905	17.9
1924-25	6,283	1,050	7,333	1,483	8,816	16.8
1925-26	6,155	1,048	7,203	1,726	8,929	19.3
1926-27	7,435	1,462	8,897	2,356	11,253	20.9
1927-28	7,127	1,278	8,405	2,923	11,328	25.8
1928-29	6,127	1,222	7,349	3,406	10,755	31.7
1929-30	6,101	1,052	7,153	3,234	10,387	31.1

Sources: Imports and Tariff from Overseas Trade Bulletin, nos 17-27.
Output from Production Bulletin, nos 14-24.

2

Commonwealth Production Bulletin, nos 14 and 24.

Once imports began to enter Australia again after the war, the local industry met only some 15 per cent of the demand for electrical equipment, but by the end of the decade this had risen to about 30 per cent.³ The growth of the industry was accompanied by an expansion in the scale of operations. In 1921-2 no electrical factory employed more than 100 workers,⁴ but by 1929-30 the number of factories employing over 100 had risen to 11; in this group there were 2,288 employees - 40 per cent of all the work-force of the industry.⁵

The examination of the various branches of the electrical industry in this chapter will show the problems of their establishment in Australia and the process of their growth. This growth, as we have seen, was rapid, and covered a wide range of manufactures; in total, however, imports remained more important and provided the more complex articles of manufacture. Moreover, such development as took

3

These percentages must be treated only as estimates; moreover, they would misstate the position if the import component of the local output changed greatly over the period. However, since 'value added' in the industry remained an almost constant proportion of total output, the impression given by the table of Australian manufacturers meeting an increasing proportion of the total demand, is correct.

4

Production Bulletin, no.16.

5

Ibid., no.24.

place in Australia required the assistance of a very high tariff, and relied heavily on overseas techniques and methods of production. This dependence very often meant that the local manufacturer associated himself with an overseas company, or that production was undertaken by the establishment of a branch of a foreign firm.

The tremendous variety of electrical equipment makes an orderly survey very difficult. In this chapter attention is first directed to consumer goods - domestic electric appliances and radios. Communication and lighting equipment are examined by means of the manufacture of telephone and telegraph apparatus and electric light globes. Meters are studied separately because it was on the basis of their production that one of the largest firms in the electrical industry was established. The next section deals with general electrical equipment used in the production of power, in industry and in transport. In Australia, the development of the manufacture of copper products was closely associated with the electrical industry, and an examination of this industry completes the chapter.

Domestic Electrical Appliances

In the first half of the 1920s the use of domestic electrical appliances in Australia was not widespread. One important limiting factor was the availability and use of

electrical power in homes; in 1923 a survey of the market estimated that 48 per cent of dwellings in Australia were within the electrical distribution zone and that 34 per cent of all homes were electrically wired.⁶ However, even from homes supplied with electric power, the demand for electrical appliances was not great. To many Australians they were still a novelty, and there was general ignorance regarding their usefulness, but there were other reasons for the slow growth in demand: the supply of electricity was both unreliable and costly, and the price of electrical appliances was high.⁷ Thus of the wired homes in Australia in 1923 it was claimed that only 75 per cent had electric irons, 20 per cent radiators, 7 per cent fans and 2 per cent vacuum cleaners; toasters, kettles and portable lamps were found in 1 per cent of these homes, while sewing machine motors,⁸ stoves, clothes washers and dish washers were even rarer.

The use of these appliances became much more common in the second half of the twenties as the disabilities mentioned above were overcome. Electricity shortages which were

⁶ L.D. Batson, Electrical Development and Guide to Marketing of Electrical Equipment in Australia, p.22. United States Dept. of Commerce, Trade Information Bulletin, no.487.

⁷ Ibid.

⁸ Ibid., pp.22-3.

frequent in Melbourne and Sydney in the first few years of the twenties were eliminated,⁹ and more homes were connected. Gas lighting was provided in few new homes after about 1915, and had been replaced by electricity in most old homes and nearly all streets by 1930,¹⁰ so that by that date there were approximately 800,000 wired homes in Australia.¹¹

With capacity greater than current consumption, electricity authorities throughout Australia reversed their previous attitude and were now anxious to extend the uses of electricity. One means was the introduction of the two-part tariff. This was done in Victoria by the State Electricity Commission from 1 January 1925, when the commission stated that its object was 'to reduce the charge to consumers desirous of using electricity for the many domestic purposes in addition to lighting, such as cooking, heating, washing, cleaning, sweeping etc., and to encourage them to develop the use of

⁹ The shortages were the result of the setback to development caused by the war. When there was insufficient electricity to meet all the demands, household supplies were cut off in order to meet all the demands of industry. See, e.g. Age, 5 Aug. 1921, p.8.

¹⁰ Robin Boyd, Australia's Home (M.U.P., 1952), p.237.

¹¹ Tariff Board Report on Irons Smoothing and Soldering of All Kinds, Transcript of Evidence, evidence of J.P. Tivey, Chief Engineer of Australian General Electric, 23 Jan. 1930, p.30.

electricity in their homes or in their business'.¹² The main Melbourne metropolitan supplier, the Melbourne Electric Supply Company, followed suit in 1927.¹³

Another obstacle in the way of increased electricity consumption - ignorance of the uses of electrical appliances - was largely overcome by the extensive use of publicity by those interested in the sale of electric appliances or electricity. The establishment of show-rooms by electrical authorities to display the range of appliances available was found to be very successful in rousing public interest; at first the aim was merely to demonstrate electrical goods, but later on retailing was commenced.¹⁴ One such authority was the State Electricity Commission, which was so concerned with the low

¹²

State Electricity Commission, Sixth Annual Report, 1924-25,
p.12.

¹³

The new two-part tariff was explained thus: 'It provides for a charge of $1\frac{1}{4}$ d. per kilowatt-hour, as recorded by meter, for all electricity consumed, plus a service charge of 1/- per room per month, payable in advance. At present the charges for current for lighting and power for irons, radiators, stoves and similar appliances is different. For light the charge is $5\frac{3}{4}$ d. per kelvin for the first 500 kelvins, and $3\frac{1}{4}$ d. per kelvin for all the current consumed over 500 kelvins. For power and heating the charge is $2\frac{1}{2}$ d. per kelvin for the first 500 kelvins, $2\frac{1}{4}$ d. for the next 500 kelvins, and $1\frac{1}{2}$ per kelvin for the next 400 kelvins. Under this system it was necessary to have two different wiring systems in the house, and also two meters, for which 6/- per year rental had to be paid. Under the new system meter rent is abolished.'
Age, 20 Aug. 1927, p.15.

¹⁴

See, e.g., Electrical Engineer, Apr. 1927, p.23.

domestic demand for electricity, that it decided in 1928-9 'to embark upon an extended and active selling campaign throughout the State, as a logical and integral part of the power supply undertaking'.¹⁵ As a result, the use of domestic appliances in the areas 'under the control' of the commission rose very rapidly.

State Electricity Commission, Victoria

	Total Connections During the Year Ended 30 June					% Increase for Year Ended 30 June 1930 on Aggregate
	1927	1928	1929	Aggregate to 30 June 1929	1930	
Ranges	135	213	344	850	745	87.64
Fans	519	117	205	1,091	765	70.1
Grillers	219	191	225	911	1,466	139
Irons	4,123	2,287	2,747	16,038	9,294	57.95
Kettles	430	252	488	1,696	4,488	264.6
Radiators	1,521	1,268	1,479	7,413	2,246	30.3
Toasters	97	64	85	309	837	270.9
Vacuum Cleaners	235	215	231	738	2,447	331.5

Source: From Eleventh Annual Report of the State Electricity Commission for the year ended 30 Jun. 1930, p.22

Unfortunately, no conclusions can be drawn from this table concerning the growth of demand for electrical appliances in Victoria as a whole; the S.E.C. supplied most of the electricity used in Victoria during these years, but the

15

State Electricity Commission, Tenth Annual Report, 1928-29, p.14.

areas 'under the control' of the commission were not extensive, since most of the distribution was done by other companies.¹⁶

Even though shortages of electricity were overcome, the price of electricity reduced and knowledge concerning appliances extended, the high cost of these appliances remained a barrier to their more widespread use in the second half of the twenties. This high level of prices was a result of the tariff imposed to protect the new electrical industries from overseas competition, and it gave rise to many bitter complaints.¹⁷ To some extent, the price difficulty was surmounted by the application of instalment buying to electrical appliances. This method of purchase was in operation as early as 1922, when it was sufficiently unusual to cause comment and require justification;¹⁸ however, as the twenties progressed, instalment buying became more general and was used by the electrical supply authorities in their retailing activities.¹⁹

16

At 30 June 1930, the total number of consumers attached to the S.E.C. was 42,801. Eleventh Annual Report, p.18.

17

See, e.g. South Australia - Royal Commission on Manufacturing and Secondary Industries, Evidence of Sir John Monash (Chairman of the S.E.C.), 12 Apr. 1926, para.1595. (S.A. Proceedings of Parliament and Papers, 1926.)

18

The Australasian Electrical Times, 27 Sep. 1922, p.519.

19

Electrical Engineer, Apr. 1927, p.23. Some city councils suffered in the experience, e.g. Newcastle.

Manufacture of Domestic Electrical Appliances

Domestic appliances did not come into general use until the second half of the twenties, and there was a lag of several years before their manufacture in Australia began; even then, the range of manufacture did not include all electrical goods. There was no manufacture of any consequence of electric floor polishers, ironing machines, hair dryers, fans, dishwashing machines or clothes-washing machines.²⁰

The manufacture of domestic electric refrigerators began in a small way at the end of the decade, although by then total retail sales had reached about £500,000 per annum.²¹ The only company to produce a significant number of refrigerators was Electricity Meter Manufacturing Company, which, according to the Tariff Board, achieved a 'reasonable output' in the twelve months to February 1929, and then almost tripled its production in the following twelve months. Nevertheless, despite the assistance of duties in excess of B.P.T. 35 per cent, I.T. 45 per cent and G.T. 50 per cent, this local product met only about 5 per cent of the demand, and most firms²² confined themselves to making cabinets for imported units.

20

Tariff Board Report on Domestic Electrical Appliances, 1927, passim.

21

Tariff Board Report and Recommendations on Refrigerators and Refrigerator Parts, 1931, p.10.

22

Ibid., p.11.



Local manufacturers were more successful with the simpler electric heating and cooking appliances for which there was a wider market. By the end of the twenties it was estimated that Australian manufacturers were meeting the demand for 20 per cent of the stoves, 80 per cent of the radiators, 20 per cent of the toasters and 90 per cent of the kettles required for domestic purposes. This development was aided by a tariff of B.P.T. 27.5 per cent, I.T. 35 per cent and G.T. 40 per cent.²³ The manufacture of electric stoves did not begin until 1927 when it was undertaken by Metters-K.F.B. Pty Ltd, but imported materials continued to comprise about 50 per cent of the material cost.²⁴ It is difficult to say precisely how extensive the volume of manufacture of the other appliances was. Some idea can perhaps be obtained by examining the Australian firm of Hecla Electric Pty Ltd, one of the major manufacturers. It was claimed that at the end of 1924 'there were over 100,000 Hecla electric fires in use in Australia, tens of thousands of Hecla electric kettles..., while thousands of grillers, cookers, saucepans, urns, hot-water services and stoves manufactured by the same firm had

23

Tariff Board Report and Recommendation on Heating and Cooking Appliances, 1931, p.7.

24

Ibid., and see also General Industries Ltd, Directors' Report for year ended 15 Mar. 1928.

been sold'.²⁵ However, these impressive but vague statistics must be qualified by some more specific figures: Hecla's paid up capital was only about £43,000 in 1927,²⁶ and in 1929 the firm's manager stated that employment amounted to 126, while turnover, although it had increased considerably from £19,516 in 1921, was still only £87,555 in 1928. Further, the size of the industry as a whole can be gauged by the manager's claim that 'the number of people who are in the business apart from ourselves are quite a number, but I venture to say that their combined output is appreciably less than ours'.²⁷

Large-scale production of smoothing irons did not begin in Australia until the end of the 1920s. Alex N. Cooke and Coy Pty Ltd had begun to manufacture them in 1918 and maintained an output of 5,000 per annum for three years, but overseas competition then reduced their output to a very small number. Until 1927-8 almost all requirements were met

25

Industrial Australian and Mining Standard, 1 Apr. 1926, p.373.

26

Statement of shareholdings dated 23 July 1927, seen at J.B. Were's. Apart from 1,506 1/- employee shares, all the shares were held by the Marriott family, which was the name of the company before incorporation in 1920.

27

Commonwealth Arbitration Court. Amalgamated Engineering Union and Others v. Metal Trades Employers Association and Others. Transcript of Evidence. Evidence of A. Stewart, 20 May 1929, p.2183.

by imports and by then the demand had reached the level of about 120,000 per annum. Production was then commenced by several companies, of which by far the most important was Australian General Electric Coy Ltd; this company produced the 'Hotpoint' iron which it had formerly imported from the United States, and by 1929 output had reached the rate of 40,000 per annum. The tariff on irons was high throughout the twenties at B.P.T. 35 per cent, I.T. 40 per cent and G.T. 45 per cent.²⁸

Radios

The demand for radios developed in a strikingly different manner as compared with other electrical consumer goods. The development of the industry on a large scale waited upon the beginning of public broadcasting in the 1920s. Public enthusiasm was aroused by this exciting innovation, and the number of radio receivers purchased for home entertainment increased rapidly. Their growth is indicated in the following table:

28

Tariff Board Report on Irons Smoothing and Soldering of All Kinds, 1930, passim.

Wireless Licences - Broadcast Listeners

Year	Number
1922	-
1923	430
1924	36,381
1924-25	63,103
1925-26	127,309
1926-27	215,929
1927-28	269,760
1928-29	300,528
1929-30	311,648

Source: Commonwealth Year Book, nos 17-23.

Since these figures related only to licences, they probably understate the actual number of receivers by a considerable amount.²⁹ With such a growth in demand for a new product, marketing conditions were naturally chaotic and radio departments could be found in all types of shops - drapers, tobacconists, booksellers, all tried to profit from the novelty. And the type of service that normally went with such sales was, of course, of a low standard.³⁰

The popularity of radio sets depended on a number of factors - more particularly on the number and quality of broadcast programmes and the price and quality of sets. At

29

For instance, in 1927-8 there were 548 prosecutions for failure to have radio licences. Postmaster-General's Department, 18th Annual Report, p.19 (Parliamentary Papers, 1929, vol.II).

30

The Australasian Electrical Times, Oct. 1924, p.663.

first, crystal sets were in common use, but by the mid-twenties they were already technically surpassed and the types of set most in demand in Melbourne were the one-valve and two-valve, the latter with a loudspeaker.³¹ The price of sets fell rapidly as manufacturers improved their production methods: for example, the retail price of an A.W.A. six-valve receiver (including all accessories) was £90 in 1926, £45 in 1927 and £35 in 1928.³² Sales of sets were also stimulated by the application of hire-purchase, and in 1927 the Sydney Morning Herald claimed that a 'major proportion' of sales were by this method.³³ Many dealers had their fingers burnt using this system of payment, and the more difficult economic conditions towards the end of the twenties caused a tightening up in methods and terms of purchase.³⁴

31

L.D. Batson, op. cit., p.34.

32

Tariff Board Report on Wireless Receiving Sets, 1929, Transcript of Evidence. S.M. Grime, production manager of Amalgamated Wireless (Australasia) Ltd, 30 May 1928, p.32.

33

Financial and Commercial Supplement, 8 Feb. 1927, p.2.

34

For example: 'At a recent meeting it was decided to commence a "Black List" to contain the names and addresses of persons from whom radio sets have been repossessed for any reasons under the terms of hire-purchase, and to circulate the list with the necessary amendments from time to time among members of the Section and Association interested.' Electrical Association of N.S.W., Annual Report for the Year Ended 31 Dec. 1929, p.17.

The manufacture of radios in Australia received considerable assistance from the tariff. In the tariff of March 1920, they were not important enough to be noted separately, but were included with item 180(E), Electric and Gas Appliances N.E.I., at the rates of B.P.T. 27.5 per cent, I.T. 35 per cent and G.T. 40 per cent. On the recommendation of the Tariff Board, these general rates were increased substantially from September 1925, to 35 per cent, 50 per cent and 55 per cent; at these levels they remained until additional fixed duties were added at the end of 1929. The duties on most parts, excluding valves, were at similar rates.

However, the radio industry developed first overseas, and this initial advantage plus the economies of large-scale production obtained by the foreign producer, made it difficult for local production to get under way. A start was made with the assembling of sets from imported parts, and by the middle twenties the Australian market was shared about equally between American, British and Australian suppliers - the latter assembling their sets from imported parts.³⁵ For the last three years of the decade, when figures for imports are available, imports of sets and parts (excluding valves)³⁶ remained fairly constant in value at about £400,000. But

35

Batson, op. cit., p.34.

36

Imports were £376,000 in 1927-8, £399,000 in 1928-9 and £403,000 in 1929-30. Overseas Trade Bulletin, nos 25-7.

by the end of 1928, local manufacture had increased to such an extent that the Tariff Board estimated that Australian manufacturers held 60 per cent of the market in sets, parts and accessories (excluding valves).³⁷ At this date, an unofficial estimate of employment in the manufacture of radios in N.S.W. was 1,030.³⁸ In 1930-1, when official figures are available, the depression had reduced employment in radio manufacture for the whole of Australia to only 908.³⁹

The growth of the radio industry for most of the twenties was largely associated with the development of one company - Amalgamated Wireless (Australasia) Limited, under the leadership of E.T. Fisk.⁴⁰ The company was formed in 1910 by an amalgamation of the Australian interests of the English Marconi company and the German Telefunken company. During the first world war the Telefunken interests were seized, and then sold by the N.S.W. Public Trustee to the other

37

Tariff Board Report on Wireless Receiving Sets and Parts, 1929, p.10.

38

Ibid. Transcript of Evidence. E.R. Voigt, President of the Australian Radio Manufacturers Association. He considered this estimate to be 'conservative'. 8 Oct. 1928, p.146.

39

Commonwealth Production Bulletin, no.25.

40

To Fisk was due 'the lion's shares of the credit for the development of the present company...'. Were's Statistical Service, 1934.

shareholders. This placed the entire shareholding in the hands of English and Australian shareholders. After the war difficulties arose in the company's relations with the Commonwealth government: the company held very extensive patent rights on equipment which the government wished to operate, while the company itself could not broadcast without a licence from the government.⁴¹ A solution was reached by which the Commonwealth government bought half the shares plus one in the company, and under this arrangement the share capital of the company expanded from £259,000 in 1922 to £744,000 by June 1928.

The manufacturing activities of the company had grown during the war, when plant was extended to enable the complete manufacture of wireless telegraph equipment, most of which was for use on ships.⁴² With the development of radio broadcasting in the twenties, there was a further expansion in production, and in the year ending 30 June 1924, the company 'designed, manufactured and erected' broadcasting stations in Sydney, Melbourne and Perth.⁴³ Broadcasting

41

Ibid.

42

Amalgamated Wireless (Australasia) Ltd, Directors' Report for six months ended 30 June 1915.

43

Ibid., year ended 30 June 1924.

equipment was also made for other Australian cities, and some was even exported to New Zealand, Fiji and Tonga.⁴⁴ The main line of radio receiver manufactured by the company was the 'Radiola', sales of which increased steadily.⁴⁵ The output of radios by this company should not, however, be exaggerated: in 1927 the firm manufactured and sold no more than 3,000 receivers.⁴⁶ In 1929, there were only 177 employed on 'our main line of manufacture [which] is radio receivers and accessories',⁴⁷ and the production of radio apparatus, although it rose rapidly from £42,273 in 1925, was only £80,682 in 1928.⁴⁸

Many firms developed as assemblers of radio parts in the second half of the twenties, and, as well as A.W.A., several other firms began the manufacture of parts on a fairly large scale. These included Electricity Meter Manufacturing

44

Ibid., year ended 30 June 1929.

45

See, e.g., ibid., year ended 30 June 1927.

46

Tariff Board Report on Wireless Receiving Sets 1929. Transcript of Evidence (confidential). S.M. Grime, production manager A.W.A., 30 May 1928. By this date imported parts made up only 1% of the total cost of an A.W.A. receiver. P.32.

47

Evidence of E.A. Horner, work's manager of A.W.A., to the Commonwealth Arbitration Court, A.E.U.Vs Metal Trades Employers' Association, Transcript of Evidence, 1929, p.599.

48

Ibid.

Coy Ltd, which is discussed later, Radio Corporation Pty Ltd and Stromberg-Carlson (Australasia) Ltd.⁴⁹ Radio Corporation began in a small way as a retailer of radio parts in 1922; a year later it entered the wholesale trade and by 1928 a turnover of £250,000 had been achieved. Following the increase in duties in 1929, it entered the manufacturing field and expanded quickly.⁵⁰ Stromberg-Carlson had a close American connection; it was incorporated in 1927 to take over the business of L.P.R. Bean and Co. Ltd which manufactured telephone parts and also acted as agent for the Stromberg-Carlson Telephone Manufacturing Company of the U.S.A. In 1928 the firm began radio manufacture, and by 1930 employed 300 in factories, mostly on 'all Australian-made radio receivers'.⁵¹

Telephone and Telegraph Apparatus

The use of the telephone became increasingly common during the 1920s: in 1920 there were 224,000 instruments in service, in 1929, 506,000, an increase of from 4.3 per hundred

49

Details of output of many parts and the amount produced by individual firms is given in Tariff Board Report on Wireless Sets, 1929.

50

Electronic Industries Ltd, Prospectus, 30 May 1939, p.3.

51

The Electrical Manufacturing Industry and its Importance to Australia, pp.40-1. Publication of The Electrical Manufacturers Association of N.S.W., 1930.

of population to 7.9 per hundred.⁵² The provision of the telephone apparatus was almost wholly from imports and these amounted to about £750,000 per annum towards the end of the decade.⁵³ With the development of radio manufacture in Australia, some manufacturers showed a growing interest in telephone apparatus, but in 1930 the Tariff Board concluded that the industry had not yet been established, and that compared with imports, local production was 'negligible'.⁵⁴

In this limited field the main local manufacturer was L.P.R. Bean and Co. Ltd of Sydney, which in 1926 was making a small range of protectors, jacks, cable boxes, indicators, keys and bells. The company employed 103 and had £10,000 invested in machinery and tools, and claimed that within this range of articles it was ready for 'mass production'. The Tariff Board was sufficiently impressed with this company to recommend, in 1926, an increase of duties on the articles mentioned from B.P.T. 0 per cent, I.T. 5 per cent and G.T. 10 per cent to B.P.T. 40 per cent, I.T. 45 per cent and G.T. 50 per cent,⁵⁵ but the government did not act on the

52

Commonwealth Year Book, nos 15 and 23.

53

Overseas Trade Bulletin, no.26.

54

Tariff Board Report on Telephone and Telegraph Apparatus, 1930, p.4.

55

Tariff Board Report on Telephone Apparatus, 1926, passim.

recommendation until December 1929. This company continued to manufacture some telephone apparatus after it combined with the American company of Stromberg-Carlson (see p.237).

The only other firm which concentrated on the production of telephone equipment was Standard Telephones and Cables (Australasia) Ltd, a branch of an American firm, which was established in January 1927 under an American manager. Production was on a small scale, and in 1928 the average employment was only 66. It seems probable that even this limited output of telephone apparatus would not have been possible without the assistance of the Postmaster-General's Department; the extent of the assistance was indicated by the works manager of S.T.C. when he said: 'they [i.e. imports] are duty free, but we are allowed about 15% preference. That is not made public'.⁵⁶

56

Commonwealth Arbitration Court, Amalgamated Engineering Union and Others v. Metal Trades Employers Association and Others. Transcript of Evidence. Evidence of S.D. McPhee, 1929, p.393. It was the P.M.G. also that provided the main market for the two local manufacturers of dry batteries and dry cells, and they, too, were assisted by a 15% preference over the imported articles. The two companies were the Australian owned Widdis Diamond Dry Cells Pty Ltd and the British owned Ever-Ready Company (Great Britain) Ltd. However, they were not large companies, and even with the additional market provided in the growing radio industry, their combined employment in 1929 was little more than 100. Tariff Board Report on Dry Batteries and Dry Cells, 1930, passim, and also the Transcript of Evidence, particularly the evidence of A.J.W. Sorell and F. Goulder.

Electric Light Globes

With the growth of the use of electricity, electric lighting had become general by the end of the 1920s, and the annual consumption of globes amounted to almost 12,000,000, worth over £600,000.⁵⁷ All globes were imported, but the threat of tariff protection forced overseas companies to consider the possibilities of manufacture in Australia. In April 1930, the Australian General Electric Coy announced that it had acquired buildings in Newcastle, and that it had ordered plant sufficient to meet the whole of Australia's requirements; moreover, experts were being brought from England to supervise the installation of the plant and train an Australian staff.⁵⁸ Other overseas companies were not prepared to lose their market so easily, and almost immediately the Dutch Philips organisation announced that it, too, would erect a factory.⁵⁹ The outcome was the formation of a new company owned jointly by three overseas companies which had formerly provided 75 per cent of the globes imported into Australia: the British Thomson-Houston Coy Ltd, General Electric Coy Ltd, and Philips Glow-lamp Works Ltd. The new factory cost

⁵⁷ Overseas Trade Bulletin, no.26.

⁵⁸ Argus, 10 Apr. 1930, p.11.

⁵⁹ Ibid., 29 Apr. 1930, p.11.

£161,000, of which £71,000 was for land and buildings and
 60
 £90,000 for plant and machinery.

Meters

On the basis of its production of alternating current house service meters, Electricity Meter Manufacturing Co. of Sydney (Emmco) developed into the major producer of electrical appliances in the twenties. The firm had its origins in 1912 in a partnership between J.K. Scharth and K.I.E. Schulz, and it was formed into a limited liability company in 1921 with an authorised capital of £30,000.
 61
 The firm was not given protection for its meters in the 1920 tariff on the grounds that its output was too small, but was promised by 'the Department' that protection would be granted when output had increased sufficiently; with this promise the company was able to obtain the business of the Sydney City
 62
 Council. The initial order in 1920 was for 1,000 meters at

60

Tariff Board Report and Recommendation on Incandescent Electric Lamps, 1931, p.4.

61

Electricity Meter and Allied Industries Ltd, Prospectus, 9 Sep. 1936, p.5. This was the holding company formed in 1934 to combine Emmco and New System Telephones Pty Ltd.

62

Parliamentary Debates, Minister for Trade and Customs, Mr A.S. Rodgers, vol.C, pp.2171-2. 'The Department' was, presumably, the Department of Trade and Customs which prepared the 1920-1 tariff.

£3 each, when the price for the imported meter was £2 12s 6d.⁶³
 In justification, the council claimed that it gave this contract because the war had shown the disadvantages of not having a local source of supply, and because overseas suppliers could not give prompt delivery.⁶⁴

However, the price of imported meters fell substantially, and it seemed that the Sydney Council's contract would be lost unless the company could obtain protection from overseas competition. Employment in the firm had been reduced from 66 to 44, and it turned to the Tariff Board for assistance, claiming that once it obtained large orders, large-scale production methods would reduce its costs. The Tariff Board accepted this argument and a protective tariff was granted of B.P.T. 35 per cent, I.T. 40 per cent and G.T. 45 per cent from September 1922, this being the first tariff recommended by the newly created board.⁶⁵ The protection was increased by the addition of alternative specific duties of B.P.T. 10/-, I.T. 12/6, and G.T. 15/- in 1925.

63

Commonwealth Arbitration Court, *Amalgamated Engineering Union and Others v. Metal Trades Employers Association and Others*. Transcript of Evidence. J.C. Scharth, Managing Director of Emmco, 27 Mar. 1929, p.832.

64

G.F. Anderson, Fifty Years of Electricity Supply, The Story of Sydney's Electrical Undertaking (Sydney, 1955), pp.84-6.

65

Parliamentary Debates, vol.C, p.2172.

On this basis the company built up a large meter business with electric supply companies, supplying about 150,000 meters per annum towards the end of the decade.⁶⁶ This rapid growth of output required constantly increasing factory premises: in 1921 the firm had 8,000 square feet in Burton Street, Sydney; in 1924 it acquired 30,000 square feet at Camperdown, and in 1928 built a new factory at Waterloo of four floors covering 140,000 square feet.⁶⁷ By 1928, also, the company employed roughly 1,000 workers and had plant and machinery worth £200,000.⁶⁸ Production was not confined to meters, but included a great variety of electrical equipment, particularly radio apparatus, electric refrigerators and petrol pumps. Nevertheless, the great output of meters meant that the company could adopt quantity production methods, and this was a contributing factor towards the reduction in their price from £2 15s. in 1921 to £1 6s. 9d. in 1929.⁶⁹ The methods of production adopted by the company were sufficiently unusual in Australia for Justice Beeby to

⁶⁶

Greater Australia, 1928, p.40.

⁶⁷

Electricity Meter and Allied Industries Ltd, Prospectus, 1936, p.5.

⁶⁸

Greater Australia, 1928, p.40.

⁶⁹

Evidence of J.C. Scharth in Metal Trades Case, 1929.

note it as one of the four firms in the metal trades using
⁷⁰
 'mass production' techniques.

To become an important producer in this new electrical industry Emmco had three major problems to solve: it had to obtain the latest information on research developments and techniques of production, it had to have adequate supplies of capital and it had to build up a large efficient labour force. Since it was a private company only a small amount of information can be obtained about the firm's handling of these difficulties; the first two appear to have been met by an association with two large English electrical firms, Parkinson and Cowan Ltd and Measurement Ltd. These firms
⁷¹
 supplied technical advice and engineering information, and seem to have held a majority interest in the ordinary capital;
⁷²
 certainly the managing director of Emmco was prepared to agree that the supply of capital to his firm was
⁷³
 'unlimited'.

As far as its labour force was concerned, Emmco was in a similar position to Holden's in the motor body building

70

Beeby, J. in Metal Trades Case, 28 C.A.R., p.963.

71

Electricity Meter and Allied Industries Ltd, Prospectus, 1936, p.5.

72

Ibid. And see also Prospectus, March 1940.

73

Evidence of J.C. Scharth in Metal Trades Case, 1929.

industry: it had to win the co-operation of a union of skilled tradesmen to build up the semi-skilled labour force suitable for large-scale production methods. Since trained process workers were unavailable in Australia, the firm took unskilled workers and trained them on the job in their quantity production methods.⁷⁴ The Electrical Trades Union was uneasily aware that these specialised repetition workers would impinge on their members' skills, but negotiation and compromise appear to have been foremost in the relations between the firm and the union,⁷⁵ and in 1925 the union found manufacturing activities sufficiently important for it to form a section 'consisting of employees engaged in radio, meter and accumulator work under factory conditions'.⁷⁶ It was not until 1929, however, that the Commonwealth Arbitration Court attempted to deal with the general problem of the relation between skilled tradesmen and process workers in the metal trades.⁷⁷

74

The Australasian Electrical Times, May 1922, p.239.

75

See, e.g. Electrical Trades Journal, Dec. 1924, p.4.

76

Ibid., November 1925, p.2.

77

See ch.VII.

Industrial Equipment

This section is concerned with heavy electrical equipment used mainly in industry and power supply stations. Such a wide range of equipment is included that attention can be drawn only to the more important features of production in Australia. This type of equipment first received a high level of protection from the tariff of 1920-1; this was generally increased in 1925-6 and again in 1929. But in spite of this tariff barrier, imports continued at a very high level and met most of the demands of the market. The reason for the inability of the local manufacturer to beat import competition lay principally in the great variety of complex equipment required, and the small size of the local market, both of which seldom allowed him any of the economies of production in quantity. But the manufacture of almost all types of equipment was attempted - and this is one of the main features of this industry in the twenties: the extensive field of production, if not the scale, and the fact that this was the first time such production had been undertaken in Australia. Another notable feature of the twenties was the most important role played by foreign firms in the establishment of the industry in Australia. These are the two aspects which will be emphasised in the following pages. Firstly, the industry will be examined from the point of view of

the range of production that was attempted, and then the origins and activities of the more important firms will be studied separately.

(a) The Field of Production

(i) Dynamo Electric Machines

All types of electric generators and motors are included under this term; it covers generators, steam and hydro-electric, for power stations, as well as the motors that ultimately convert the electric current into mechanical work. Not only is there an enormous size variation in this electrical machinery, but there is wide diversity depending on other characteristics such as the type of current, frequency and speed required.

An estimate of the power of dynamo electric machines installed in the Commonwealth in 1932 was as follows:⁷⁸

	Horse-power
Generators	1,100,000
Motors, Industrial	650,000
Motors, Railway Traction	550,000
Motors, Tramway Traction	<u>400,000</u>
	2,700,000

78

Tariff Board Report and Recommendation on (A) Dynamo Electric Machines (Except Fractional Horse-power Motors), and (B) Parts of Alternating Current Electric Motors, 1 horse-power to 125 horse-power, Both Inclusive, 1932, p.10.

79

With substantial tariff protection the manufacture of a range of this machinery became firmly established during the twenties. The manufacture of industrial motors commenced during 1922 and by 1932 some 35,000 motors with a total output of 300,000 horse-power had been produced.⁸⁰ The most common type produced was the three phase induction motor of both the squirrel cage and slip ring (or wound coil) types, but the local manufacturers could not produce such motors beyond 125 horse-power on a commercial basis.⁸¹

By 1932 the Tariff Board considered that the manufacture of traction motors was also well established.⁸² There were at least five concerns (three of them branches of foreign firms) in this type of production, employing approximately £180,000 of capital and giving employment to about 130 workers.⁸³

One of the more complex and larger dynamo electric machines is the turbo-generator, which is used to create

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The tariff was: 1920-1, B.P.T. 27.5%, I.T. 35% and G.T. 40%; 1925-6 (approximately) B.P.T. 45%, I.T. 55% and G.T. 60%. There was a further change in December 1929.

80

Tariff Board Report on Dynamo Electric Machines, 1932; Summary of Evidence of J.L. Holt of Electrical Manufacturers' Association, p.3.

81

Ibid., p.11.

82

Ibid., p.16.

83

Ibid., p.11.

electrical energy. The turbine converts the heat energy of steam to mechanical energy of rotation, which is then converted to electrical energy in the alternator (or generator). The duty on these machines was roughly the same as on industrial motors, but until 1929, because of the inability of Australian manufacturers to meet requirements, many sets in sizes up to 22,000 k.w. were admitted duty free by special bylaws. However, after this date the practice ceased for turbo-generators above 1,000 k.w.⁸⁴ The general method of manufacture was for Australian firms to work in collaboration with British firms, the latter providing the design and the more complicated manufactured parts. Thus the Australian contribution would include the iron castings and the whole of the machining, while imports would include the forgings for the turbine and alternator shafts, the steel blade discs of the turbine and the stallo⁸⁵y iron stampings for the alternator.

The alliances between Australian and British firms included Standard Waygood with C.A. Parsons and Coy, Thompson and Coy with Metropolitan Vickers and Morts Dock with British

84

Tariff Board Report and Recommendation on Turbo-Generators, 1933, p.8.

85

The Commonwealth Engineer, Feb. 1926, pp.265-6.

86

Thomson-Houston. Yet it was not the tariff alone which forced overseas firms to agree to local manufacture; they were also influenced by the preference given by public authorities, who purchased most of these generator sets, to the local manufacturer over and above the tariff. This assistance was extremely important for the industry in Australia, and it often required a nice calculation on the part of the authority of extra cost as against the proportion of the machinery manufactured locally.⁸⁷ Generally, the Australian manufacturer was assisted by having his imported parts admitted duty free, but the reliance on overseas was heavy. In a study of a group of turbo-alternators the Tariff Board found that 40 per cent of the cost was local in origin; but if the complete turbo-alternator had been imported, then the same amount of machinery that was locally made would have borne a much lower proportion of the total cost.⁸⁸

86

Tariff Board Report on Turbo-Generators, 1933, p.10.

87

Here is an example from a State Electricity Commission's contract for the supply of a generator. 'Of the 11 tenders submitted, none provided for plant wholly of Australian manufacture. Thompson's Engineering and Pipe Company submitted a tender of £47,855, while providing for £28,831 to be spent in Australia. This tender, however, was £9,250 higher than the lowest tender which provided for only £13,980 to be spent in Australia. The Commission had accepted Thompson's price thus giving a 25% preference to the Australian firm.... The time quoted in the Australian tender is 80 weeks, while the lowest tender provided for 64 weeks.' Argus, 20 Aug. 1927, p.33.

88

Tariff Board Report on Turbo-Generators, 1933, p.10.

(ii) Static Transformers

The manufacture of transformers in Australia began in about 1920 and by 1932 there were at least five firms in the industry, three of which were of direct Anglo-American origin. By that date the installed power of transformers in the Commonwealth was approximately 3,000,000 k.v.a., of which Australian manufacturers had provided about one-third. Much of this local output was made from imported parts, the value ratio of Australian to total material varying between 15 per cent and 62 per cent. Capital invested in the industry amounted to approximately £125,000, and employment was given to about 100 workers. With the assistance of a very high tariff the industry grew quickly - perhaps too quickly, for by 1932 the capacity of the Australian factories was far in excess of the demand.⁸⁹ Here again preference over the tariff was important for the prosperity of the industry. Some indication of this importance can be gained from a complaint by the firm which had initiated the industry in Australia (Standard-Waygood) that it was not receiving sufficient support from the 'City Fathers';⁹⁰ later the company admitted

89

Tariff Board Report and Recommendation on Static Transformers, 1932, passim. The level of the tariff during the twenties was: 1921 B.P.T. 27.5%, I.T. 35% and G.T. 40%; 1926 B.P.T. 35%, I.T. 45% and G.T. 50%. There was a further change in December 1929.

90

English Electric Coy of Aust. Ltd, Directors' Report for year ended 31 Mar. 1923.

that it was largely dependent on 'sympathetic preference' for
⁹¹
 the sale of its products.

(iii) Electric Fittings

Electric fittings include a mass of apparatus such as switches, regulating and controlling apparatus, and protective devices. Imports remained at a high level during the twenties but with the aid of a high tariff and imported parts, manufacturing was extensive in Australia. Eleven firms were
⁹²
 operating in N.S.W. alone by 1932.

(iv) Boilers

As with other electrical equipment, some of the materials used in the installation of water tube boilers were wholly made in Australia, others were fabricated in Australia from imported parts, and others were wholly imported. By the early thirties five principal local manufacturers - two foreign firms, two Australian firms using foreign designs and one Australian firm using Australian designs - were in
⁹³
 existence.

91

Ibid., year ended 31 Mar. 1926.

92

Tariff Board Report and Recommendation on Electrical Fittings, 1932, passim. The tariff was the same as on static transformers.

93

Tariff Board Report and Recommendation on Drums and Other Parts of Water Tube Boilers, 1934, passim.



(b) The Firms in the Industry

The preceding pages have shown that there were many firms in Australia producing general electric equipment for industry. Most of them operated on a small scale, rarely employing more than 100, and they usually produced a great variety of equipment. In fact, the larger firms in the industry tended to be those which were established in Australia as branches of overseas concerns. The reason for this is obvious: the electrical industry is so complex and at the same time so highly specialised that the Australian market could not support adequate research and training establishments and reliance had to be placed on the know-how of large overseas companies. Several large Australian companies, such as Thompson and Coy, Mort's Dock and Clyde Engineering, attempted to solve this problem by working under contract with overseas firms, but as their main interests were general, rather than electrical, engineering, they will not be discussed here.

The major firm producing electrical equipment developed out of three companies with mixed Anglo-American backgrounds; all began manufacturing in Australia in the twenties and then amalgamated at the end of the decade. One of these three companies was Australian General Electric Company which began in Australia in 1899 as a selling organisation for the

General Electric Company of the U.S.A. and the British Thomson-Houston Company Ltd of England. In 1918 consideration was given to the advantages of manufacturing in Australia and land was obtained for a factory at Hamilton, a suburb of Newcastle. Before the factory was built, however, urgent work necessitated the renting and equipping of a building in North Melbourne. The first part of the factory at Newcastle was completed by 1928, after which the works at Melbourne were closed and the machine tools installed there transferred. By 1929 the range of regular production included the following: traction motors, traction controllers and certain parts of control equipment, squirrel cage motors and star delta starters, Hotpoint electric irons and toasters, air break switches and certain street lighting fittings.⁹⁴

The second company was Metropolitan Vickers (Australia) Pty Ltd, which was established in 1925. It took over the works of an Australian company, Electrical Equipment Manufacturers Pty Ltd of South Melbourne, which, in 1920, was one of the first companies to begin the manufacture of switch-gear in Australia.⁹⁵ At the same time the company established

94

The Electrical Engineer of Australia and New Zealand, Mar. 1929, p.431.

95

The Commonwealth Engineer, Aug. 1921, p.10.

works at Auburn, N.S.W., as a result of obtaining a contract, in connection with the electrification of Sydney's railways, which required a certain proportion of the work to be carried out locally. The contract included pantographs, resistance boxes, and junction boxes for 150 train equipments, and was sufficient to employ the works for twelve months.⁹⁶ Expansion was substantial at both the South Melbourne and Auburn factories, the floor space at the latter growing from 14,000 square feet in 1925 to 50,000 square feet in 1928.⁹⁷ Another of the important contracts secured by the firm was the provision of the heavy switch gear for the new Bunnerong power station, and by 1930 the two plants employed about 500.⁹⁸

The third foreign firm was the English company of Ferguson, Pailin Ltd, which established their Australian works at Marrickville, N.S.W., in 1921 as a 'modest assembly shop'.⁹⁹ But the firm soon extended into actual manufacture

96

The Electrical Engineer of Australia and New Zealand,
Apr. 1925, p.35.

97

Ibid., Dec.1928, p.319.

98

Sydney Morning Herald, 25 Sep. 1930, p.11.

99

The Electrical Manufacturing Industry and its Importance to Australia. Issued by The Electrical Manufacturers' Association of N.S.W., 1930, pp.22-3.

specialising in heavy switch gear, and in 1930 about 200 were
¹⁰⁰
 employed.

Following the merger of their British and American
 principals, these three companies combined towards the end
 of 1930 under the title of Australian Electrical Manufactur-
 ing Coy Ltd. ¹⁰¹ By 1932, when the company was known as As-
 sociated General Electric Industries Ltd, it was claimed that
 it had 'the sum of £404,907...invested in the Australian
¹⁰²
 works'.

The manufacture of alternating current motors was begun
 in Australia in 1922 by Parkinson (Australia) Ltd at Five
 Dock, Sydney. The firm was sponsored by F.A. Parkinson Ltd
 of Leeds, and Messrs Noyes Bros. of Sydney and Melbourne, ¹⁰³
 and the motors were manufactured according to the designs
 provided by the English firm. ¹⁰⁴ Between 1922 and 1932 the
 firm produced approximately 25,000 motors with an aggregate

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Sydney Morning Herald, 25 Sep. 1930, p.11.

¹⁰¹

Industrial Australian and Mining Standard, 2 Oct. 1930,
 p.263.

¹⁰²

Tariff Board Report and Recommendation on Static Trans-
 formers, 1932, p.5.

¹⁰³

The Electrical Manufacturing Industry and its Importance
 to Australia, pp.17-18.

¹⁰⁴

The Commonwealth Engineer, Nov. 1922, p.157.

horse-power output of almost 200,000; this was roughly two-thirds of the total Australian output.¹⁰⁵ After the merger of the English Parkinson and Crompton companies, the name of the local firm was changed to Crompton Parkinson (Australia) Ltd.

Another large English firm to open an Australian branch was Babcock and Wilcox, which established a factory on a 20 acre site at Regent's Park, Sydney, in 1922. It was announced that the range of manufactures would include water tube boilers, mechanical stokers, pumps and feed water heaters, economisers, steam piping, structural steel work, steel chimneys, electric cranes, water softeners, suction ash plants and general power house accessories.¹⁰⁶ The company obtained considerable business from the growth of electric power stations in Australia, and by May 1928, it was giving employment to about 500 workers.¹⁰⁷

105

Tariff Board Report on Dynamo Electric Machines, 1932, Summary of Evidence of H. Hall of Crompton-Parkinson (Aust.) Ltd, p.3.

106

The Commonwealth Engineer, Nov. 1922, p.153. At the opening of the works the general manager stated that 'it was due to the influences of Mr [W.M.] Hughes with the directors of the company, whilst in London a few years ago, that the works had been erected in Australia.' Ibid., Feb. 1923, p.269.

107

Sydney Morning Herald, 9 May 1928, p.17.

The manufacture of lifts and escalators in Australia was greatly increased by the establishment of the Waygood-Otis organisation. This company had previously acted only as an importer, but in 1923 it amalgamated with Messrs Brand Bros who had a factory at Auburn, N.S.W.¹⁰⁸ In 1924 a new factory was built at Roseberry and in 1930 it was claimed that 'most of the important new buildings in the State [N.S.W.] have been fitted with lifts by this Company, which has a skilled staff supported by the experience of the greatest lift engineers in England and America'.¹⁰⁹

The most important Australian manufacturer of heavy electrical equipment was Standard-Waygood Ltd, which was also the first company to enter this field on a large scale. In 1924 the managing director considered his company to be 'the largest manufacturer of steam turbines, electric generating machinery, traction motors, transformers and lift machinery in the Commonwealth'.¹¹⁰ The company then employed between

108

Age, 25 Apr. 1923, p.10.

109

The Electrical Manufacturing Industry and its Importance to Australia, pp.43-4. The actual motors for the lifts and escalators were imported. (Tariff Board Report on Dynamo Electric Machines, 1932, Summary of Evidence of J.S. Norton, p.9.)

110

Commonwealth Arbitration Court. Amalgamated Engineering Union and Adams. Transcript of Evidence. Evidence of G.B. Clerk, 20 Aug. 1924.

400 and 450 and this was the average number for the rest of the decade, although at the beginning of the twenties up to 600 had been engaged.¹¹¹ To assist development in this new field a close connection was established with an overseas concern, the English Electric Coy: in 1920 Standard-Waygood Hercules, as it was then called, acquired the Australian business of this English firm and adopted the name of the English Electric Coy of Australia Ltd. The principal consideration paid to the English firm was 100,000 one pound ordinary shares in the new company. In 1922 the holding of the English company was bought back, and in 1926-7 the name of the company was changed to Standard-Waygood Ltd. This did not mean a total loss of overseas connections; manufacturing rights of the English Electric Coy in Australia were retained, and similar relations were established with C.A. Parsons and Coy Ltd and H. Reyrolle and Coy Ltd, both of England.¹¹²

The company grew quickly in the first years of the twenties: in 1919 it had purchased the electrical engineering concern of G. Weymouth Pty Ltd; in 1921 it set up a subsidiary to handle its lift business, and in the same year large

111

Commonwealth Arbitration Court. Enquiry re Standard Hours. Transcript of Evidence. Evidence of J.H. Pocock, Managing Director of the English Electric Coy of Australia, 8 Oct. 1926.

112

Were's Statistical Service, 1934.

works were constructed at Clyde, N.S.W. However, although the subsidiaries did well, the company, as a whole, was not a financial success. It seems to have invested too heavily in the provision of heavy electrical equipment, particularly turbo-alternators, and it suffered from the entry of other firms into this limited field. For the sale of this type of product, we have seen how the company was dependent on 'sympathetic preference' from its customers,¹¹³ and in the sale of two turbines to the Railway Commissioners it received a 10 per cent preference on the first and a 25 per cent preference on the second.¹¹⁴ Moreover, the new workshops at Clyde had been built and equipped at the peak of the post-war inflation,¹¹⁵ and although ordinary dividends ranged between 2.5 per cent and 10 per cent from 1922 to 1928, the firm finally had to write down its overvalued works. In 1929,

113

See p.252.

114

Evidence of J.H. Pocock in Enquiry re Standard Hours, 1926. It should be noted that the variety and volume of the heavy engineering work meant that the factory could not engage in quantity production methods. In 1929 the managing director said it was largely an 'engineering shop' and only 10 process workers were employed. (Commonwealth Arbitration Court. Amalgamated Engineering Union and Others v. Metal Trades Employers Association and Others. Transcript of Evidence. G.B. Clerk, 26 Mar. 1929.)

115

The English Electric Coy of Australia Ltd, Directors' Report for year ended 31 Mar. 1922.

therefore, the share capital of £370,000 was reduced by £185,000, of which £143,000 was written off and £42,000 returned to shareholders.¹¹⁶

Copper Manufactures

The manufacture of copper products was begun in the war years, and developed on a large scale during the twenties with almost the entire output going to the electrical industry.

Before the war, in 1907, a copper refining company, the Electrolytic Refining and Smelting Company Ltd, had been established at Port Kembla. The capacity of the refinery in the immediate pre-war years was 19,000 to 20,000 tons per annum; at the request of the Commonwealth government, it was extended in 1916, following which the peak year of production of 23,058 tons was reached in 1918. Until the beginning of the twenties nearly all the output of the refinery had been exported, but with the development of local manufacturing and the fall in overseas copper prices after the war, the home market became much more important. This decline in price, combined with the exhaustion of some Australian copper deposits, also caused a substantial fall in the volume

116

Standard-Waygood Ltd, Directors' Report for year ended 31 Mar. 1929.

of output to an average of 11,000 tons per annum for most of the twenties.

The major share interest in the company at the time of its establishment was held by Mount Morgan Gold Mining Coy Ltd, one of the principal copper mining companies. Shares were held also by Australian individuals and by Albert Hirsch and Son of Halberstadt, Germany; during the war, however, the German interest was acquired by Mount Morgan.¹¹⁷

In 1926 the manager of the refinery estimated its total cost at about £300,000,¹¹⁸ but its continued existence as a large-scale enterprise was then in doubt. Copper mining had declined in Australia until it was practically confined to Mount Lyell, and there in 1927 the Mount Lyell Mining and Railway Coy built its own electrolytic refinery. This new refinery caused a substantial decrease in the activities of the Port Kembla refinery, all that remained being the treatment of scrap and small amounts of copper from other mines, and the conversion of Mt Lyell's cathodes into wire

117

The preceding information was obtained from Tariff Board Report on Copper and Refined Copper, 1927, passim.

118

Court of Industrial Arbitration of N.S.W., Transcript Vol.140. Re Smelting (Electrolytic Refining and Smelting Coy. Ltd.) Award. Evidence of E.A. White, 26 Feb. 1926.

119
bars and ingots; in 1928 the controlling interest in the
company was acquired by the Broken Hill Associated Smelters
120
Pty Ltd.

The major market for the refined copper during the
twenties was Metal Manufactures Pty Ltd, which was established
in 1916 next to the refinery at Port Kembla. The critical
factor initiating the formation of the company was the short-
age of copper manufactures in Australia during the war, par-
ticularly for telephone services, and the Commonwealth go-
vernment approached the Australian copper producers to see
if they would begin manufacturing operations. In the event,
the shareholders were the three major copper mining com-
panies - Mount Morgan Gold Mining Coy Ltd, Mt Lyell Mining
and Railway Coy Ltd and Hampden-Cloncurry Copper Mines Ltd;
the refining company - Electrolytic Refining and Smelting
Coy of Australia Ltd; and one important British copper manu-
121
facturing company - British Insulated and Helsby Cables Ltd.

119

Tariff Board Report on Copper and Copper Products, 1934,
p.8. G. Blainey refers to Port Kembla in 1928 as a 'ghost
refinery'. Peaks of Lyell (M.U.P., 1954), p.261.
120

Metal Manufactures Gazette - Coming of Age Number - Com-
memorating The Twenty-First Anniversary of Production by
Metal Manufactures Ltd, June 1939, p.42.
121

It is not clear what the volume of each company's share-
holding was. Blainey (op. cit., p.259) says that Mt Lyell
obtained one-quarter of the shareholding and that this was
larger than any other company's. Judge Beeby in the N.S.W.
Arbitration Court (op. cit.) in 1926 stated that Mt Morgan
was the biggest shareholder. However, a note in J.B. Were's

The shareholders did not change until September 1928, when the holdings of the Mount Morgan and the Hampden-Cloncurry mines were sold to a group of very prominent companies, some of which were suppliers of raw material (other than copper) to Metal Manufactures. These companies were Broken Hill Associated Smelters Pty Ltd, Imperial Chemical Industries Ltd, British Aluminium Coy Ltd, Electrolytic Zinc Coy of Austral-¹²²asia and the National Smelting Corporation of England.

There was a very good market for the company's products, particularly in the period up to about 1925 in which there was a large backlog in demand as the result of the war. Further, there was some sort of understanding that Commonwealth government departments, particularly the Postmaster-General's which was the main consumer, would patronise the company. It seems that in 1916 the Prime Minister had promised Metal Manufactures that 'it would be given an opportunity of fulfilling the Commonwealth's demands during a period of 10 years'.¹²³ Thus the conditions of contract with the

121 (continued)

files dated 28 Nov. 1923 gives the following 'approximate' shareholding: Mt Lyell 80,000, Mt Morgan 80,000, Hampden-Cloncurry 60,000, Electrolytic Refining 40,000 and British Cables 40,000. This estimate is probably near the truth.
122

Metal Manufactures Gazette, p.6.

123

Commonwealth Stores Supply and Tender Board (C.P. 370, Series 4). Business Paper, Meeting 25 Jan. 1921, p.3.

P.M.G.'s Department required that tenderers state the country of origin of the copper, so that a preference could be given on bare copper wire, insulated copper wire and cable to those manufacturers using Australian copper; a similar clause operated in the contracts of the Department of Works and Railways.¹²⁴ In 1920 this preference system of the P.M.G. worked in the following way: the price per ton of copper wire was calculated by taking the price of electrolytic copper in London and adding £57 10s. for the manufacturing cost at Port Kembla; at that time the manufacturing cost in Britain and America was about £35 per ton.¹²⁵

The protection against overseas competition was formalised by the tariff of 1920-1. On most of the company's products the tariff duty was set at the rate of B.P.T. 30 per cent, I.T. 40 per cent and G.T. 45 per cent. Even so, in 1930 the general manager admitted that 'in many cases we can only retain business on account of a definite price preference given by Government Departments and other large consumers'.¹²⁶

124

Ibid., pp.2-3.

125

Parliamentary Committee on Public Works (Commonwealth Parliamentary Papers, 1920-1, vol.V). Evidence of J.M. Crawford, State Engineer, P.M.G.'s Dept., N.S.W., 15 Dec. 1920, p.104.

126

Tariff Board Report on Copper, Brass and Aluminium Wire, Pipes and Tubes, etc., 1930, Transcript of Evidence, J.P. Caddy, 22 Oct. 1930, p.6.



In this favourable market situation - tariff protection, preference in government contracts and a rapidly growing demand from the electrical industry - the output of the firm expanded quickly up to 1925.

Metal Manufactures Pty Ltd

Output and Employment 1920-30

Year Ended 31 Mar.	Wire Factory (tons)	Tube Factory (tons)	Cable Factory (tons)	Total Output (tons)	Employment
1920	1,169	-	-	1,169	277
1921	2,944	235	-	3,179	346
1922	3,041	400	-	3,441	437
1923	4,292	836	-	5,128	604
1924	5,949	976	1,488	8,413	815
1925	7,811	813	3,052	11,676	787
1926	6,113	1,034	2,230	9,377	636
1927	5,076	1,347	1,612	8,035	594
1928	3,989	1,432	1,572	6,993	589
1929	5,460	1,384	2,129	8,973	582
1930	3,847	1,308	2,421	7,576	528

Source: Figures supplied by Metal Manufactures Ltd, letters dated 14 Jan., 19 Feb. and 8 Mar. 1957; they also can be estimated from graphs in Metal Manufactures Gazette, p.11.

The Tariff Board considered the demand up to 1925 to be 'abnormal' and associated with the set-back to public utilities during the war. After the peak in 1925 output was fairly stable for several years, but with the onset of the

127

Tariff Board Report on Copper, Brass and Aluminium Wire, Pipes and Tubes etc., 1930, p.13.

depression it began to decline, and in 1931 it fell sharply. In its main lines, the company supplied the major portion of the Australian demand: during the three years to 30 June 1929, the production of copper wire and strand, which was 50 per cent of the total output, amounted to 12,629 tons, while imports supplied only 2,695 tons; over the same period the company's production of copper pipes and tubes met 67 per cent of the demand.

The company, then, had an assured market in the twenties, but there were other problems associated with the establishment and development of a large manufacturing business; these related particularly to the supply of technical knowledge, labour and capital. In tackling the first of these problems, Metal Manufactures was fortunate in having its overseas connections with British Insulated and Helsby Cables Ltd, which provided the key technical men for the establishment of the factory, and enabled it to keep abreast with technical advances abroad during the twenties. The isolation of Port Kembla brought some initial labour difficulties but to encourage the immigration of workers the company built a

128

Evidence of J.P. Caddy, op. cit., p.10.

129

Metal Manufactures Gazette, pp.6 and 19.

130

Metal Manufactures Pty. Ltd., Description of Works and Products, 1927, p.14.

number of homes for its employees and provided a co-operative store.¹³¹ In one way, however, isolation proved helpful in supplying the company's needs for female labour, since there was no alternative work in the district other than domestic service.¹³² This type of labour was, of course, unskilled and unused to factory work, but after several months training on the job and the use of a bonus system of payment, it soon developed into a proficient work-force.¹³³

To finance the expansion of Metal Manufactures the share capital was rapidly increased. The original authorised capital was £200,000 and the first issue was of £80,000, the balance being taken up by 1920. Further issues raised the paid-up capital to £750,000 in 1926, where it remained for the rest of the decade.¹³⁴ No difficulty was encountered in raising this finance because of the high profits of the firm; indeed, a considerable proportion of the increase in share capital came through bonus issues of shares out of profits.

131

Metal Manufactures Gazette, p.9.

132

Court of Industrial Arbitration of N.S.W., Transcript of Evidence, Vol.126. Re Copper Wire (Metal Manufactures Ltd.) Award. Evidence of F.H. Finch (Union Secretary), 20 Dec. 1923.

133

Ibid. See, e.g. evidence of Ruby Lucas, an employee in the telephone cable department, 20 Dec. 1923.

134

Metal Manufactures Gazette, p.7.

The only competition came from imports, and the company took into account the full protection of the tariff in its pricing policy; prices therefore were kept at the level of the landed duty paid cost of imported goods, and the high profits made possible bonus share issues and the payment of good dividends on the additional share capital.¹³⁵ The Tariff Board concluded that the bonus issues had led to 'over capitalization', and that if prices had been set to return a reasonable dividend on the share capital needed, then the company could have obtained a greater proportion of the Australian market.¹³⁶

Profits, then, were high, and high in spite of the fact that the company was paying premium prices for its raw materials - copper, lead and zinc - which were supplied by its shareholding companies. On the chief raw material, copper, a premium on London prices had been paid since 1922; after 1927 the actual premium was 11 per cent above London parity prices with a minimum of £4 10s. per ton and a maximum of £9 per ton. Since there was also a saving on transport charges to London, the suppliers of copper benefited to the

135

Tariff Board Report on Copper, Brass and Aluminium Wire, Pipes and Tubes etc., 1930, p.13.

136

Ibid.

extent of from £6 10s. to £11 per ton on the copper used
¹³⁷
 locally.

Although Metal Manufactures had an Australian monopoly for most of its products during the twenties, there were, at the time of its foundation, three other companies producing copper and copper alloy manufactures. One was the Colonial Ammunition Coy of Footscray, which had been producing rolled brass mainly for small arms ammunition since 1912. This company remained in the ammunition business, but from 1921 it sold its output under contract to the Commonwealth government,¹³⁸ and was purchased in 1927 by the government for £150,000.¹³⁹ H.V. McKay of Sunshine commenced copper tube manufacture in 1916, mainly for its own requirements, but ceased in 1921 and sold its machinery to Metal Manufactures.¹⁴⁰ For both these companies copper manufacture was a sideline, but the third company, Austral Bronze Coy Ltd, developed into a substantial copper manufacturer.

137

Ibid. Blainey (op. cit., p.259) says that in the twenties Mt Lyell Coy made more money from manufacturing than mining. This was partly profits from its holding in Metal Manufactures and partly from sales to that company of copper at higher than world prices.

138

Times Trade Supplement, 9 Apr. 1921, p.65.

139

Sydney Morning Herald, 1 Apr. 1927, p.11.

140

Metal Manufactures Gazette, pp.5 and 17.

Austral Bronze began in a small way in 1915, but was re-constituted in 1920 with a share capital of £84,000; this was increased to £117,000 in the following year and it remained at this figure for the rest of the decade. In the early years of the twenties the company's range of output was too ambitious and profits were consequently small. However, the appointment of J.H. Meiklejohn from the Broughton Copper Coy of England as manager, led to improved methods of production and in the four years 1925-6 to 1928-9 dividends of 10 per cent were paid and substantial reserves accumulated. ¹⁴¹

The products produced by Austral Bronze and the importance of imports in 1928-9 is shown in the table below:

1928-9 - Tons

	Austral Bronze Output	Imports
Brass rods and bars	423)	... 341
Brass sections	140)	
Copper sheets and strips	574(... 560
Copper circles & segments	221(
Copper rods and bars	470	... 293
	<u>1,828</u>	<u>1,194</u>

Source: Tariff Board Report on Brass, Muntz and Yellow Metal Rods, Bars and Extruded Sections; Copper Sheets, Circles, Segments, Rods and Bars, 1930, p.6.

141

Metal Manufactures Gazette, p.38; and Austral Bronze Coy Ltd, Directors' Reports for years ended 31 July 1921 to 1928.

When allowance is made for the fact that the imports include 460 tons of locomotive plates not produced by Austral Bronze, it can be seen that this firm held about 70 per cent of the market for the products it manufactured.¹⁴² Like Metal Manufactures this company operated behind a high tariff wall,¹⁴³ was given preferences by government departments and paid premium prices for its raw materials.¹⁴⁴ Competition between the two companies was at first slight, but it became clear that Austral Bronze was developing as a potentially dangerous rival of the larger firm; it was, therefore, purchased by Metal Manufactures in 1929.¹⁴⁵ This transaction made complete the interlocking of interests of copper miners, refiners and manufacturers.

142

Tariff Board Report on Brass...Copper..., 1930, p.6.

143

Ibid., p.3.

144

Ibid. Transcript of Evidence. J.H. Meiklejohn, 4 Apr. 1930, p.5.

145

A considerable premium had to be paid by Metal Manufactures for the purchase. The price of Austral Bronze shares was 27/- in Oct. 1928, but the purchase price in Oct. 1929, was 50/-. Jobson's Investment Digest, Nov. 1928, p.553, and Oct. 1929, p.588.

Chapter VI

THE GROWTH OF HEAVY INDUSTRY

Introduction

Before the war the iron and steel industry in Australia was insignificant: in 1913 production of pig iron was just approaching 50,000 tons, while only 14,000 tons of steel were produced. The demand for iron and steel of approximately one million tons was met almost entirely from imports. In the twenties the situation was transformed. This decade saw the emergence and firm establishment of a large-scale iron and steel industry in which total output of steel reached over 400,000 tons per annum.

The growth of the iron and steel industry was not accompanied by a general development of heavy industry, and this in turn limited the demand for iron and steel. Large-scale shipbuilding, established as a war-time measure, was allowed to collapse in the early twenties. The engineering industry, though never on a large scale,¹ also gained some stimulus from the war, but languished with the return of

1

Partial exceptions are the production of agricultural implements and railway locomotives.

foreign competition; the difficulties of establishing such an industry are indicated by the attempts to manufacture heavy electrical equipment (chapter V). More important for the iron and steel industry than the inability to develop these two aspects of heavy industry, was the failure to set up a complete range of steel mills to process the output of the iron and steel works. To meet the existing demand in the Australian economy for an extensive range of steel products, it had been hoped that British firms would establish branches in Australia. To a great extent, these hopes were disappointed, and the manufacture of tinned-plate, steel sheet and tubular products on a large scale was not attempted. As a result the Australian iron and steel industry in the twenties met only some 40 per cent of the demand for steel.

Nevertheless, the achievement was substantial: a large-scale iron and steel industry and a range of dependent industries were founded. This expansion was largely accomplished through the activities of Broken Hill Proprietary Coy Ltd (B.H.P.), which opened its steelworks at Newcastle in 1915. It outstripped the small pre-war producer, G. and C. Hoskins, and established the monopolistic structure which has become characteristic of the Australian industry. The problems facing B.H.P. in the twenties were unlike those facing firms in the motor and electrical industries - they

were not problems associated with the rapid growth of a new industry, for although steel output doubled in the decade, such problems had been largely overcome in the import-free period between 1915 and 1920. B.H.P.'s main efforts during the twenties were directed towards consolidating its position by extending its range of products, by improving efficiency, and by integration - both backwards to mines and forward to markets. For Hoskins, the basic problem in the twenties centred on the necessity to become a large-scale producer in order to survive in the industry. The attempt was made late in the decade when fresh capital was obtained and the location of the works transferred from Lithgow to Port Kembla. These moves were unsuccessful and the company was ultimately absorbed by B.H.P. in 1935.

In the growth of the industry governments played a decisive role. Here was an 'infant industry' established in a field in which there were extensive economies of scale and in which demand had previously been met by imports. The war, by reducing imports, had permitted the rapid expansion of the B.H.P. steelworks beyond the expectations of its founders, but with the return of foreign competition the industry was in a desperate position. This difficulty was met in part within the framework of the Commonwealth government's policy of protection, and in March 1920, for the first time,

extensive tariff assistance was given to the iron and steel industry. On several occasions during the twenties this protection was increased, and at the same time, governmental authorities, both state and federal, extended a substantial preference to the local industry in their purchases. Since, in Australia, the activities of governments in such fields as railways were extensive, this preference was vital to the industry.

In this chapter attention is directed, in the first place, to the extent to which local production met the demand for iron and steel in the aggregate. This general approach is then broken down into a study of the development of the two firms in the industry - first Hoskins, and then the more important producer, B.H.P., in much greater detail. In both cases, special emphasis is placed on the variety of iron and steel products manufactured and the development of their particular markets; in this manner the impact of the growth of the iron and steel industry on the metal industries as a whole may be seen.

Aggregate Demand for Steel

The demand for steel in Australia during the twenties was met from two sources - imports and home production. In total it is difficult to measure. Statistics are available for the volume of Australian output, but the great variety

of imported steel products have to be converted into their crude steel equivalent in order to make allowance for wastage in manufacture. There have been two attempts to carry out this task for Australia in the 1920s, one by the United Nations Department of Economic Affairs² and the other by N.M. Windett,³ each using a different method. The results of their calculations are set out in the table below.

Table 1

	<u>United Nations</u> Apparent Consumption of Crude Steel - '000 metric tons	<u>Windett</u> Estimated Consumption of Steel on an Ingot Basis - tons '000s
1913	800	806.6
1919-20	536	N.A.
1920-21	N.A.	N.A.
1921-22	370	N.A.
1922-23	915	1923 970.2
1923-24	915	1924 934.1
1924-25	970	1925 946.8

(continued on next page)

²
United Nations Department of Economic Affairs, European Steel Trends in the Setting of The World Market (Geneva, 1949). The conversion rates used were (p.5):

- (a) for ingots and semis: 1.12
- (b) for flat products (plates, sheets, hoop, skelp, strip): 1.35
- (c) for other rolled products: 1.20
- (d) for tube and wire: 1.20.

Where the product could not be classified the conversion rate was 1.25.

³
N.M. Windett, Australia as Producer and Trader 1920-1932 (O.U.P., 1933). Here (p.180) the less sophisticated technique of the Balfour Committee on Trade and Industry (1928) was used: '...10% is to be added to the weight of semi-manufactured steel (blooms, billets, tin-plate bars, sheets bars, etc.) and 33% on the average to the weight of all finished steel products.'

(continued)

	<u>United Nations</u> Apparent Consumption of Crude Steel - '000 metric tons	<u>Windett</u> Estimated Consumption of Steel on an Ingot Basis - tons '000s
1925-26	918	1926 948.7
1926-27	1,023	1927 1,006.6
1927-28	1,080	1928 1,101.0
1928-29	965	1929 840.1
1929-30	801	1930 708.7

Sources: United Nations, op. cit., p.100
Windett, op. cit., p.180

Each estimate contains substantial errors. The United Nations' calculation of Australian output in 1919-20 is too high, and it transposes the figures for 1921-2 and 1922-3.⁴ Mrs Windett, on the other hand, combines imports in each year with local production in the preceding year; at the same time she has used calendar years when the figures are related very closely to the year ending 30 June. When these adjustments are made and the metric tons converted to long tons, the following result is obtained:

4

The United Nations' figures for Australian output in metric tons are (op. cit., p.100) 72,000 in 1921-2 and 278,000 in 1922-3. Official Australian figures in tons are 251,000 in 1921-2 and 88,000 in 1922-3 (N.S.W. Year Book, 1930-1, p.67).

Table 2
Steel Consumption in Australia
 (tons '000)

	Adjusted Calculations	
	United Nations	Windett
1913	788	807
1919-20	(475) ^a	N.A.
1920-21	N.A.	N.A.
1921-22	544	N.A.
1922-23	715	N.A.
1923-24	876	882
1924-25	955	943
1925-26	904	924
1926-27	1,007	1,012
1927-28	1,063	1,074
1928-29	950	958
1929-30	788	795

^a Estimate

It can be seen that when the tables have been adjusted, both methods give very similar results. Neither, however, gives a complete coverage of all steel products, since, in particular, no attempt can be made to estimate the ingot equivalent of steel imported in the form of machinery. With this qualification the table does show the pattern of consumption: it illustrates the post-war shortage of steel when consumption was well below the boom year of 1913. For various reasons, as we shall see later, the patterns of production and consumption were disturbed for the next two years, and it

was not until 1923-4 that the typical level of consumption for the twenties began to emerge. In that year it was one-tenth above the 1913 level, and by the peak year of 1927-8 had increased a further 20 per cent. Although consumption fell in the following year it was still high, but in 1929-30 it declined further to the pre-war level.

Production and Imports

Once normal conditions of supply and demand resumed after 1923, the Australian industry met an almost constant proportion - some 40 per cent - of the total demand for steel. If we except perhaps 1928-9, there was almost no change in this proportion, even though consumption itself was fluctuating. The position is set out in the table below:

Table 3

Australia - Steel

	Consumption '000 tons	Production '000 tons	Production as % of Consumption
1923-24	876	336	38
1924-25	955	388	40
1925-26	904	385	40
1926-27	1,007	411	40
1927-28	1,063	406	38
1928-29	950	433	45
1929-30	788	315	40

Source: Consumption from adjusted United Nations' estimate, see p.279.
Production from N.S.W. Year Book, 1930-1, p.67 .

There is no simple explanation for the failure of local production to meet more than two-fifths of the demand, nor for the constancy of this proportion. The market for iron and steel products is not homogeneous, but consists of a number of particular markets each operating under conditions peculiar to itself. The development in these separate commodities and markets will receive special attention in later sections of this chapter. Nevertheless, some general reasons may be advanced for the local producers' lack of success in obtaining a larger share of the market. Fundamentally, iron and steel could be produced more cheaply overseas than in Australia. For instance, in 1929 the price of steel bars per ton produced by the Australian manufacturers was £12.12.6, while the f.o.b. British price was £7.15.0 and freight and insurance to Australia was only £2.⁵ This is not the place to explain the price difference in detail; in another chapter we shall look at the most important point - the failure of Australia's rigid cost structure to move with the rest of the world after the war, so that in the steel industry wages and many other costs were well above those in the United Kingdom.⁶ Later in this chapter a more specific

⁵ Annual Report of the Tariff Board for Year Ended 30 June 1934, p.16.

⁶ See ch.IX.

point will be examined - the question of the efficiency of the Australian steel producers. But apart from relative costs and efficiency, the conditions of international trading in the 1920s made the decade a most difficult one for an infant steel industry; many countries had excess capacity created by the war and these aggressively pushed their products on the world market, often at prices below the cost of production.⁷

With such a large price differential between imports and home production it is doubtful if the industry could have survived on any scale at all, unless it had been assisted in various ways by governmental policy. Most important, of course, was the tariff. Between 1907 and 1916 various bounties had been paid on pig iron and steel, but it was not until the tariff of March 1920, that systematic protection was given to iron and steel and their dependent industries. Under this tariff the basic duty was: pig iron per ton, B.P.T. 20/-, I.T. 30/- and G.T. 40/-, and on this base all other duties were erected.⁸ March 1920 was a difficult time to set fixed duties: the post-war inflation was not over and

⁷ For the development of international trading agreements in the twenties, see E. Hexner, The International Steel Cartel (Chapel Hill, 1943), particularly ch.3.

⁸ W.M. Greene, Parliamentary Debates, vol.XCI, p.721.

the deflation had not begun. This particular duty was, therefore, an assessment of the long-run position by the Minister for Trade and Customs, who commented: 'I think that when trade assumes what I anticipate will be its normal level, this particular duty will be found to represent about 22 per cent British.'⁹ This turned out to be an understatement for most of the twenties, and by 1929 the price of pig iron in the United Kingdom had fallen to £3.5.0 per ton.¹⁰ Although this basic rate on pig iron remained unchanged for the decade, all the major finished steel products such as rails, wire and galvanised iron, received substantial increases in duties or the addition of bounties.¹¹ Two other tariff measures were also used against overseas competition. One was the Customs Tariff (Industries Preservation) Act of 1921, which was directed against 'dumping' of goods in Australia below cost, and against competition from countries with depreciated currencies; this act was of great assistance to the steel industry. Of less value was the change in the classification of goods which could benefit from the lower

9

W.M. Greene, *ibid.*, vol.XCV, p.8804.

10

Annual Report of the Tariff Board for Year Ended 30 June 1930, p.15.

11

See the sections in this chapter analysing the markets for individual commodities.



duties of the British Preferential Tariff. Since 1908, in order to be covered by the B.P.T., goods were required to have at least 25 per cent British labour and/or materials in their factory cost; this system worked quite well until after the war, but from that time began the systematic export from the United Kingdom of goods which came just within the B.P.T. provisions. One of the chief industries affected by this competition was steel, because of the large-scale use of semi-finished continental steel by the British industry.¹² This practice had been partly checked by the 1921 anti-dumping act, but a significant change in the severity of the legislation was made in April 1925 when the minimum of 25 per cent British content was raised to 75 per cent.¹³ However, the legislation was not easy to enforce as great reliance had to be placed on the honesty of the declarations made by the British producers.

The other important aspect of government policy, which was vital to the industry, was the purchase of steel products

12

The position with galvanised sheets is illustrated by T.H. Burnham and G.O. Hoskins, Iron and Steel in Britain 1870-1930 (London, 1943), p.330. 'A large proportion of the British output, sometimes up to 85 per cent, was exported, but between 1920 and 1930 the tonnage of imported sheet bars was as great as that of exported galvanised sheets.'

13

For a discussion of this measure see Annual Report of the Tariff Board for Year Ended 30 June 1925, pp.17-18.

with a price differential in favour of local manufactures. This preference, which was given by the Commonwealth and some state governments and semi-governmental authorities, is documented in the sections on individual markets. Indeed, the Commonwealth government gave a double preference: it was not legally obliged to pay duties, but in comparing Australian with overseas steel prices for its contracts, it added to the foreign price the tariff plus an extra margin of preference for the Australian producer.

Since the Commonwealth government showed its willingness to go to great lengths to encourage the development of the iron and steel industry by overcoming foreign competition, it might be expected that local output would meet more than 40 per cent of consumption during the 1920s. In fact, of course, complex industries are not built overnight whether they have a protected market or not, but more important was the structure of the iron and steel industry and the relationship of the Australian market with British producers. Some products of the steel works go directly to the consumer or to the general engineering trades - particularly pig iron, merchant bar, structural steel and rails. In these the local producers during the twenties dominated the market. Other products, however, require further processing in steel mills before they emerge as wire, plate and sheet, and pipe and

and tube. It was in these steel mills, the intermediate market for the products of the steel works, that there was a market gap.

Wire was the only large-scale mill manufacture achieved during this period, and here it was mainly a matter of expanding local firms which previously had gained experience in drawing wire from imported rods. In the other mill products requiring heavy investment and large-scale manufacture, B.H.P. tried to encourage the migration of British firms but these showed a definite reluctance to begin operations in Australia. It seems that either by international agreement or through the tariff, the Australian market in these mill products was dominated by particular British firms or groups of firms; these firms, operating with excess capacity in the United Kingdom, had no desire to extend capacity in Australia, irrespective of the level of protection granted to them. If they had done so, they would, in a sense, have been competing against themselves. This was the case with the only attempt to produce sheet in Australia - the manufacture of 'galvanised iron' by Lysaghts - and it partly accounts for the slow rate of growth and the very high level of imports of both plain and galvanised sheet. ¹⁴ Another

14

See section on 'galvanised iron'.

very important import was tinsplate - about 50,000 tons per annum in the middle twenties. World production in this commodity was dominated by Britain and the U.S.A., and according to Burnham: 'There was an agreement with the American industry on the basis of 70:30 in foreign markets.'¹⁵ In 1918 B.H.P. approached leading British tinsplate manufacturers and in 1920 a tentative agreement was reached with them to establish the industry in Australia, 'but the depressed conditions then developing in the United Kingdom prevented any further steps being taken'.¹⁶ Deferred duties were placed on tinsplate in 1920 to encourage local production, and although negotiations with the British producers continued until 1930,¹⁷ nothing came of them. For tubular products, the position was similar: Burnham states that there was an international cartel in tubes to which the British Tube Association belonged.¹⁸ The largest British producer and exporter to Australia was Stewarts and Lloyds and, encouraged by deferred duties, this company was always about to establish

¹⁵ Burnham and Hoskins, op. cit., p.331.

¹⁶ Tariff Board Report on Tinsplate, 1939, p.16. Tariff Board Comments.

¹⁷ Ibid., p.4, Summary of Evidence of N.E.T. Jones, Executive officer of B.H.P.

¹⁸ Burnham and Hoskins, op. cit., p.332.

a plant in Australia during the twenties; it was not, however, until 1934 that production was actually begun - in association with B.H.P.¹⁹

If the production of these mill products in Australia had been pushed with the same success as with wire, then the proportion that local production of steel products bore to consumption would have been almost doubled. The same circumstances help to explain the constancy of the relationship between local production and consumption. By 1923-4 local producers were established in their particular markets; in these markets marginal gains could have been made at the expense of imports, but to change the relationship substantially, the extension of manufacture into new mill products was required.

Hoskins Iron and Steel Coy Ltd²⁰ (later Australian Iron and Steel Ltd)

Although overshadowed by B.H.P., Hoskins was not an unimportant producer of iron and steel in the 1920s. Table 4

19

Tariff Board Report on Iron and Steel Tubes or Pipes..., 1933, p.5. Summary of Evidence of G. Thomson, Chairman of Directors of Buttwell Pty Ltd.

20

The source material on the Hoskins' firm is not extensive. Because of B.H.P.'s dominance, Hoskins did not obtain much general publicity, but more important is the fact that until 1925 the entire shareholding was in the Hoskins family, and so the necessity to publish information was small.

shows that the Hoskins' output of pig iron was 80,000 tons in 1919 and grew to around 120,000 tons by the end of the decade. B.H.P.'s production moved in roughly the same fashion, remaining at about three times Hoskins' level. In terms of steel, Hoskins was relatively less significant. From 1923-4 steel output figures averaged about 55,000 tons and this was only one-sixth to one-seventh of B.H.P.'s production. (Table 5.)

The brothers G. and C. Hoskins entered the iron and steel industry in 1907. They were then successful engineers in Sydney, and they specialised particularly in the large-scale production of cast iron pipes and boilers. They continued this Sydney business after they had purchased from W. Sandford the iron works at Lithgow which included a new blast furnace with a capacity of 1,200 tons per week. The firm was assisted by a substantial N.S.W. government contract and by a Commonwealth government bounty on production, so that by 1913 it was able to erect a second blast furnace and begin the manufacture of steel in quantity (14,000 tons).

21

Their most famous contract was 350 miles of steel pipe for the Coolgardie water supply. Hoskins Iron and Steel Coy. Ltd., 1925, p.15. (A company brochure.)

22

N.R. Wills, Economic Development of the Australian Iron and Steel Industry, 1948, pp.51 and 57-8.

Table 4

Production - Pig Iron - Tons

	Hoskins	B.H.P.	Total
1913	46,563	-	46,563
1914	75,150	-	75,150
1915	76,318	66,662	142,980
1916	52,556	74,035	126,591
1917	45,025	102,394	147,419
1918	68,072	138,873	206,945
1919	80,941	152,754	233,695
1920	94,384	251,416	345,800
1921	99,790	266,759	366,549
1921-22	66,142	235,165	301,307
1922-23	75,780	62,334	138,114
1923-24	60,841	306,258	367,099
1924-25	101,293	358,861	460,154
1925-26	97,572	333,025	430,597
1926-27	125,098	343,801	468,899
1927-28	95,036	333,368	428,404
1928-29	130,307	330,803	461,110
1929-30	120,852	187,517	308,369

Source: See Appendix II.

Table 5

Steel IngotsProduction - Tons

	Hoskins		B.H.P.	Total
1913	13,608		-	13,608
1914	24,420		-	24,420
1915	25,040	1914-15	7,367	
1916	20,762	1915-16	86,400	
1917	19,667	1916-17	116,314	
1918	N.A.	1917-18	141,889	
1919	N.A.	1918-19	178,002	
1920	N.A.	1919-20	166,772	
1921	N.A.	1920-21	209,458	
1921-22	31,183		219,799	250,982
1922-23	35,004		52,810	87,814

Range of Production - '000 tons

1923-24	43-51	285-293	336
1924-25	44-57	331-345	388
1925-26	49-62	324-337	385
1926-27	57-70	340-353	411
1927-28	46-58	347-359	406
1928-29	59-82	351-374	433
1929-30	49-70	245-266	315

Source: See Appendix II.

Markets were assured by the reduction of imports during the war, and when, in 1919, C.H. Hoskins and family bought out his brother's interests, the firm took the title of Hoskins Iron and Steel Coy Ltd, and C.H. Hoskins became general manager and director.²³

During this period the range of activities was extended, and a description of the Hoskins enterprise in 1925 stated that as well as the blast furnace opened in 1907, there were:

...another Blast Furnace with a capacity of 2,000 tons of iron per week, three modern Steel Furnaces, a 28-inch Rail and Billet Mill, a modern 10-inch Bar Mill for rolling small bars, and many extensions to the Engineering Plant, Foundries, Power Plant, etc., etc. Also additional Iron Pipe Plants at Sydney and Rhodes, and a Locking Bar Pipe Plant at Brisbane, have been constructed...²⁴

By 1925, also, the firm gave employment to between 2,500 and 3,000 employees²⁵ and the total assets were valued at approximately £2 millions.²⁶ This was a very large investment. When the Hoskins took over the iron works in 1907 they acquired assets to the value of £324,000,²⁷ and even allowing

²³ Hoskins' brochure, op. cit., p.16.

²⁴ Ibid., p.23.

²⁵ Ibid.

²⁶ Hoskins Iron and Steel Coy Ltd, Report for the year ended 30 Nov. 1925.

²⁷ Wills, op. cit., p.58.

for their considerable investments in related enterprises at the time, the difference in the totals suggests a large increase in the value of the assets. It is impossible to be certain how the funds for this expansion were obtained, since all share capital was in the hands of the Hoskins family, and accounts were only published after 1925. Operations were almost certainly very profitable during the war and immediate post-war years, and in the five years 1921-5 net profits averaged £92,000 per annum.²⁸ These profits were probably the main source of funds, particularly as Jobson said in 1927: 'The directors have for years followed a very conservative policy as regards ordinary dividends, preferring to allow as much of the profit as possible to remain in the business.'²⁹ At the same time, the fact that assets had to be written down in massive fashion in 1928 suggests that they may have been overvalued at an earlier date.

We have seen that the company produced twice as much pig iron as steel, so that a considerable quantity of iron

28

'These net profits have been arrived at after debiting all Expenses, including Management, Administration, Depreciation of Plant, Bad Debts, Federal and State Income Taxes, etc., and after making such adjustments, as regards non-recurrent expenditure and Depreciation as in our opinion are reasonable and fair.' Auditors' statement, Prospectus of Hoskins Iron and Steel Coy. Ltd., 1926, p.3.

29

Jobson's Investment Digest, May 1927, p.314.

remained to be disposed of. It included all grades of foundry
³⁰ iron and large tonnages were used in the company's own
foundries and pipe-casting plants at Sydney and Rhodes.
Australia produced virtually all the cast iron pipes of large
diameter necessary for the local market, and Hoskins was
the biggest manufacturer in Australia; it produced pipes from
3 inches to 72 inches in diameter and had a capacity of
1,200 tons per week on a one shift per day basis.³¹ Hoskins'
output of steel was modest in comparison with B.H.P. and its
range of products was not as extensive; it produced rails
of between 60 lbs and 100 lbs in weight, various types of
structural steel and merchant bar from a 10-inch mill.³² The
most important business was in rails, practically all of
which was confined to N.S.W. where the company obtained a
'generous' preference from the railways department.³³ It
seems that Hoskins' market for both pig iron and steel was
confined mainly to N.S.W., where competition with B.H.P. was
not as severe as might be expected because of the company's

³⁰ Hoskins' brochure, op. cit., p.44.

³¹ Ibid., p.96.

³² Ibid., passim.

³³ Tariff Board Report on the Iron and Steel Industry. Tran-
script of Evidence. Evidence of C.H. Hoskins, 13 Jan. 1926,
p.59.

small output, its relations with the N.S.W. railways department, and the fact that it was a large consumer of its own pig iron.

Although Hoskins managed to make reasonable profits during the twenties, the site of the firm at Lithgow was most unsuitable. Iron ore reserves in western N.S.W., on which the firm relied, were almost exhausted; Lithgow coal was unsatisfactory and had to be mixed with coastal coal to obtain a satisfactory coke; finally, freight on both raw materials and finished products was crippling. In other words, there was no future for a large-scale iron and steel works at Lithgow, and if Hoskins was to have any hope of growth in the future (or even the maintenance of the existing competitive position), a move to a better site was vital. Further, the works at Lithgow had been badly laid out and could not be regarded as an integrated iron and steel works, so that even without the problems of site, a complete reorganisation of the works would have been necessary.

Hoskins had always been aware of the drawbacks of Lithgow, and as early as 1908 the firm had purchased land at Port Kembla. But it was not until the early twenties, when they purchased an additional 400 acres there, that their decision to move to that site was finalised. ³⁴ Port Kembla

34

Wills, op. cit., p.80.



had obvious advantages - a seabord site and proximity to good coking coal and to limestone. Not until 1927, however, were satisfactory long-term arrangements completed for the supply of iron ore; then, the leases for the deposits at Yampi Sound were acquired from the Queensland government.³⁵ To help finance the move to Port Kembla, 300,000 £1 preference shares were issued to the public in 1926 and construction was commenced in 1927. But it was well beyond Hoskins' resources to erect a new steel works of any great size, and in 1928 it was announced that three large English and Australian firms would co-operate with Hoskins to form a new company - Australian Iron and Steel Ltd. This was an important development in the industry: here was a new company with a good site and backed by four experienced firms. It seemed as though B.H.P. would now be facing a rival of some stature.

The three companies which joined Hoskins were Dorman Long and Co. Ltd, a large British steel firm with engineering branches in Australia; Baldwins Ltd, another British steel firm; and Howard Smith Ltd, shipowners and coal merchants

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For the immediate requirements of the Port Kembla works, iron ore was obtained from the B.H.P. The cost of iron ore f.o.b. at Whyalla was approximately 4/- per ton and N.R.Wills thinks that B.H.P. charged Australian Iron and Steel roughly 10/-. (Conversation with N.R. Wills, Economic Research Officer, B.H.P.)

of Melbourne. Into this new venture Hoskins brought all its assets. These had a net tangible value of £2,215,131 on 30 November 1927, and for these Hoskins received £1,771,400 in £1 shares - 325,000 preference and the balance ordinaries. The preference shares were for the preference shareholders in the old firm and the 1,446,400 ordinaries were for the Hoskins family. Not all of these were retained by Hoskins: 396,400 were given to Dorman Long and 50,000 to Howard Smith, so that the Hoskins family received 1,000,000 ordinary shares for assets valued at £1,890,000 in their balance sheet.³⁶ At the time, the strange nature of this transaction created a considerable stir. The Melbourne Herald commented: 'The transfer of £446,000 of Hoskins' shares to the incoming partners is the extraordinary feature of the transaction. These are not goodwill shares, because no value has been placed on that asset. They are portion of the hard-earned accumulations of the Hoskins group...'³⁷ The reason advanced by the Herald for this action was that 'the Hoskins' fortunes are sunk in the steel industry, and their current capital value is of less consequence to these parties than the earning

³⁶

'Wild Cat' Monthly, 2 June 1928, p.249.

³⁷

Melbourne Herald, 24 May 1928 (press cutting seen at J.B. Were's).

they are capable of producing'.³⁸ This comment suggests the true explanation of the event, which is not fully appreciated by the Herald: for a company to be in a sound financial position, the value of its assets must be related to its income earning capacity. In spite of the writing down of Hoskins' assets, this share transaction indicates that they were still overvalued; indeed, it is hard to believe that a steelworks moving to a new site has much transfer value. In fact, these payments to Dorman, Long and Howard Smith were for their goodwill, but this item did not show in the balance sheet because of the over-valued Lithgow assets.

Dorman, Long brought into the new company its assets in Australia, principally engineering shops in Melbourne and Sydney, but excluding its Sydney Harbour Bridge contract.

The valuation placed on the assets was:

Net tangible fixed assets	£103,600
Stock and works in progress	<u>£295,536</u>
Total	£399,136

For these assets Dorman, Long received £195,536 in cash and 203,500 in ordinary shares plus the transfer from the Hoskins family of 396,400 ordinary shares.³⁹ Thus, as Jobson says, Dorman, Long received '£396,400 for goodwill and

38

Ibid.

39

Australian Iron and Steel Limited, Prospectus, 17 May 1928.

benefits of that company's research results and its agency in Australia'.⁴⁰

Baldwins Ltd provided a heavy steel-rolling mill for which it received 100,000 ordinaries and £68,000 in cash.⁴¹ Howard Smith, which was to attend to the shipping and selling agency side of the new business, took up 350,000 ordinary shares for cash and was given 50,000 ordinaries by the Hoskins family.⁴²

As a result of these arrangements the structure of the ordinary share capital of the new company was:⁴³

	£m.
Hoskins' Iron and Steel Coy Ltd	1.0
Dorman, Long and Co. Ltd	0.6
Howard Smith Ltd	0.4
Baldwins Ltd	<u>0.1</u>
Total	2.1

An additional 675,000 preference shares were issued to the public to make the preference capital a total of £1,000,000, and in the middle of 1929 a further 600,000 ordinary shares were issued at par to the current holders of the ordinary shares.⁴⁴

⁴⁰ Jobson's Investment Digest, June 1928, p.280.

⁴¹ Sydney Morning Herald, 18 May 1928, p.11.

⁴² Ibid.

⁴³ Ibid.

⁴⁴ Jobson's Investment Digest, July 1929, p.360.

The size and composition of the iron and steel output in the last two years of the twenties - 1928-9 and 1929-30 - by Australian Iron and Steel did not differ greatly from that of Hoskins in the years immediately preceding them. But there were great changes in location and equipment. In August 1928, what was described by Essington Lewis as the biggest blast furnace in the British Empire, with a capacity of 800 tons of pig iron a day, was completed at Port Kembla,⁴⁵ while the two blast furnaces at Lithgow were dismantled and used as scrap.⁴⁶ However, the move of the entire works to Kembla did not take place as planned; the onset of the depression meant a sharp fall in the demand for steel, and in the short run it was found more profitable to maintain the existing steel furnaces. Thus in the twenties only pig iron was made at Port Kembla while Lithgow continued to roll steel. This organisation of production must have been awkward and costly, and exactly how it was arranged is hard to say. A letter from B.H.P. dealing with the disposal of pig iron from Kembla states:

We presume that some of this iron went to Lithgow for smelting and some to the Sydney pipe works for the manufacture of cast iron pipes. It is probable

45

E. Lewis, 'Iron and Steel Industry in Australia', The Journal of the Institution of Engineers Australia, 1929, p.136.

46

Wills, op. cit., p.85.

too, that some iron was stockpiled at Port Kembla, and that some was sold in Sydney; but in the absence of any details of actual disposal, this must remain conjecture.⁴⁷

In its first two years of existence the profits of Australian Iron and Steel were modest - £182,000 in 1927-8 and £215,000 in 1928-9, but in 1929-30 the effects of declining demand began to be felt and profits fell sharply to £75,000.⁴⁸ The depression came at a most unfortunate time for the company: the move to the coast was incomplete, with half the plant at Lithgow and half at Port Kembla, further capital was needed but was very difficult to raise, and it is probable that the internal structure of the firm was weak because of overvalued assets. From this initial reverse in its fortunes Australian Iron and Steel never recovered.

The Development of B.H.P.

(a) Outline of Growth Before 1920

The origins of large-scale production of iron and steel in Australia lie with B.H.P. This company was incorporated in Melbourne in 1885 to mine base metals at Broken Hill; here it had a most prosperous history, and although no official

47

Letter from the Senior General Manager of B.H.P., dated 15 Mar. 1957.

48

Australian Iron and Steel Ltd, Reports for the years ended 30 Nov. 1928 to 1930.

announcement of a decision to investigate the possibility of the establishment of an iron and steel industry was made until 1911,⁴⁹ rumours had existed from the beginning of the century. For various reasons the prospects were most encouraging: first, there was no other significant producer in the field and the Australian economy appeared to have reached the stage at which it could support such an industry. Second, the company possessed the only known rich and extensive iron ore deposits in Australia; these were well sited near the coast in Spencer's Gulf, and had been acquired by the company to serve as flux in the smelting of its base metals. Third, profits from base metals had begun to decline in the twentieth century and the exhaustion of the mine was in the foreseeable future. Finally, the company's large financial reserves, combined with its connections and prestige would enable it to raise the capital necessary for such a large investment.

The general manager of B.H.P., G.D. Delprat, was sent overseas in 1911 to inquire into the operation of the industry, and while in the United States, he engaged David Baker, a consulting engineer from Philadelphia, to come to Australia

49

B.H.P., Reports and Statements of Account for half-year ending 31 May 1911.

and advise the firm on problems associated with establish-
 50 ment. Baker chose an excellent site for the works at
 Newcastle, construction was begun, a staff nucleus of key
 workmen was brought from the United States 51 and in early
 1915 the production of pig iron and steel began. Meanwhile,
 in August 1914, the war had commenced, and the timing, al-
 though it did not interfere seriously with the construction
 of the works, did transform the market situation for the
 company.

Baker's plans for the scope of the works had been along
 fairly modest lines, even though they envisaged later growth
 and diversification. Initially, he considered, the plant
 would concentrate on the production of rails, 52 but even as
 construction proceeded the intervention of the war, leading

50

The B.H.P. Review, vol.XX, no.2, p.7 (Obituary).

51

David Baker, 'Reminiscences of the B.H.P. Company's Ad-
 ventures in Steel', B.H.P. Review, vol.XIII, no.1. Baker
 writes (p.3): 'To secure a satisfactory start of the opera-
 tions of the plant...arrangements were made with the Govern-
 ment to import a nucleus of skilled workers under contract
 for three years. These men we depended upon not only to
 give a successful start in each department, but to teach
 Australians to take over their work...'. Only in the coke
 oven department did the men come from England, the rest
 came from the U.S.A. The influence of Baker and his staff
 gave an American rather than English influence to construc-
 tion and methods.

52

Report from the Select Committee on Newcastle Iron and
 Steel Works Bill, 24 Sep. 1912, pp.10-11. Evidence of
 G.D. Delprat (N.S.W. Votes and Proceedings of the Legislative
 Assembly, 1912).

to the reduction of imports and mounting orders, meant that B.H.P. changed the nature and size of its plans for future development.⁵³

When opened in 1915 the plant consisted of a blast furnace, two open hearth steel furnaces, a blooming mill, a 28-inch mill and a battery of by-product coke ovens.⁵⁴ By 1919 there were in addition another blast furnace and battery of by-product coke ovens, five more steel furnaces, 18-inch, 12-inch and 8-inch mills and a rod mill.⁵⁵ Table 6 shows the growth of output during the war and the way in which it was diversified. In 1916, the first full calendar year of output, steel production amounted to 88,000 tons; two years later it had almost doubled. During the war years output was dominated by the production of rails which made up well over one-half of the total volume; in 1917 structural steel became more important, as did 'round, flat, square steel' in 1918; but it was not until 1920 that rods began to be produced in volume - in that year they almost equalled rails in weight. It is impossible to tell how profitable B.H.P.'s

53

Interstate Commission of Australia. Tariff Investigation. Iron and Steel, p.92. Evidence of G.D. Delprat (Parliamentary Papers, 1914-17, vol.VI).

54

B.H.P., Reports and Statements of Account, half-years ending 31 May 1915 and 30 Nov. 1915.

55

Ibid., Nov. 1915 to May 1919.

Table 6

B.H.P. - Output - Tons '000

	1915	1916	1917	1918	1919	1920
Pig Iron	67	74	102	139	153	251
Steel ingots	45	88	131	164	177	220
Billets	4	5	7	6	5	9
Rails	22	47	64	68	85	54
Fishplates	-	2	3	5	4	5
Structural steel	-	5	16	16	14	20
Round, flat, square steel	-	-	2	19	15	36
Plates	-	-	-	8	2	2
Guard plates	-	-	-	1	-	-
Rods	-	-	-	4	8	50
Munitions and shell steel	2	7	9	-	-	-

Source: Charles E. Taylor, 'How Australia Built up a Steel Industry', The Trans-Pacific, Sep. 1921, p.70.

iron and steel operations were during the war, because the mine at Broken Hill was an important contributor to the company's high level of profits. But the absence of overseas competition meant that iron and steel production must also have been profitable, although the prices charged by B.H.P. for iron and steel were well below those overseas.

56

In the Tariff Board Report on Iron and Steel Industry (1926), the board stated (p.33): 'It is only too well known that during the war, owing to shortage of supplies of iron and steel products, the prices of these products from overseas became abnormally high. It would, of course, have been possible for the local producers to have increased the prices of their commodities in keeping with those of the imported, but such action was not taken and in this way it is estimated... that...during the period 1915 to 1920...Australia was saved four or five million pounds.'

The war, then, came at a most opportune time for B.H.P. The relative freedom from overseas competition assisted the plant to survive the difficult period of establishment; expansion and diversification of output were possible sooner than had been anticipated, and satisfactory profits were made. At the same time the war created a climate of opinion which was most favourable to protection, particularly for heavy industry, when the tide of overseas competition began to run strongly again.

(b) B.H.P. in the 1920s

The end of the war did not bring an immediate onset of competition from overseas and the company was still unable to meet local demand; further, the early establishment of English steel-using industries was expected, so that conditions were conducive to another phase of development. The foundations of a third blast furnace were laid in 1918 and it was completed and blown in by August 1921.⁵⁷ This was the end of expansion for the 1920s; further construction took place only to replace obsolete plant or to make the works more balanced and integrated. In fact, given the development of the market, it seems probable that a third blast furnace was unnecessary and two might have sufficed for the decade.

57

B.H.P., Reports and Statements of Account for year ending 31 May 1922, p.15.



The growth in the first years of the twenties was not complete when the world post-war recession began. The effect on the demand for steel in Australia was not as important for B.H.P. as the fall in overseas prices for steel and its worsening competitive position. The company was in a most vulnerable situation: the plant was unbalanced and much of it had been constructed under conditions of inflated wartime prices, while dependent industries had not been established as expected. As a result profits fell sharply from £424,000 in 1920-1 to £103,000 in 1921-2 and in June 1922 the complete plant was closed.⁵⁸ The works remained shut until February 1923, during which period they were given a thorough overhaul and extensive improvements were made. However, internal economies were insufficient, and the firm insisted that costs controlled by external factors must also be reduced.⁵⁹ The company had considerable success in these efforts: the basic wage for iron and steel workers was reduced from £4.5.0 a week to £3.19.0; the industry was exempted from N.S.W. legislation reducing hours per week from 48 to 44; and a price reduction on coal was obtained from the vend in Newcastle.⁶⁰

58

Ibid.

59

Ibid., pp.35-8.

60

Ibid., year ending 31 May 1923, p.16.

The threat of the application of the new dumping duties may also have had some effect in reducing import competition.

With this assistance the firm reopened early in 1923 and for a number of years output remained at a fairly steady level, particularly in comparison with the preceding period and with the period of depression which was to follow in the early thirties. Output of both pig iron and steel was in the range of 300,000 to 350,000 tons up to 1928-9, and this level contrasts with the previous peak of about 200,000 tons for the first two years of the twenties. The composition of this output, its markets and its impact on the rest of the economy, will be examined in later sections of this chapter. However, given the level of production, there were two main ways in which the firm could increase the profitability of its operations: one was to increase the protection from overseas competition by obtaining increases in the tariff, particularly for the steel using industries; the other was to reduce its costs. Developments in the tariff are also examined elsewhere.⁶¹ Here we will examine the efforts by B.H.P. to raise its efficiency.

This was one of the features of B.H.P.'s activities in the twenties, after the closing of the works in 1922. The

61

The tariff must be examined through individual iron and steel products; see later sections of this chapter.

great period of plant expansion was over and the company was unable to increase materially the demand for steel by encouraging new steel-using industries. The rest of the decade was, therefore, typically a period in which B.H.P. attempted to consolidate its position by increasing efficiency and reducing costs. Most important were B.H.P.'s attempts at vertical integration in the industry, partly to ensure supplies and markets, but also to lower costs both by obtaining freedom from monopolistic suppliers and carriers and by coordination with dependent industries. Thus company coal mines and shipping fleets were established, and control was obtained over two large wire companies which took a quarter of B.H.P.'s steel output. Within the plant two more open hearth furnaces were added in 1924 (bringing the total to nine), to balance the additional blast furnace completed in 1921, and in the last two years of the decade a start was made in the replacement of the old Semet-Solvay coke ovens with modern Wilputte ovens. In 1927 the conversion of the rolling mills from steam to electric drives was begun with the electrification of the 8-inch merchant mill; meanwhile iron ore quarries had been electrified and mechanised.

62

62

B.H.P., Reports and Statements of Account, years ending May 1923 to 1930. Apart from the main wire companies, other manufacturing concerns in which B.H.P. obtained a share interest in the twenties were: Titan Nail and Wire Pty Ltd, Vickers Commonwealth Steel Products, The Structural Engineering Co. of W.A. Ltd, Australian Wire Rope Works Ltd and B.H.P. By-Products Company Pty Ltd.

Most B.H.P. employees had to learn their skills on the job but in this period the company showed its awareness of the need for more scientific training. Between 1921 and 1926, 30 officers were sent abroad to increase the range of their experience,⁶³ and in 1926⁶⁴ the company decided to institute a staff training scheme.

It is some indication of B.H.P.'s improved efficiency in this period that in spite of a slight upward tendency in wages, in spite of the reduction in hours from 48 to 44 in 1926 and the expense resulting from the introduction of workers compensation and child endowment, the company was able to lower its prices substantially. The position is illustrated in the table below:

Table 7

Price per ton

	Pig Iron f.a.s. s'wks	Merchant Bars c.i.f. Capital Austn. Ports
July 1923	£7.10.	£15.10.
Jan. 1924	£7.10.	£14.10.
July 1924	£7.10.	£14.10.

(continued on next page)

63

Commonwealth Arbitration Court, Enquiry re Standard Hours, Transcript of Evidence, p.3958, A.M. Rowe, General Sales Manager of B.H.P., 18.11.26.

64

B.H.P., Reports and Statements of Account for year ending 31 May 1927, p.16.

(continued)

	Pig Iron f.a.s. s'wks	Merchant Bars c.i.f. Capital Austn. Ports
Jan. 1925	£7. 0.	£14.10.
July 1925	£6.10.	£13. 0.
Jan. 1926	£6.10.	£13. 0.
July 1926	£6. 0.	£13. 0.
Jan. 1927	£6. 0.	£13. 0.
July 1927	£6. 0.	£13. 0.
Jan. 1928	£6. 0.	£13. 0.
July 1928	£6. 0.	£12.12.6.
Jan. 1929	new method of	£12.12.6.
July 1929	calculation	£12.12.6.

Source: Wills, op. cit., pp.137-8.

To finance the expansion at the beginning of the twenties, B.H.P. obtained £799,000 from share issues and £1,500,000 from debentures. For the rest of the decade, between 1921 and 1930, no further funds from outside sources were needed for expansion within the firm; although paid-up share capital increased from £2,455,000 to £2,988,000, representing the nominal value of 533,000 shares, all of it was used to purchase an interest in other industrial concerns. Over the same period debentures declined in value from £2,109,000 to £991,000, so that it was both unnecessary for B.H.P. to turn to the market to finance plant reorganisation, and possible for it to repay £1,118,000 of debentures.

Depreciation allowed on the iron and steel works was substantial, as it amounted to £2,423,000 over the nine years to 1930. Nevertheless, the value of the works remained practically unchanged: £5,991,000 in 1922 and £5,976,000 in 1930, so that annual outlay on capital works was roughly equal to depreciation. Over the same period, £281,000 were written off the mine at Broken Hill. After allowing for this depreciation, profits were earned in all years except 1922-3 and from these dividends were paid of 3.75 per cent in 1921-2, 5 per cent in 1924-5 and 10 per cent in each of the following four years; no dividends were paid in 1922-3, 1923-4 and 1929-30. This dividend policy was conservative, and the balance to the credit of the appropriation account which accrued from profits rose from £28,000 to £487,000.⁶⁵

It seems, therefore, that the company made a very adequate provision for depreciation and that once it recovered from the difficulties of the early twenties, profits were sufficient to pay reasonable dividends and increase reserves until 1929-30. In that year activities were affected both by a decline in demand and by an interruption in coal supplies caused by a closure of the mines.

⁶⁵

Ibid., years ending 31 May 1920 to 1930.

Although returns on share capital were moderate, they were much less imposing in relation to the total of shareholders' funds. Both at the beginning and the end of this period, reserves were somewhat greater than actual share capital, so that even in the most profitable years of the twenties, profits were only about 5 per cent of shareholders' funds. Not only were profits low, but not all of them were related to the operation of the iron and steel works. In 1926, when B.H.P. applied to the Tariff Board for increased protection, the board was so concerned about the industry's competitive position and the manner in which it made its profits that it recommended sweeping tariff increases.⁶⁶ The Commonwealth government, however, was unimpressed, and ignored most of the board's recommendations.⁶⁷ It rightly considered that the board's methods in calculating B.H.P.'s competitive position were quite wrong; for example, the board claimed that '...but for...the profits from the sale of by-products arising from the production of coke for the blast furnaces the whole undertaking at Newcastle would not be a commercial proposition...'.⁶⁸ However, this is not a telling argument since

66

Tariff Board Report on Iron and Steel Industry, 1926,
pp.42-3.

67

H.E. Pratten, Minister for Trade and Customs, Parliamentary Debates, vol.117, pp.3219-22.

68

Tariff Board Report on Iron and Steel Industry, 1926, p.40.

by-products are almost as much an integral part of steel making as the steel itself. Of much greater importance in considering the steel works as a profitable enterprise, was the extent to which B.H.P. was still dependent on its mine at Broken Hill. In fact, the mine operated only intermittently during the twenties, but the company continued to process the results of past workings with new methods. There are no separate figures published for profits from the mine, but in 1926 the company commented:

The financial results of the year's work can be largely attributed to the successful operations of the Company's silver-lead mine at Broken Hill, in connection with which the increased tonnage mined, combined with the high price of metals, have been most gratifying.⁶⁹

In the last years of the twenties the company also found profitable the export of over half a million tons of iron ore.

In general terms it can be said that B.H.P.'s position was transformed during the 1920s. At the opening of the decade the company was in a strong financial position, but the plant was in the middle of an expansion programme and was unbalanced. Although profits were not high during the twenties, the dividend policy was conservative and reserves were

69

B.H.P., Reports and Statements of Account for year ending 31 May 1926, p.9. At that date the 'Mine Account' was valued at £108,000, and the fixed assets of the steelworks at almost £6 millions.

increased; at the same time the plant was reorganised and modernised while markets and supplies were made more secure. The company, therefore, was able to face with some confidence the depression at the beginning of the thirties.

Products and Markets

Table 8 divides up the output of the B.H.P. steel works into various iron and steel products. The remainder of the chapter is an analysis of the composition of the company's output and the behaviour of the different markets for iron and steel. In this manner it is possible to examine not only the output of B.H.P. but also its impact on other manufacturing activities in Australia.

(a) Rails and Accessories

During the 1920s B.H.P.'s most important single market was in 'rails and accessories', which took about 29 per cent of the total volume of output of steel products.⁷⁰ The company regarded this as 'the principal and most desirable business'.⁷¹ The rail sections manufactured by the company were: heavy rails - 110, 100, 90, 80, 60 and 45 lbs to the yard; light 'T' rails - 30, 20 and 14 lbs to the yard; and

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See Table 8.

⁷¹

A Bailey (sales manager), 'Sales and Salesmanship', The B.H.P. Review, vol.6, no.2, p.7.

Table 8

Production of Iron and Steel Products for Sale - Newcastle Steelworks,

Half Year Ended November 1919 to Half Year Ended May 1931

Tons

Half Year Ended	Pig Iron	Ingots Blooms Semis	Merchant Bar	Structural Plates	Sheet Bar	Rails and Accessories	Coiled Rod	Total Steel Products
Nov. 1919	15,697	2,886	9,993	7,692	37	32,837	2,688	56,133
May 1920	28,578	7,750	14,756	4,682	970	29,275	20,027	77,460
Nov. 1920	37,911	7,135	25,474	7,661	1,122	26,536	29,399	97,327
May 1921	11,063	4,641	23,502	11,331	950	18,115	13,232	71,771
Nov. 1921	42,132	5,776	30,895	306	-	59,072	17,791	113,840
May 1922	18,074	3,024	6,029	187	3,495	34,543	12,301	59,659
Nov. 1922	-	-	-	-	80	617	-	617
May 1923	22,065	659	6,557	158	-	26,881	2,553	37,575
Nov. 1923	27,092	3,768	29,954	3,631	767	35,802	31,110	113,640
May 1924	28,474	2,452	26,120	2,994	9,375	40,388	32,090	112,708
Nov. 1924	35,354	7,981	34,792	5,477	8,664	34,737	41,346	134,875
May 1925	23,913	8,204	34,708	4,796	10,542	44,411	32,978	137,330
Nov. 1925	15,394	9,984	34,530	10,488	12,233	39,102	40,209	146,342
May 1926	39,405	7,336	30,428	5,938	12,029	30,018	33,931	120,611
Nov. 1926	26,561	9,528	31,564	8,397	12,960	27,026	39,937	132,935
May 1927	21,713	10,161	38,300	7,566	16,483	40,530	37,755	150,877
Nov. 1927	42,606	6,665	41,085	10,626	16,565	51,181	41,631	165,945
May 1928	5,752	5,059	27,140	10,638	14,757	35,330	34,437	125,532
Nov. 1928	37,208	9,088	39,574	15,746	12,928	33,126	42,392	157,730
May 1929	15,709	7,413	38,403	16,819	17,804	22,446	41,897	145,005
Nov. 1929	2,901	9,383	31,201	2,606	18,027	15,256	42,921	115,958
May 1930	25,287	5,516	25,184	9,486	14,591	18,095	24,825	101,867
Nov. 1930	31	4,299	17,020	11,273	18,761	25,175	26,543	108,098
May 1931	6,371	4,821	10,827	3,584	18,145	11,868	13,134	62,379

Source: Supplied by B.H.P., letter dated 15 Mar. 1957

18 and 25 lb. bridge rails. The bridge rails were purchased by mining companies principally for use underground while the 14 lb. rails were mainly used by the sugar mills as portable track.⁷² By far the most important were rails for the state and Commonwealth railways.

Before the war, these supplies were entirely imported and in the three years 1911-13 the value of imports averaged £1,220,000 per annum.⁷³ But the war almost completely cut off this source of supply, and by 1917-18 imports were reduced to £9,000.⁷⁴ Thus an extremely favourable market situation was created for the Australian iron and steel producers and state and Commonwealth governments turned to them in desperation and gratitude. We have seen in Table 6 that B.H.P.'s response was to turn well over one-half of its output into rails and fishplates.

This seizure of the market by local producers taking advantage of the special conditions created by the war was confirmed by substantial tariff protection in March 1920.⁷⁵ In

72

Ibid.

73

Overseas Trade Bulletin, no.11. Figures of volume are not published.

74

Ibid., no.15.

75

Tariff Item 154. Railway and Tramway Material, viz.:-

(A) Rails weighing 50 lb. per yd. and over - per ton, B.P.T. 35s., I.T. 60s., G.T. 75s.

(continued on next page)

November 1927, the duties against non-British competition were increased, but only on heavy rails was the British tariff raised.⁷⁶ Since these heavy rails were used almost entirely by government departments, the main effect was to reduce the amount of preference which governments gave to producers over and above the tariff.⁷⁷ This preference was a strong support of the industry. In the early years of the twenties the practice was still sufficiently unusual to require explanation; in 1922, for example, a contract to supply the Victorian railways with 5,800 tons of rails was shared between B.H.P. at £12 per ton and the British firm of Dorman, Long and Co. at £10.9.9. per ton - both prices at Melbourne. The question was

75 (continued)

- (B) Rails weighing less than 50 lbs per yd - per ton, B.P.T. 45s., I.T. 70s., G.T. 85s.
- (C) Fishplates, Tieplates and Rods - per ton, B.P.T. 48s., I.T. 75s., G.T. 95s.
- (D) Fishbolts, Switches, Points, Crossings and Intersections - ad val. B.P.T. 27½%, I.T. 35%, G.T. 40%.

76

The duty on the first three items (in footnote 75) were increased in November 1927 to: (A) 50s., 85s., 100s.
 (B) 45s., 100s., 125s.
 (c) 48s., 100s., 125s.

77

As Senator T.W. Crawford said: 'Recently very many overseas quotations have been lower than those of the Broken Hill Proprietary Limited, but because of goodwill towards the local industry a majority of the States have obtained the bulk of their requirements from Newcastle. It is scarcely fair to place upon those governments the responsibility of having to decide between a lower oversea and a higher Australian tender.' Commonwealth Parliamentary Debates, vol.118, pp.3811-12.

raised why the whole contract did not go to Dorman, Long, and the Argus reported:

...officials of the construction branch explained that quicker delivery was assured by splitting the contract between the two tenders, while it was further supposed that the Cabinet, in making the decision, had in mind the advisability of assisting the Australian industry, although it was admitted the Broken Hill Pty. Co. was already given preferential treatment by the Customs tariff.⁷⁸

By the middle twenties this preference had become a general rule and was vital for the rail business of both B.H.P.⁷⁹ and Hoskins.⁸⁰ By virtue of this preference and the tariff, foreign competition was largely excluded and by 1929 the sales manager of B.H.P. could claim that 'all Commonwealth and State railway requirements (other than for high manganese rails),⁸¹ were rolled in Australia'. The local dominance of

78

18 Aug. 1922, p.6.

79

In 1926 R.H.M. Rowe, General Sales Manager of B.H.P., stated: 'In our rail business - in which all the States are concerned - we are dependent entirely upon the sympathetic consideration of the various States. I have no recollection within the last three years - and I have personally negotiated all the large contracts for my Company - of having known of one instance in which our rail price was the lowest figure.' Evidence to Commonwealth Arbitration Court, Enquiry re Standard Hours, Transcript of Evidence, 18.Nov. 1926, p.3958.

80

C.H. Hoskins stated: 'We get varying degrees of preference and it is felt mostly in the rail trade.' Tariff Board Report on the Iron and Steel Industry, Transcript of Evidence, 13.Jan. 1926, p.59.

81

The B.H.P. Review, vol.6, no.2, p.7.

the market is shown by the table of imports below which should be compared with the average yearly imports before the war of £1 $\frac{1}{4}$ million.

Table 9

Imports - Rails and Accessories - £m.

1919-20	37
1920-21	48
1921-22	87
1922-23	454
1923-24	211
1924-25	137
1925-26	172
1926-27	83
1927-28	298
1928-29	73
1929-30	43

Source: Overseas Trade Bulletin, nos 17-27.

It can be seen that imports were at a high level in 1922-3 when B.H.P. was closed, and there were two large shipments of rails to Western Australia in 1925-6 and 1927-8. These shipments were a result of Western Australia's anti-protectionist attitude which led that state to refuse a preference to the local producer over the tariff.

Another very important factor which assisted the development of the local rail industry was the agreement reached by railway engineers on standard specifications throughout Australia for rails and fishplates. Previously, the various states had different specifications, so that it was difficult

for local producers to obtain the economies of mass production. In 1921, however, agreement was reached, and standards were published by the Institute of Science and Industry. On the formation of the Australian Commonwealth Engineering Standards Association in 1922, it was agreed that these standards should be reviewed annually by the Interstate Conference of Railway Engineers.⁸²

This most important market for railway rails can be divided into two separate sections - rails for new track and rails for replacement. Government railway mileage open for traffic at 30 June 1920, was 23,147 miles and at 30 June 1930, 26,605, so that there was an increase of roughly 3,500 miles in the ten years.⁸³ Most of these lines were in country areas, although there was some extension, duplication and electrification in metropolitan areas. At a very rough estimate, something like two-thirds of the rails were used for new track and one-third for replacement of worn track. But, in any case, the greater part of maintenance demand was for country track, so that the demand for rails relied mainly on

82

Australian Commonwealth Engineering Standards Association, First General Report. Reviewing the Work and Progress of the Association for Period Ended 30th. June, 1924, p.6.

83

Commonwealth Year Book, no.17, p.318, and no.24, p.165. Privately owned railways for general traffic totalled only about 1,000 miles.



rural not urban development. This demand for rails was fairly steady in the five years after 1922-3: in thousands of tons B.H.P.'s output was 76, 79, 69, 68 and 87. However, government demand was no more stable than general private demand at the end of the twenties, and in 1928-9 output fell sharply to 55,000 tons and then to 33,000 tons in 1929-30.

(b) Wire

The wire industry provided B.H.P. with one of its most important markets during the 1920s - over one-quarter of the volume of the company's entire output of steel products went as coiled rod to the wire industry. The manufacture of wire products was not a new development of the twenties - in fact, the industry dates back to the nineteenth century. But this was the first time that Australian-made rods had been used for wire drawing and indeed, until the first world war it was the normal practice in the industry to attempt no drawing at all, but to import wire and use it to manufacture wire products.

Two firms dominated the industry in the twenties: Lysaght Bros and Company Ltd of Sydney and Rylands Bros (Australia) Ltd of Newcastle. Lysaght Bros was established at Five Dock on the Parramatta River in 1884 as a manufacturer, primarily, of wire netting. In the first years of the twentieth century the range of production was extended to include barbed wire,

wire nails and zinc oxide. The war cut off supplies of wire, and encouraged by B.H.P.'s announcement of its intention to begin rod production, the company began drawing wire, using the limited supplies of imported rods. Originally, the firm had been established as a branch of John Lysaght Ltd of Bristol, which was later to begin galvanised iron production in Australia, but by the beginning of the 1920s it seems that little or no connection remained with the parent firm. Twice in its history the firm had been forced to reconstruct and bring in fresh capital,⁸⁴ and in 1918 the Acting Minister for Trade and Customs, Mr W.M. Greene, stated: 'Although both firms bear the same name, they are in no way associated, and the principals, as far as they know, have no blood relationship'.⁸⁵

Rylands Bros (Aust.) Ltd showed a similar course of development. The firm began at South Melbourne in 1889 as The Austral Nail Co. Pty Ltd, using imported wire to manufacture wire nails. In 1905 production was extended to barbed wire and in 1911 wire-drawing began, using imported rods. Import competition soon killed wire-drawing but the plant was again

84

Information on the early development of the firm was obtained from Fifty Years of Progress: 1885-1935 (a brochure published by Lysaght Bros and Coy Ltd in 1935), pp.3-6.

85

Commonwealth Parliamentary Debates, vol.LXXXVII, p.8522.

used on imported rods during the war when the firm greatly extended its range of wire manufactures. With the encouragement of the Commonwealth government the firm decided to establish a large wire mill next to B.H.P., and during 1919-20 operations were transferred from Melbourne to Newcastle. In 1921 amalgamation took place with Rylands Bros Ltd of Warrington, the largest wire manufacturer in England, to form Rylands Bros (Aust.) Ltd. The English firm had decided in 1920 to set up a wire netting factory at Newcastle and to obtain its wire from The Austral Nail Co., but in 1921 it was thought that some form of amalgamation would be more effective. Seven members of the firm were brought out from England to establish the new wire netting branch.

The development of the wire industry before the war had been limited by the pressure of foreign competition. At that time there was no protection against British imports and only a revenue duty on other foreign imports. This position was changed radically in 1920 when the Commonwealth government decided to protect substantially all types of wire production. The justification for this change in policy was found in the shortages of wire during the war and the progress that had

86

Information in this paragraph obtained from J.K. MacDougall, 'Some Reminiscences of the Wire Industry in Australia', The B.H.P. Review, vol.XIV, no.2, pp.1-4.

since been made by the industry in meeting local demands.

In September 1922, a new system of bounties was introduced on wire netting and fencing wire; these were made the equivalent of the B.P.T. and the other duties were lowered by that

88

amount. In spite of an application for increased assistance by the industry, the Tariff Board thought that this bounty was sufficient protection during the twenties against competition from the United Kingdom. In 1924, however, action was taken to prevent British dumping, and in 1927 increased

89

protection was given against foreign competition.

87

E.g., the Minister for Trade and Customs stated: '...there is in Newcastle a wire-drawing plant, which I believe is capable at the present time of turning out all the black and galvanised-iron wire that Australia will require. It came into being as the direct result of the war...'. Commonwealth Parliamentary Debates, vol.XCI, p.722. Later, discussing wire netting he said: '...our war experience has shown us that this is an industry which, perhaps, above all others, we should endeavour to establish in Australia.' Ibid., vol.XCV, p.8987.

The most important duties were: fencing wire, per ton, B.P.T. 52s., I.T. 72s. 6d., G.T. 90s., and wire netting B.P.T. 68s., I.T. 85s., G.T. 105s.

88

Iron and Steel Products Bounty Act (1922). The introduction of bounties on wire and galvanised iron was a victory for agricultural interests as represented by the Country Party.

89

Tariffs and bounties did not measure the full amount of assistance given by the Commonwealth government. Under the Advances to Settlers Act (1923) and the Wire and Wire Netting Act (1927) the Commonwealth government during the twenties advanced approximately £850,000 to the states for loans to farmers to purchase wire and wire netting. A condition attaching to the loan was that the wire and wire netting must be made in Australia.

With this protection the industry expanded, and it quickly secured the greater part of the market. Employment in 'wire working' and in 'nails' had reached roughly 1,000 before the war; at the end of the war it had grown to 1,300 and it remained at this level to 1921-2. The rapid development of the industry after this date was accompanied by a marked increase in employment to 3,400 in 1923-4 and 3,800 in 1926-7 - the highest figure for the decade.⁹⁰ By far the two most important products were fencing wire and wire netting, and by the end of the twenties Australian producers were able to meet roughly 85 per cent of the requirements of the local market in wire netting and 70 per cent in fencing wire.

Table 10

Wire Netting

Year	Output '000 tons	Imports '000 tons	Consumption ^a '000 tons	Output as % of Con- sumption	Bounty £'000
1922-23	7.4	N.A.	N.A.	N.A.	25.2
1923-24	19.0	N.A.	N.A.	N.A.	64.8
1924-25	26.6	N.A.	N.A.	N.A.	90.3
1925-26	28.0	3.1	31.1	90.0	95.1
1926-27	26.6	4.6	31.2	85.3	90.3
1927-28	21.7	3.3	25.0	86.8	73.9
1928-29	21.7	3.3	25.0	86.8	73.9
1929-30	16.6	2.8	19.4	85.6	56.5

(continued next page)

90

'Wireworking' and 'Nails' are the industry classifications of the Production Bulletin; in some years they are combined. Employment figures are from Production Bulletin nos 8, 14-24.

(continued)

Fencing Wire^b

Year	Output '000 tons	Imports '000 tons	Consumption ^a '000 tons	Output as % of Con- sumption	Bounty £'000
1922-23	4.6	N.A.	N.A.	N.A.	12.0
1923-24	20.6	20.6	41.2	50.0	53.5
1924-25	27.7	27.6	55.1	50.1	71.9
1925-26	37.5	27.5	65.0	57.7	97.4
1926-27	37.8	31.0	68.8	55.0	98.4
1927-28	40.2	22.8	63.0	63.8	104.5
1928-29	45.8	17.5	63.3	72.4	121.8
1929-30	43.9	19.5	63.4	69.2	114.1

a

Consumption estimated at output plus imports.

b

Initially 'fencing wire' meant wire of guage 8 to 14 for fencing or for use as prescribed by departmental by-law. From 1 April 1925, it included all wire of guage 8 to 14 irrespective of final use. The change was made because of administrative problems. (Tariff Board Report on Barbed Wire, Fencing Wire and Other Wires and Wire Netting, 1926, p.4.) There is therefore a change in the coverage of the table after 1924-5. Imports must be treated as close estimates.

Sources: Output and Bounty from Commonwealth Production Bulletin, nos 17-24.
Imports from Overseas Trade Bulletin, nos 20-7.

Almost the entire output of these two products came from
91
Lysaght and Rylands, and their relative size is suggested
in the following table.

91

Several other firms obtained the bounty for netting but their employment never totalled more than 50. (Returns under the Iron and Steel Products Bounty Act - unprinted Parliamentary Papers.)

Table 11

Approximate Weekly Capacity

	Rylands tons	Lysaght tons
Total wire	1200/1500	800/1000
of which -		
Galvanised wire	800	300
Barbed wire	150	150
	Miles	Miles
Wire netting	300	700
	Tons	Tons
Nails	40	150

Source: Essington Lewis, 'Iron and Steel Industry in Australia - III', The Journal of the Institution of Engineers Australia, vol.1, 1929, p.228.

It can be seen that both factories were on a large-scale and it was claimed that the wire netting factory of Lysaght Bros was the largest in the world.⁹² Both factories also claimed that they were operated most efficiently, R.M. McDougall of Rylands stating that '...the output per head of operatives in his company's factory is much greater than in England, and will compare favourably with America'.⁹³ The amount of protection given by the bounty seems to have been small

92

Summary of Evidence of F.A. Cocks of Lysaght Bros, Tariff Board Report on Barbed Wire..., 1926, p.17.

93

Ibid., p.9. Summary of evidence of R.M. McDougall.

considering that the major raw material, wire rods, was itself protected,⁹⁴ and the profits of the two firms were kept at a low level.⁹⁵ However, two other factors impinged on the level of profits: one was the relationship between the firms themselves and the other was their relationship with B.H.P.

Rylands was in peculiar position because, in the early years of the twenties, its parent firm in England was its keenest competitor: both firms had the same gross price list but regulated their prices by giving discounts.⁹⁶ However, by the middle twenties, at least, the two local firms were the main suppliers and some sort of market agreement had been reached between them. On their relationship the Tariff Board commented:

The Board has investigated the statement...as to the existence of an arrangement between the Australian manufacturers in the nature of a combine. While the

94

E.g., when the tariff per ton on wire rods was £2.4.- per ton, the bounty on fencing wire was £2.12. per ton.

95

'...taking into consideration the bounty received, each of the applicant Companies has been able to show a profit on its turnover while one of the Companies has during each of the three years, 1923, 1924 and 1925 declared, what is in the opinion of the Tariff Board, a reasonably high rate of dividend for an industry receiving assistance in the form of a bounty.' Ibid., p.44, Tariff Board's Comments.

96

Annual Report of the Tariff Board to June, 1924, Appendix C, p.37, Evidence of J. MacDougall.

Board is aware that the local makers have entered into an arrangement in regard to the sale and distribution of their products it is satisfied from its investigation that the arrangement has in no way resulted in restraint of trade or the charging of unduly high prices.⁹⁷

To some extent the close relationship between these two firms must have resulted from their mutual dependence on B.H.P. Under the Iron and Steel Bounty Act (1922), the bounty could only be obtained if Australian raw materials were used. Since B.H.P. was the only local producer of wire rods, this meant reliance on that firm. Lysaght had nothing but praise for B.H.P., one of its executives stating that the company had been 'very well treated' and that 'prices charged to his Company had been quite reasonable'.⁹⁸ Furthermore, it appears that B.H.P. did not take full advantage of the tariff⁹⁹ in its wire rod prices.

Such a close relationship between the wire making firms and B.H.P., combined with separate ownership and control could not last. Taking as they did over one-quarter of B.H.P.'s entire output, the wire firms were that company's most important private market. B.H.P. was therefore vitally

97

Tariff Board Report on Barbed Wire..., 1926, p.43.

98

Summary of evidence of Mr Champ, ibid., p.7.

99

Summary of evidence of Mr Champ and F.A. Cocks, ibid., pp.7 and 17.

interested in their prosperity, their efficiency and their rate of growth. It was inevitable, then, that B.H.P. should seek some form of control and this was accomplished by the end of the twenties. Rylands was purchased early in 1925 for the exchange of 215,443 B.H.P. shares, 'with a view to effecting economies in the cost of production and distribution of products...'¹⁰⁰ and in 1929 an interest was obtained¹⁰¹ in Lysaght Bros.

(c) Galvanised Iron

Production of galvanised iron in Australia began in 1921, but ceased in 1922-3 when the closure of the B.H.P. works cut off supplies of steel. With the re-opening of B.H.P., this industry became firmly established and between May 1923 and November 1929, one-tenth of the volume of B.H.P.'s steel¹⁰² output went as sheet bar to be turned into galvanised iron.

100

B.H.P., Reports and Statements of Account for year ending 31 May 1925, p.10.

101

Ibid., 1929, p.9. Lysaght Bros may have been in real difficulties by 1929, certainly their importance had declined relatively to Rylands, and their employment fell steeply in 1929-30 (Returns under Iron and Steel Products Bounty Act). As well as developing control over the two wire producers, the B.H.P. in 1927 took over The Titan Nail and Wire Pty Ltd, a large manufacturer of barbed wire and nails in Melbourne which obtained its wire from Rylands. The firm dates back to 1888. 'The Titan Nail and Wire Pty Ltd.', The B.H.P. Review, vol.XV, no.5.

102

See Table 8.

Earlier in the century, several attempts had been made by the Commonwealth government to encourage the industry in Australia. A bounty on production had been paid from the beginning of 1909 to the middle of 1914, but the results were trifling.¹⁰³ The scarcity of imports and their high price during the war were the main reasons behind a fresh attempt to aid the industry in 1918.¹⁰⁴ This time hopes for success were more soundly based. The establishment of B.H.P. meant an assured supply of local raw material, and in 1917, the chief exporter of galvanised iron to Australia, the English firm of Lysaght and Coy, agreed to commence manufacturing in Australia if sufficient tariff protection were granted. Negotiations with the Commonwealth government led to the level of protection provided by the 1918 act.¹⁰⁵

103

Bounties were authorised under the Manufacturers' Encouragement Acts of 1908 and 1912 and were at the rate of 10% of the value of the finished product. However, payments were only £192 in 1908-9, £287 in 1909-10 and £118 in 1910-11. Commonwealth Parliamentary Debates, vol.LXXXVII, p.8521.

104

Ibid., p.8227. Under the Iron and Steel Bounty Act (1918) the duties and bounties introduced were:

	Duty		Bounty
	U.K.	General	
Black steel sheets	Nil	5%	30s. a ton
Galv. sheets, not corrugated	10s.	20s.	40s. a ton
Corrugated galvanised sheets	20s.	30s.	40s. a ton

The bounty was to be reduced by as much as the freight from the U.K. exceeded £2.10. a ton. It was to expire on 23 Sep. 1923.

105

See statement by Minister for Trade and Customs, Commonwealth Parliamentary Debates, vol.LXXXVII, pp.8522-3.

Lysaght sited their factory next to the steelworks at Newcastle and brought out skilled workers from their home plant; in all, 75 sheet mill workers and 28 galvanisers were brought to Newcastle with their families to houses provided
106
by the company.

The specific circumstances surrounding the establishment of Lysaght's factory in Australia are particularly significant because they played an important role in the relations between the company and the government. The Tariff Board was later to conclude that the Commonwealth government 'directly encouraged' the establishment of this industry in Australia, and was therefore, in some special degree, responsible for its success.
107
The tariff of March 1920 did not alter substantially the duties placed on galvanised iron in 1918, but a deferred duty was introduced to operate from 1 January 1922, of per ton B.P.T. 72s., I.T. 90s. and G.T. 110s. These duties were reorganised in September 1922, when a bounty of 52s. per ton was introduced and the B.P.T. was lowered to 20s. per ton; there was thus no change in the level of protection against most of the competition which

106

Lysaght's Venture, 1955, p.5. See also 'Lysaght's Newcastle Housing Scheme', Millions Magazine, 1 Oct. 1920, p.1.

107

Tariff Board Report on Galvanised Iron, 1926, p.5.

came from the United Kingdom. However, this protection was insufficient to establish the industry firmly. In September 1925, the tariff was increased against non-British imports so as to discriminate against British exporters who were using continental bars;¹⁰⁸ this was inadequate, and in January 1928, the bounty was raised to £3.12s. Two years later it was further increased to £4.10s.¹⁰⁹

Lysaght was the only firm to respond to this protection and the progress of the firm from 1923 to 1930 is set out in the table below:

Table 12

Galvanised Iron

Year	Production '000 tons	Imports '000 tons	Consump- tion ^a '000 tons	Production as % of Consumption	Bounty £'000	Employ- ment
1923-24	16.3	99.6	115.9	14.1	39.8	N.A.
1924-25	17.1	102.6	119.7	14.3	44.5	390
1925-26	18.9	89.5	108.4	17.5	49.2	433
1926-27	26.1	103.5	129.6	20.2	67.9	454
1927-28	23.0	107.6	130.6	17.6	65.1	486
1928-29	28.5	87.5	116.0	24.6	102.7	545
1929-30	24.1	67.2	91.3	26.4	89.6	614
Total	154.1	657.4	811.5	19.0	458.8	-

^a Consumption taken as production plus imports.

Sources: Production and Bounty from Commonwealth Production Bulletin nos 18-24.

Imports from Overseas Trade Bulletin, nos 21-7.
Employment from returns to Parliament (unprinted).
It does not seem to include office staff and should relate only to those employed on galvanised iron.

¹⁰⁸ Tariff Board Report on Galvanised Iron, 1925, p.6.

¹⁰⁹ A summary of the changes in tariff and bounty may be seen in Tariff Board Report on Galvanised Iron and Steel Plate and Sheet, 1931, pp.5-6.

When the works were established in 1921 a motor, annealing furnace and pickling machine were installed with a capacity for a plant of eight rolling mills,¹¹⁰ but this number of mills was reached only slowly: four mills were in operation by the end of 1921, two more by 1924, one in 1926 and the final one in 1927. The capacity of the works was then between 30,000 and 40,000 tons of galvanised iron a year. A complete duplication of the plant was begun at the end of the decade and completed in 1930.¹¹¹ Nevertheless, throughout the twenties, capacity was quite inadequate for Australia's requirements and production catered for only a small proportion of the local consumption (see Table 12). Because of transport costs, the company's market in the middle of this period was confined to New South Wales, where it met about half the demand,¹¹² and where one of its foreign competitors claimed it was assisted by a substantial freight discount from the N.S.W. railways.¹¹³

Was this slow rate of growth the result of inadequate tariff protection? In part this seems to have been so. In

¹¹⁰

Lysaght Venture (Sydney, 1955), p.6.

¹¹¹

Lysaght's Jubilee (1945), passim.

¹¹²

Tariff Board Report on Galvanised Iron (1925), p.4.

¹¹³

Ibid.



1926 the Tariff Board pointed out that the protection given the local industry represented the difference between the duty on British sheet bars (44/- per ton) and the total of the duty (20/-) and the bounty (52/-) on galvanised iron; the difference of 28/- per ton in ad valorem terms amounted to only 6 per cent.¹¹⁴ In setting the level of protection, the Tariff Board allowed for a profit 'not so high as would, in ordinary course of trading be regarded as a satisfactory return on capital, but...sufficiently high for an industry dependent for its existence on the receipt of bounty from the Commonwealth Government'.¹¹⁵ Certainly profits do not appear to have been large, and up to the end of 1928 only one 5 per cent dividend had been paid on the ordinary share capital.¹¹⁶

114

Tariff Board Report on Galvanised Iron (1926), p.4.

115

Ibid., p.5.

116

See statement by Acting Minister for Trade and Customs, F.M. Forde, Commonwealth Parliamentary Debates, vol.122, p.1044. The parent company in England held all the share capital in the Newcastle works (partly through a subsidiary). This amounted to a nominal capital of £1,000,000, of which 500,000 £1 preference shares and 436,095 £1 ordinary shares had been issued by 1931. On this share capital no dividends had been paid up to 1927. Then in the three years 1927-9 yearly 5% dividends were paid on the preference shares, while in 1928 5%, and in 1929 2.5%, were paid on the ordinary shares. (Tariff Board Report on Galvanised Iron and Steel Plate and Sheet, Transcript of Evidence, F.L. Walker, Managing Director of John Lysaght (Aust.) Ltd, 10 Feb. 1931) Only a portion of the share capital was represented by real assets; 500,000 shares had been issued to the English firm for goodwill, patents etc., and the Tariff Board thought this an unreasonable procedure since the English company was the only

The attitude of the Tariff Board towards profits in the industry could not have been an inducement towards efficiency, and, as we have seen, the firm was slow in obtaining the economies associated with the full utilisation of its plant. Further, it seems that the mills constructed in Australia were not of the most modern design: all were of a primitive hand-operated type and it was not until 1935 that the erection of mills using mechanical handling methods was begun. The main competition came from England, where the industry was described as being 'in the front rank of progressive enterprise'. The British competitive position was enhanced by the use of cheap raw materials imported from Europe, and it is doubtful if Australian anti-dumping legislation was able to stop these imports.

116 (continued)
 shareholder (Tariff Board Report on Galvanised Iron and Steel Plate and Sheet, 1931, Supplementary Confidential Report, p.7). However, the English company made substantial contributions to the expansion at the end of the decade, and after adding this contribution and deducting the amount paid for goodwill etc., the Tariff Board arrived at '£676,059 representing capital employed in the industry'. Ibid. (General Report), p.15.

117

J.C.F. Lysaght, 'Sheet Rolling in Australia', The B.H.P. Review, vol.XVI, no.3, pp.10-13.

118

Committee on Industry and Trade, Survey of Metal Industries (1928), p.64.

119

Tariff Board Report on Galvanised Iron... (1931). In the Supplementary Confidential Report it is stated that British manufacturers generally used continental sheet bars and few complied with the British preference conditions of the Australian tariff (p.2).

It can be seen that the competitive position of the Australian firm was not strong, but there appears to have been another, and possibly more important factor inhibiting growth during the twenties. This was Lysaght's relationship with its English parent company. The manufacturing company at Newcastle, Lysaght's Newcastle Works Ltd, was controlled by the English producer, John Lysaght of Bristol, which also controlled John Lysaght (Australia) Ltd, the Australian distributor for both the manufacturing companies. These two manufacturing companies would necessarily have been in some sort of competition, since imports came almost entirely from the United Kingdom and of these John Lysaght of Bristol provided approximately 75 per cent. At the beginning of 1931 the Tariff Board noted that 'very high profits were being earned during the past three years' by the distributing company, and apparently a much higher rate of profit was being earned on imports than on local production. The managing director of the distributing company admitted that Australian production was one of the reasons for part-time work in the English plant which could easily have met the

120

Ibid. Supplementary Confidential Report, p.2.

121

Ibid. (General Report), p.9. In the Supplementary Confidential Report the rate of profit on the capital actually employed in the distributing company was given at 27% in 1928 and 26% in 1929 (p.3).

Australian demand. ¹²² Further, the Australian plant was not operating at capacity because 'we could import cheaper than we could manufacture'. ¹²³ It was not, therefore, in Lysaght's interests to expand production in Australia. Instead, the company maintained a small plant here, in case of tariff developments and to discourage potential competitors, and at the same time maximised profits by supplying the market as far as possible from the English plant.

In total then, Lysaght took one-tenth of the volume of B.H.P.'s steel output between 1923 and 1930. This was an important but limited market and no doubt B.H.P. wished the local company would make more strenuous efforts to meet Australian requirements. However, the relationship between the two companies was necessarily very close: to obtain its bounty Lysaght had to use Australian raw material which all came from B.H.P. Moreover, the price it paid for B.H.P. steel was set at a fixed proportion of the price which it obtained for its galvanised iron. This pricing agreement appeared so unusual to the Tariff Board that it was led to suspect B.H.P. of a financial interest in Lysaght's Works,

¹²²

Ibid. Transcript of Evidence, F.L. Walker, p.13 (confidential).

¹²³

Ibid., p.16 (non-confidential).

124

but investigation proved the suspicion unfounded. In this independence, Lysaght was exceptional among the firms which were closely dependent on B.H.P. in the twenties, the more so since its behaviour could not have suited B.H.P.; but no doubt the main reason was its total ownership by a very large English firm.

(d) Ingots, Blooms and Semis - The Commonwealth Steel Co. Ltd

Table 8 indicates that between 1923 and 1930 roughly 5 per cent to 6 per cent of the volume of B.H.P.'s output of steel products was in the form of 'ingots, blooms and semis'; that is, as steel which has had only preliminary processing at the steel works. The principal buyer of this steel was the Commonwealth Steel Co. Ltd.¹²⁵ This firm owed its origins to the shortage of railway rolling stock equipment during the war, which induced five prominent Australian engineering companies to combine for the manufacture of wheels, axles and tyres. Accordingly, in 1917, they formed Commonwealth Steel Products Company Ltd and in 1918 they were joined

124

Ibid. (General Report), p.12.

125

E.g., the B.H.P. sales manager stated: 'Quite a large turnover was done in blooms, mostly used for forging purposes, the principal buyers being the Vicker-Commonwealth Steel Products Co., and the various Governments.' The B.H.P. Review, vol.6, no.2, p.7. Apart from blooms the company was a large purchaser of ingots and Table 13 suggests that the company took at least half of B.H.P.'s output of the products dealt with in this section.

by Howard Smith Ltd. Two experts were sent overseas to examine methods of production and Newcastle was chosen as a site for the factory. Newcastle was selected not because it was the home of B.H.P., but because it was the only city offering the unrestricted supply of electricity required for the firm's electric furnace. Subscribed capital was limited by wartime controls to £150,000, and two Americans were appointed to supervise production, which commenced in 1919. In that year the company was joined by Taylor Bros and Co. of Leeds.

126

Production of these commodities had actually been started during the war by Thompson and Coy of Castlemaine to meet the desperate shortage. Very primitive machinery was used and although the product was satisfactory, the process was expensive.

127

However, the difficult situation during the

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This information on the early development of Commonwealth Steel was obtained from W.E. Clegg (General Manager), 'The Origin and Development of Commonwealth Steel Co. Ltd.', The B.H.P. Review, vol.XIV, no.3. Those present at the initial meeting at which the decision to form the company was made were: Messrs W. Rigg, J.E. Vance, H.C. Hudson, T. Irons, J.F. Rofe (directors of The Clyde Engineering Co. Ltd), Mr James D. Ritchie (Messrs Ritchie Bros, Auburn), Mr A.M. Henderson (of Melbourne), Messrs A. Goninan and R.W. Goninan (A. Goninan & Co. Ltd), Messrs J.B. Wallis and B.D. Scarth (The Pioneer Spring Co. Ltd). Ibid., p.5.

127

W.M. Greene, Minister for Trade and Customs, Commonwealth Parliamentary Debates, vol.XCVI, p.9519.

war, combined with Australian efforts to meet the demand and the formation of the Commonwealth Steel Co., persuaded the Commonwealth government that this was an industry well worth protecting, and in March 1920, the heavy duties were imposed of B.P.T. 35 per cent, I.T. 45 per cent and G.T. 55 per cent.

This was not the limit of the protection obtained by the industry. Most of the states and the Commonwealth government - who were the main purchasers - gave a preference to the local manufacturers over and above the tariff.¹²⁸ Indeed, in the latter half of the twenties, the Commonwealth, N.S.W. and Queensland Railways gave an absolute preference and overseas suppliers were not invited to tender.¹²⁹ Imports became practically confined to South Australia and Western Australia, partly because of state anti-protection sentiment and partly because of high freights from Newcastle; as a result, for the last three years of the decade imports of wheels and axles for railways and tramways were only 16 per cent of the estimated Australian consumption.¹³⁰ It was this development by Australian producers that forced one of the principal

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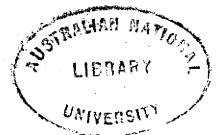
Commonwealth Arbitration Court, Amalgamated Engineering Union & Others v. Metal Trades Employers Association & Others, Transcript of Evidence. W.E. Clegg, 20 June 1929, p.2865 et seq.

129

Tariff Board Report on Wheels and Axles for Railways and Tramways, 1931, p.6.

130

Ibid.



British suppliers, Vickers Ltd, to join the Commonwealth Coy in 1923 and the firm's name was changed to Vickers-Commonwealth Steel Products Ltd.

Total Australian production was divided between Thompson's and the Commonwealth Company; the latter was by far the larger producer and Thompson's market was confined almost entirely to its home state, Victoria, where it was assisted by a local preference. The following table sets out the Commonwealth Company's output of its main products in the last three years of the twenties, and gives an estimate of total Australian requirements.

131

W.E. Clegg, The B.H.P. Review, vol.XIV, no.3, p.7.

132

W.E. Clegg in evidence to Commonwealth Arbitration Court, 20 June 1929.

133

The table shows only a part of the company's output; set out below is the entire production between 1920 and 1928.

159,873	Railway and Tramway Tyres
22,937	" " " Axles
21,631	Pairs of Assembled Wheels and Axles
16,816	" " " Smaller Wheels and Axles for Collieries, etc.
48,387	Cast Steel Wheel Centres
6,070	Tons of General Steel Castings
2	Large Cast Steel Stern Frames for 12,500 ton Commonwealth Ships. Stern Frame for Naval Sea-plane Carrier, and various 'Waratah' Manganese Steel Track Work Layouts for Tramways at Melbourne, Brisbane, Hobart, etc.

Source: Essington Lewis, 'Iron and Steel Industry in Australia - III', The Journal of the Institution of Engineers Australia, vol.1, 1929, p.230.

Table 13

Period June to June	Australian Re- quirements		Manufactured by Commonwealth Steel		Vickers- Products Ltd
	Tons	£'000	Tons	£'000	% of Re- quirements
<u>Tyres</u>					
1927-28	5,138	178	3,802	130	74
1928-29	7,450	226	5,412	164	73
1929-30	7,180	204	5,189	148	72
<u>Axles</u>					
1927-28	1,225	48	491	19	40
1928-29	1,280	45	640	23	50
1929-30	541	17	249	8	46
<u>Wheel Pairs</u>					
1927-28	3,205	165	1,282	66	40
1928-29	5,292	258	2,117	103	40
1929-30	2,926	102	1,463	51	50

Source: Tariff Board Report on Wheels and Axles...,
1931, p.4. Summary of Evidence of W.E. Clegg.

With an assured market and the backing of prominent Australian and English firms the Commonwealth Company made rapid progress. By 1923 the share capital had been increased to £350,000,¹³⁴ and in 1929 the manager claimed that his company had 'spent £150,000 in remodelling our plant to save handling, and to install the latest and most modern equipment';¹³⁵ by 1931 he reported that £450,025 was invested in the manu-¹³⁶facture of wheels and axles alone.

¹³⁴

W.E. Clegg, The B.H.P. Review, vol.XIV, no.3, p.7.

¹³⁵

W.E. Clegg in evidence to Commonwealth Arbitration Court, 20 June 1929.

¹³⁶

Tariff Board Report on Wheels and Axles..., 1931, p.4.

Throughout the twenties there was a close relationship between this firm and B.H.P. As we have seen, electricity supply was the deciding factor behind the location of the works at Newcastle, but as events turned out the company was fortunate in being near B.H.P. Initially, the firm used its electric furnace to manufacture its own ingots, relying on scrap for its raw material.¹³⁷ This method of production remained in use until 1924, 'but the demand became so great that we were forced to decide between extending our own furnace equipment or buying from the Broken Hill Company. My company decided to purchase from the Broken Hill company seeing they had a plant along side us...'.¹³⁸ The electric furnace was still used for steel castings, mainly for wheels, but for the rest of the twenties it only operated at about one-third of its pre-1924 rate of production.¹³⁹ From 1924, then, B.H.P. supplied the company with steel ingots for forging and rolling into tyres and blooms for forging into axles. The association between the two companies became closer in May 1929,

137

A major source of scrap is internal; 25% of the ingot is wasted in slicing the cheeses. Tariff Board Report on the Iron and Steel Industry, Transcript of Evidence, p.64.

W.E. Clegg, 13 Jan. 1926.

138

W.E. Clegg in evidence to Commonwealth Arbitration Court, 20 June 1929.

139

Ibid.

when B.H.P. acquired a shareholding in Vickers-Commonwealth and Essington Lewis (Managing Director of B.H.P.) became a director.¹⁴⁰ But B.H.P. did not acquire a decisive controlling interest in the firm until 1935, when it bought out some of the English shareholders.¹⁴¹

(e) Merchant Bar and Structural Steel

Because of classification difficulties it is necessary to consider both these types of steel products together. Although they are separated in Table 8, the division is not in fact clear cut. For instance, a statement of B.H.P.'s output up to May 1924, shows an output of 'structural shapes' which is well above that suggested by Table 8.¹⁴² It is probable that the output of structural steel in Table 8 refers only to heavy structural shapes rolled in the 28-inch mill, as distinct from merchant bar which includes the lighter structural shapes rolled in the 18-inch and 12-inch mills. When combined, these commodities make up a most important

140

W.E. Clegg, The B.H.P. Review, vol.XIV, no.3, p.7.

141

Division of Industrial Development, Review of the Iron and Steel Industry, September 1950 (no.22 in the Industry Review Series), p.11. This was when the present name of Commonwealth Steel Co. Ltd was adopted.

142

Output of structural shapes to 31 May 1924 was 112,000 tons. New South Wales: Its Resources and Business Possibilities (John Sands Ltd, Sydney, 1925), p.17.

part of B.H.P.'s total steel output - roughly 30 per cent between 1923 and 1930.

The production of both these products by B.H.P. did not lead directly to the establishment of further processing industries; it simply meant the replacement of imports, which, in the four years before the war, 1910-13, had averaged 155,000 tons per annum.¹⁴³ In the four years 1925-6 to 1928-9, they were reduced to an average of 99,000 tons per annum,¹⁴⁴ but in these years, local output which had been negligible before the war, rose to an average of 92,000 tons per annum from B.H.P. and perhaps 25,000 tons from Hoskins. It seems, therefore, that the demand for these products was at least one-third higher in the twenties than pre-war: the source of the demand being the enormous variety of uses in mechanical and constructional engineering for ultimate use in all industries.

It is probable that it was in constructional work that the demand for this type of steel was rising most steeply. It was not until 1911 that the first steel frame office building was erected in Melbourne,¹⁴⁵ but during the twenties,

¹⁴³ Overseas Trade Bulletin, no.11.

¹⁴⁴ Ibid., no.26.

¹⁴⁵ G.N. Blainey, Johns and Waygood Ltd., 1856-1956, p.54.

the use of structural steel, often in conjunction with cement, found widespread acceptance, particularly for new city buildings.
146

What prevented the local manufacturers from obtaining more than some 60 per cent of the market? They were assisted by substantial protection in 1920 which was increased in 1927;
147 further, the consumers of structural steel were encouraged to use the Australian product by a substantial preference in government contracts, and local suppliers could give quicker delivery than overseas producers. In spite of these advantages, local manufacture was limited by the great variety of shapes and sections required by the market and the cost of producing those for which there was not a large demand. This difficulty was faced at the beginning of the decade when the first set of standards published by the
148 Institute of Science and Industry related to structural steel.

146

The growing importance of both cement and steel has already been noted in ch.III.

147

These commodities are imported under two tariff items for which the rates of duties were very similar.

Item 136(c), Bar, Rod, Angle, Tee, etc.

1920 B.P.T. 44s., I.T. 65s., G.T. 80s. - per ton

1927 B.P.T. 70s., I.T. 100s., G.T. 120s. - per ton

Item 155, Rolled Iron or Steel Beams, Channels, Joists, Girders, etc.

1920 B.P.T. 48s., I.T. 75s., G.T. 90s. - per ton

1927 B.P.T. 70s., I.T. 100s., G.T. 125s. - per ton.

148

For the development of a standard for structural steel, see articles in the Australasian Engineer, 31 Dec. 1919, 31 July 1920 and 30 Nov. 1920.

The standards published in 1920 covered 76 sections and this number was reduced in 1923 to 73; in 1926, however, when B.H.P. was manufacturing only 48 sections out of the Australian standard, the British standard list covered 113 sections.¹⁴⁹ As one engineer complained about the local manufacturers: 'I am sorry to say they treat us very bad, because they do not carry sufficient stocks', and this applied even to the 'stock sizes'.¹⁵⁰ As late as 1929 B.H.P.'s sales manager had to admit the company was still losing business because its range of structural steel products was inadequate. But he thought that architects and structural engineers could, with more care, substitute local structural steel for imported material, and he reminded them that, for government contracts, 'it was in their interests to give preference to Australian products when preparing specifications...'.¹⁵¹

The development of the market for structural steel in the twenties can best be illustrated by an outline of the growth of two major construction firms, one conducting most

149

Tariff Board Report on the Iron and Steel Industry, 1926,
pp.20-1.

150

Ibid., Transcript of evidence, A. Stuart of the Sydney Steel Coy Ltd, 2 Feb. 1926. This firm had a turnover of 9,000 to 10,000 tons of steel per annum.

151

A. Bailey, 'Sales and Salesmanship', The B.H.P. Review, vol.6, no.2, p.7.

of its business in Melbourne, the other in Sydney. To ensure that these firms had a sheltered market for the processing of structural steel, in 1925 an additional duty was added to structural steel which was 'drilled or further manufactured' of per ton - B.P.T. 25 per cent, I.T. 35 per cent and G.T. 40 per cent.

One of the principal Melbourne firms was Johns and Waygood Ltd, which had important interests in electric lifts as well as structural steel. For this company the twenties was a boom period, as the uses of structural steel multiplied: its contracts included some of Melbourne's largest buildings, towers for electric power lines in both Victoria and Tasmania, the Ford works at Geelong, meatworks at Darwin and in Western Australia, the Flinders Street railway viaduct and railway bridges throughout Australia.¹⁵² This business was extremely profitable. In the eleven years between 1919-20 and 1929-30 dividends were at the rate of 12.5 per cent for three years, 17.5 per cent for four years and 20 per cent for four years; over the same period share capital was increased from £83,000 to £183,000, £73,000 of the increase being made by bonus share issues.¹⁵³ These outstanding profits

¹⁵²

Were's Statistical Service, 1934. (Report on Johns and Waygood Ltd.)

¹⁵³

Johns and Waygood Ltd, Annual Reports, for years ended June 30, 1920 to June 30, 1930.

created considerable interest amongst outside observers. For instance, Jobson commented in 1926: 'The exceptionally profitable nature of the business...indicates that competition is by no means keen, but whether this condition will continue is open to question.'¹⁵⁴ Two years later Jobson was writing: 'It is somewhat strange that the economic principle of capital flowing into industries showing more than average returns has not created keener competition...'¹⁵⁵ and he could only conclude that 'sound management is apparently the secret of its success...'¹⁵⁶ Contracts with public authorities formed a large portion of the company's business, and their custom of giving a preference to Australian manufacturers over and above the tariff was an important factor in limiting overseas competition and encouraging the demand for Australian steel. For example, in 1929 the firm obtained a contract for £56,606 with the Victorian State Electricity Commission for the steel towers to support transmission lines carrying electric power from Yallourn to Melbourne:

The accepted price was £6,300, which is 11.8 per cent greater than that of the lowest tender received. The commission recommended its acceptance in the interests of Australian manufacture.¹⁵⁷

154

Jobson's Investment Digest, Sep. 1926, p.515.

155

Ibid., Sep. 1928, p.434.

156

Ibid.

157

Argus, 17 May 1929, p.9.

Another important firm working in structural steel was Dorman, Long and Coy Ltd, an English firm which established branches in Australia. One branch was begun at Melbourne as early as 1900,¹⁵⁸ and it quickly became Johns and Waygood's chief competitor.¹⁵⁹ A further branch was established in 1923 at Alexandria in Sydney, when the company took over the works of Scruttons Ltd, its former agent.¹⁶⁰ These works were extended and the company carried out the steel work on many of Sydney's large buildings;¹⁶¹ by 1926 the Sydney branch employed about 160.¹⁶² As we have seen,¹⁶³ both branches were taken over by Australian Iron and Steel Ltd in 1928; at that date they had tangible assets worth £399,136 and the compensation was 600,000 ordinary £1 shares in the new steel company. Meanwhile, Dorman, Long had obtained the most important construction contract of the 1920s - the

¹⁵⁸
 Australian Iron and Steel Ltd, Prospectus, 17 May 1928, p.9.

¹⁵⁹
 Blainey, op. cit., p.46.

¹⁶⁰
Industrial Australian and Mining Standard, 3 May 1923, p.717.

¹⁶¹
Alexandria - 'The Birmingham of Australia' - 75 Years of Progress, 1868-1943 (W.C. Penfold and Co.), pp.78-80.

¹⁶²
 Evidence of T. Smith to the Commonwealth Arbitration Court, Transcript, Enquiry re Standard Hours, 6.Oct. 1926, p.2031.

¹⁶³
 See p. 298.

Sydney Harbour Bridge at a price of £4,218,000: This contract was kept quite separate from the operation of the two branches and was not included in the sale to Australian Iron and Steel. An immense amount of steel fabrication was required for the job, and once again government insistence forced the work to be carried out in Australia. The position was summed up by the Australasian Engineer:

...great stir is being made in the press regarding the ultimate decision, and the nearer the stage approaches when the decision will be given, the wilder seem to be the statements being made to influence the adjudicators to give preference to an Australian tender.

The agitators are apparently oblivious to the fact that in Section 16 of the specifications...it is stated that 'the tenderer must provide in his tender for fabricating the metal work either wholly or so far as is reasonably practicable within the State of New South Wales.... In dealing with the tenders, consideration will be given to the relative weights of metal work manufactured locally and abroad'. In which paragraph there is practically a preference for Australian production where advisable.¹⁶⁴

Not only was the fabrication to be carried out in Australia, but, where possible, the steel had to be of Australian manufacture. In all, the construction of the bridge called for 50,300 tons of steel, roughly 50 per cent of which was supplied from within Australia by B.H.P.; imports

164

31 Jan. 1924, p.7.

were limited to heavy structural shapes and steel plates not
 manufactured locally.¹⁶⁵

(f) Pig Iron

For most of the twenties, B.H.P.'s output of pig iron for sale was at the rate of about 50,000 tons per annum. In weight this was between one-fifth and one-sixth of the output of steel products for sale. In terms of annual production, the output figures suggest that the market was very stable, and there was no decline until 1929-30 when production fell to 28,000 tons from 53,000 tons in the previous year.¹⁶⁶ The total pig iron market was shared by B.H.P. with Hoskins and imports; in 1925-6, when imports amounted to 11,752 tons, the Minister for Trade and Customs claimed that 'the local companies supplied over 90 per cent of the merchants' requirements, in addition to supplying the whole of their own requirements'.¹⁶⁷ This would place local output for sale at around 100,000 tons and would appear to be a reasonable estimate.¹⁶⁸ However, not all of Hoskin's iron output at

¹⁶⁵

Ibid., 30 Apr. 1924, p.12, and Commonwealth Engineer, July 1926, p.479.

¹⁶⁶

See Table 8.

¹⁶⁷

H.E. Pratten, Commonwealth Parliamentary Debates, vol.117, p.3221.

¹⁶⁸

Hoskins' pig iron output was around 100,000 tons when steel production was about 50,000 tons, so that about 50,000 tons of pig iron were not turned into steel.

Lithgow was in competition with B.H.P., since a considerable proportion went to their own cast iron pipe works.

In spite of the claim of B.H.P.'s sales manager that 'several grades were produced to suit all classes of foundry work', ¹⁶⁹ it seems that, in 1926 at least, some of the imports ¹⁷⁰ of pig iron were of a type not made in Australia. But, generally speaking, imports were not large during the twenties: they averaged about 10,000 tons per annum between 1922-3 and 1927-8, ¹⁷¹ as compared with an average of 58,000 tons per annum in the three years preceding the war. ¹⁷² The reduction in imports was assisted considerably by the imposition of the tariff on pig iron in 1920 of per ton B.P.T. 20/-, I.T. 30/- and G.T. 40/-. The problem of competition from iron and steel scrap still remained: in the three years before the war, imports of scrap had averaged 22,000 tons per annum, ¹⁷³ and these increased in the twenties to a peak of 26,000 tons in 1923-4. ¹⁷⁴ Faced with this threat to their pig iron market,

¹⁶⁹

A. Bailey, The B.H.P. Review, vol.6, no.2, p.7.

¹⁷⁰

H.E. Pratten, loc. cit.

¹⁷¹

Overseas Trade Bulletin, nos 20-5.

¹⁷²

Ibid., nos 9-11.

¹⁷³

Ibid., nos 9-11.

¹⁷⁴

Ibid., nos 17-27.

the major iron and steel companies appealed to the Tariff Board for assistance. Although steel scrap is essential for the satisfactory operation of the basic open hearth process, there was sufficient within Australia, so that the steel companies' main consideration was the competition with their pig iron.¹⁷⁵ The Tariff Board met their wishes and recommended the same duty on 'cast iron and steel scrap' as was applied to pig iron.¹⁷⁶ This recommendation was carried out by the Commonwealth government in September 1925, and by 1926-7 imports of scrap had been reduced to less than 10,000 tons.¹⁷⁷

Conclusion

The establishment of a large-scale iron and steel industry on a firm basis was one of the outstanding industrial achievements of the 1920s. There was never any real danger of the industry failing as a result of overseas competition: once it had been founded the Commonwealth government was determined it should be maintained. This attitude meant that

175

Tariff Board Report on Cast Iron and Steel Scrap, Transcript of Evidence, 1925, Evidence of R.H.M. Rowe, General Sales Manager of B.H.P., p.9.

176

Tariff Board Report on Cast Iron and Steel Scrap, 1925. (Not printed.)

177

Overseas Trade Bulletin, no.24.

the government took measures to encourage the industry, two of which were of particular importance - the tariff and preference in government contracts. Yet the industry could not rest complacently behind this protection. The twenties was a period of most aggressive world trading: competition, from imports as well as from B.H.P., forced Hoskins to give up its uneconomic site at Lithgow and move to the coast in an attempt to expand production. The main producer, B.H.P., was, at the beginning of the decade, operating at a cost level which was undoubtedly above that of its overseas competitors. In part this was a result of Australian costs in general being high (and staying high throughout the twenties), but its efficiency was also not up to world standards. The rest of the twenties was therefore a struggle to improve the firm's competitive position by plant reorganisation, staff training, and integration with suppliers and markets. One obstacle, however, could not easily be overcome - the steel-using industries had not been established at the expected rate and so the firm suffered from overcapacity.

For most of the twenties the industry met a fairly constant 40 per cent of the Australian demand for steel, and until steel mills were established to extend the range of production, this proportion could not be substantially changed. Of the industry's markets, the state and Commonwealth

governments and their agencies were without doubt the most important. They purchased almost all the rails and accessories which made up three-tenths of the volume of B.H.P.'s steel output in the twenties, and they were the main ultimate market for ingots and blooms, as well as large purchasers of merchant bar and structural steel for the extensive public works programme of the twenties. Farmers purchased almost the entire output of wire netting and fencing wire, and this was one-quarter of B.H.P.'s production; they were also an important market for galvanised iron. Merchant bar and structural steel, about three-tenths of B.H.P.'s output, went mainly to private metal works and construction engineers, as did the output of pig iron.

The development of the iron and steel industry meant a substantial replacement of imports at the cost of expensive iron and steel products. In the twenties it did not lead to the establishment of a complete range of steel using industries; many firms used locally produced iron and steel but they could have managed as well, or better, using imports. It was just those products which are most economically related to the steel works - plate and sheet, pipes and tubes - which were not made in Australia in the twenties. In this sense, the growth of the industry was disappointing, and although it had attracted a cluster of dependent industries by the end



of the twenties, they were not as extensive as had been anticipated. Nevertheless, even without these industries, the basic step of large-scale production of steel which had been begun during war had been consolidated in peace, a trained work-force had been built up and the foundations were laid for further developments in the metal industries.

Chapter VII

THE SUPPLY OF LABOUR

Introduction

Total employment in manufacturing in Australia grew from 368,500 in 1919-20 to 459,800 in 1926-7 - a total increase of 91,300 in seven years, or approximately 13,000 per annum. The year 1926-7 ended the period of growth in employment: there was a fall of 2 per cent in 1927-8, little change in the following year and then a sharp drop in 1929-30. Until 1926-7 the rate of growth of industrial employment of over 3 per cent per annum was twice as high as the rate of natural increase in the 15-64 years age group.¹ In terms of quantity of labour alone this growth placed special demands on the economy. However, numbers were only part of the problem: rates of growth were very uneven in different industries - some were growing while others were declining, and even when total numbers fell after 1926-7 some industries continued to expand rapidly. These fast-growing industries, some of which were new to Australia in the 1920s, needed labour not only in quantity but also of a certain quality.

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See p.363.

Although there are similarities, this labour problem was vastly different in degree from the one which faces the 'underdeveloped' country as it begins to industrialise. In its extreme form, such a country endeavours to raise its real income by transforming an agricultural, often peasant, population into an urban and industrial work force. In Australia's case, real income and general educational level were both already high, a large proportion of the work-force was already engaged in manufacturing (22.3 per cent in 1921),² and urbanisation was exceeded in few other countries. Australia was, in fact, an advanced but semi-industrialised country for which most of the twenties was a period of vigorous industrial growth which posed special problems in terms of the labour supply.

The first part of this chapter examines in general terms the sources of the supply of labour for manufacturing - natural increase, immigration and movement off the land, and then considers the adequacy of this supply as measured by the volume of unemployment. In the second half of the chapter attention is given to the problems surrounding the specific skills needed for the industrial growth: what was the effect of the wage structure? How important and how satisfactory

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See p.11.

were the various methods of training labour including training on the job, apprenticeships and technical schools, and training overseas? Finally, what was the role of the migrant with his specialised skills and experience?

The Quantity of Labour

(a) Natural Increase and Immigration

The flow of labour into the work-force takes place within the rough limits set by the increase in the numbers in the working age group. This working age may reasonably be set for Australia between the ages of 15 and 64 years. The position for the 1920s is set out in the table below.

Date	15-64 Age Group	Increase: Numbers	Increase: %
April Census 1921	3,470,464	-	-
30 June 1921	3,483,463	-	-
1922	3,553,433	69,970	2.0
1923	3,632,851	79,418	2.2
1924	3,713,709	80,858	2.2
1925	3,805,215	91,506	2.5
1926	3,888,621	83,406	2.2
1927	3,987,259	98,638	2.5
1928	4,079,248	91,989	2.3
1929	4,156,363	77,115	1.9

Source: Official estimates of population in age groups are unpublished, but are available at the Department of Census and Statistics, Canberra. This particular age group is calculated from the population in five year age groups as obtained by K.M. Jupp, 'Factors Affecting the Structure of the Australian Population, with Special Reference to the Period 1921 to 1933', p.151. (M.A. thesis, A.N.U., unpublished.)

The increase shown in the total numbers was the result of natural increase plus the net effects of migration. Of course, not all of these people were additions to the work-force in the conventional sense - housewives, for example, must be excluded. In the table below an attempt is made to estimate actual yearly additions to the work-force as measured by 'breadwinners' in census and migration returns; at the same time migration movements are separated from the natural increase. Only the years from 1925 are covered since it was not until that year that 'temporary' migration was separated from 'permanent' migration.

Breadwinners, '000s

Year	Natural In- crease	Less	Permanent Emigra- tion	Plus	Permanent New Arrivals	=	Total in- crease	% P.N.A.to Total
1925	34	-	10	+	35	=	59	59
1926	34	-	11	+	35	=	58	60
1927	35	-	11	+	43	=	67	64
1928	35	-	12	+	30	=	53	57
1929	35	-	14	+	19	=	40	48

Source: Natural Increase was calculated on the increase in the 15-64 age group in the population plus permanent departures less permanent new arrivals of the same age group in the three years 1925-7. This gave an average rate of increase of 1.5% per annum. This percentage was assumed to have operated since 1921 and was applied to the number of breadwinners (less pensioners) as recorded in the census of 1921. Migration figures from Demography Bulletin, nos 43-7.

It can be seen that in the years 1925-8, in which a high rate of immigration took place, immigrants made up roughly 60 per cent of the additions to the work-force. Estimates of permanent new arrivals in the years 1922 to 1924 suggest that a similar proportion applied in those years.³ Clearly then, immigration was the major, and indeed the vital source of labour supply for the general Australian expansion of the 1920s - how important was it for expansion, specifically in manufacturing?

(i) Selected Migrants

The migration policy for the 1920s was established in 1920 when the Commonwealth government put forward for the approval of the states a comprehensive scheme for the encouragement of immigration. Within these proposals the provision of labour for secondary industry found no place - 'primary object of scheme to be the settlement of immigrants on the lands of Australia'.⁴ It was felt that if land settlement was combined with immigration from Great Britain then the provision of British capital would be greatly facilitated.

3

Immigrants made up 60% of the additions to the work-force; the net effect of migration was, of course, considerably smaller.

4

Report of the Resolutions, Proceedings and Debates of the Premiers' Conference Held at Melbourne, May, 1920, p.viii. (Held at House of Representatives, Canberra, Miscellaneous Papers, 1920-21.)

As the Prime Minister, W.M. Hughes, explained to the state premiers:

Settlement without immigration will not appeal to the Britisher, who naturally says to himself, 'Every new settler who goes to man Australia is a potential customer of mine.... If I lend £100 or £200 to the Commonwealth Government in order to send out this man to Australia, he will buy some of my goods or some of the goods which are made in English factories. That is a very good thing for me, and it will also assist to garrison the Empire.'⁵

And later he continued:

Every man in the country [U.K.] who has money to invest will naturally inquire, 'What are the conditions which govern this immigration proposal? Are they such as to insure a steady stream of people who will settle upon the land and provide those already here with additional avenues of employment.['] He will see the possibility of business in it, because more people mean more business. If we can guarantee to provide more people in Australia, the pockets of the investor will be unbuttoned, and we shall be in for a season of relative prosperity.'⁶

At the same time the Prime Minister assured Australian manufacturers that the extension of land settlement would mean an extension of their market and increased employment in the cities:

Mr. Theodore said, and he was quite right, that if you put one man on the land, he provides a job for

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Conference of Commonwealth and State Ministers Held at Melbourne, October-November, 1921. Report of Debates and Decisions Arrived At, p.32. (Held at House of Representatives, Canberra, Miscellaneous Papers, 1920-21.)

⁶

Ibid.

one man, and probably for two men in the city. If we attend to the first part, the other will adjust itself.⁷

Land settlement in Australia was only part of a general co-ordinated scheme of land settlement for British migrants throughout the empire. Towards the end of the war, sentiment had mounted in Britain in favour of a policy which would accomplish 'the sound distribution of our population in the Empire...'.⁸ This sentiment, primarily strategic in origin, was reinforced at the beginning of the twenties by the emergence of a high level of unemployment. Migration combined with land settlement had the particular virtue of not only reducing unemployment directly, but of extending the market for British manufactures and of increasing supplies of food-stuffs and raw materials. Thus from the British point of view, land settlement was basic to all migration assistance, and this attitude was encouraged by the dominions:

It was clear from the outset that in all the Dominions represented the openings available for workers of other classes depended upon the increase in the number of primary producers. It was, consequently agreed that the problem...of establishing settlers from this country as primary producers upon the land

⁷ Ibid., p.31.

⁸ L.S. Amery (First Lord of the Admiralty), Imperial Economic Conference, 1923. Record of Proceedings and Documents, p.114. (Cmd. 2009.)

overseas, must be the basis of any policy of State-aided Empire Settlement, and that the facilities for inter-Imperial migration generally...would only be of limited value unless granted as a part of a policy based on land settlement.⁹

It was on this foundation that the Empire Settlement Act was passed in 1922.¹⁰

The results in Australia were disappointing. Only three states, New South Wales, Victoria and Western Australia, entered into agreements with the Commonwealth and British governments for schemes of land settlement, and of these only Victoria and Western Australia made any serious attempt to carry out actual settlements. The other states contented themselves with selecting males for agricultural labourers and females for domestics. This lack of response led to further plans to encourage migration, resulting in an agreement under the Empire Settlement Act in 1925, for the further supply of loans by the Commonwealth and British governments

9

Conference of Prime Ministers and Representatives, January-February, 1921. Report of Proceedings. Appendix V on State-Aided Empire Settlement, p.59. (Held at House of Representatives, Canberra, Miscellaneous Papers, 1920-21.) This was the more active side of the policy. The other aspect of the policy was the assistance with passage money to migrants 'nominated' by sponsors in Australia.

10

For a summary of the main terms of this act and of the £34 million agreement of 1925, see F.A. Bland, 'Development and Migration', ch.III of Studies in Australian Affairs, ed. P. Campbell et al. (M.U.P., 1928).

for the development schemes of the states.¹¹ However, the difficulties encountered in land settlement and in the economic position generally meant that the agreement brought no increase in migration. The position is set out in the table below:

<u>Selected Migrants</u>			
Year	Male	Female	Total
1920	1,716	1,356	3,072
1921	2,203	1,655	3,858
1922	N.A.	N.A.	9,726
1923	12,548	2,819	15,367
1924	9,131	3,480	12,611
1925	8,001	2,130	10,131
1926	6,062	1,822	7,884
1927	5,330	2,079	7,409
1928	4,155	1,829	5,984
1929	2,556	1,206	3,762

Source: Labour Report, nos 10-20.

Almost all the male migrants went to pastoral and agricultural occupations, as settlers or labourers - either directly or indirectly through boys' training schools, and most of the females filled domestic positions.¹² The two states

11

Agreement Dated 8th April, 1925, Between the Secretary of State for the Colonies and the Commonwealth Government regarding Arrangements for the Settlement in Australia of an Increasing Number of Assisted Migrants. (Parliamentary Papers, 1925, vol.II.)

12

It was stated that requisitions might also include 'a few artisans who may be required to balance periodical scarcity of skilled workers'. Conference of Commonwealth and State Ministers, May-June, 1923. Memoranda, Report of Debates and Decisions Arrived At: Commonwealth Government's Memorandum on Immigration, p.57. (Parliamentary Papers, 1923 and 1923-4, vol.II.)

which seriously attempted land settlement took most of these migrants: Victoria placed 39 per cent and Western Australia 33 per cent.¹³ Since the other states were not actually settling their selected immigrants on the land, it was difficult for them to maintain that the migrants were increasing employment opportunities, and so only a nominal number was selected.

It is a measure of the failure of planned migration for land settlement that the selected migrants made up only about one-sixth of the permanent new arrivals in Australia between 1922 and 1929. Neither the British nor Australian governments intended these migrants to add to the industrial workforce, although both hoped the migration would stimulate manufacturing in their respective countries. Selected migrants, therefore, provided labour for secondary industry only in an indirect fashion:¹⁴ inasmuch as the land settlement schemes

13

Labour Report, nos 10-20.

14

It seems probable, however, that some of the selected migrants either broke their contract and stayed in the cities, or else went to the cities immediately on fulfilling their term. How common this was it is hard to say. In late 1921, when trade was brisk, the Queensland branch of the Electrical Trades Union commented: 'A number of "farm hands" (?) who have emigrated from Great Britain have called at the office to see if there is any work in the Electrical Industry...'
Electrical Trades Journal, vol.IX, no.8, p.5. Then in late 1925 the Victorian branch of the same union complained: 'The constant stream of electrician "farmers" from overseas is

failed, or Australian agricultural workers were displaced by migrants, the movement of population from country to town which was taking place in the 1920s was accentuated. This movement is discussed in a later section.

The hard facts of the difficulty of land settlement gradually began to impress on Australian governmental

14 (continued)

also helping to swell the already overstocked labour market.' Ibid., vol.XIII, no.5, p.7.

The position was put more generally by the Age (20 Nov. 1926, p.17): 'During the past few months many Australians who have returned from a trip to Britain shrug their shoulders when they are asked questions concerning migration. A prominent citizen put the case this way. Say, for example, said he, that there are two men in Britain who feel they'd like to try their luck in Australia. One of these men is a carpenter, the other a plasterer. Very well. They go along to one of the immigration offices and make application to the agent. They state plainly that they are tradesmen, and that they desire to practise their trade in Australia. The agent says he's sorry but only farm workers are wanted. The men are about to move off, when the agent does a bit of quick thinking. If these men go he will miss 37/6 commission on each man. So he calls them back; advises them to go to Australia - as farm workers. If they can't take a hint, he plainly tells them that in order to conform with the immigration rules they had better enrol as farm workers, and when they get to Australia they can fulfil their obligations by doing a few weeks' work on a farm, after which they can drift back to the city and practise their trade.'

A more specific charge was made by the Age in the following year (13 Aug. 1927, p.14): 'Grave allegations against the type of migrant being brought to Australia were made by Welfare Officer L.C.J. Wake, provincial immigration and Government subsidy officer of West Australia, who reached Melbourne by the migrant vessel Barrabook yesterday. Of the 450 migrants who were bound for Australia by the steamer, said Mr Wake, fully 50 per cent., despite their statements to Australia House, had no intention of going on the land.'

authorities that migration for this purpose would never mean large numbers of migrants. As early as 1923 an attempt was made to plan a more balanced intake. The plan was to include a survey of undeveloped resources and 'the possible secondary industries that could be developed as a result of the development of such resources'.¹⁵ Under the 1925 agreement between the British and Australian governments the emphasis was still placed on land settlement but there was some recognition of the necessity for the expansion of secondary industry. The states were invited to submit development programmes and had to satisfy the Commonwealth government 'that the proposed works are such as will directly contribute towards the settlement whether on the land or otherwise of suitable assisted migrants...'.¹⁶ The context of the agreement suggests that the 'otherwise' was to include only such factories as depended directly on the simple processing of primary products, such as sugar mills and butter factories.

This problem of the relation between the type of migration and the nature of development in Australia was stated in 1926 in open terms by the Royal Commission on National

¹⁵

Conference of Commonwealth and State Ministers, 1923, op. cit., p.viii.

¹⁶

Agreement, Dated 8th April, 1925, op. cit., p.3.

Insurance when dealing with unemployment: 'British immigrants come, in the majority of cases, from industrial centres, and if these are to be encouraged as immigrants it will be necessary to foster secondary industries, otherwise many will swell the ranks of the unemployed in this country.'¹⁷ And by 1928 the Development and Migration Commission was prepared to rate 'specially skilled workers for new industries' along with land settlers, as having the same effect in increasing employment.¹⁸

Thus, although government migration policy was never directed towards increasing the industrial labour force, it had been compelled for two reasons to recognise the importance of the migrant factory worker. In the first place, in order to absorb migrants in the numbers desired, reliance could not be placed on agriculture. Furthermore, government policy was endeavouring to encourage manufacturing into new and complex fields of production and if this policy was to succeed, workers with the requisite skills had to be obtained. The quickest way to obtain men with skills, and above all, with experience, was through migration.

17

Second Progress Report of the Royal Commission on National Insurance - Unemployment, p.14 (Parliamentary Papers, 1926-8, vol.IV).

18

Development and Migration Commission. Report on Unemployment and Business Stability in Australia - Dated June, 1928, p.18 (Parliamentary Papers, 1926-8, vol.V).

(ii) Non-selected Migrants

The relation between the non-selected migrants and the labour force for manufacturing was much more direct than it was for selected migrants. Selected migrants were intended for agriculture: non-selected migrants could choose their employment and came from a variety of occupations. But until 1925 it is impossible even to be precise about the number of non-selected migrants who arrived in Australia with the intention of living there permanently. Only in that year was a count begun of 'permanent new arrivals', from which the number of unassisted migrants can be obtained by subtracting the selected and nominated migrants. The position is set out in the table below:

Immigration into Australia

(With the intention of permanent residence)

Year	'000s		Unassisted	Permanent New Arrivals
	Assisted Selected	Nominated		
1920	3.1	6.0	N.A.	N.A.
1921	3.9	10.8	N.A.	N.A.
1922	9.7	14.5	28 ^a	52 ^a
1923	15.4	11.3	25 ^a	52 ^a
1924	12.6	12.4	33 ^a	58 ^a
1925	10.1	14.7	31.7	56.5
1926	7.9	23.4	28.2	59.5

(continued on next page)

(continued)

Year	Assisted Selected	Nominated	Unassisted	Permanent New Arrivals
1927	7.4	22.7	36.9	67.0
1928	6.0	16.4	25.8	48.2
1929	3.8	9.2	18.7	31.7

^a These figures are estimates. In the three years 1925-7 the percentage of permanent new arrivals to total arrivals was very stable: 56%, 55% and 57%. Applying the average of these percentages to arrivals in the three earlier years an estimate of permanent new arrivals can be made. Since this percentage is a function in part of the number of selected and nominated migrants, it seems dangerous to apply it in 1920 and 1921 when their numbers were low.

Source: Labour Report, nos 10-20 and Demography Bulletin, nos 43-7.

Not all the migrants, of course, were immediate additions to the work-force, but the very high proportion of breadwinners amongst them meant that they made a disproportionate contribution to it. ¹⁹ Is it possible to be more specific concerning migrants and the labour supply for the manufacturing sector alone? All migrant breadwinners as additions to the work-force affected the labour supply to manufacturing either directly or indirectly; moreover, because of the vast

19

To take a typical year - 1925: the percentage of breadwinners in each migrant group was - selected 86%, nominated 40% and unassisted 65%. The average for all migrants in this year was 63% (Demography Bulletin, no.43) and this contrasts with the 1921 census position in Australia when 42% of the population was breadwinners.

range of skills in manufacturing, almost all migrants were possible workers in that field. But migrants would tend to try and maintain their usual occupations and the numbers who were in 'manufacturing' before migrating are available after 1925.

Permanent New Arrivals - Breadwinners

'000s

Year	Occupation Manufacturing	Total	% Manufacturing to Total
1925	4.8	35.3	13.6
1926	5.4	35.4	15.3
1927	6.5	42.6	15.3
1928	4.0	29.9	13.4
1929	2.2	19.0	11.6

Source: Demography Bulletin, nos 43-7.

Because of classification difficulties it is difficult to compare the proportion of migrants from manufacturing with the proportion engaged in manufacturing in the Australian work-force. But the most plausible assumptions suggest that at the 1921 census the comparable Australian figure was about 19 per cent, which places the percentage of migrants in manufacturing somewhat below the Australian average. No doubt, this was mainly the result of the large proportion of agricultural workers and domestics in the selected migrants. More detailed information concerning occupations is available throughout the twenties for nominated migrants only. These

migrants have been classified into broad industrial groups, and the position for manufacturing is set out below:

Total of Nominated Migrant Breadwinners
1920 to 1929

(Manufacturing groups only)

Wood, Furniture, etc.	1,394
Engineering, Metal Works, etc.	7,764
Food, Drink, Tobacco, etc.	1,118
Clothing, Hats, Boots, etc.	3,776
Other Manufacturing	<u>1,135</u>
Total Manufacturing	15,682

Source: The table is the sum of the yearly figures in Labour Reports, nos 10-20. It is exclusive of Victoria in 1922.

The total of nominated migrant breadwinners in the same years was 60,393, so that those who gave their occupation as manufacturing made up 26 per cent of the total. The comparable Australian figure for manufacturing breadwinners, in this case, was about 22 per cent. Within the manufacturing group, migrants were heavily concentrated in the metal industries which employed about half of the total, whereas the comparable Australian employment figure was about one-quarter. The proportion of migrants in the clothing and textile group was roughly the same as in Australian manufacturing while all other groups were under-represented. Undoubtedly this grouping of the migrants reflects the rapidly growing metal and textile industries in Australia.

(b) The Movement of Labour from Primary Industry

An important source of labour in the 1920s was provided by the movement of population away from farming occupations. This movement was similar to that from country areas to cities, but because of changes in location in secondary and tertiary industries it need not have been exactly the same.²⁰ The basic factor behind the relative decline in rural population was the increase in farming productivity which freed large amounts of labour. It has been claimed that 'the displacement of rural workers by machinery has shown its maximum effect in agriculture, but, to some extent, the process has extended to shearing, to dairying, to fruit-growing, and other rural occupations'.²¹ At the same time, work in

20

For example, in Victoria, one reason given for the movement to the cities was: 'The closing of small industries and the removal of larger ones from country centres to the metropolitan area.' Report of the Select Committee upon the Causes of the Drift of Population from Country Districts to the City, p.3 (Victoria - Votes and Proceedings of the Legislative Assembly, 1918, vol.1).

21

S.M. Wadham and G.L. Wood, Land Utilisation in Australia, 1939, p.351. It is not just machinery that causes increasing productivity; more broadly, it is the result of the application of scientific methods to primary production.

An indication of the rapid increase in productivity in primary industry during the twenties in Australia is given by this table from Colin Clark, The Conditions of Economic Progress (1957), p.259.

Year	Output per Head. I.U.
1911	1,350
1921-22	1,411
1923-26	1,495
1926-29	1,650

Australian cities during the twenties was made more attractive by the fact that city occupations were generally covered by award wages. Few rural occupations were included in awards so that the prevailing level of unemployment among the unskilled kept rural wages relatively low.

Details of the division of the population between rural and urban (metropolitan plus urban-provincial) districts are not easily available before the census of 1911. In that year the rural population was 1,878,675, representing 42.2 per cent of the population; in 1921 it was 2,032,422 or 37.6 per cent, and in 1933 it was 2,381,017 or 36 per cent. Thus rural

22

The country labour position was examined by the Royal Commission on National Insurance in 1926: 'there is usually a lack of labour for country work owing to the rate of wages and the difficulty of a married man maintaining a family in town on such wages. The hours to be worked and the smallness of the wage are not attractive.' Second Progress Report of the Royal Commission on National Insurance. Unemployment, p.11. (Parliamentary Papers, 1926-8, vol.IV.)

The attitude of the unemployed to country work was put by the secretary to the Unemployed Workers' Union. '...they come to us every minute of the day and tell us they have been sent out to jobs in the country where the conditions have been unendurable. Mr. Farrar [N.S.W. Minister for Labour and Industry] challenged me the other day. He said he had 200 jobs for men on farms, and I said, "I can give you 400 applicants for those jobs if you guarantee they will be covered by an award and will get a fair living wage." But he said "I am not going to argue about wages at all. I can find them work."' Royal Commission on National Insurance, Minutes of Evidence, para.18357, 13 Mar. 1925.

23

Census of the Commonwealth of Australia 30th June 1933.
Statistician's Report, p.48.

population continued to grow over this period, but declined relatively to the urban population. A similar impression is gained when employment in primary production is examined:

Primary Production

	1901	1911	1921	1933
No. of Breadwinners - '000s	530.5	598.7	598.3	703.8
Percentage of Total Breadwinners	32.4	29.7	25.8	24.5

Source: Census, 1933, Statistician's Report, p.228

From the basis of the figures for population distribution in 1921 and 1933 an estimate can be made of the movement of population out of rural areas in the twenties. Between these two dates the proportion of the population in rural areas declined from 37.6 per cent to 36.0 per cent; if the rural areas had simply retained their proportion of the population, their numbers in 1933 would have increased by an additional 106,000. However, this figure is only a first approximation; allowance must be made for the differences in both birth and overseas migration rates between urban and rural areas. This has been done by a writer in the Round Table who estimated that between the censuses the urban population increased by 'approximately 170,000 by an influx from the country to the towns'²⁴. This estimate may be taken

24

Article on 'Empire Migration' in Round Table, vol.25, 1934-5, pp.69-70.

as substantially correct.²⁵ The period between the censuses, however, does not exactly cover the 1920s; in particular, it is generally agreed that there was a substantial movement back from the city to the country with the depression in the first years of the thirties.²⁶ Making allowance for this, the movement of population to the cities in the twenties may have been as high as a quarter of a million. If this movement had the same breadwinner-dependant relationship as the rest of the population, then it added to the urban work-force more than 100,000 workers, the great majority of whom would be coming from primary industry.

In quantitative terms this flow of labour from primary industry into the cities was very large. It was greater than the total increase in employment in manufacturing during the twenties. Like immigration, it contributed to the manufacturing work-force directly as well as indirectly by filling positions in tertiary industry. Yet there was a very

25

It is roughly confirmed by K. Jupp, op. cit., pp.77-8.

26

For instance it is stated in the Census, 1933, Statistician's Report, p.48: 'During the depression years the mobility of men of the younger ages was considerably increased, as necessity drove many to seek work away from their usual place of residence. Many town-dwellers roved the country districts as prospectors for minerals or as seekers of casual farm work or as applicants for locally-distributed government relief.'

great qualitative difference: unlike the migrants, these workers from primary industry had little to offer manufacturing in the form of technical skills and industrial experience.

(c) Unemployment

An estimate of the adequacy of the labour supply can be made by an examination of the level of unemployment. The most commonly used measure of unemployment for the 1920s is the average unemployment amongst about 400,000 unionists, as based on the returns of the union secretaries:

Unemployment in Trade Unions

Year	Percentage
1920	6.5
1921	11.2
1922	9.3
1923	7.1
1924	8.9
1925	8.8
1926	7.1
1927	7.0
1928	10.8
1929	11.1

Source: Labour Report, no.23, pp.98-9.

This yearly average can be broken down into quarters, but even the best period, the third quarter of 1920, shows an unemployment figure of 5.4 per cent.²⁷ The percentages must be treated as approximations only, but even so there is no

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Labour Report, no.13, p.25.

suggestion of any situation approaching full employment. This conclusion is emphasised by comparing the figures with the full employment year of 1948 when the same returns showed a level of unemployment of 0.9 per cent.²⁸ In the 1920s, then, the supply of labour, in broad terms, was more than adequate for the development which took place; at no stage was a general shortage of labour a limiting factor.

This broad classification of industrial unemployment can be subdivided into different industry groups, five of which have relevance for manufacturing. When this is done (see following table), the picture of general unemployment immediately changes. Conditions approaching full employment can be seen for several years at a time in such important industry groups as 'Wood, Furniture, etc.' and 'Clothing, Hats, Boots, etc.'²⁹. Yet while this classification does suggest the great variation in the different demands and supplies for the various skills which make up an industrial labour force, it still goes only part of the way. For instance, in the 'Clothing, Hats, Boots, etc.' group, there may be included both boot stitchers and wool weavers, but there is an

28

Ibid., no.38, p.116.

29

There is consistently low unemployment in 'Books, Printing, etc.'. This reflects the high level of skills and strong unions in the printing industry, and its relative freedom from fluctuations in employment during the twenties.

Percentage of Unemployment in Different Industries

		I	II	III	IV	V	VI
Years in Quarters		Wood, Furniture, etc.	Engineering, Metal Works, etc.	Food, Drink, Tobacco, etc.	Clothing, Hats, Boots, etc.	Books, Printing, etc.	Other Manufacturing
1920	1	3.5	5.3	8.5	0.7	1.6	5.1
	2	3.2	5.7	11.2	2.0	1.6	4.7
	3	2.9	3.6	17.0	4.8	2.0	6.4
	4	4.4	4.3	20.2	7.3	2.6	10.0
1921	1	9.2	5.4	15.8	12.8	3.8	12.6
	2	16.3	10.2	14.8	8.4	4.4	19.0
	3	14.1	9.0	14.4	8.8	3.7	21.3
	4	9.9	14.4	14.1	2.1	1.9	12.4
1922	1	10.2	17.7	7.4	1.5	1.6	9.0
	2	11.2	14.1	11.3	1.9	1.8	13.8
	3	5.3	17.2	12.4	2.4	2.9	10.7
	4	2.7	15.6	12.1	2.6	2.0	8.5
1923	1	3.0	10.6	8.7	2.6	1.8	8.7
	2	3.5	9.5	9.8	6.3	1.2	10.0
	3	2.3	7.7	10.6	6.6	1.5	11.0
	4	2.7	9.3	9.6	4.2	1.2	8.9
1924	1	2.8	10.9	12.0	4.4	1.7	9.4
	2	3.2	9.2	10.7	6.3	1.5	12.2
	3	5.6	9.6	10.8	8.0	2.2	17.6
	4	7.0	15.6	12.6	11.4	1.5	15.0
1925	1	7.8	14.9	9.6	7.8	1.8	12.0
	2	5.3	15.6	10.6	6.8	2.8	18.2
	3	4.3	7.0	7.9	7.1	2.6	16.4
	4	8.0	7.5	10.9	3.3	1.8	10.9
1926	1	6.9	6.5	13.8	2.8	2.4	10.4
	2	5.1	4.7	9.4	3.3	2.1	15.4
	3	4.7	4.7	11.9	4.7	1.9	15.1
	4	3.4	3.9	9.5	1.6	1.4	9.4
1927	1	3.1	4.7	8.0	4.1	1.6	6.6
	2	3.2	4.3	8.9	2.2	1.6	8.8
	3	5.1	5.0	9.2	4.4	1.7	15.3
	4	6.3	8.7	8.3	6.4	2.2	14.6
1928	1	8.3	13.5	8.6	9.1	2.8	16.0
	2	9.3	12.5	10.0	11.6	2.6	17.9
	3	9.6	12.2	8.9	12.3	3.1	17.5
	4	9.9	12.9	7.2	7.4	2.4	16.2
1929	1	6.5	11.2	5.4	9.8	2.6	13.8
	2	13.6	9.4	11.4	10.2	3.2	17.9
	3	14.2	13.2	11.6	12.8	3.4	20.7
	4	15.5	15.4	12.8	10.0	3.3	22.1

Source: Labour Report, nos 11-20.

immense difference between the skills and the demand and supply for the two types of work. Even an apparently clear-cut group such as 'Wood, Furniture, etc.' includes 'saw mills and timber-yards,...wire-mattress-makers and organ-builders, carpet-cutters and coffin-makers, the picture-framing industry and piano manufacturing,...wood-carvers, turners, upholsterers, French polishers, drape-cutters, and bedding-makers'.³⁰ 'Other Manufacturing' is made up of an extremely diversified group of industries, including: 'asphalting,...wicker-working...coach-building and candle-making, the gas industry and shipbuilding, masons and opticians, soap-makers and rubber-workers, manufacturers of artificial manure and tent makers'.³¹ It is obvious that the total number of unemployed in such a group gives little information about individual industries or skills within industries.

Differentiating between skilled and unskilled occupations in the broadest fashion, the Royal Commission on National Insurance concluded that 'generally the percentage of unemployment amongst skilled workers is not high, whilst in some industries sufficient skilled men are not always available'.³²

³⁰

E.R. Walker, Australia in the World Depression (1933), p.43.

³¹

Ibid.

³²

Second Progress Report of the Royal Commission on National Insurance, 1926, p.8. (Parliamentary Papers, 1926-8, vol.IV.)

and 'the greatest proportion of unemployment is amongst the unskilled and casual workers'.³³ Only scanty attention was given to the supply of skilled labour for secondary industry³⁴ by this commission, and the evidence was seldom conclusive. However, in the metal trades, figures are available for unemployment in one skilled union - the Amalgamated Engineering Union³⁵ - and it is possible to compare these with unemployment in the metal trades generally in order to highlight the different demand and supply conditions for different skills within a single industry. In the following table are set out figures for unemployment in the A.E.U. and in the industrial group 'Engineering, Metal Works, etc.', about 30 per cent of the unionists of which probably belonged to the A.E.U.³⁶

33

Ibid., p.9.

34

See, e.g., conflicting evidence in Western Australia of the Chairman of the Furniture Trades Association of Manufacturers and the Secretary of the United Furniture Trades Union of Workers. Royal Commission on National Insurance, Minutes of Evidence, 3 Mar. 1926 and 5 Mar. 1926.

35

N.G. Butlin, 'An Index of Engineering Unemployment, 1852-1943', Economic Record, vol.22, 1946, pp.241-60.

36

Ibid., p.255.

Percentage Unemployment Through Lack of Work

Year	A.E.U.	Group II
		Engineering, Metal Works, etc.
1919	2.2	4.3
1920	1.5	3.8
1921	4.4	8.9
1922	4.9	15.3
1923	2.6	8.4
1924	2.1	10.3
1925	2.1	10.6
1926	1.9	4.1
1927	2.5	4.9
1928	4.7	12.0
1929	5.3	11.5

Source: A.E.U. - Butlin, op. cit., p.252.
 Group II - Labour Report, nos 9-20. To obtain the percentage of unemployment through lack of work, it was necessary to subtract from the Group II percentage of unemployment from all causes, the percentage unemployment from sickness, accident and other causes which applied to industry as a whole.

The contrast between unemployment in the skilled A.E.U. and for metal workers generally is striking. Indeed, it is possible that the general unemployment figure for Group II should be even higher because of imperfections in the returns of the A.E.U. to the Commonwealth Statistician during the 1920s.³⁷ Total figures for metal workers show large pools of unemployment existing throughout most of the twenties, yet the position was vastly different for skilled engineers:

³⁷

Ibid.

between 1919 and 1928 unemployment in the A.E.U. was never greater than 5 per cent and for seven of the years it was very close to 2 per cent. There was, in fact, no reservoir of unemployment in this union, and with conditions so close to full employment, skilled labour was often in short supply.

As with the A.E.U., so with other skilled unions.

Chapter IV, for example, has emphasised the extreme shortage of skilled labour which accompanied the expansion in the textile industries. It is this general problem of the supply of skilled labour which will be examined in the second half of this chapter. At the same time it will be shown that the problem of skills goes beyond union classifications: even within a particular union there will be different varieties and qualities of skills. More important, problems of ability and experience extend all the way up a firm's hierarchy to the top management. These problems can be very acute, particularly where expansion takes place from a limited base into new avenues of industrial growth, as it did in Australia in the 1920s.

The Supply of Skilled Labour

(a) The Wage Structure

The supply of labour in the 1920s took place within a wage structure which, it was generally agreed, was basically

unfavourable to the provision of skilled workers. ³⁸ Certainly it is true that the skilled worker was in a less favourable position relative to the unskilled than he had been

before the war. ³⁹ This was principally the result of the failure of the arbitration authorities to raise the money value of the margin for skill as the value of money fell during the war; as Justice Higgins of the Commonwealth Arbitration Court explained:

...when the Court has increased the basic wage because of abnormal increase of prices due to the war it has not usually increased the secondary wage. It has merely added the old secondary wage the old margin, to the new basic wage. It is true that the extra commodities which the skilled man usually purchases with his extra wages become almost as indispensable in his social habits as the commodities purchased by the unskilled man, and have no less increased in price; but the Court has not seen fit to push its principles to the extreme in the abnormal circumstances

38

See, e.g., G.V. Portus, 'The criticism[s] that wage fixation has failed to maintain the margin of skill in wages... appear[s], however, to be soundly based.' In 'Development of Wage Fixation in Australia', American Economic Review, vol.XIX, no.1, p.75. R.G. Menzies attributes this to the numbers and vocal skill of the unskilled. ('The Distribution of the Industrial and Trade and Commerce Power', a chapter in Studies in the Australian Constitution, ed. G.V. Portus (1933), p.66.) W.K. Hancock emphasises the importance of a general feeling of egalitarianism (Australia (1945), pp.150-1).

39

D.W. Oxnam found that comparing 20 skilled and 20 unskilled trades, the award wage of the unskilled was 73.3% of the skilled in 1914, and averaged 80.6% during 1921-30. The wages were, of course, legal minima. See 'The Relation of Unskilled to Skilled Wage Rates in Australia', Economic Record, June 1950, p.115.

of the war, and the moderate course taken has been accepted without demur.⁴⁰

When approached in the last year of his presidency of the court in 1921, Higgins, against the trend of decisions of other judges, agreed to restore the pre-war purchasing power of margins. This meant that a fitter whose margin had been set at 3/- a day by the Harvester judgement in 1907 (the basic wage then being fixed at 7/- a day), now had his margin raised to 6/- a day. But in the following year, the new president reviewed the award and reduced the margin to 4/⁴¹-. This became the standard for highly skilled workers in many industries during the twenties.⁴² At the end of the decade Judge Beeby stated that he would not have hesitated to restore the margins for skill in the metal trades back to their pre-war ratio, but the economic position of the industry precluded any increase in money wages at all.⁴³

The relative decline in margins after the war was not confined to Australia alone. It was part of a 'world-wide

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H.B. Higgins, A New Province for Law and Order (1922), pp.55-6.

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28 C.A.R., p.969.

⁴²

George Anderson, Fixation of Wages in Australia (1929), p.304.

⁴³

D.T. Sawkins, 'The Effect of the Living Wage Policy on Wages for Skill', Economic Record, vol.6, 1930, pp.168-9.

trend' which A.G.B. Fisher saw as partly the result of the spread of education and of a relative increase in the supply of skilled labour.⁴⁴ This had the implication, emphasised by Colin Clark, that margins for skill were normally higher 'in primitive countries or in countries at an early stage of industrial development'.⁴⁵ Yet the impression is gained that margins for skill were lower in Australia than in highly industrialised countries such as the United Kingdom and the United States. Examining the position in the late thirties, B. Datta found that the ratio of unskilled to skilled wages was 68.6 per cent in Britain, 72.8 per cent in U.S.A. and 84.5 per cent in Australia.⁴⁶ These figures, however, must be treated with great caution, since no satisfactory source is given. A check of two industries for the middle twenties does not suggest such a violent contrast between Britain and Australia: in the three years 1924-6 the ratio in the metal trade between the wage for a labourer and for a fitter was 71 per cent in Britain, 79 per cent in Melbourne and 81 per cent in Sydney; in the building industry

44

A.G.B. Fisher, The Clash of Progress and Security (1935), pp.66-7.

45

Colin Clark, The Conditions of Economic Progress (1957), p.525.

46

B. Datta, The Economics of Industrialisation (1952), p.183.

the ratio between a labourer and a bricklayer was 76 per cent in Britain, 83 per cent in Melbourne and 88 per cent in Sydney.⁴⁷

Award wages in Australia are not, of course, legal maxima. It is not easy to generalise concerning the extent to which payments over award rates were made, but at different times in various industries such payments appear to have been widespread.⁴⁸ It must be emphasised then, that no conclusive and embracing picture can be given for Australia - rates for key workers could be well above the award. At the same time, however, the very fact of the award would have a 'conforming'

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Australian wages from Labour Report, nos 15-17. British wages from Eighteenth Abstract of Labour Statistics of United Kingdom and Ministry of Labour Gazette, as reported in International Labour Review, vol.17, 1928, p.727.

48

It is obvious that over-award payments existed where labour was in short supply, as, e.g., in the textile industry for much of the twenties (ch.IV). Two further examples from specific industries are motor bodies and electricity. The Furnishing Worker (5 May 1924, p.3) complained of migrants being brought to work for a firm in South Australia (evidently Holden's) at award wages, which were 'considerably below what is the average wage operating in the industry here'. The Electrical Trades Journal (vol.XII, no.2, June 1924, p.3) commented: 'Members should remember the law of supply and demand, and realise that they can easily obtain more than minimum rates while these conditions last.' More generally, the Chief Inspector of Factories and Shops in Victoria reported in 1920: 'The supply of female and skilled labour was again not sufficient for requirements.' (Report, p.3, Victorian Parliamentary Papers, 1921, vol.I.) And again in 1926: 'The supply of skilled labour was nearly always insufficient...' (Report, p.7, ibid., 1927, vol.2).

effect. As W.R. Maclaurin notes:

...in the majority of cases margins for skill have apparently tended to settle at the minimum rate which has given rise to considerable dissatisfaction among the skilled workers.⁴⁹

It must also be pointed out that many of the key men for industrial growth, including most of those in managerial positions, remain outside the ranks of unionised labour and would be only very slightly influenced by the structure of award wages.

(b) The Training of Skilled Labour,

(i) On the Job

Much of the manufacturing labour force generally, and in particular that section of it which might be called semi-skilled, learns its work on the job. This is a slow method but in time the new workers may become competent. ⁵⁰ Its

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W.R. Maclaurin, 'Recent Experience with Compulsory Arbitration in Australia', American Economic Review, vol.28, 1938, p.71, n.14. The general conclusions of this section are supported by J.E. Isaac, 'Economic Analysis of Wage Regulation in Australia: 1920-47', ch.6 (unpublished Ph.D. thesis, London). He concludes (p.185) that 'in the absence of wage regulation, margins in Australia would have been higher than the actually prevailing levels...'.
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Cf. W. Arthur Lewis, 'Much of this training is done badly, since the newcomer is merely allocated to some other worker who is supposed to teach him the job; not many people, however good they may be at their own job, are also good at teaching it to somebody else, unless they have also received some instruction in teaching, or take a special interest in the problem.' The Theory of Economic Growth (1955), p.194.

drawbacks become most obvious where new entrants make up a large proportion of the total work-force, as was often the case in the textile industries during the twenties. It is also difficult to train workers on the job when the industry and the methods used are, to a large extent, new; it has been shown how this difficulty was faced in the motor body building industry and in electrical manufactures. Yet in general this method of training poses no special problems where there is a satisfactory level of education and a tradition of factory work.

(ii) Apprenticeships and Technical Schools

To obtain skills at a higher level a more rigorous system of training is necessary. This is usually obtained through technical schools and apprenticeship systems, often working in conjunction. In Australia, technical education can be traced back directly to the needs of the mining industry. 'Schools of Mines' were established to provide instruction in the techniques of mining, the first being the Ballarat School of Mines, founded in 1870. Many of these schools, retaining their original title, still survived in the 1920s, but most had curricula little different from those of ordinary technical schools.

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For instance, the Bendigo School of Mines included a three year course in agriculture in its syllabus. K.S. Cunningham, 'Technical Education in Australia' in The Year Book of Education, 1939, p.643.

In examining technical education in the 1920s, attention will be concentrated on New South Wales and Victoria, the principal manufacturing states, where technical instruction was most fully developed. Between them, these two states employed about three-quarters of the general manufacturing work-force, and an even higher proportion in the more complex forms of manufacturing. At the top of technical education were the universities, which provided degree courses in technical subjects. Below them were the technical colleges, the main centres of technical education; they provided diploma courses reaching professional or semi-professional standards, as well as trade and apprenticeship courses. At this lower level most of the students were drawn directly from industry. For the younger age group there were junior technical schools and similar institutions. Correspondence courses on a limited scale were also available.

In New South Wales the principal centre of technical training was the Sydney Technical College. On the whole, its courses were regarded as supplementary to practical work in employment, and, as a result, most courses were held in the evening. There were also technical colleges at Newcastle and Broken Hill, and trade schools in provincial centres and in Sydney suburbs.

In Victoria 33 technical schools at the senior level were in operation in 1925, the principal institution being the Working Men's College⁵² in Melbourne. Contrary to the practice in New South Wales, Victoria did not require that students in a particular course be employed in a similar trade, and only those taking courses on the basis of full-time day instruction were eligible for 'diplomas'. Several Victorian technical schools were established as the result of private endowment and the Technical Education Commission in New South Wales noted that 'in Victoria there seems to be a wider appreciation by the general public and by industry of the value of Technical Education...'⁵³.

The apprenticeship system was one of the main sources of students for technical schools, but during the post-war period⁵⁴ apprenticeship appeared to be dying out almost completely. Its revival rested on the passing by the states of legislation relieving the parties to the apprenticeship contract of some of the mediaeval and onerous conditions. Where it thrived, it did so only because it provided a source of cheap

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Later the Royal Melbourne Technical College.

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Technical Education Commission, Report on the Technical Education System of New South Wales, p.34. (N.S.W. Parliamentary Papers, 1935-6, vol.I.)

54

Cunningham, op. cit., p.653.

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labour. In all states apprenticeship contracts provided for compulsory attendance at technical classes, and at the end of the 1930s, New South Wales was the only state in which there was no provision for attendance in the employers' time.

Developments in New South Wales in the 1920s

In 1913-14 technical courses had been re-organised and attendance at senior technical schools limited to those actually engaged in trades related to the courses. This was an attempt to eliminate the 'amateur' and instill a more business-like procedure and attitude within the schools. There were no significant developments in organisation in the twenties, but in 1923 there were some changes in the junior

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One authority reviewed the position: '...in spite of everything that has been done to re-establish under modern conditions the old apprenticeship system, the practice of taking apprentices is losing ground. In all industrial laws or awards, apprenticeship is provided for, and in most of those in the skilled division only those boys who are apprenticed are allowed employment. Where boy labour is valuable (that is to say, in those callings in which machinery is used) apprentices are employed in numbers up to the limit allowed, but in all other cases the number of apprentices is very much below what the law allows.' In several professions, 'University and Technical College training has already come largely into practice as the principal part of the training.... Unless arrangements can be made to direct and place as apprentices the necessary number of young people, there will most certainly be a very serious shortage of Australian born skilled artisans in this country in the very near future'. J. Nangle, 'Vocational Guidance'. Presidential Address to Section J of Australasian Association for Advancement of Science, 1924.

technical colleges: the curriculum was broadened, the courses extended from two to three years and closer union was established with the technical colleges.⁵⁶ Nevertheless, in New South Wales the technical colleges and trade schools were regarded as giving real technical instruction, the junior technical colleges being classified and treated as 'super-primary' schools. Co-operation between the two types of schools was never as close as in Victoria.

Although N.S.W.'s educational facilities in general must be regarded as inadequate, provision for technical education was particularly bad. The position is set out below, the higher percentages in the first years of the decade reflecting Commonwealth government assistance for ex-servicemen after the war.

<u>Expenditure - £'000</u>			
Year	Technical (a)	All Education (b)	(a) as % of (b)
1920	215	3,253	6.6
1921	224	3,745	6.0
1922	219	3,918	5.6
1923	163	4,026	4.0
1924	174	4,292	4.1
1925	197	4,389	4.5
1926	243	4,559	5.3

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Year	Technical (a)	All Education (b)	(a) as % of (b)
1927	N.A.	N.A.	
1928	245	5,242	4.7
1929	225	5,256	4.3

(a) 'Technical' does not include junior technical colleges.

Source: Report of the Minister for Public Instruction, 1920-9 (N.S.W. Parliamentary Papers, 1922-30).

It can be seen that technical education received only about 5 per cent of total educational expenditure. Observing this fact, the Minister for Public Instruction stated: 'I have been greatly exercised in mind at the disproportionately small amount of attention devoted to Technical Education.... This appeals to me as an astonishing circumstance, and one which is somewhat difficult to explain...'.⁵⁷ Similarly, the expenditure on buildings was relatively small. Here is the position for the latter half of the twenties.

Expenditure on Buildings, Additions, Repairs etc.

£'000

Year	Primary and Secondary	Technical	Univer- sity	Total	Technical as % of Total
1925	621	28	65	714	3.8
1926	638	60	18	716	8.4
1927	868	61	5	734	8.3
1928	1,004	48	9	1,061	4.6
1929	772	14	11	798	1.7

Source: Technical Education Commission, op. cit., p.33.

57

Report of the Minister for Public Instruction for the Year 1920, p.8 (N.S.W. Parliamentary Papers, 1922, vol.I).

There was a marked fall in expenditure on technical education at the end of the decade and the Technical Education Commission felt that whilst it 'hesitates to make any comparison between the expenditure on Primary and Secondary Education and Technical Education, and realizes that the extensions in the secondary school system have no more than met the demands for them...', there has not been the same recognition of the need for the consolidation and expansion of the activities of the Technical Education Branch, which must necessarily provide the same relationship to industry and commerce as the University does to the humanities, science and professions'.⁵⁸

The result of this policy was that buildings were old and their facilities meagre, the main centre of technical learning being the old Darlinghurst gaol.⁵⁹ Country centres were usually in an even worse position, and often could not provide the range of courses desired by students.⁶⁰ The growing industrial city of Newcastle, the heart of the iron and steel industry, reported that the whole technical education

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Technical Education Commission, op. cit., p.34.

59

The gaol was taken over for the technical college in 1921.

60

Report of the Minister for Public Instruction for 1922, p.10. (N.S.W. Parliamentary Papers, 1923.)

provision was out of date: 'During the past ten years the metallurgical industries in this district have expanded enormously...whilst the accommodation and equipment at the Technical College have remained almost stationary...'.⁶¹ And in physics, 'a comparison of the syllabus of 1903 with that in use today shows that, except for two or three unimportant additions, the present one is the same as that of 30 years ago'.⁶²

Despite the fact that attendance normally had to be after work in the evening, and despite the unattractiveness of the schools and the failure of the courses to keep up with modern needs, the demand for technical education throughout the twenties was greater than could be handled at the current level of expenditure. The Minister for Public Instruction reported that the 'Superintendent of Technical Education stresses the keen demand for technical education and the impossibility of meeting it owing to the financial stringency'.⁶³ This at the peak of the prosperity of the twenties, in 1926. And the Minister noted that large numbers of students had to be

61

Technical Education Commission, op. cit. Report of Newcastle Committee, p.16.

62

Ibid., p.18.

63

Report of the Minister for Public Instruction for the Year 1926, p.10 (N.S.W. Parliamentary Papers, 1927).

'denied admission owing to the limits of facilities being
⁶⁴
 reached'.

Nevertheless, although facilities were limited and many applicants for technical education were unable to obtain it, the number of students receiving technical education continuously increased during the 1920s.

Enrolments - All Technical Colleges and Schools

(Excluding junior technical colleges)

Year	Number
1914	4,407
1919	5,607
1920	6,669
1921	7,290
1922	7,533
1923	8,178
1924	9,063
1925	9,669
1926	10,108
1927	10,797
1928	12,376
1929	13,390

Source: Technical Education Commission, op. cit., p.142. The numbers attending art classes at Sydney Technical College have been subtracted from 1926, since these numbers are not available for earlier years. The total figures are below those in the annual reports of the Minister but the trend is the same.

64

Ibid. Similar statements were made in the Report...for 1920, p.8 (ibid., 1922); 1924, p.9 (ibid., 1925-6); and 1928, p.9 (ibid., 1929-30).

These figures show that in the twenties enrolments more than doubled. Not all of these students were studying industrial trades, but most of them were taking courses related to manufacturing. In particular, the development of the new industries is evident in the type of course taken. For instance, at the Sydney and east Sydney technical colleges 87 electrical fitters and mechanics began enrolments in 1915; in 1919 there were 276 and by 1930 the number had increased to 927. At the same time, enrolments in the higher grade 'diploma' courses increased at a much more rapid rate than enrolments in the trade courses: 93 diploma students began courses in 1918 and the number had increased to 589 in 1930.⁶⁵

Developments in Victoria in the 1920s

The Victorian technical education system was reorganised in 1910 with the passing of the Education Act.⁶⁶ The act set out a programme for the rapid expansion of technical schools and junior technical schools, and it has been claimed that with the act there was an 'awakening of interest in technical education, and...determination to establish in the State, a progressive policy of linking up school with industry'.⁶⁷

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Technical Education Commission, op. cit., pp.143-4.

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Education Act 1910 (no.2301).

⁶⁷

D.H. Rankin, The History of the Development of Education in Victoria, 1836-1936 (1939), p.259.

Until this time all technical schools were under the control of local councils, but in 1910 they came into the co-ordinating authority of the Education Department. The next important legislative action affecting the technical education system was taken in 1928 when an act was passed setting up an Apprenticeship Commission with power to require apprentices in certain trades to attend classes in technical schools in the employers' time.⁶⁸ Meanwhile courses were being continually reorganised; in the mid-twenties it was stated that 'the courses for senior-technical school work have been raised and lengthened. In some subjects, students now begin where they previously left off'.⁶⁹

The junior technical schools were closely allied with the technical schools for seniors: both were usually housed in the same building and the curriculum of the junior school was designed principally to qualify students for entry into the senior school. Pupils were enrolled at 12 or 13 years of age, but many interrupted their schooling to take employment. The courses in the senior school included 'general engineering,

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Apprenticeship Act 1928 (no.3636). Time for classes was not to exceed 4 hours per week (clause 26(2)).

69

D. Clark, Chief Inspector of Technical Schools, Report of the Minister for Public Instruction for the Year 1924-25, p.26 (Vic. Parliamentary Papers, 1925).

architecture, trade subjects, and metallurgy'.⁷⁰

Expenditure on technical education is set out below:

<u>Expenditure - £'000</u>			
Year	Technical Schools (a)	Total Education (b)	(a) as % of (b)
1919-20	177	1,624	10.9
1920-21	192	2,053	9.4
1921-22	229	2,357	9.7
1922-23	224	2,344	9.6
1923-24	261	2,567	10.2
1924-25	293	2,691	10.9
1925-26	351	2,781	12.6
1926-27	347	2,996	11.6
1927-28	362	3,290	11.0
1928-29	349	3,220	10.8
1929-30	380	3,284	11.6

Source: Report of the Minister for Public Instruction, years 1919-20 to 1929-30. (Vic. Parliamentary Papers, 1922 to 1931.)

Expenditure on technical education was about one-tenth of the total spent on all education. Unfortunately no direct comparison is possible with New South Wales since expenditure in Victoria includes that on the junior schools while in New South Wales it does not. However, the figures do suggest a more satisfactory position in Victoria and the higher average percentage in the second half of the decade implies increasing

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Report of the Minister for Public Instruction for the Years 1920-21 and 1921-22, p.5. (Vic. Parliamentary Papers, 1922.)



attention to technical education. Buildings in Victoria were generally more satisfactory, many being new and specially built for their purpose. Departmental reports do not mention any over-crowding, but they do not appear to represent the true situation; here, as in New South Wales, the demand for technical education could not be met. In 1924 the principal of the Working Men's College reported:

...the need for expansion in the evening classes was apparent. The following evening classes were full, and requests for tuition in them were being refused: - Carpentry, dressmaking, electric wiring, milling and gear cutting, motor trimming, plumbing and gas fitting, coach and motor body building, electric-welding, fitting and turning, motor mechanics (evening class), oxy-acetylene welding and process engraving. For these classes it was estimated that there were 633 on the waiting list.⁷¹

The number of students at Victorian technical schools seems to have grown at a very similar rate to that in New South Wales.

Average Number of Students in Attendance per Term

Year	Junior Technical Schools	Technical Schools (senior)	Gross Enrolment Technical Schools (senior)
1919	2,393	6,844	
1920	2,747	7,801	
1921	2,933	7,724	
1922	3,489	8,439	11,805

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Argus, 26 Feb. 1924, p.11.

(continued)

Year	Junior Technical Schools	Technical Schools (senior)	Gross Enrolment Technical Schools (senior)
1923	3,624		12,955
1924	4,333		14,293
1925	4,792		13,451
1926	5,430		14,644
1927	5,881		16,267
1928	6,106		17,977
1929	5,945		18,182

Source: Report of the Minister for Public Instruction, years 1920-21 to 1929-30. (Vic. Parliamentary Papers, 1922-31.)

Because of a change in the method of recording students at technical schools (senior) it is impossible to be precise about the growth in numbers, but it appears that the increase in the twenties was over 100 per cent. Information is not available as to the type of course pursued, but it seems probable that the demand for skilled workers for the new and expanding industries was felt in the same way as in New South Wales. For example, the Chief Inspector of Technical Schools reported that 'the motor industry has expanded at a more rapid rate than it was possible for our few technical schools capable of training students to provide the requisite number of skilled men required for the trade'.⁷² Also, the

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Report of the Minister for Public Instruction for 1925-6, p.31. (Vic. Parliamentary Papers, 1927.)

compulsory part-time day training of apprentices after 1928 made necessary the provision of better equipment in the schools, 'particularly in connexion with the printing, electrical, and motor industries'.⁷³

Conclusion

It is obvious that the technical schools both in New South Wales and Victoria were a most important source of skilled labour for the industrial expansion of the twenties. It is also apparent that there was a great lack of co-ordination between industrial growth, mainly private in nature but encouraged by the Commonwealth government, and the provision of education by the state governments.⁷⁴ In terms of expenditure there seems to have been little recognition by the states that industrialisation would place increased and,

73

Report...for 1929-30, p.6 (ibid., 1931). It has also been emphasised in ch.IV that the rapid growth of the textile industry in Victoria created forceful, but unsatisfied, demands for a special textile school.

74

The Minister for Education in New South Wales, D.H. Drummond, claimed at the 1936 Conference of Ministers for Education in Australia that since the Commonwealth government was responsible for the industrial development, then it should also contribute to the expenses of technical education in the states. It followed, therefore, that he could not be blamed for the present deplorable condition of technical education in N.S.W. See D.H. Drummond, Technical Education in Australia, passim (pamphlet, Sydney, 1936).

indeed, novel demands on technical education. However, almost in spite of the efforts of the state governments, the demands of industry made themselves felt through the technical education system. New courses had to be provided and in Victoria, at least, the end of the decade saw the recognition that apprentices would need time off from their work to obtain an education that would meet the new requirements of industry. Workers became aware of the demands for the skills and crowded into the inadequate schools, many of them taking courses in such new fields as electricity and motor vehicles. Total numbers were greater than ever before: during the twenties enrolments in senior technical schools more than doubled whilst total employment in manufacturing increased by only about 25 per cent. Thus, although the effort of the states was grudging, and although the quality and quantity of workers trained could not have been ideal, technical education responded in a marked fashion to industrial growth.

(iii) Training Overseas

Technical schools provided most of the basic training, but for more specialised skills at a higher level and for broader knowledge and experience it was necessary to travel overseas. ⁷⁵ For Australians this usually meant visiting

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In the British tradition, universities were not an important source of highly trained labour for secondary industry.

Britain or the United States. Normally, this sort of training was beyond individual initiative and resources, and was obtained through firms sending employees overseas. The expense involved in this practice must have limited numbers severely and ensured that the recipients occupied key positions. Only the larger firms could organise regular training schemes. It has been shown, for example, that between 1921 and 1926 B.H.P. sent 30 of its officers overseas to widen their experience.⁷⁶ Australian Glass Manufacturers also sent experts to the United States yearly, as well as keeping a technical adviser in Britain who regularly visited the continent.⁷⁷

This sort of experience is probably most valuable at top management level in order to keep abreast generally with the latest developments in the centres of innovation. Reading through transcripts of evidence to the Commonwealth Arbitration Court, the impression gained is that where Australians were employed in positions similar to 'manager' or 'works superintendant' by medium-sized firms and upwards, they almost

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See p. 310.

77

S.G. Garnsworthy, Secretary of the Australian Glass Bottle Manufacturing Company, Commonwealth Arbitration Court, Enquiry re Standard Hours, Transcript of Evidence, 3 Nov. 1926, p.3227 et seq.

invariably had some overseas experience. Of course, the alternative to sending men overseas to gain experience was to bring foreigners to Australia. This alternative will be examined in the next section.

(c) Migration

Problems of a skilled labour supply are simplified if a country can rely on immigration. There is no need then to make such a heavy investment in training, and labour is obtained not only with skills, but more important, with experience and knowledge of the latest technical developments overseas. Australia was fortunate in being able to attract this especially valuable type of labour in the 1920s, and was, indeed, in a more favourable position in this respect than many under-industrialised countries: its standard of living was already high enough to encourage migration, and it had close economic and cultural links with Britain, itself a highly industrialised country.

We have seen that Australian immigration statistics give very little detailed information concerning the occupations

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In the metal trades some 3,000 to 4,000 Australians obtained experience in Britain during the war. They were recruited in Australia and returned at the end of the war. E. Scott, Official History of Australia in the War of 1914-18, Vol.XI. Australia During the War (1943), pp.264-77. 'A fair proportion...were in key positions.' Ibid., p.268.

of migrants, and British statistics are hardly better. But the British figures do indicate a sustained flow of 'skilled tradesmen' to Australia with a very high proportion from the metal and engineering trades.

Net Emigration of Skilled Tradesmen from Great Britain to

Australia^a

Year	Metal and Engineering Trades	Total
1921	987	2,305
1922	1,932	4,983
1923	1,920	4,725
1924	1,377	4,154
1925	1,422	4,383
1926	1,832	5,653

^a

Includes Irish Free State up to 1924.

Source: Committee on Industry and Trade, Further Factors in Industrial and Commercial Efficiency (H.M.S.O. 1928), pp.255-6.

However, the critical importance of skilled migrants cannot be sufficiently emphasised in this manner. To obtain a clearer picture it is necessary to examine their role in specific industries and firms. This has been carried out in various chapters of this work - motor vehicles in Chapter II; textiles in Chapter IV; electricity in Chapter V; and heavy industry in Chapter VI. In each of these industries migrants occupied many key positions. Some migrated with their firm to Australia when it established an Australian branch - the

extent of this migration is suggested by Appendix III. Others were brought out by Australian firms to assist in some specialised undertakings for which there was insufficient experienced Australian labour; finally, some migrants came to Australia on their own initiative and found their own employment. In total, they played a vital part in the communication of techniques between highly industrialised countries - particularly Britain and America - and Australia.

Chapter VIII

FINANCING INDUSTRIAL GROWTH

Introduction

As with the supply of labour, the provision of finance for industrial expansion in the twenties posed problems in Australia - problems which fall between those of an under-developed economy and a mature capitalist economy, but much closer to the latter than the former. Australia had a high national income per head, sound savings institutions and an experienced manufacturing sector, yet in the twenties there were special difficulties of several kinds. New industries, in which Australian experience was small, were being developed; and here, of course, the risks were considerable. Also, although there were established and experienced manufacturing and financial sectors of the economy, the link between public savings and manufacturing investment was not firmly forged. Stock exchanges were traditionally associated with government bonds, public utilities and mining, while banks were not interested in the provision of more than short-term capital for industry. Most manufacturing was carried on by private businesses, so that a vigorous expansion of



manufacturing increasingly called forth new methods of financing. A further problem lay in the electric power industry, where private enterprise was unable or unwilling to provide the enormous investment required to carry out the electrification of the economy.

The nature of the source material makes it necessary for this study to treat as a unit of time the nine years between June 1920 and June 1929, so that much of the subtlety of the process of industrial finance - the year to year fluctuations - is lost. But at the same time much can be learnt. This chapter contains an estimate of the volume of finance needed by industry during the expansion of the twenties, which is then examined from a number of aspects: the importance of the various investing institutions, the role of the government, the sources of funds for private investment and the part played by foreign investment.

Following normal Australian usage, the types of firms which operate in the private enterprise sector of the economy are divided into two groups: in the first category are those which are called here 'private businesses', including sole proprietorships, partnerships and proprietary (or private) companies; the other group is made up of public companies. The main differences between the two types of companies lie in the number of shareholders, the ability to call on the

public for finance and the amount of publicity which must be given to accounts. In this chapter the private enterprise sector is distinguished from the government or public sector, in which enterprises are described in various ways - public authority, local authority or government undertakings.

The Amount of Finance

There is no direct way to measure the volume of finance needed for the industrial growth of the 1920s. It can only be estimated indirectly by other means, and the result obtained must be regarded as an approximation. This approach is based on the use of the values of fixed assets in manufacturing - 'land and buildings' and 'plant and machinery' - which are recorded in Production Bulletins. Assuming that these fixed assets bear a constant relationship to total assets, then it is possible to obtain the increase in the value of total assets during the twenties, and this equals the total finance required for the expansion. In order to find this relationship a sampling technique was employed, the proportion of fixed assets to total assets being calculated for all those manufacturing companies which publish accounts. ¹

¹ Extensive use is made in this chapter of the published accounts of companies. Accuracy is therefore dependant on the extent to which accounts represent their true financial position. While the standard of account keeping was not always high in the twenties, it is thought that it is adequate for the purpose required here.

However, as values of fixed assets shown in both Production Bulletins and company accounts are depreciated values,² this method of estimation gives the net increase in the value of total assets and does not include depreciation. Depreciation figures for the twenties are not available, and the best that can be done is to use the official figures which were first published during the 1930s. These show that the average rates of depreciation for the three years 1936-7 to 1938-9 were 1.275 per cent on land and buildings and 5.806 per cent on plant and machinery,³ equalling 1.462 per cent and 6.164 per cent of their depreciated values. Applying these percentages to the annual values of fixed assets during the twenties,⁴ the results below are obtained:

Depreciation - £'000

Year	Land and Buildings	Plant and Machinery
1920-21	882	4,219
1921-22	975	4,801
1922-23	1,079	5,297
1923-24	1,194	5,947

(continued on next page)

2

This is a slight overstatement. In most cases company accounts show fixed assets at depreciated values; where this was not done the depreciation reserve was subtracted from both the value of fixed assets and total assets.

3

Production Bulletin, nos 31-3. The very low rate of depreciation on 'land and buildings' is the result, of course, of the inclusion of 'land' in this category.

4

Figures for the annual values of 'land and buildings' and 'plant and machinery' were obtained from Production Bulletin, nos 14-23. They have been adjusted as in Appendix 1.

(continued)

Year	Land and Buildings	Plant and Machinery
1924-25	1,318	6,494
1925-26	1,386	6,852
1926-27	1,486	7,134
1927-28	1,547	7,357
1928-29	<u>1,610</u>	<u>7,562</u>
Total	11,477	55,663

These calculations suggest that depreciation on fixed assets in manufacturing during the nine years 1920 to 1929 totalled £67,140,000, of which £11,477,000 was for land and buildings and £55,663,000 for plant and machinery. This total of depreciation was provided from within manufacturing: it was a charge on the internal finance of business organisations.

With this estimate of depreciation, it is now possible to turn back to estimate the net increase in total assets. Published accounts are available for about 250 public companies, covering a great variety of manufacturing activities for the year of operations ending during 1929.⁵ But for two reasons it was necessary to exclude from these companies those which were involved in the production and distribution of gas and electricity. First, in these industries fixed assets make up a much higher proportion of the value of total assets than in other manufacturing industries. Second, company

5

See Jobson's Investment Digest, 1929 and 1930.

accounts in these industries normally include in the category of fixed assets, both the assets involved in manufacturing and in transmission and distribution, while the assets recorded in the Production Bulletins relate only to manufacturing. Therefore, the usual relationship between fixed assets in company accounts and in Production Bulletins does not apply; moreover, distribution and transmission assets in these industries comprise a very large proportion of the total.

Excluding electricity and gas then, accounts are available for 236 general manufacturing companies for the year's operations ending in 1929. In that year the depreciated value of their fixed assets totalled £61,468,000, and the value of their total assets was £122,699,000, so that fixed assets were 50.1 per cent of total assets.⁶ Since we now know the relationship between fixed and total assets, the next step in estimating the increase in total assets during the twenties is to calculate the increase in fixed assets.

6

A static picture of the sources and uses of funds of public companies around 1925-6 was presented by F.V. McGee, 'Australasian Business Finance', Economic Record, Nov. 1927, pp.252-65. Using his figures for 174 manufacturing companies it was found that fixed assets were 51.2% of total assets. His figures include some New Zealand companies and his treatment of depreciation was not consistent.

Value of Land and Buildings and Plant and Machinery
Used in Manufacturing (excluding electricity and gas)

£ million

	30 June 1920	30 June 1929
Land and Buildings	48.6	102.0
Plant and Machinery	<u>47.0</u>	<u>91.3</u>
Total Fixed Assets	95.6	193.3

Source: Production Bulletin, nos 14 and 23 (see footnote 4, p.416).

The increase in fixed assets was, therefore, £97,700,000, and since fixed assets were 50.1 per cent of total assets, the increase in total assets between 1920 and 1929 was £195,000,000. This is the sum, plus depreciation and plus finance for electricity and gas, that we suggest makes up the total industrial finance required in the twenties. To begin with, we will concentrate on this £195,000,000 needed for general manufacturing; it was provided through three channels - public companies, private businesses and government enterprises.

The Investing Institutions

(a) Public Companies

We have seen that there were 236 public manufacturing companies operating in 1929,⁷ all of which were in existence

⁷ There were, of course, probably several other public manufacturing companies for which accounts could not be found.

at the beginning of the decade, or came into being during the twenties, either as a new business or by conversion from a private business. The contribution of these companies, as public companies, to the provision of the finance needed for the expansion of the twenties, can be obtained by subtracting from the value of their assets in 1929 (£122,700,000) their value in 1920 plus the value of the assets of any private business which was converted to a public company during the twenties (£70,340,000). The resulting figure of £52,360,000 - the finance provided by public companies - is 26.8 per cent of the finance needed for general manufacturing.

The manner in which this finance was raised can be learnt from a further study of the accounts of these companies. This reveals that public share issues by them amounted to £25,500,000, bonus share issues to £6,000,000 and the increase in reserves to £10,660,000; that is to say, 48.7 per cent of the finance was provided by public issue and 31.8 per cent (the total of reserves and bonus issues) by ploughed-back profits. Public financing and profits thus accounted for some 80.5 per cent of the expansion of public companies, leaving a mere 19.5 per cent to be taken up by other liability increases such as creditors and banks.

(b) Private Businesses

(i) General

The sources of finance for public companies are clear, but the financial activities of private businesses must

necessarily remain obscure. Of their nature, the accounts of these concerns are private and not open for public inspection; moreover, to be of value, any study of them would have to be comprehensive, since their scope covers all types of manufacturing. Some sampling procedure would be possible if there were sufficient analytical histories of private Australian businesses, but, in fact, there are none. In this position, generalisations concerning their financing must be of limited worth, but it might be expected that their general pattern of finance would be similar to that of public companies, since all were operating in the same general environment and with the same traditions. Certainly the role of banks was small in both cases,⁸ but an essential difference in the source of finance would stem from the nature of the capital market confronting the two types of organisation. Private businesses, as we have seen, can be divided into sole proprietorships, partnership and proprietary companies, and in each the number of members of the firm was limited by law: even the proprietary company could have no more than 50 members. For public companies, on the other hand, the number of shareholders was unlimited and could be increased at any time at the will of the firm; they could then draw on a much

⁸

See p.439.

wider circle for their capital. Under these circumstances it would seem likely that private concerns were forced to rely much more heavily on internal financing - on the reinvestment of profits - than public companies.

Although the accounts of proprietary companies are not generally accessible, the records of two are kept in the archives of the Australian National University. It is useful to outline their financial development, not because it can be used as evidence in support of the generalisations which have been made, but because it is thought that their story is not unrepresentative. To give added perspective, they are examined over a lengthy period - 1901 to 1929.

Michaelis, Hallenstein and Company Pty Ltd carried on a large tanning business which had its origin in Melbourne in the 1860s. At the opening of the century, its total assets were £292,000, which were financed by £150,000 of preference shares and £5,500 of ordinary shares; reserves amounted to £32,000, while creditors and bank were important at £72,000 and £31,000 respectively. By the outbreak of the first world war assets had risen to £379,000, financed by the expansion of the ordinary share capital from £5,500 to £100,000; of this increase £5,000 was subscribed, the remainder being bonus share issues. The war was a period of very profitable trading - in two years 25 per cent dividends were

paid - and by June 1920, total assets had risen to £644,000; funds were provided by a further bonus issue of ordinary shares of £100,000 and an increase of reserves of £140,000. The twenties were a quiet period: by June 1929, total assets had risen a further £97,000 to £641,000, the increase being more than financed by the increase in the depreciation reserve. By the same date creditors and bank had both fallen absolutely compared with the beginning of the period, and they now totalled only £82,000. It can be seen that almost the entire expansion came from profits.

Another large tanning firm was that of McMurtrie and Coy Ltd of Sydney, which grew in very similar fashion to Michaelis, Hallenstein. In December 1901, total assets were £112,000, financed by preference shares of £40,000 and ordinary shares of £22,000; reserves were £17,000, while bank and

⁹ The importance of internal financing may be made clearer by a small table:

	<u>£'000</u>		
	1902-14	1914-20	1920-29
Increase in Total Assets	<u>87</u>	<u>265</u>	<u>97</u>
Internal Finance:			
Bonus Shares Issued	89	100	-
Increase in General Reserves	15	126	-45
Increase in Depreciation Reserve	<u>-</u>	<u>12</u>	<u>133</u>
Total	104	238	88



creditors equalled £16,000 and £8,000. By the outbreak of the war assets had risen to £215,000 and ordinary share capital had risen by £58,000 from bonus issues,¹⁰ with outside finance still an important factor. Once again the war brought good profits and by June 1920, the ordinary share capital had increased by an additional £30,000 of bonus issues, while reserves rose from £26,000 in 1914 to £80,000. Profits were modest throughout the twenties and the total assets declined from £302,000 to £259,000 in June 1929; of this total, share capital was £150,000, reserves £49,000 and bank and creditors totalled £43,000. The accounts do not show depreciation as a running total, but it was allowed at the rate of about £3,000 a year.¹¹

In these two companies outside sources of finance played a very minor role. Banks and creditors declined in relative

10

Some accounts are missing in the pre-war period but those available show that the periodic increases of share capital of £48,000 were from bonus issues; it seems reasonable to assume that the balance of £10,000 was issued in the same manner.

11

As with Michaelis, Hallenstein, the role of self-finance in McMurtrie and Coy may be made clearer by a table:

	£'000		
	1901-14	1914-20	1920-29
Increase in Total Assets	<u>103</u>	<u>87</u>	<u>-43</u>
Internal Finance:			
Bonus Shares Issued	58	30	-
Increase in Reserves	<u>9</u>	<u>54</u>	<u>-31</u>
Total	67	84	-31

importance and the members of the firm were called on for insignificant amounts of fresh capital. Almost the entire development from 1901 to 1929 was financed through ploughed back profits.

Investment in private concerns may be considered from yet another point of view. The greater part, but not all, of foreign investment in Australian manufacturing during the twenties took place through these institutions. The importance of this foreign investment is considered in the next section.

(ii) Foreign Investment in Australian Manufacturing

At the opening of the decade, government spokesmen gave the impression that a vast flood of private foreign capital was pouring into Australia; however, these statements were soon shown to be inaccurate and exaggerated.¹² In fact, Australian figures for foreign private capital inflow in the twenties are most fragmentary. The fullest work in this field has been done by Roland Wilson.¹³ His estimates show that between 1920 and 1929 net imports of capital totalled £250,365,000, to which state and Commonwealth overseas

¹²

See, e.g., Argus, 24 Feb. 1921, p.7, and 5 Sep. 1921, p.10.

¹³

Roland Wilson, Capital Imports and the Terms of Trade..., 1931.

borrowing contributed £219,697,000, while banking funds abroad fell by £3,977,000.¹⁴ This leaves only £26,691,000 to be explained in terms of other private transactions and municipal borrowings;¹⁵ in total, it does not suggest a large private inflow of capital during the twenties, and it is not, of course, informative about the manufacturing sector.

If statistics are so poor from the point of view of the borrower, can more be seen through the lenders' eyes? Foreign investment in Australian manufacturing was almost entirely American and British, and the American figures are very informative.

American Manufacturing Abroad

Year	Australia and New Zealand \$'000,000
1897	0.5
1908	6.0
1914	10.0
1919	16.0
1924	26.0
1929	49.8

Source: Cleona Lewis, America's Stake in International Investments (1938), p.595.

14

Ibid., p.36

15

Ibid., pp.42-3, for a statement of the variety of private transactions possible.

The source of the earlier figures in this table is not clear, but the 1929 figure, covering American direct investment of all types in manufacturing in Australia and New Zealand is based on a very careful survey of the Department of
16
Commerce.

The table shows that investment in manufacturing in Australia and New Zealand increased by \$33.8 millions during the twenties. Of this total probably five-sixths - approxi-
17
mately \$28 millions - was in Australia, and at 4.8665 dollars to the pound this amounts to an increase of £5.8 millions. How much of this represents an inflow of funds is another matter; reinvested profits were probably at least as important as in Australian industry generally, and, for various reasons (including the high profits in the motor industry), they were probably more important.

British investment was undoubtedly larger than the American, but by how much is impossible to say with any precision. Various estimates of British overseas investment
18
such as those in the Economist or by Robert Kindersley
19

¹⁶ U.S. Department of Commerce, Bureau of Foreign and Domestic Commerce, American Direct Investments in Foreign Countries (Trade Information Bulletin, no.731, 1930).

¹⁷ Estimated on the basis of their relative populations and stage in industrial growth.

¹⁸ Economist, 1 Mar. 1930, p.453, 'British Companies Abroad - I'; and 22 Mar. 1930, pp.634-5, 'British Companies Abroad - II'.

¹⁹ There are a series of articles by Kindersley in the Economic Journal around 1930. See, e.g., 'British Overseas Investment in 1931', June 1933, pp.187-204.



do not really come to grips with the size of British private investment generally in Australia, let alone in manufacturing. No more can be done here than to list the foreign firms which are known to have begun operations or expanded substantially in this country during the twenties.²⁰ Such a list is impressive both in length and in the stature of the foreign firms, but it gives little indication of the amount of investment. However, a general study of British investment, as revealed in part by previous chapters, suggests that it is unlikely that it was more than four or five times the size of the American. Perhaps twenty-five to thirty million pounds would be a fair estimate of the value of foreign investment made in Australian manufacturing during the twenties. It is not a large sum when compared with the total expansion.

(c) Government Agencies

Apart from the provision of electricity, governmental authorities were not deeply involved in manufacturing enterprises in the twenties. The Commonwealth government was directly interested in manufacturing through the provision of capital for two large firms which had defence implications: these were Commonwealth Oil Refineries Ltd and Amalgamated Wireless (Australasia) Ltd, for which the Commonwealth

20

See appendix III.

government provided roughly half the capital. These were public companies and their financial development in the twenties has already been examined.

The main connection of public authorities with manufacturing was through their ownership of railways and tramways. In the manufacturing industry 'Railway Carriages, Railway and Tramway Workshops', the value of land and buildings increased by £2,859,000 and plant and machinery by £3,110,000²¹ in the nine years between 1920 and 1929. Assuming these fixed assets bore the same relation to total assets as in manufacturing in general, then total assets increased by²² £11,910,000. This was virtually all government finance.

In the field of general industrial undertakings which competed with private enterprise, some states, particularly New South Wales and Queensland, were actively engaged, while the Commonwealth government operated the Commonwealth Shipping Line for the first half of the twenties. Investment in these undertakings is set out as follows:

21

Production Bulletin, nos 14 and 23.

22

A very small amount of finance was probably private. In 1931 there were 112 government railway and tramway workshops and four private. The latter were small. Commonwealth Year Book, 1931, p.743.

Public Investment in 'Industrial Undertakings'^a

£'000

Year	Commonwealth	States	Local Government Authorities
1920-21	3,000	433	103
1921-22	3,369	383	17
1922-23	1,815	155	23
1923-24	627	361	42
1924-25	163	625	34
1925-26	-	652	24
1926-27	-	467	27
1927-28	-	489	25
1928-29	-	49	42
Total	8,974	3,614	337

^a Commonwealth investment is gross, while state and local are new.

Source: W.A. Sinclair, 'Public Capital Formation in Australia 1919-20 to 1929-30', Economic Record, Nov. 1955, pp.303-4.

The table refers to industrial undertakings, not manufacturing establishments; once this criterion is applied, the total value of the investment diminishes considerably. Investment by the Commonwealth government refers to the Commonwealth Shipping Line and can be ignored, since it relates almost entirely to the purchase of ships (mainly overseas), and not to an expansion of shipyards. ²³ Investment by local

23

The Commonwealth government also conducted a few small undertakings - such as explosives and small arms - for defence purposes, but these were not expanding during the twenties.

government authorities is almost entirely in gasworks, and this industry is treated separately later in this chapter. In the state field the industrial undertakings include a great variety of businesses: brickworks, quarries, fisheries, pastoral stations, butchers shops, cold stores, saw mills, to name only a few. However, even if the number of undertakings was large, it can be seen that their contribution to the growth of the twenties was small in value. Probably no more than one-third of their expansion can be associated with manufacturing, so that public investment in manufacturing enterprises considered under this heading amounts only to some £1,200,000.

Service Industries

(a) Electricity

During the 1920s the electrical power industry developed in a spectacular fashion: the value of land, buildings, plant and machinery used in the production of electricity rose from £8,230,000 in June 1920 to £28,300,000 in June 1929.²⁴ These fixed assets constitute only a part of those in the electric power industry; the larger part is used in the transmission

24

Production Bulletin, nos 14 and 23. Until 1924-5 Victorian figures, unlike the other states, included assets involved in distribution as well as manufacturing. In the 1920 figure above, Victorian distribution assets have been excluded.

and distribution of electricity. Therefore, in order to measure the volume of funds required by the industry for its development, the usual relationship between fixed assets and total assets in general manufacturing cannot be applied. It is, however, possible to estimate the funds used in the industry in a more direct manner.

All investment in the electrical industry in the twenties was carried out either by public companies or governmental authorities.²⁵ In this decade public companies still occupied an important place in the industry: their total assets in 1920 of £4,970,000 had increased by 1929 to £14,950,000.²⁶ This increase of almost exactly ten million pounds was financed in the following manner:

	£'000,000
Share capital	4.01
Reserves	1.37
Debentures	2.30
Victorian government loan	<u>1.71</u>
	9.39
Balance - other liabilities	<u>0.59</u>
Total Finance	9.98

25

There may have been a few very small private companies in the country, but their total effect would be negligible. For a short history of the replacement of privately owned companies with public authorities, see A Brief History of some of the Features of the Public Electricity Supply in Australia and the Formation and Development of the Electricity Supply Association of Australia 1918-1957 by Guy Allbut (1958).

26

Figures for public company finance obtained from the accounts of these companies as published in Jobson's Investment Digest, 1920-30.

Most of the finance came from the public issue of shares or debentures, but not all of this capital was raised in Australia. Some, particularly for two large companies - Melbourne Electric Supply Coy Ltd and The Adelaide Electric Supply Coy Ltd - was found in the United Kingdom.²⁷ Profits ploughed back into reserves provided about one-seventh of the finance; there were no bonus issues of shares. The loan from the Victorian government was to the Melbourne Electric Supply Coy Ltd, which was about to be taken over by the state electrical authority.²⁸

Estimates have been published of public authority investment in durable assets in the electrical industry during the twenties; these show that between 1920 and 1929 new investment by state governments totalled £23,200,000 and by local government authorities, £19,600,000.²⁹ These figures relate only to durable assets but they make up a very high proportion of total assets in such undertakings: about 90 per cent on the average. Total finance for public authority electrical undertakings would therefore be:

27

See company histories in Were's Statistical Service, 1934.

28

The Melbourne company was purchased by the State Electricity Commission in 1934.

29

W.A. Sinclair, op. cit., p.304.

	£'000,000
State government investment in durable assets	23.2
Local government authority investment in durable assets	19.6
Plus 10% for other assets	<u>4.3</u>
Total finance	47.1 ³⁰

The electrical industry required capital of approximately fifty-seven million pounds, of which something over four-fifths was found by government undertakings and the balance through public companies. The demands of this industry are appreciated when it is realised that this investment was roughly three-tenths of that in general manufacturing.

(b) Gas

As with the electricity industry, there are special reasons for studying the gas industry on its own. This industry was operated by private enterprise companies or by local government authorities; state governments were not involved. However, unlike the electricity industry, the role of public authority undertakings was small; this can be seen in 1931 when official figures for manufacturing fixed assets separate, for the first time, local authorities from companies:

30

Rough confirmation can be found for this figure. In 1930-1 (Production Bulletin, no.25, p.108) - the first year in which a separation is made - fixed assets in government electrical undertakings were 4.17 times greater than in the non-government. If both types had maintained the same rate of growth in the twenties, then government asset increase should be 4.17 times the private of £9.98 million; this equals £41.6 million. In fact, government concerns probably grew more rapidly than non-government.

	<u>£'000</u>		
	Land and Buildings	Plant and Machinery	Total
Local authorities	146	400	546
Companies	1,514	6,694	8,208

Source: Production Bulletin, no.25, p.108.

Since local authorities thus owned only 6 per cent of fixed assets in the industry, the main explanation of finance for gas lies with companies. These companies were public companies,³¹ and their accounts reveal that their total assets grew from £11,730,000 in 1920 to £21,210,000 in 1929.³² The sources of this finance are set out below:

	<u>£'000</u>
Public Share Issues	4,730
Debentures	2,980
Bonus Share Issues	350
Increase in Reserves	930
	<u>8,990</u>
Other Liabilities	490
Total Finance	<u>9,480</u>

Public share issues provided about half the finance needed; debentures were very important at almost one-third of the

31

There were a few small private companies and some small public companies for which accounts could not be found, but their combined importance in the expansion of the twenties was insignificant.

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Their accounts were seen in Jobson's Investment Digest, 1920 to 1929.

total, while ploughed back profits (bonus issues and reserves) made up something over one-seventh.

If local authority gas works had grown at the same rate as the companies during the twenties, then the finance required for their expansion would have amounted to £630,000. The greater part of these funds would have been provided by government authorities.

Features of Financing

The total amount of finance needed for the expansion of manufacturing during the 1920s can now be established:

	£'000,000	% of net Finance	% of gross Finance
General Manufacturing	195.0	74.4	
Electricity	57.1	21.7	
Gas	10.1	3.9	
Net Finance	<u>262.2</u>	100.0	79.6
Total Depreciation	67.1		20.4
Gross Finance	<u>329.3</u>		100.0

The total sum required amounted to £329 millions, of which depreciation was one-fifth. This depreciation of £67 millions was finance that had to be found before any net growth could take place. The great importance of the electricity industry as a capital consumer is shown by the fact that it took over one-fifth of total manufacturing funds during the decade. However, as we have noticed, from the point of view of manufacturing, there is some overstatement here, since

the electricity industry includes assets involved in transmission and distribution as well as manufacturing.

Investment in manufacturing took place through three types of organisation:

	£'000,000	
General Manufacturing		
Private Businesses	125.3	
Public Companies	56.6	
Governmental Undertakings	<u>13.1</u>	<u>195.0</u>
Electricity		
Public Companies	10.0	
Governmental Undertakings	<u>47.1</u>	<u>57.1</u>
Gas		
Public Companies	9.5	
Governmental Undertakings	<u>0.6</u>	<u>10.1</u>
Total Net Finance		<u>262.2</u>

In general manufacturing, the role of government investment was small; the private sector was much more important, and the greater part of the investment was carried out by private businesses, not through public companies. Governments dominated in the electricity industry, the rest being carried out by public companies. Investment in gas was undertaken almost completely by public companies.

We are now in a position to divide manufacturing into government and non-government sectors. Of the total net investment of £262,000,000, government investment totalled ³³ £63,400,000, or almost one-quarter of the total. But this

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This total of government funds exceeds that in the previous table, because it relates to the origin of funds, not the investment institution. Thus it includes government investment through public manufacturing and electricity companies.

most important position is the result only of government investment in electricity. Exclude electricity and the role of governments is insignificant.

Of the investment in general manufacturing, about one-quarter was through public companies. In this group the pattern of the provision of funds is clear: of the net finance, 49 per cent was obtained through public issue and 32 per cent from reinvested profits. This, of course, is not a complete picture, because no account has been taken of the financing of depreciation. Turning to gross finance including depreciation, public share issues fall to 40 per cent while internal financing rises to 43 per cent. These are the two major sources of finance for public companies. ³⁴ This conclusion

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See A.R. Hall, Australian Company Finance. Sources and Uses of Funds of Public Companies, 1946-55 (1956). In the introduction to this work, R.F. Henderson, who is concerned with the process of financing, states (p.ix): 'No simple addition of retained profits to new industrial issues can possibly explain the finance of industrial investment.' Yet A.R. Hall's conclusions are very much along these lines for the period 1946-54 (p.4): 'Apart from year-to-year changes, the general picture that emerges is one of a company system which, while its main source of new funds is retained earnings, relies quite heavily on the new issue market, somewhat extensively on the extension of trade credit, and rather less heavily on bank overdraft than is often assumed to be the case.'

However, it must be emphasised that the length of the time period studied here means a bias towards emphasis on long-term sources of finance. See *ibid.*, pp.14 and 32-3.



emphasises the small role of the banks in the provision of funds for industry. Figures of advances by banks to industry are not available except for 1927, when the advances of the trading banks to 'manufacturing and mining' totalled £25,436,000, 11.9 per cent of their total advances.³⁵ If it is assumed that three-quarters of the advances were for manufacturing, how important were they for this sector? Fixed assets of manufacturing in 1927-8 were £225,000,000³⁶ so that total assets were roughly £450,000,000: clearly some £20,000,000 of advances do not occupy a very important place in this picture.³⁷

Although public companies accounted for little more than one-quarter of the expansion of general manufacturing during the decade, their importance was rapidly increasing. In 1920 there were 91 manufacturing companies registered at the stock exchange in Sydney and 83 in Melbourne; by 1929 these figures

³⁵ Royal Commission on Banking, Report, 1937, p.314.

³⁶ Production Bulletin, no.22.

³⁷ Once again, they may have been important for short-term finance. However, these figures suggest that D.H. Merry should severely qualify his conclusion: 'Up to 1939 at least, the banks in Australia remained the main providers of capital for industry.' See 'The Changing Role of Trading Banks in the Australian National Economy', Economic Record, Apr. 1959, p.78.

had risen to 148 and 138 respectively.³⁸ The increase did not occur simply because companies already listed reregistered on another exchange: between the two exchanges there were 103 new companies registered in this period.³⁹ This change in the method of fund-raising by manufacturing concerns during the twenties did not pass unnoticed; for example, The Australasian Insurance and Banking Record commented:

...some important changes have taken place in Stock Exchange business, owing to the great increase in public securities and to the increase in the number of trading and manufacturing companies quoted on the Exchanges, the character of the stock and share market being widely different from what it was in 1913.⁴⁰

This development was naturally welcomed by the stock exchanges, the chairman of the Melbourne Stock Exchange stating:

One aspect in the development of the Exchange should afford members particular satisfaction. This is the tendency on the part of the largest and best known trading concerns to seek capital from the public through the medium of the Stock Exchange.⁴¹

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Sydney Stock Exchange, Monthly Stock and Share List, June 1920 and June 1929; also the Stock Exchange of Melbourne, Official List, June 1920 and June 1929.

39

Ibid. For various reasons there were some companies which lost registration.

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The Australasian Insurance and Banking Record (Leader), 21 Oct. 1927, p.857.

41

Ibid., 22 Nov. 1926, p.1050. The same trend was noticeable on the smaller stock exchanges. The president of the Adelaide Stock Exchange stated: 'A gratifying feature has been the continued increased trade in industrials, proving the confidence the investing public and companies had in the Stock

It has been suggested that foreign private investment in Australian manufacturing increased by some twenty-five to thirty million pounds during the twenties; it therefore accounted for roughly one-seventh of the finance provided for general manufacturing. This sum, of course, does not represent an inflow of funds: a large part of it was reinvested profit. What were the industries in which this investment was made? In 1929 we know that of the \$49,816,000 invested by American interests in Australasian manufacturing, \$18,962,000 was in 'automotive vehicles, agricultural and industrial machinery', \$7,579,000 in chemicals and \$7,441,000 in the electrical industry.⁴² Unfortunately, there is no similar survey of the position earlier in the decade, but as these were the expanding industries of the twenties, undoubtedly most of the

41 (continued)

Exchange to provide a free and open market and reliable prices for their shares.' (*Ibid.*, 21 Apr. 1927, p.321.) The president of the Brisbane Stock Exchange had similar views:

'Government loans still hold pride of place as regards the volume of business, but it is very satisfactory to note that industrials show the largest increase in volume..., and this explains how the ideas of investors and the trend of investments have changed. During the war years, and for a long period afterwards, the small investor went solidly for War Loans, and nothing else.... As confidence increased and the returns from Government loans showed only 5 $\frac{1}{4}$ to 5 $\frac{3}{4}$ per cent, the investor has turned to sound industrial stocks...'

(*Ibid.*, 21 Aug. 1928, p.694.)

⁴²

U.S. Department of Commerce, Bureau of Foreign and Domestic Commerce, American Direct Investment in Foreign Countries (Trade Information Bulletin, no.731, 1930), p.30.

American investment took place in them. British investment in manufacturing was more widespread: of the industries mentioned above, it occurred in electrical manufactures and chemicals but not in the most important part of the motor industry - chassis assembly and body building; in addition, previous chapters have shown substantial British investment in textiles, clothing, cement, rubber and steel. It is apparent, however, that important though foreign investment in Australian manufactures was during the twenties, the main contribution was not in terms of an inflow of funds from overseas.

Foreign investment was relatively much more important in the production of electricity than in general manufactured goods. It has been pointed out that English investment was significant for the two private electricity firms in Adelaide and Melbourne,⁴³ but foreign funds were more important in government undertakings. Government investment in electricity amounted to £25,500,000 by the states and £21,600,000 by local authorities.⁴⁴ The states raised their money through loans while local authorities used various methods, including public loans and funds obtained from state and federal governments.

43 See p.433.

44 See p.434.



The most important single source of finance was from state loans, which increased from £425,900,000 to £718,800,000 between 1920 and 1929; this increase was shared almost equally between overseas loans of £149,300,000 and local loans of £143,600,000.⁴⁵ In this manner then, through the general provision of funds to Australian public authorities for public works, overseas investors financed a large part of the growth of the electricity industry.

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Finance Bulletin, no.27, p.31.

Chapter IX

PRODUCTIVITY AND PRICES

Introduction

During the 1920s, Australia directed an increasing proportion of its resources to manufacturing and, in the process, reoriented its domestic national product more towards manufactured goods. The success and wisdom of this structural change in the composition of total output depended, in part, on the efficiency with which resources were used in manufacturing. At the same time, the ability to carry through this reorientation depended not merely on relative productivity gains within Australia in shifting resources towards manufacturing, but also on movements in comparative costs as between Australia and the trading world, chiefly the United Kingdom.

Australia's industrial development has occurred in the face of strong competition from imports, so that the major theme of industrial growth centres around import replacement. Between 1900 and 1914 the percentage of total imports which came from the United Kingdom was roughly 60 per cent, and although this figure fell to an average of about 45 per cent during the twenties, the United Kingdom was still by far the

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most important supplier. If imports of manufactured goods alone were considered, the importance of Britain would be even greater. Australian manufacturers were, therefore, particularly concerned with British costs and prices, and their evidence to the Commonwealth Arbitration Court and the Tariff Board amply demonstrates their preoccupation with British competition.

In the first place, then, this chapter examines the behaviour of productivity in Australian manufacturing. Next, the general competitive position within which industrial growth took place is analysed by means of a comparative study of productivity and costs in Britain and Australia.

2

Productivity of Labour in Australian Manufacturing

Contemporary discussion on productivity in Australia during the twenties was based on the volume of production

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Overseas Trade Bulletin, nos 1-12, 17-27. Second was the U.S.A., which was roughly half as important as the United Kingdom in the 1920s.

2

Only labour productivity is examined. As L. Rostas in Comparative Productivity in British and American Industry (1948), p.2, remarks: 'What makes physical output per head a good measurement of relative productivity is that it reflects the joint effect of a great number of influences on production. Relative physical output per head is influenced, for example, by differences in the skill and effort of the workers, but it is equally influenced by differences in managerial efficiency, differing technical equipment, rate of operations, and various other factors.' However, it is not influenced, in particular, by the degree of efficiency in the use of raw materials and fuel, or by the amount of capital used in the course of production.

obtained by using a price index, compiled by the Commonwealth Statistician, to deflate the value of manufacturing output.³ Using this method, the Commonwealth Statistician considered he was in a position to calculate an index of output per head in manufacturing and his results are set out in the table below:

Productive Efficiency Index (1911=1000)

^a
Manufacturing

1911	1000		1918	1008
1912	1015		1919	1043
1913	1026		1920	1032
1914	1034		1921	1044
1915	1041		1922	1054
1916	1049		1923	1072
1917	1036		1924	1075

^a From 1919 the years begin on 30 June of the year stated.

Source: C.H. Wickens, 'Australian Productive Efficiency', Economic Record, November 1927, p.183.

It can be seen that this official table indicates a very slow growth of output per head in manufacturing - something like an average of 0.5 per cent per annum over the whole period. Because of this, the official manufacturing price index numbers were one of the principal weapons of those opposed to the protection of Australian manufacturing. The chief academic member of this camp was F.C. Benham: his use

³

Published in Production Bulletin. See, e.g., no.21, p.183.

of these statistics can be seen in his book The Prosperity⁴ of Australia⁵ and in his controversy in the Economic Record with J.B. Brigden and L.F. Giblin. Although many of Benham's statistics were queried, no doubts were cast on the price index numbers and the results obtained from them.

In 1928 the official price index numbers for manufacturing were varied by the introduction of the 'chain method' of compilation;⁶ then in 1930 came a major change in official policy. The series was discontinued with this announcement:

This method gives results which may be used safely over a few years in which the technique and efficiency of manufacturing do not change appreciably. But, it is dominated by the rate of wages, and over a period of years during which there has been a considerable increase in the mechanization of industry it is likely to be very misleading. In particular, a caution may be given against using this index for any inference as to the growth of productive efficiency per worker, because the method of constructing the index practically assumes that there has been no change in productive efficiency.⁷

So much for the precise measures of productivity which were used so confidently during the twenties. The Commonwealth Statistician expressed the hope that a more satisfactory index

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F.C. Benham, The Prosperity of Australia (1928), ch.V.

5

Economic Record, 1926, 1927 and 1928.

6

Production Bulletin, no.22, p.173.

7

Ibid., no.24, p.112.

of the volume of manufacturing production would be produced,⁸ and he continued to express that hope yearly in the Production Bulletins until 1936; in that year it too was omitted.

There are, therefore, no recognised official indexes of manufacturing output for Australian in the 1920s, but there have been numerous unofficial attempts to compile indexes, of which three of the more reputable will be considered here. These estimates were made by Folke Hilgerdt for the League of Nations, Colin Clark and A. Maizels.

Folke Hilgerdt used as a price index the unweighted arithmetic average between the official Melbourne wholesale price index and the official index of nominal wage rates for adult males.⁹ This index was applied to the gross value of production of manufacturing industry and the result obtained is set out below:

^a
Volume of Manufacturing Production
1925-9 = 100

1908	45.6	1920	69.3	1926	99.5
1909	51.0	1921	79.7	1927	101.2
1910	57.0	1922	83.9	1928	103.0
1911	61.4	1923	82.9	1929	98.9
1912	61.8	1924	90.4	1930	89.0
1913	69.0	1925	97.4		

^a No estimates were made for the war years.

Source: League of Nations, op. cit., p.141.

⁸

Ibid.

⁹

Industrialisation and Foreign Trade, Economic, Financial and Transit Department, League of Nations, 1945. (Reprinted by the United Nations, 1948.) P.144.

The average volume of output for the years 1911-13 was 64 and for the years 1927-9 101, indicating an increase during this period of 58 per cent.¹⁰ Employment increased by 41 per cent, so that there was a slow increase in output per employee averaging 0.7 per cent per annum.

In 1946 Colin Clark used a more complex method to estimate real product per worker in manufacturing for various years between 1913 and 1928-9, and then for every year to 1940-1.¹¹ He divided manufacturing into two sections. The first section included those industries for which some figures of volume of output were available. 'The factors of conversion into I.U. [international units] were obtained directly from United States factory census statistics, over the period 1925-1934 (the base period for I.U.'s). The $\%$ value added per unit of volume handled was determined for each of these industries.'¹² This was applied to Australian output, 30 per cent was deducted for depreciation and miscellaneous expenses,

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The end of the twenties has not been compared with the beginning of the decade so as to make this study comparable with the following two and because the great price changes at the beginning of the decade place grave doubts on the accuracy of the index; see, for example, the very great increase in production shown in 1921.

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Colin Clark, Economic News, October-December, 1946, vol.15, nos 10-12.

12

Ibid., p.3.

and then the total was divided by the number of workers engaged. The result set out below was obtained:¹³

	1913	1921-2	1924-5	1926-7	1928-9
Numbers engaged (thousands)	50.0	57.8	62.0	59.3	56.2
Real Product per Worker (I.U. per annum)	1960	1799	1984	2142	2384

For the greater part of output no volume figures are available, so Clark constructed his own wholesale price index for manufactured goods and used this - combined with other measures¹⁴ - to deflate the value added in manufacturing.¹⁵

	1913	1921-2	1924-5	1926-7	1928-9
Numbers engaged (thousands)	287.1	337.6	377.9	407.9	394.3
Real Product per Worker (I.U. per annum)	481	515	738	762	804

It is difficult to assess the value of Clark's work because so much depends on the accuracy of his price index numbers. But his results have some odd features: for instance, for the majority of the workers, output per head increased

¹³

Ibid., p.5.

¹⁴

Ibid., pp.3 and 6.

¹⁵

Ibid., p.5.

more than 60 per cent in the 15 years between 1913 and 1928-9. This seems suspiciously high. Indeed, the index shows an increase of more than 40 per cent in three years in the early twenties. Furthermore, the output of 804 in 1928-9 is not exceeded in any year up to and including 1940-1, when the index ceases. Another odd feature is that output per worker is three to four times as high in the first group of industries as in the second, when the Production Bulletin shows that 'value added per employee' is only about two-thirds greater.

The most recent systematic attempt to estimate the growth of productivity in Australian manufacturing has been made by A. Maizels.¹⁶ He divided the period 1911-13 to 1953-4 and 1954-5 into four parts, and for the initial period 1911-13 to 1927-8 and 1929-30 he obtained the result set out below:

Annual Average Cumulative Rates of Increase in
Output per Employee-Hour

Industry Group	Percentage 1911-13 to 1927-8, 1929-30
1. Food, Drink and Tobacco	1.5
2. Textiles, Leather and Clothing	1.6
3. Chemicals and allied trades	0.2
4. Metals and Engineering	0.5
5. Building Materials	2.6
6. Paper, Printing etc.	1.1
7. Energy	<u>6.4-8.0</u>
Total ^a	1.8
a Total, ^a excluding energy	1.4
Including miscellaneous trades.	

Source: A. Maizels, op. cit., p.172.

¹⁶ A. Maizels, 'Trends in Production and Labour Productivity in Australian Manufacturing Industries', Economic Record, Aug. 1957, pp.162-81.

The presentation and statistical analysis of Maizels' work give the productivity indexes an air of accuracy which, for the first period at least, is spurious.¹⁷ He states that 'for the first "link" (between 1911-13 and 1927/8-1929/30), 55 per cent of total gross industrial production was covered by the groups for which unit value index numbers could be computed'.¹⁸ This 55 per cent is made up of three groups in the above table: 'Energy' with an almost complete coverage of 94.5 per cent of output, 'Food, Drink and Tobacco' with a good coverage of 61.3 per cent and 'Textiles, Leather and Clothing' with only 38.7 per cent.¹⁹ But the last sample is not as good as it sounds, since almost half the output of the sample is scoured wool which needs little processing in manufacture; raw materials constitute five-sixths of the value of the output. The rest of the indexes are 'estimated by deflating the value of output by index numbers based on appropriate wholesale price or wage rate changes',²⁰ and for

17

At the same time no awareness is shown of the inaccuracies of the basic figures in the Production Bulletins. Methods of counting were changed on several occasions and if these were taken into account several of the production indexes would change substantially.

18

A. Maizels, op. cit., p.176.

19

Ibid., table S.A./I.

20

Ibid., p.176.

these 'the margin of error in the resulting volume series can be assumed to be greater than for the series based on census unit values'.²¹ It is nowhere stated how wage rates and wholesale prices are combined. Appendix II²² indicates that in this first period the Melbourne wholesale price index has been used but, in fact, most of these prices are totally irrelevant to Australian production.²³

Given this variety of attempts to measure manufacturing productivity in Australia, can any quantitative conclusions be reached? It would seem that no estimates can be made of year-to-year changes during the twenties, both because of the very small changes involved and the very approximate nature of the basic material. Can the twenties then be looked on as a period, and productivity at the beginning compared with that at the end? Once again such an approach must fail because those price indexes which are available cannot cope with the great price fluctuations between 1919 and 1923.

21

Ibid., p.165.

22

Ibid., p.181.

23

Of the chemicals in the Melbourne index almost none were made in Australia. The metals section is very heavily weighted with coal. Building materials are almost all timber. There is no price index for paper so Maizels had to use wages only. For the commodities included in the Melbourne wholesale price index, see, e.g., Labour Report, no.15, p.10.

Finally, is it possible to take a still broader view and compare the immediate pre-war position with the end of the twenties? This is probably the best approach, although it includes the war years during which productivity may have moved in opposite fashion to the twenties. Even accepting this difficulty, the basic problem still remains - the materials available cannot give a satisfactory result. Consider the methods which have been discussed and criticised: between 1913 and 1929 the per annum rate of increase of productivity was estimated at less than 1 per cent by the Commonwealth Statistician and Folke Hilgerdt, about 2 per cent by A. Maizels and 3 per cent by Colin Clark.²⁴ There is a great range in these estimates, all have faults and little reliance can be placed on any of them. However, all agree that productivity was rising. Is there any other evidence for this conclusion?

By far the most important factor affecting output per head is the amount of machinery that is available. In 1920, by international standards, Australian manufacturing was poorly equipped; for instance, an American visitor viewed the position thus:

Regarding Australian engineers and workmen, he said that they are undoubtedly as capable as any in the

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These estimates are not directly comparable in that three of them refer to output per man, while Maizels' refers to output per man hour.



world's market, but unfortunately they are very greatly handicapped through the want of modern production machinery. Consequently, the Australian workman of to-day works harder and produces far less than the oversea competitor, due to the fact that Australia is at the present time depending mostly on the human element to give production instead of obtaining same from the latest labor-saving machinery.²⁵

26

However, it has been emphasised that one of the most important features of the growth of the twenties was the high rate of investment in factory equipment: plant and machinery more than doubled in value during the decade from £58.4 million in 1919-20 to £125.6 million in 1929-30. In terms of value of equipment per worker the increase was from £167 in 1919-20 to £260 in 1926-7, the peak of the boom in employment; then, with the continued investment in equipment and the fall in employment, it rose to £309 in 1929-30. If the service industries of electricity and gas are excluded, the movements in the value of equipment are similar but the levels are lower: £137 in 1919-20, £205 in 1926-7 and £233 on 1929-30. These money values suggest a striking increase in the capital equipment available per worker,²⁷ and this impression is

25

The Commonwealth Engineer, October 1920, p.74. The visitor was an engineering expert, Mr Arthur B. Thorne.

26

Chapter I, pp.17-24.

27

All values used above are from Production Bulletins as adjusted in Appendix I.

confirmed by the use of a measure of the volume of capital equipment: horse-power per worker rose from 1.22 in 1919-20²⁸ to 1.63 in 1926-7 and 1.98 in 1929-30. Thus during the period of most rapid expansion, when employment increased 27 per cent in the seven years to 1926-7, the horse-power per worker increased by one-third - as compared with an increase of one-half in the value of all equipment.

Output per head is affected not only by the amount of machinery that is available, but also by its quality and age. These characteristics are difficult to generalise about, but at least the very rapid growth in total equipment in the twenties must have ensured that a high proportion of all machinery was new. One indication of technical progress was the increasing application of electrical rather than mechanical power (i.e. directly from prime movers). This cannot be demonstrated with finality because it is impossible to separate purchased electricity from electricity produced in factories, but the horse-power of electric engines as a percentage of all engines in factories rose from 40 per cent in 1919-20 to 67 per cent in 1929-30.²⁹ Accompanying this expansion of

28

Production Bulletin, nos 14, 21 and 24 (excluding electricity and gas). There is a small overstatement involved because of the double-counting of electricity produced in factories.

29

Ibid., nos 14 and 24.

capital equipment went the introduction of new techniques of manufacturing from overseas. This, of course, was not a fresh development of the twenties, but an added impetus was given by the inflow of foreign firms and capital. Certainly, these new techniques were most apparent in firms that had some foreign associations - the most spectacular being in the motor industry; and here we have noticed the impression made on Australian manufacturers by the methods of production adopted by Holden's, General Motors and Ford.³⁰

The economies associated with production in quantity cannot be obtained unless the market is of a sufficiently large size. The optimum size of the market varies immensely from industry to industry, but in a country with a small population like Australia, it is obvious that many industries would benefit from an extension of their markets. This was obtained in a general way during the twenties through an increase of population at the rate of 1.9 per cent per annum, while some industries benefited from rising incomes and new methods of time-payment which spread their markets throughout the community.

Finally, rising productivity in the twenties was encouraged by the development of standardisation. The movement

³⁰

See ch.II.

had its origins in Australia in production difficulties experienced during the war,³¹ and contemporary thought saw that the following advantages might be gained:

The primary objects of standardisation are to cheapen manufacture by elimination of waste entailed in producing multiplicity of qualities and designs for one and the same purpose, to effect improvements in quality, design and workmanship, to increase production, to reduce maintenance charges and variety of stock, and to secure interchangeability of parts. From the producers' point of view, the two main objects, are greater output and reduced cost.³²

The first standards, which dealt with structural steel, were published at the end of 1919 by the Commonwealth Institute of Science and Industry in association with the Institute of Engineers, Australia.³³ The organisation was put on a more formal basis when these two groups and the Australasian Institute of Mining and Metallurgy and the Australian Chemical Institute formed the Australian Commonwealth Engineering Standards Association in 1922.³⁴ An assessment of the activities of the association to 1927 stated:

The association has to its credit tangible results in the form of many printed specifications and a further number ready for publication, all of which cover a wide field. The total under consideration is 166. The organisation is modelled on the lines

³¹

The Australasian Engineer, 30 Nov. 1920, p.8.

³²

Ibid., 31 July 1920, p.3.

³³

Ibid., 31 Dec. 1919, p.4.

³⁴

Australian Commonwealth Engineering Standards Association, First General Report (1925), p.5.

of that of the British Engineering Standards Association, and two principles of paramount importance, adhered to from the outset, are those of the voluntary character of the movement and the equable representation of all interests. There are approximately 181 committees, the membership of which considerably exceeds 1000 representatives, appointed by Government departments, manufacturing and commercial organisations throughout the Commonwealth.³⁵

In 1929 this organisation amalgamated with the Australian Commonwealth Association of Simplified Practice (founded in 1927) to form the Standards Association of Australia.³⁶

A judgement of the effectiveness of the introduction of standards during the twenties would require detailed analysis. In general, the main influence was felt in the metal, electrical and chemical industries, and we have already seen the useful work done in the standardisation of structural steel and railway materials.³⁷ Moreover, it can be appreciated that the introduction of standards must raise productivity, and the effects would be felt particularly in countries where the scale of operations was small.

These developments in the twenties - more and better equipment, new techniques of production, an expanding market,

35

Industrial Australian and Mining Standard, Feb. 1927, p.118.

36

Standards Association of Australia, 1st Annual Report, Year Ended 30th June, 1930, p.2.

37

See ch.VI.

the application of standards in industry - must have made possible a sharp increase in productivity; and this conclusion is only slightly tempered by two qualifications. The first concerns the difficulties associated with the rapid growth of the labour force, which until 1926-7 was growing at an average rate of over 3 per cent per annum; this, in itself, is a high rate, but it conceals the more rapid growth in particular industries. The implications of this growth have been examined in detail in previous chapters.

The other qualification centres on the development of surplus capacity: the growth in the value of machinery and in horse-power indicates only additions to machinery available, not machinery in use. However, although there was undoubtedly surplus capacity in some industries, such as steel, for most of the decade, the general position did not worsen until after about 1928. Then, as demand and employment began to fall away, excess capacity became widespread. In the period of most rapid growth to 1926-7, therefore, the increase in horse-power of one-third is a fair measure of the increase of machinery in use.

Productivity and Overseas Competition

It is not enough to look at the productivity of manufacturing in Australia simply in isolation. Australia had an open economy and much of its industrial growth came in

direct competition with imports. Australian productivity, therefore, as compared with productivity overseas, is an indication of competitive ability and a measure of the difficulties that industrialisation faced from overseas competition. It has been emphasised that Britain was the main competitor, so that attention will be concentrated on that country.

Problems of measurement of productivity are severe also in Britain, but they are made simpler by censuses of production in 1907, 1924 and 1930. Various measures have been attempted, and although there are often substantial differences between them,³⁸ none suggests a spectacular increase in productivity during the twenties. L. Rostas, for instance, calculates that output per man-hour in manufacturing and kindred industries rose at the rate of 1.4 per cent per annum between 1907 and 1924, and 2.1 per cent between 1924 and 1937.³⁹ These figures fall within the range of the Australian estimates, and such are the inaccuracies of the Australian figures that only some marked contrast would be meaningful. If, on the other hand, the British figures are compared with the

38

See, e.g., the discussion in A.L. Bowley, Studies in the National Income (C.U.P. 1944), ch.III.

39

L. Rostas, Comparative Productivity in British and American Industry (C.U.P. 1948), p.42.

more general evidence on Australian productivity, it seems possible that Australian productivity was growing at the faster rate during the twenties.

While we can only speculate about the relative rates of growth of manufacturing productivity in Britain and Australia, there are sounder grounds for concluding that the level of productivity was lower in Australia than in Britain.

(a) The small size of the Australian market was probably the most important factor. We have seen that population was increasing rapidly, but it had reached only 6.4 millions at the end of 1929, and this is a small market for an extensive manufacturing sector. Further, the market was often not even as large as total numbers suggest: the vast area of the continent, the scattered nature of the population centres together with high transport costs hindered the growth of a centralised manufacturing hub. The extent of the economies associated with large-scale production differs immensely between industries, but many Australian industries would have benefited from a larger market. For example, in the glass bottle industry, the secretary of the Australian Glass Bottle Manufacturing Company, which had an almost complete monopoly of the Australian market, stated that the new 'Owen' bottling machine was unsuitable for the limited Australian demand: 'For us to introduce the "Owen" machine would be like putting

a racehorse in a dray to do dray work'.⁴⁰ Even if firms could reach the size which gave most internal economies of scale, the size of the industry in any one location usually limited external economies.

(b) The volume of machinery per worker as measured in horse-power was smaller in Australia than in Britain. The position is set out in the following table:

Horse-Power per Worker - Manufacturing

	Britain	Australia
a		
1924	2.38	1.50
1930 ^a	2.83	1.98

^a For Australia the year ends on June 30th.

Source: Britain - A.L. Rostas, op. cit., p.68.
Australia - Production Bulletin, nos 18 and 24.

It can be seen that the Australian figure is substantially below the horse-power available in Britain, and although the rate of growth between 1924 and 1930 was faster in Australia, the absolute difference between the two countries was almost exactly maintained.

(c) During the twenties Britain did not experience the same difficulties as Australia, resulting from the swift growth of the work-force. New industries also developed

40

Commonwealth Arbitration Court, Enquiry re Standard Hours, Transcript of Evidence, J.G. Garnsworthy, 3 Nov. 1926, p.3227.

rapidly in Britain,⁴¹ but there was a relatively larger pool of skilled labour on which to draw.

(d) Australia's isolated position and the small size of its population and manufacturing sector meant that it tended to lag behind in the latest developments in manufacturing techniques. To some extent this was overcome during the twenties by the more progressive firms' policy of keeping in touch with overseas innovations, by migration and by the establishment of branches by foreign firms. Undoubtedly more was accomplished in this decade than previously, but inevitably a time-lag continued to exist.

(e) It was (and is) often claimed that production per head has been lowered in Australia by the reluctance of the unions to accept piece wage rates. Judge Beeby examined this question in the Commonwealth Arbitration Court in 1929; he pointed out that piece-work had a long history in Australia, was widespread, and that 'in nearly all instances in which mass production is carried on in Australia, employers have succeeded in introducing the system'.⁴² Undoubtedly the judge was right in his assessment of the extent of piece rates

41

However, the rate of expansion of these industries in Britain lagged behind many other countries. See, e.g., W. Arthur Lewis, Economic Survey, 1919-1939 (1950), p.42.

42

28C.A.R., p.937.

in Australia, but it is also true that there were fewer industries in Australia than Britain which could engage in quantity production and so apply piece rates. An outstanding example was the engineering industry, in which Judge Beeby admitted that piece-work was not extensive. The position in England was quite different: there, payments by results became more widespread during the twenties so that by 1927 the Employers' Federation claimed that only 51 per cent of the work-force remained on time work.⁴³ In Australia, although it was also a feature of the twenties that many firms were attempting to move into quantity production, de-skill tasks and apply piece rates, most firms in engineering remained on time rates. Moreover, the attitude of the unions often limited production. For example, the managing director of Hadfields (Australia) Ltd complained that he brought out some English moulders who, on piece work in England, had been turning out eighty truck wheels per day; under identical conditions in Australia, but on day rates, the men produced only thirty-five a day. The union did not permit piece work⁴⁴ and the men were governed by the general pace in the shop.

43

Committee on Industry and Trade, Survey of Metal Industries (H.M.S.O. 1928), p.153.

44

Evidence of J.M. Deschamps to the Commonwealth Arbitration Court, Enquiry re Standard Hours, Transcript of Evidence, 8 Oct. 1926, p.2126.

(f) Finally, the protection of manufactures from overseas competition may have had a detrimental effect on local efficiency. The extent of this effect would depend mainly on the degree of internal competition, but it is not difficult to imagine an industry with vigorous internal competition but with a standard of efficiency far below that of overseas; foreign competition could provide a much-needed stimulus for such an industry.

45

Costs and Overseas Competition

The Australian competitive position was affected not only by relative productivity, but also by the prices paid for the resources used in manufacturing. The chief element of manufacturers' costs is wages, and attention, in the first place, will be concentrated on them. Unfortunately, wages are extremely difficult to generalise about and international comparisons are notoriously treacherous; nevertheless, even if great care must be taken in interpreting the figures given below, the general pattern is discernible.

 45

See report of address by J.T. Sutcliffe (Commonwealth Director of Labour Statistics) to Victorian branch of the Economic Society in Argus, 24 July 1926, p.22, for a discussion of the effect on the woollen industry. E.g., 'Because of high tariffs it has been possible for manufacturers who were not so efficient as those in England to make substantial profits.'

We will begin by examining the position in the mid-twenties after the deflation and when the value of money was stabilised for the decade. Using the British Wage Census of 1924, A.L. Bowley estimated that for adult males 'the average wage or earnings...in a full normal week, including agriculture, and all other wage earning occupations, may be put, for the United Kingdom at...about 60s.'⁴⁶ The comparable figure for men and boys in industry, excluding agriculture, he estimated at 58s. 9d.⁴⁷ In Australia, the weighted average nominal weekly rate payable for a full week's work to adult males in industry, excluding agriculture, in 1924 was 94s. 4d.⁴⁸ These figures, of course, are not directly comparable: in particular, the Australian figure overstates the general adult male wage level by including only industries covered by an arbitration court award, but it is an understatement to the extent that actual payments exceeded award rates, as they often did. However, from these approximations the impression is gained that the Australian male adult wage level in the mid-twenties was about half as high again as that in Britain.

46

A.L. Bowley, Wages and Income in the United Kingdom since 1860 (1937), p.49.

47

Ibid., p.51.

48

Labour Report, no.15, p.70.

Was this relative wage position more or less favourable to Australia than before the war? Once again the figures available do not permit firm conclusions. The Twentieth⁴⁹ Abstract of Labour Statistics of the United Kingdom, estimates that in 1924 the average increase in weekly full time rates of wages as compared with July 1914, was 70 per cent to 75 per cent. Bowley disagrees, and using the Wage Census⁵⁰ of 1924 estimates the increase at 94 per cent, based on a male increase of 91 per cent and a female increase of 112 per cent.⁵¹ In Australia, weekly award rates for adult males rose 70 per cent between 1913-14 and 1923-4, while those for adult females rose 82 per cent.⁵² Remembering the different bases of calculation mentioned in the preceding paragraph, it can be seen that the official British and Australian figures show very similar increases, but Bowley's figures suggest that wage levels in Britain rose more than those in Australia, so that there was some improvement in Australia's competitive position.

49

Pp.96-7.

50

Bowley, op. cit., p.14.

51

Ibid., p.17.

52

Labour Report, no.15.



A clearer picture can be obtained by examining the wages for a particular trade in a particular industry:

Fitter and Turner - Engineering Industry

	Minimum Wage Melbourne		Wage U.K.
30 Sep. 1914	66/-	July 1914	38/11

As at 31 December

1919	86/-	82/9
1920	122/10	89/7
1921	122/10	76/9
1922	106/ 6	56/1
1923	115/ 6	55/-
1924	108/ 6	56/6
1925	111/ 6	56/6
1926	113/ 6	56/6
1927	113/ 6	58/1
1928	110/ 6	58/9
1929	114/ 6	58/9

Source: Melbourne - Labour Report, nos 5, 10-20.
United Kingdom - Twentieth Abstract of Labour
Statistics, pp.94-5.

There are limitations to this comparison. The Australian figures do not include payments above the award. On the English side there may be some slight understatement: the figures above show an increase in 1925 on July 1914, of 41 per cent, whereas the average of recognised district time rates of wages in 16 centres shows a 45 per cent increase for a full week's work, comparing 30 June 1925 with August 1914. ⁵³

53

Committee on Industry and Trade, Further Factors in Industrial and Commercial Efficiency (1928), pp.92-3.

Yet an actual sample study of earnings for those on time rates between July 1914 and March 1925 shows an increase of 56.4 per cent for fitters and 50.0 per cent for turners, indicating that the recognised district rates were not always adhered to (or that more overtime was worked).⁵⁴

However, taking the figures in the table at their face value, the following general statements can be made concerning the wages of fitters and turners in the engineering industry in Australia and the United Kingdom.

(a) At the outbreak of war, wages in Australia were 65 per cent above those of the United Kingdom.

(b) Between 1914 and 1919 the gap between wages in the two countries was almost entirely eliminated, and even when Australian wages rose very sharply in 1920 they were still little more than one-third higher than British wages. But deflation in 1921-2 was much more severe in Britain than in Australia, and in those two years wages there fell by slightly more than one-third, while in Australia they fell by about one-eighth.

(c) Once the post-war deflation was over and for the rest of the decade, 1923 to 1929, Australian wages were roughly double those in the United Kingdom.

The comparison is not altered significantly if hours of work in engineering are taken into account. British hours were reduced from 54 to 47 at the end of 1918 and remained there for the decade.⁵⁵ Australian hours were reduced in May 1921, from 48 to 44; in September 1922, the Full Arbitration Court raised them again to 48 and then reduced them in February 1927 to 44.⁵⁶

This relation between the wages of skilled men in the engineering trade in Britain and Australia was not exceptional. The position was similar for unskilled men.

June 1921	Britain	-	43/-	per week
	Australia	-	84/-	per week
December 1924	Britain	-	40/2	per week
	Australia	-	85/3	per week

Source: Tariff Board Report on the Engineering Industry 1925, p.11.

Wage costs, although very important, are only part of the total cost structure. During the twenties wages and salaries made up between 20 per cent and 25 per cent of the total value of output in manufacturing. In 1926-7, for example, wages and salaries were 22 per cent of the value of

55

Committee on Industry and Trade, Survey of Metal Industries, (H.M.S.O. 1928), p.152.

56

O. de R. Foenander, Towards Industrial Peace in Australia (M.U.P., 1937), pp.134-41.

output, and wages made up 87 per cent of wages and salaries combined.⁵⁷ The most important single item of cost was represented by raw materials, which made up 55 per cent to 60 per cent of the value of total output. This contrast, however, between raw material costs and wage costs greatly understates the importance of wages. The wage cost of many manufacturing industries becomes the raw material costs of others: timber from the saw mills goes to furniture makers, iron and steel provide the raw material for a vast number of metal-using industries, and so on.⁵⁸ Similarly, Australian wage costs may be important in raw materials procured from outside the manufacturing sector; three cases can be distinguished:

(a) In the cost of many raw materials, high Australian wages are irrelevant and do not affect the competitive position of the Australian manufacturer. Some of these raw materials, like wool, with an Australian wage content, are sold on the world market and so affect home and overseas manufacturers alike. Some, like rubber, are purchased overseas.

(b) In spite of higher wage costs, some Australian manufacturers may have been able to obtain their raw materials

57

Commonwealth Production Bulletin, no.21.

58

This means, of course, that the proportion of total value contributed by raw materials (and wages) depends also on the classification of industries adopted by the Commonwealth Statistician.



more cheaply than their overseas competitors. B.H.P., for example, could obtain iron ore at a relatively low cost because of the location and quality of the ore deposits.⁵⁹

(c) High Australian wages meant high costs for some raw materials, such as timber and, more important, coal, the major source of power. In the coal industry wages comprised a very large part of the total cost,⁶⁰ and they had risen particularly sharply in Australia:

For New South Wales as a whole, between 1914 and 1928, miners' and wheelers' wage-rates increased by 130 per cent, and those of day-wage employees almost exactly doubled. During this time the cost of living had increased by only 70 per cent, and the State living wage by 77 per cent and the average wage in all industries by 82 per cent, although even in 1914 the level of wages was, if anything, higher in mining than in other occupations.⁶¹

The Davidson Commission compared these wages with those earned in the United Kingdom:

The average earnings per shift worked by miners on contract...were...12s. 9d. in Great Britain and 34s. 11d. in respect of the same group of employees in New South Wales in 1927-8.⁶²

59

See ch.VI.

60

Wages made up 70.7% of the cost of coal in the U.K. in the mid-twenties. Committee on Industry and Trade, Further Factors in Industrial and Commercial Efficiency (H.M.S.O., 1928), p.10.

61

A.G.L. Shaw and G.R. Bruns, The Australian Coal Industry (1947), pp.96-7.

62

Ibid., p.104.

In spite of the fact that in N.S.W. the coal was much more accessible and the seams were thicker, the price of N.S.W. coal at the pit head in the period 1909-13 was only slightly lower than in Britain - 7/4 as against 8/9 a ton.⁶³ The N.S.W. price remained lower until 1927, but in that year, when the N.S.W. price was 17/7 a ton, the British price fell sharply to 14/7; the British price remained the lower of the two for the rest of the decade.⁶⁴ The explanation for the high level of the price in N.S.W. and its movements relative to the United Kingdom price lies largely in wage rates.

These considerations suggest that the Australian cost structure was considerably higher than that in the United Kingdom. It was based on wages which, after the deflation of 1921-2, were in general 50 per cent to 100 per cent higher. This appears to have been roughly the position before the war, but the expansion of manufacturing in the twenties was increasingly into new fields in vigorous competition with imports. The cost conditions of the twenties were, therefore,⁶⁵ very unfavourable for industrial growth.

63

F.R.E. Mauldon, 'The Decline of Mining', The Annals of the American Academy of Political and Social Science, vol.158, Nov. 1931, p.75.

64

Commonwealth Year Book, no.24, p.590.

65

In part the unfavourable cost conditions resulted from tariff protection designed to promote industrial growth. J.B. Brigden and four other economists in The Australian

Conclusion

Although it is impossible to measure with precision the growth of manufacturing productivity in Australia during the 1920s, general considerations indicate that the increase was substantial. They suggest the possibility that productivity in Australia was rising at a higher rate than in Britain, the exports of which provided the main source of overseas competition. However, the level of productivity was lower in Australia than in Britain, and Australia's competitive position was made worse by the relative costs of the men and materials used in production. In all, this period was a difficult one for Australia to expand secondary industry.

Some relief from this unfavourable position was given by the country's isolated position and the consequent high cost of carriage from overseas. The extent of this protection differed immensely between commodities, depending on such factors as bulk, value and transportability. However, once locally produced raw materials or finished products had to travel interstate, then the advantage to local manufacturers was often lost. As the Tariff Board pointed out:

65 (continued)

Tariff An Economic Enquiry (M.U.P., 1929), Part V, concluded that 9% of the price level in 1926-7 resulted from protection. Not all of this increase in prices was caused by protection of manufactures; approximately two-sevenths can be allocated to protection of primary produce.

Increased costs in the running of vessels on the Australian coast, due in the main to awards covering rates of pay and conditions of labour, and rendered possible by the protection afforded by the provisions of the Navigation Act, have resulted in increased rates of freight. Shipowners have passed the additional costs on to shippers.⁶⁶

Thus to ship timber from the Baltic ports to Australia cost 6/3 to 6/9 per 100 super feet, while the freight from Brisbane to Melbourne was 6/- and from Brisbane to Adelaide 10/3.⁶⁷ Similarly, copper from Townsville to Antwerp was 20/- per ton,⁶⁸ and from Townsville to Port Kembla 21/- per ton.

One important qualification must be made to the concentration in this chapter on British competition. Britain was not the only source of imports: other countries, of which U.S.A. was the most important, provided over 50 per cent. Costs in these countries cannot be considered here, but one development in the twenties did affect in a comprehensive way their trading relations with Australia. This was the return of Britain - and Australia - to the gold standard in 1925.

66

Tariff Board Annual Report for the Year Ended 30th June, 1928, p.17.

67

Ibid., p.19.

68

Ibid. Tariff Board Reports abound in complaints by manufacturers, and their recognition by the Tariff Board, of the high level of interstate as compared with overseas freights. See, e.g., Tariff Board Report on Agricultural Implements, 1925, p.28; also Tariff Board Report on Pianos, Piano Players and Keyboards, 1927, p.6.

It is generally recognised that this return to the gold standard overvalued sterling by about 10 per cent, and its chief effect on Britain was to weaken the competitive position of exports, while at the same time the cost of imports was reduced. The British and Australian exchange rates remained unchanged so that the effect was very similar in Australia: the Australian manufacturers' competitive position deteriorated, except with those countries which had a stable exchange relationship with the United Kingdom. The adjustment of the exchange in 1925 was, therefore, a factor diverting the demand for manufactured goods not only from Australian, but also British, manufacturers to other overseas suppliers.

APPENDIX I

The official statistics on manufacturing, which are most commonly used in this thesis, are published in Commonwealth Production Bulletins. As defined there, 'manufacturing' is carried on in 'factories', where a factory is 'an industrial establishment in which four or more hands are employed, or in which power other than hand is used'.

In order to measure the annual change in such variables as employment and value of fixed assets, the yearly returns in the Production Bulletins must be adjusted to make a consistent series. As they stand, they do not cover the same group of industries for the whole decade.

1. Employment

(a) It is necessary to exclude those industries which, although already existing, were covered by the official statistics for the first time during the 1920s. These were 'Wineries' from 1923-4, 'Bottling' from 1925-6 and 'Bakeries' from 1927-8. 'Biscuits', also, were excluded because in some states their returns were inextricably mixed with 'Bakeries'.

(b) Returns were collected for some industries during part of the twenties until it was agreed that they were not truly 'manufacturing'. These industries, too, must be excluded. These were the distribution side of electricity and gas production in Victoria, and felling and hauling in 'sawmills' in Western Australia and Tasmania. Since separate figures are not available to divide these industries into parts, it has been assumed that the part to be excluded moved in the same fashion as the industry as a whole. With this assumption the following number of employees was subtracted from the total:

	Victorian Electricity	Victorian Gas	W.A. Sawmills	Tas. Sawmills
1919-20	521	1,409	1,008	527
1920-21	531	1,375	1,244	520
1921-22	578	1,435	1,587	526
1922-23	625	1,519	1,439	410

(continued on next page)

(continued)

	Victorian Electricity	Victorian Gas	W.A. Sawmills	Tas. Sawmills
1923-24	748	1,591	1,432	635
1924-25	861	1,531	1,678	530
1925-26	-	-	1,631	373
1926-27	-	-	-	402

(c) In 1928-9 a new method of counting employment was introduced. From that year the employment figures refer to the average number of persons employed over the whole year instead of, as previously, the average number over the period worked. This changed method reduces employment between 1927-8 and 1928-9 by some 15,000.

For most purposes, the new method of counting employment is the most useful, and the Production Bulletin extends the total (but not for individual industries) back ten years to 1918-19. However, to make the series consistent it must be adjusted according to the qualifications above. The following method was adopted: the adjustments were made to the totals obtained by the old method of counting; the percentages were then obtained of the adjusted to the unadjusted totals, and these percentages were applied to the totals obtained by the new method of counting. This procedure gives the employment totals which are used in Chapter I.

2. Value of 'Land and Buildings' and 'Plant and Machinery'

(a) As with employment the following industries were excluded: Wineries, Bottling, Bakeries and Biscuits.

(b) The land and buildings involved in the distribution of gas and electricity in Victoria are trifling in value and can be ignored. However, with the assumption made in 1(b) above, the following reductions were made to the value of plant and machinery:

Victoria - Plant and Machinery - £'000

	Electricity	Gas
1919-20	957	156
1920-21	967	159
1921-22	1,151	163
1922-23	1,466	168
1923-24	2,127	223
1924-25	2,865	229

Similarly the following reductions were made because of felling and hauling in Western Australia (Tasmanian reductions were very small and were ignored):

Western Australia - £'000 - Sawmills

	Land and Buildings	Plant and Machinery
1919-20	84	146
1920-21	104	201
1921-22	132	252
1922-23	155	261
1923-24	142	256
1924-25	136	264
1925-26	147	267

(c) There is a sudden, and obviously unreal, increase in the value of plant and machinery in electricity production in Tasmania in 1923-4. This increase was spread over preceding years so that the rate of growth was the same as in Sinclair's calculations of public capital formation in electricity in Tasmania.¹

Tasmania - Electricity Plant and Machinery - £'000

	<u>As in Production Bulletins</u>	Adjusted
1919-20	810	810
1920-21	270	1,690
1921-22	804	2,474
1922-23	785	2,804
1923-24	2,969	2,969

3. It should be noted that the Production Bulletin figures for 1925-6 cover, in fact, eighteen months in Western Australia. There is, therefore, a significant overstatement in statistics relating to output, materials used and wages.

¹

W.A. Sinclair, unpublished material; the basis for his note (already cited) 'Public Capital Formation in Australia: 1919-20 to 1929-30', Economic Record, Nov. 1955.

APPENDIX II

Output figures for both pig iron and steel are given by N.R. Wills (op. cit., pp.9 and 11). However, no sources are cited, there are substantial errors, and it is possible to give more complete figures. Set out below are the sources for tables 4 and 5 in Chapter VI.

(a) Pig Iron - Table 4

- (i) 1913-21: N.S.W. Year Book, 1922, p.400. This source divides pig iron production according to whether it came from N.S.W. or 'other' ores. The table in the text allocates N.S.W. pig iron to Hoskins, 'other' to B.H.P.
- (ii) 1921/2-1927/8: N.S.W. Year Book, 1928-9, p.313. The same allocation was made as in the first period. In fact, pig iron produced from 'other' ores equals yearly production of B.H.P. for years ended 31 May, as in annual Reports. However, Wills (p.82) does mention that Hoskins used some South Australian ore for the first time in 1925; probably the quantity was small.
- (iii) 1928/9-1929/30: N.S.W. Year Book, 1930-1, p.67. In these years the official figures show only total output without any division according to source of ores. The B.H.P. output for years ended 31 May have therefore been obtained from annual Reports, and subtracted from the total to give Hoskins' output.

(b) Steel Ingots - Table 5

- (i) Hoskins 1913-17. Cited by A. Pratt, The Australian Tariff Handbook, 1919 (1919), p.126.
- (ii) B.H.P. 1915/16-1929/30. B.H.P. Annual Reports. From 1923-4 B.H.P. began to produce ingots in its foundry, particularly for Commonwealth

Steel Co., as well as the customary production of ingots from its open hearths. However, the foundry produced castings as well as ingots, and although total output was given, there was no division between these two products. All that can be done is set a range for B.H.P.'s ingot output of open hearth plus foundry output. The range is small but it reflects on the relative importance of Hoskins (see iv below).

- (iii) Total 1921/2-1929/30. N.S.W. Year Book, 1930-1, p.67.
- (iv) Hoskins 1921/2-1929/30. 'Total' less B.H.P. output. From 1923-4 to 1929-30, this means that Hoskins' output is set in a range. Some confirmation is obtained for this procedure by the output for Hoskins (i.e. Australian Iron and Steel) in 1928-9 and 1929-30, which was calculated by B.H.P.'s Research Section (letter dated 15 Mar. 1957).

Hoskins - Output - Steel Ingots - '000 tons

	Table in Text	B.H.P.'s Calculation
1928-29	59-82	72
1929-30	49-70	73

APPENDIX III

Listed below are the foreign firms which began manufacturing in Australia between 1920 and 1930, or substantially expanded their operations.

During the twenties two lists of foreign firms operating in Australia were published. One was described as '...an official list of the chief British firms established in Australia in the 10 years before 1929' (Industrial Australian and Mining Standard, Oct. 1930, p.259). The other was entitled: 'List of Some of the British Manufacturers who have established Interests in Works and Factories in Australia' (Greater Australia, 1928, p.68). In fact, both of these were of only slight assistance in compiling the list below, which relies on the general source material of the thesis.

The list, of course, is not complete. Moreover, the names of the firms are those commonly used in the source material, and may not be their legal titles in the 1920s.

Unless otherwise stated, the firms are thought to be of British origin.

Motor Industry, Chapter II

General Motors Corporation (U.S.A.)
Ford Motor Company of Canada (U.S.A.)
Du Pont de Nemours (U.S.A.)
Exide Batteries
North British Rubber Coy
Dunlop Rubber Coy
Rapson Tyre and Jack Coy
Goodyear Tyre and Rubber Coy (U.S.A.)

Cement, Chapter III

British Interests in Commonwealth Portland Cement Coy and Bates (A/Asia) Ltd. (In 1957 these interests were held by Associated Portland Cement Manufacturers Ltd.)

Woollen Textiles, Chapter IV

Kelsall and Kemp Ltd
 Paton and Baldwin Ltd
 Saltaire Ltd
 W.C. Gaunt

Hosiery and Knitted Goods, Chapter IV

I. and R. Morley Ltd
 J.B. Lewis and Sons Ltd
 Handschin and Ronus (Switzerland)
 Julius Kayser and Coy (U.S.A.)
 Holeproof Hosiery Coy (U.S.A.)
 Jantzen Knitting Mills (U.S.A.)

Cotton Manufactures, Chapter IV

British Thread Mills
 British Interests in British Australian Cotton
 Association Ltd

Electrical Manufactures, Chapter V

Stromberg-Carlson Telephone Manufacturing Coy (U.S.A.)
 Thomson-Houston Coy Ltd
 General Electric Coy Ltd (U.S.A.)
 Philips Glowlamp Works Ltd (Holland)
 Standard Telephones and Cables (U.S.A.)
 Parkinson and Cowan Ltd
 Measurement Ltd
 Metropolitan Vickers
 Ferguson Pailin Ltd
 F.A. Parkinson Ltd
 Babcock and Wilcox
 Waygood Otis (U.S.A.)
 English Electric Coy
 British Insulated and Helsby Cables Ltd
 British Aluminium Coy Ltd
 National Smelting Corp. of England
 Marconi Company

The Iron and Steel Industry, Chapter VI

Dorman, Long and Co. Ltd
 Baldwins Ltd
 Rylands Bros. Ltd
 Lysaght and Coy
 Taylor Bros and Coy

Vickers Ltd
 Allan Whyte and Co.
 Bullivant and Co.
 T. and W. Smith

Metal Industries

Chubb and Co.
 Guest, Keen and Nettlefold Ltd
 Hadfields Ltd
 Parkinson Stove Coy Ltd
 Parkinson and Cowan
 Crompton Parkinson Ltd
 British Interests in Sydney Steel Coy
 Crittall Manufacturing Co.
 John Thornycroft and Co. Ltd
 W. and T. Avery Ltd

Food and Drink

Nestles Ltd
 Cadbury Ltd
 J.S. Fry and Sons Ltd
 James Pascall Ltd
 Glaxo Ltd
 Davis Gelatine Ltd
 Kelloggs Ltd (U.S.A.)
 Distillers Coy of Edinburgh
 W. and A. Gilbey
 Wrigleys (U.S.A.)

Miscellaneous

The Gramophone Coy Ltd (Gramophone Records)
 Columbia Gramophone Ltd (" ")
 Michael Nairn Ltd (Linoleum)
 Lewis Berger and Sons Ltd (Paint)
 Pinchin, Johnson and Co. Ltd (Paint)
 British Interests in British Australian Lead Manufac-
 tures (Paint)
 Goodlass Wall and Co. Ltd (Paint)
 Bryant and May (Matches)
 A.G. Spalding (Sporting Goods)
 Slazengers Ltd (" ")
 Anglo-Persian Oil Co. (Petrol)



Shell (Petrol)
de Havilland Aircraft Coy Ltd (Aircraft)
Lever Bros Ltd (Soap)
Reckitt and Sons Ltd (Chemicals)
Beecham's Pills (Pharmaceuticals)
Imperial Chemical Industries Ltd (Chemicals)

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This bibliography contains only the names of those works of reference actually mentioned in the thesis.

I MANUSCRIPT MATERIAL

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Commonwealth of
Australia

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Returns under the Act, 1923-30.
(Held at Parliament House, Canberra.)

Royal Commission on National In-
surance. Minutes of Evidence,
1925-26.
(Held at National Library, Canberra,
Australian Archives Division.)

(ii) Departmental

Commonwealth Stores
Supply and Tender
Board

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Minutes of Meeting, 25th January 1921.
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