Industrial relations in the Australian engineering industry, 1920-1945: the Amalgamated Engineering Union and craft unionism

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NOTE

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As shown in Chapter Five, the Australian metal industries grew steadily during the 1930s after having suffered from the Great Depression. Between 1931-32, the trough of the Depression, and 1937-38, the number of metal workers increased around 2.2 times, and the real value of output of the industries rose around 2.8 times. During the Second World War, the development of the metal industries, which played the crucial role in the wartime economy, further accelerated.

Table 8.1 below shows the changes in the number of factories and employees and in both nominal and real values of output with regard to the Australian metal industries during the Second World War.

Table 8.1  (I)Number of Metal Factories in Australia, (II)Average Number of Employees in Metal Factories(x1000), (III)Nominal Value of Output of Metal Factories(x1000 pounds) and (IV)Real Value of Output of Metal Factories(1920-21=100)*, 1939-1945

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1 See Table 5.1 at pp. 189-190.
In the short period between 1939-40 and 1943-44, the number of employees increased about 1.8 times. During the same time, the nominal and the real value of output rose about 2.1 and 1.7 times, respectively. The nominal value of output exceeded 300 million pounds in 1943-44. If the growth of the metal industries between the Great Depression and the Second World War is regarded as a continuous development process, the value of output increased 6.6 times in the nominal term and 5.1 times in the real term between 1931-32 and 1943-44.2

In parallel with the post-Depression growth of the engineering industry, quantity production of standardised articles through the 'manufacturing' method had developed considerably by the time Australia entered into the War, compared to a decade before when Beeby's Metal Trades Award had not been established. This development of quantity production further precipitated the division of labour, which resulted in the creation of new classes of workers like 'inspectors' and 'assemblers'.

As the interchangeability of components became more and more important, the employers began to establish the inspection department to check if produced components conformed to the standard.3 Thus, 'inspectors' were engaged to make sure, with prefixed micrometers and 'go' and 'not go' gauges, that the sizes of components were within tolerance, before they were put together by fitters and 'assemblers' into finished articles. Usually these 'inspectors' were picked up from the ranks of the non-skilled,

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2 Ibid.

3 See, for instance, Transcript, Nos. 33, 84, 93, 95 of 1939 and others, The Amalgamated Engineering Union and others versus the Metal Trades Employers Association and others, 4/12/1939, p. 119 and 26/6/1941, p. 2250.
mainly juniors, and they were simply required to call for a foremen or a machine setter when they found anomalies.4

By thus achieving the standardisation of component parts, the employers sought to substitute 'assembling' for 'fitting' in the final putting-together process. As a cultivator manufacturer described:

[T]he men are called upon to assemble the components of these engines and cultivators. That work today is almost entirely a matter of pure assembly, due to the fact that the parts have had to be standardised. It is the duty of these men to put these parts together. That is done in the first place either by machine processes, or...by fitters, thus bringing the components to a standard form. The assemblers then take the parts issued to them in their respective stages and assemble those parts together.5

Assembling was a simple operation with tools like spanners, hammers and screw drivers. However, the problem for the employers was that despite the level of standardisation they had achieved, small adjustments, like removing burrs, were still not able to be eliminated completely from the assembling operation. Such simple adjustment did not require the skill of tradesman fitters, but still had to be done with tools like files, chisels and scrapers, the so-called 'tools of trade'. Thus, although the employers wanted to engage process workers on this class of work, they could not do so in practice, because the Union demanded, on the grounds of the Award's definition of process workers, that whoever used the tools of trade should be paid the tradesmen's rate:

In the matter of the assembly of these production lines, the operations involved sometimes cause a man to use tools, which would debar him from the classification of process worker because, when he uses those tools, he becomes a tradesman...These men would required to use the well defined tools, such as a hammer, a spanner, and a screw driver and, in addition, they would have of necessity to use pliers and files and maybe a tap sometimes.6

4 See, for instance, Transcript, ibid., 9/6/1945, p. 364.
5 Evidence of S. Whight, Transcript, ibid., 4/12/1939, p. 112.
6 Evidence of W. Harrison, ibid., 16/4/1940, p. 222.
Thus, in an attempt to employ this class of labour at a lower rate than tradesmen, the employers asked the Court for the creation of the new classification, 'assemblers', ranked between 'process workers' and 'fitters'. Eventually, the Court established this new classificatory category with regard to window-frame making.

The creation of 'assemblers' was a threat to fitters' industrial status in that they lost the legal guarantee of the sole possession of their sacred tools of trade. This intrusion into fitters' sanctum was paralleled by that into turners', as the operation of the pre-set (turret) lathes was performed increasingly by juniors and process workers.7 The division of labour between the setting-up and the actual operation was developing with regard to engineering machines in general.8 It should be noted in this relevance that the employers now tended to regard turners as identical with first class machinists rather than as an independent craft category in the traditional sense.9

Tradesmen's work itself was undergoing the process of specialisation and routinisation. As a result, each fitter, for example, began to prefer a particular operation he was conversant with and tended to regard himself more specifically as a miller, a planer and so on, whereas, conventionally, a tradesman fitter had been ready to perform the whole range of fitting operations both at the bench and on machines.10

More importantly, the standardisation of production was dispensing with some of the essential qualifications of tradesmen, making it difficult for the Union to defend the traditional stand in the Court. The Award defined 'tradesman' as 'an adult workman who, in the course of his employment, works from drawings or prints required to be scaled, and/or measured from drawings or prints, or makes precision measurements, or applies general trade experience'. In

7 See, for instance, evidence of C. Grant, ibid., 16/10/1940, p. 688 and evidence of N. Leary, 9/6/1941, p. 2095.
8 See, for instance, evidence of J. McDonald, ibid., 4/12/1939, pp. 103-105 and evidence of J. Patterson, ibid., 7/3/1941, p. 926.
9 See, for instance, evidence of D. McDonald, ibid., 24/9/1940, p. 31.
this period, however, a large proportion of tradesmen did not necessarily work from drawings or prints required to be scaled, nor did they usually make precision measurements.\(^\text{11}\) The employers were keen on exploiting this dilution of tradesmen's skill and asked the Court for the re-definition of tradesmen, so that they could downgrade into a lower category those tradesmen who did not work from drawings or prints or did not make precision measurements. An employer related, 'if he [a tradesman] got a job to do without a print or a drawing an employer could say, "You have done this job half a dozen times, you don't need a blue print, you don't need to be a tradesman to do it"'.\(^\text{12}\) Although the Union opposed, successfully, this attempt by the employers in the Court, it at least had to admit that the skill of tradesmen was changing. As the Arbitration agency of the AEU stated:

> What we do not want is an employer to be able to put a boy on to a lathe, boring machine or milling machine and claim that it is a boy's work because he is not required to work to precision measurements.\(^\text{13}\)

The average work of a fitter is not to use precision measurements and he does not in the majority of cases work to drawings or prints. His work is to see that everything is properly fitted, accurately fitted, one part in relation to another, and also the part itself...[The employers' claim] would mean that 75% of our men employed as fitters would not be entitled to the tradesmen's rate.\(^\text{14}\)

As implied in the above comments, the Union was trying to persuade the Court that the kernel of tradesmen's skill consisted in the responsibility for the completion of finished products rather than in specifically definable requirements. In this vein, the Union tried to re-define the definition of 'precision measurements', in order to make it conform to the trend, with the emphasis on 'responsibility':

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\(^{13}\) Evidence of C. Mundy, \textit{ibid}., 12/8/1941, p. 2364.

\(^{14}\) Evidence of C. Mundy, \textit{ibid}., 6/12/1939, p. 174.
The present award defines precision measurements as measurements of a finer accuracy than is possible with the naked eye from a calliper, measure, scale or rule. We suggest that "a precision measurement" means measurements of a definite and precise accuracy necessary to ensure that the article is the required size and fit for the obtaining of which the employee is responsible.\textsuperscript{15}

More highly skilled work of toolmakers was being specialised too. The Award defined 'toolmaker' as 'a tradesman making and/or repairing any precision tool, gauge, die or mould to be affixed to any machine, who designs or lays out his work and is responsible for its proper completion'. However, most toolmakers did no longer necessarily lay out or complete the whole toolmaking process by themselves. For instance, an toolmaker testified that, apart from himself, there were ten other workers engaged in the making of a mould, including a draughtsman, a marker-off, a shaper, a turner and a miller and even apprentices who did rough work and inspection.\textsuperscript{16} Under these circumstances, the Union had to argue that the Award definition had become obsolete:

\begin{quote}
When this definition [of toolmaker] was first laid down by the Court it probably defined adequately the scope of work to be performed by a toolmaker...[H]e was set apart from the other employees in the shop, working with a micrometer and precision machinery; he was the man who started on the steel and carried the job through to completion. But with modern developments it is difficult to find that type of toolmaker in a big shop. The practice of sub-division has been introduced into toolmaking...With the definition of toolmaker as at present in the award because none of these men is responsible for the layout, preparation and completion of the gauge, technically none of them can make a claim for the toolmaker's rate...[Nevertheless they should be paid the toolmakers' wage,] because obviously it is a breaking up of the responsibility for the purpose of accelerating production, so why should the toolmaker be penalised?\textsuperscript{17}
\end{quote}

\textsuperscript{15} Evidence of C. Mundy, \textit{ibid.}, 5/3/1941, p. 879.
\textsuperscript{17} Evidence of Dawes, \textit{ibid.}, 18/4/40, p. 343.
Thus, the Union claimed the same toolmakers' rate for any tradesmen engaged in the toolmaking process, be they at the bench or on machines.\(^\text{18}\) Again, like the case with ordinary tradesmen, the Union emphasised, as a measure to evaluate toolmakers' skill, the responsibility they held in the production process rather than their specific requirements.\(^\text{19}\)

In the meantime, the non-skilled labour was pouring into the industry. Since the promulgation of the 1930 Beeby Award, the number of unapprenticed juniors, who were mostly used as process workers, increased continuously. The representative of the FIA commented:

> The great majority of boys...are working as process workers on repetition work...[T]he great majority of boys in this manufacturing section of the industry are in dead-end jobs, jobs that are unlikely to carry them beyond the age of 17 or 18. If they survive that period, they stand a strong chance of being dismissed at 21.\(^\text{20}\)

In NSW, the number of workers aged under 21 employed in the metal industries was about 21 thousand in 1938-39. It rose rapidly after the outbreak of the War and reached its zenith of 29 thousand in 1940-41, slightly declining afterwards.\(^\text{21}\)

As indicated in the above comments, the employers replaced juniors in very short cycles to avoid higher rates of payment. The unions complained that the Award provision, which allowed the employers to engage juniors on the experience basis instead of the age basis, was contributing to their abuse, because the employers often did not check juniors' experience certificates deliberately and


\(^{21}\) Source: *New South Wales Statistical Register*. Calculated from figures in the category, 'Employees at 15th June, excluding Working Proprietors'.
hired them at the first year's rate, even if they had previous experience in the industry.22

Moreover, it was becoming more and more common that so-called 'minor machines' like the drilling and the screwing machines were handled by juniors, despite the Union's insistence that they should be manned by first class machinists and that juniors should be paid margins if it was inevitable to assign them to machine work.23 It was not against the Award to engage juniors on process work, be it machine work or else. However, the employers tended to have juniors perform apprentices' work in defiance of the Award, if the Union was not vigilant enough. In fact, some cases were reported where the employers let juniors set up machines including the first class machines like the lathes and the slotting machines and, when the Union disclosed the breach, escaped penalties by having them registered as trainees.24 On occasions, juniors performed, of their own accord, jobs beyond their jurisdiction. In such cases, the Union stated, 'it is the employers duty to prevent him [i.e. a junior] from doing so...He should be stopped at once and told his position in the industry'.25

Because of the wartime situation, the Union had to make a compromise with regard to apprenticeship regulations, and the proportion of apprentices to tradesmen was provisionally loosened to 1:1 from the normal rate of 1:3. However, the still unsatisfied employers, who were keen on breaking craft regulation, took advantage of the situation and sought to replace contract-bound apprentices by trainees they could discharge at their discretion. For this purpose, they tried to extend the trainee system, currently admitted only in NSW, to other States. In opposition, the Union defended the apprenticeship system, reasoning that 'it is a very much better system than a system whereby boys are required to do whatever work they are told to do on threat of dismissal', and went

so far as to insist that all junior workers in the industry should be apprenticed.26

As immediate means to alleviate the problems with junior labour, the Union called for tighter regulations on unindentured minors. In addition to the claim for the experience, instead of age, basis of payment and margins for machine work mentioned above, the Union demanded that the operations to which juniors should not be assigned should be specified and that the proportion of juniors to adults be determined as 1:4.27 Moreover, the Union insisted that the employers should notify the Union of their employment of juniors and that the right of entry to the firms be extended so that Union Organisers could freely observe work practices and have an easier access to the time and wages books of junior workers.28

While junior labour had always been the problem since the introduction of the 1930 Beeby Award, the necessity of the wartime economy brought into the industry additional workers from other sources, that is dilutees (added tradesmen) and women. With regard to female workers, the employment of women before the War had been confined to such minor sections of the industry as coremaking, canister production and the manufacturing of electrical and radio components.29 However, as the War effort intensified, the depletion of not only skilled labour but also male labour as a whole urged the employers to demand that female labour should be introduced, like juniors, into wider branches of the industry, especially into munition production.30 The Union had always opposed the deployment of females on machine work in general. However, its resistance was particularly vehement with the (turret) lathes, because tradesman turners held strong craft sentiment

26 Evidence of C. Mundy, *ibid.*, 25/9/1940, p. 92.
28 Evidence of C. Mundy, *ibid.*, 25/9/1940, p. 98.
30 See, for instance, evidence of C. Grant, *ibid.*, 25/9/1940, pp. 72-73 and 16/10/1940, p. 686.
towards the lathes. Eventually, however, the Union had to accept the inevitable, and from mid 1940 on female workers were introduced. Women were deployed especially on munition production where need was urgent, operations were of a repetitive nature and demand was expected to taper once the War ended. The number of females employed at metal trades factories in NSW was a little less than 3 thousand in 1938-39, constituting less than 4 per cent of all factory workers employed at metal factories. After 1940, however, it suddenly increased and reached its peak of 21,000 in 1943-44, constituting 15 per cent of the whole metal workforce.

Thus, with the rapid expansion of the industry, division of labour, dilution of skill and the introduction of non-skilled labour were further precipitated during wartime. Looked into more closely, however, this view has to be qualified in some crucial aspects. Although the employers were generally keen on introducing the mass production method and some of them made significant efforts in this direction, there still remained the fundamental constraint on mass production, the limited size of the market. The same cultivator manufacturer abovementioned commented on the difficulties with running mass production:

For the last two years that Company [i.e. the Howard Auto Cultivator Company] has adopted distinct mass production methods...[However] we have had great difficulty owing to the number of components, and the number of processes, and the limited output during the year. With the plant we have available our standard machines are called upon over and over again to carry out a large number of varying operations on specific components. We are suffering from a lack of output...That prevents us from working continuously the whole of the specialised machine.

Because of the necessity to produce various kinds of articles, the production line had to be flexible. Hence, the adoptability of

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31 See, for instance, *ibid*., pp. 688-689 and evidence of C. Mundy, *ibid*., 16/10/1940, p. 691.

32 Source: *New South Wales Statistical Register*. Figures are taken from 'Average number of persons employed during period of operation. Workers in factory, mill, etc.'

specialised machines was limited and the production still had recourse to standard machines frequently for odd jobs. Thus, the mass production method was not able to operate at maximum efficiency.

In general, despite the significant growth in output and job specialisation, the changes in the production method were conceived of as anything but radical. The employers were still far from satisfied with the development of manufacturing:

[In many factories there are machine tools which are of a modern character, but in practically every factory there is a preponderance of machine tools which have been in existence for many years...The fundamental principles of engineering are the same as they were 10 or 15 years ago, or even before that...Manufacturers in Australia are attempting to increase that side of business[i.e. manufacturing], rather than the jobbing side...So far as manufacturing is concerned, many avenues are still open for the production of more or less consumable goods which cannot be produced unless we have conditions operating similar to those conditions operating overseas, and with which we have to compete.3 4

Even at munition works, where the organisation of the production line was, because of the highly standardised nature of the products, best suited for mass production, the employers had difficulties in running efficient production. They had to utilise their old equipment and new machines did not necessarily raise productivity as considerably as they expected, while hand operations could not be eliminated. Thus, the method of production in Australia at the outbreak of the Second World War was like that in Britain during the First World War. The employers commented:

As regards the munition factories, in our own particular factory...there is now a very large number of machines which were doing work in England in the last war. They are by no means modern machines...The shell billets output has gone up considerably, but it must be remembered there that 5 or 6 years ago...one man would attend to it and cut off the bar...[N]ow, with the introduction of new machinery, we have four men

34 Evidence of C. Grant, ibid., 30/11/1939, p. 74-75.
employed where previously one man handled it, and the amount of work done per man...is less than it was before.35

[Has there been any increase in productivity because of the use of modern machinery?] No, because so many of our operations are hand operations and we have to take great care...Our methods are practically the same now here as they were in England during the last war.36

Production remained rather labour-intensive, even where it was standardised.

There was indeed a significant increase in productivity with regard to core engineering machines, including the lathes. As a turner testified:

[To take a fly wheel for instance, four and a half years ago that used to take roughly...one and a half hours. Now we can turn them out in half-an-hour, through the use of tungsten steel, a hardened steel...[To bore out a cylinder four and a half years ago would take one and a half hours at least, and then after the boring out it had to be ground, but now we bore them out and make them shaped which eliminates that grinding. After they left us four and a half years ago they went to the grinder and that took approximately...an hour and a half. Now we complete the job in just about half an hour...[We had no tool made [in the past] that could stand up to the high speed.37

It should be noted, however, that this innovation concerned speed rather than skill. Although machine tools could stand higher revolutions now thanks to the availability of harder steel, the skill required of the operators itself did not change.38 As the same turner stated, 'The difference is in the speed...The general principle of the machine is still the same as it was in 1914'.39 Another turner remarked that although tradesman turners' work had become specialised in setting-up, the increase in speed made the changes of setting more frequent, keeping tradesmen busy:

35 Evidence of O'Loughlin, ibid., 17/10/1939, pp. 31-32.
36 Evidence of Topp, ibid., 17/10/1939, p. 33.
37 Evidence of H. Alley, ibid., 1/5/1940, pp. 569-570.
39 Evidence of H. Alley, ibid., 1/5/1940, p. 572.
About 80% of my time is on that machine [i.e. the boring machine]. The other 20% I vary with other machines. There has been about 25% increased production. Owing to the use of modern tool steel, we are able to do the same work by taking larger cuts at faster speeds and with greater feeds. The greater part of our work actually is in setting up the work on the machine. Owing to the job being done faster, it requires more frequent setting up and changing of the gear and the jobs connected with it.  

As indicated, the variety of jobs to be done kept in demand those conversant with the machines. Thus, although the productivity of machine operations did increase considerably thanks to the availability of harder steel, it was not necessarily based on the dilution of skill.

The speed-up of machine operations also enhanced the necessity of fitting, because higher revolutions caused distortion of components due to the heat:

However perfect the machine work is...none of it is absolutely perfect because there are variations which have to be adjusted... The speed at which they run, and the efficiency of the cutting steel, generates heat in the product of the machine and, although the product may be exact to the dimensions, when it leaves the machine, after it has reached the fitter, and has cooled off, then there is a certain amount of distortion which takes place, and that distortion has to be remedied by the fitter.

Thus, machine work could not completely eliminate the final touch by experienced fitters.

Moreover, the limited adoptability of standardisation also made it inevitable for the employers to leave jobs to tradesman fitters instead of assemblers. As a road grader manufacturer admitted, because of the wide range of operations to be performed, all-round tradesmen were indispensable:

Q: Have you any difficulty in securing competent tradesmen?

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A: I must say "yes" to that...Very often, an assembler who is used to this line of work is as good as a tradesman, but naturally when he has to turn his hand to something else he is lost. We do all classes of work - some fine, some medium, and some rough.42

The employers themselves had to admit that they depended on tradesmen for the running of production. They also admitted that the skill was of personal nature, belonging to individual tradesmen. Hence, they professed, 'We want tradesmen. The whole industry wants them...We cannot make a tradesman even with 5 years experience [of an apprenticeship]. It depends upon the man himself'.43

Thus, the labour-intensive and tradesmen-dependent nature of production fundamentally remained unaltered, despite a certain degree of mechanisation and standardisation of the production process. Such that, as production expanded, tradesmen were able to claim, successfully, for the fair share of the increased profits. Turners were of opinion that:

[W]e have trebled our output in the last four years, and we feel that we should have a certain amount of the benefit of that increased production because, whatever is done in the engineering trade, the brains have come from the men and not from the management.44

It should be borne in mind that tradesmen, be they fitters or turners, were still indispensable because of their ability to perform a wide range of operations at their discretion, despite the subdivision of the production process which was being proceeded with to some extent. Moreover, the ground on which tradesmen based their claim for higher margins was not so much the changes in the quality of their skill as their contribution to the increased output and enhanced physical intensity.45

42 Evidence of J. Winters, ibid., 5/12/1939, p. 146.
43 Evidence of S. Whight, ibid., 4/12/1939, p. 123.
44 Evidence of H. Alley, ibid., 1/5/1940, p. 580.
45 Ibid.
The labour-intensive and tradesmen-dependent nature of production at the early stages of the War did not change throughout the whole duration of the War. Although the real output of the metal industries almost doubled during wartime, this increase was achieved mostly by continuously intensifying labour. Hence, at the closing stage of the War, the employers had reservations about the wartime development of the industry:

There has been no outstanding improvement in methods brought forward in production in the last five or six years...The only revolution that has taken place in this industry is that we have made numbers of various articles in greater proportion than the normal domestic market would absorb for war purposes. After the war times have gone after the need for fuses, caps and shells have gone - we will go back to what we were...46

Q: [H]as there been any drastic changes in methods in your plants?
A: I do not think so, excepting we have been able to get more modern machines which when operated to their best advantage would give higher outputs to those of 15 or 20 years ago but there has not been any marked change in processes in most of our ordinary machine work.
Q: You are doing a fair quantity of the same class of work you were doing pre war?
A: Yes.47

The fact that the largely increased production was mostly for the temporary War effort contributed to the employers' managerial choice to meet the immediate demand by provisionally intensifying work. Thus, excessive overtime became prevalent. On the busiest days, around 1942-3, 60-hour weeks and 12-hour shifts were not unusual.48 Due mainly to fatigue, work discipline deteriorated seriously, to the concern of employers.

Numerous cases were reported where the employers complained of their employees' absenteeism, late-coming, going-slow, lack of interest, coming to work drunk, refusal of duty and so on, which

were signs of the passive resistance against work intensification.\textsuperscript{49} According to an employer, working hours lost by absenteeism was around seven per cent compared to three in the normal times.\textsuperscript{50} The employers, uncomfortable with the wartime industrial regulations, argued that, in addition to excessive overtime, Manpower regulations also contributed to this moral deterioration, reasoning, 'a man [who] cannot be dismissed without permission of Manpower tends to make him independent and do what he likes'.\textsuperscript{51}

In any event, as output was increased by intensifying labour, productivity itself decreased. Table 8.2 and 8.3 below shows the value of output per capita, the value of materials used per capita and the value of salaries and wages per capita both in current and constant prices.

Table 8.2 (I)The Value of Output Per Capita, (II)The Value of Materials Used Per Capita and (III)The Value of Salaries and Wages Per Capita of the Australian Metal Industries, 1939-44: Current Prices(pounds)

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*Source: Official Year Book of the Commonwealth of Australia.*
*Note: Figures are taken from the category, 'Industrial Metals, Machines, Conveyances'.*


\textsuperscript{50} Evidence of N. Burgess, *ibid.*, 24/7/1945, p. 709.

Table 8.3 (I) The Value of Output Per Capita, (II) The Value of Materials Used Per Capita and (III) The Value of Salaries and Wages Per Capita of the Australian Metal Industries, 1939-44: Constant Prices (1920-21=100)*

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<td>43-44</td>
<td>152.5</td>
<td>137.4</td>
<td>170.8</td>
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Source: Official Year Book of the Commonwealth of Australia.

Note: Figures are taken from the category, 'Industrial Metals, Machines, Conveyances'.


The changes in the real value of output per capita indicates that the level of productivity at the end of the War was lower than when it broke out, although a slight increase in productivity is recognised at the early stages of the War. Contrary to the downward trend of productivity, the level of real wages was pushed up, overall, rather considerably during wartime.

With regard to productivity, a motor manufacturer testified in the Court that the man hours taken to make the same type of motor increased by 24 per cent between 1939 and 1944.52 According to another employer, the increase in the man hours was 50 per cent.53 Under the circumstances, there were many cases reported where the employers voluntarily gave their employees tea breaks and removed overtime, as a result of which labour efficiency was considerably ameliorated.54 At any rate, as productivity deteriorated, production costs increased conspicuously, many employers alleging that production costs rose by 30 to 50 per cent.

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52 Evidence of J. Tivey, ibid., 31/7/1945, p. 950c.
during the War years. These employers attributed the rise of costs mainly to deteriorating labour efficiency, together with general wage increases coupled with extended annual and sick leaves.

It should also be noted, however, that the employers emphasised, as one important cause of decreased productivity and increased costs, the influx of 'the inferior type of labour', that is, dilutees. An employer accounted for lowered productivity by, in addition to 'the employees not doing a fair days work', 'the fact that we have a certain amount of dilution and it is generally recognised that they do not give the same output as fully trained men.' In this situation, foremen and leading hands at his firm were always complaining to him, saying 'when are you going to give me some good men?'.

Not only were dilutees inefficient compared to genuine tradesmen, but also did they necessitate additional costs for more meticulous planning and supervision:

In peacetime, they were all tradesmen, and very good tradesmen. We did not plan at that stage. Our planning has been necessitated largely on account of the inferior type of labour that has to be employed.

The employers also alleged that dilutees were largely responsible for the moral deterioration. According to an employer, 'the infiltration of the poorer class of labour has definitely lowered the


58 Evidence of L. Reichstein, *ibid.*, 24/7/1945, p. 676.


general morale of the higher grade men that I previously employed'.\textsuperscript{61} Another employer deplored:

\begin{quote}
[T]he good tradesman today, or what were the good tradesmen...have had it knocked out of them by the slow workers standing next to them, not worrying about the work and knowing that they cannot be put off. They are standing there working at a certain speed, which is low, and the better men follow suit...Once men did not sit down...They stood most of their day...[T]oday men will persist in reading. They bring in newspapers and books...\textsuperscript{62}
\end{quote}

Dilutees were trained at Technical Colleges for six months before being deployed as 'added tradesmen'. However, the training was far from sufficient for them to perform on a par with genuine tradesmen. There were many kinds of skilled operations which the employers could not entrust to 'added tradesmen', and generally, they were assigned to relatively simple standardised tasks, if classified as skilled.\textsuperscript{63} The employers themselves had to admit, 'For a specialised kind of employment [they] would be competent in six months, but not a specialist in every class of work that would be expected from a tradesman'.\textsuperscript{64}

In spite of their discontent with dilutees' skill and attitude, the employers had to have recourse to them to a large extent, because of the dearth of legitimate tradesmen. Even at the closing stage the War when production had long passed its zenith and was slightly declining, the proportion of added tradesmen to the whole tradesmen employed was still as high as about a third to one half at many firms.\textsuperscript{65}

Under the circumstances, the employers' complaints about dilutees mounted, especially as the termination of hostilities drew near. That

\begin{itemize}
\item \textsuperscript{61} Evidence of D. Scott, \textit{ibid.}, 23/7/1945, p. 659.
\item \textsuperscript{62} Evidence of T. Haynes, \textit{ibid.}, 2/8/1945, p. 1096.
\item \textsuperscript{64} Evidence of A. McDonald, \textit{ibid.}, 9/8/1945, p. 1277.
\item \textsuperscript{65} See, for instance, evidence of L. Reichstein, \textit{ibid.}, 24/7/1945, p. 671 and evidence of R. Brown, \textit{ibid.}, 30/7/1945, p. 911.
\end{itemize}
the employers had to pay full tradesmen's rate for dilutees despite their apparently inferior skill and that they could not be discharged at will because of Manpower regulations aggravated the employers' dissatisfaction, to the extent that the employers regarded dilutees as a burden. The representative of the employers in the Court testified as follows:

Q: [I]t was at the employer's request that the trainees came into the industry?
A: It may be so. I can see a lot of merit in it, but also a terrible lot on the other side. I do not want to be burdened with it after the war.

The employers still recognised merit in keeping dilutees on relatively easy operations, like rough fitting, assembling and agricultural implements making, at lower rates than tradesmen. However, they no longer had any illusion of making great profits by substituting dilutees for real tradesmen.

As a matter of fact, the employers were relieved by dilutees' leaving the industry, while dilutees themselves desired to return to their previous jobs. As an employer related, 'We are satisfied that a lot of them will leave the trade...[T]hey would like to get back to their original industry or business'. Many dilutees had already left the industry before the end of the War. In December 1943, there were still about 33,000 dilutees. By December 1944, however, the number had dropped to 26,000, and the employers anticipated that the majority of them would disappear eventually. At any rate, the employers themselves made it clear that the industry could only be sustained by fully qualified tradesmen:

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67 Evidence of A. McDonald, ibid., 9/8/1945, p. 1277.
69 See, for instance, evidence of C. Horner, ibid., 10/9/1945, p. 1499.
70 Evidence of R. Nuttall, ibid., 11/9/1945, p. 1555.
71 Evidence of C. Mundy, ibid., 30/5/1945, p. 108.
We would be prepared to dispense with the majority of our "Dilutees" and replace with fully qualified tradesmen... We are of the opinion that the majority of "Dilutees" will leave the industry. Because of their limited knowledge, and therefore limited scope, and owing to their lack of training, their opportunities for advancement or obtaining alternative employment within the industry are very limited indeed... In the majority of cases 'Dilutees' cannot take the place of technically qualified tradesmen who have served through all Departments as apprentices.72

Contrary to the initial concern of the Union, dilutees eventually posed no threat at all to the industrial status of legitimate tradesmen.

It was mostly thanks to munition orders that the wartime economic boom was sustained.73 Therefore, the employers were seriously concerned about the future of the industry at the closing stage of the War in the face of dwindling munition production. Although it was imperative for the employers to convert from munition to civil production, they initially held a rather gloomy view on this possibility. An employer said, 'War contracts will finish and we have our own domestic work to think about. It may be that some of it develops into more of a repetition job, in which conditions might not be so good'.74

Among many factors contributing to this pessimism was competition from overseas rivals, especially Britain, which was expected to intensify once the War terminated. In this regard, the employers criticised the Government's tariff policy for favouring the primary industries, with the Ottawa Agreement being still

73 For instance, an employer stated that until early 1945, 90 per cent of the work was for the Defence Department. See evidence of L. Reichstein, ibid., 24/7/1945, p. 672. Other employers gave similar evidence. See, for instance, evidence of S. Pope, ibid., 7/3/1945, p. 1141.
74 Evidence of P. Fry, ibid., 2/8/1945, p. 1081. Other employers also presented pessimistic views. See, for instance, evidence of S. Wright, ibid., 30/5/1945, p. 98, evidence of K. Lewis, ibid., 24/7/1945, p. 695 and evidence of N. Burgess, ibid., 24/7/1945, 24/7/1945, p. 713.
valid.\textsuperscript{75} Rising production costs added to the employers' concern, robbing them of a hope of developing export and making it harder for them to defend their own domestic market.\textsuperscript{76}

There were also structural problems inherent in the Australian engineering industry which clouded the postwar prospect. An employer enumerated such problems:

Much of our manufactures during the war period have been copied from the designs and technique supplied by other countries...The development of research and new technique has taken place in other countries to a far greater extent than in Australia...Australia's home market is comparatively small, and the preparation of drawings, designs, and tooling is a heavy expense to undertake for a limited range of manufactures.\textsuperscript{77}

In spite of their gloomy views, the employers continued their efforts to transform their wartime businesses into civilian manufacturing in accordance with the postwar situation by, for instance, creating planning and marketing departments.\textsuperscript{78} In the meantime, the future prospect for the industry began to turn rather bright. Immediately after the termination of the War, the employers were already of opinion that 'we have reason to believe that the past growth of the industry will continue'.\textsuperscript{79} Now they could see the coming of a new era of much extended consumerism:

we have now entered a Mechanical Age on a far vaster scale than was ever thought possible just a few years back...Even the actual erection of a house is getting to be more an engineering job and its fittings such as hot and cold water system, refrigeration, modern cooking equipment and now even air conditioning all of which depend on mechanisation, give an

\textsuperscript{75} See, for instance, evidence of J. Tivey, \textit{ibid.}, 31/7/1945, p. 955 and evidence of E. Horner, \textit{ibid.}, 10/9/1945, p. 1488.
\textsuperscript{76} See, for instance, evidence of A. McDonald, \textit{ibid.}, 9/8/1945, p. 1278.
\textsuperscript{77} Evidence of F. Perry, \textit{ibid.}, 7/8/1945, pp. 1135-1136.
\textsuperscript{78} See, for instance, evidence of S. Pope, \textit{ibid.}, 7/8/1945, p. 1142.
indication of the enormous possibilities and prospects ahead of the engineering industry.\textsuperscript{80}

Although the Australian engineering industry was still besieged with limitations which debarred it from developing into fully fledged mass production, the wartime experience nevertheless provided the industry with various positive conditions for further development. As a manufacturer remarked:

\begin{center}
\begin{quote}
Australia has obtained a general dividend by her industrial development which ordinarily she would not have attained [in] her present magnitude in 30 years, which she has attained in five years...[T]he war has brought forth a qualified plan of action, of executive organisation, of technical knowledge...and of confidence which have become actual successful results.\textsuperscript{81}
\end{quote}
\end{center}

The same manufacturer also stated that the employment of an increased number of non-skilled labour, especially process workers, during the War gave the company a valuable experience to ‘utilise inexperienced labour from other sections of industry, even though this requires a higher overhead administration in the form of technical production planning, inspection, and supervisory staff’.\textsuperscript{82}

In spite of this positive aspect of the employment of non-skilled labour during wartime, the employers had to admit that for the postwar development of civilian production ‘a large and increasing number of skilled tradesmen are an absolute necessity’.\textsuperscript{83} It was skilled labour that was most needed at the time when the industry was on the verge of largely extending its manufacturing side, as well as widening the range of its products. In order to pursue this direction, the employers recognised, the training of apprentices was crucial:

As part of the post-war programme, my Company has an extended scheme for the manufacture and installation of

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\textsuperscript{80} Evidence of R. Nuttall, \textit{ibid.}, 11/9/1945, p. 1556.
\textsuperscript{81} Evidence of S. Pope, \textit{ibid.}, 7/8/1945, p. 1159.
\textsuperscript{82} \textit{Ibid.}, p. 1141.
\textsuperscript{83} Evidence of R. Nuttall, \textit{ibid.}, 11/9/1945, p. 1556. Other employers made similar statements. See, for instance, evidence of F. Grace, \textit{ibid.}, 7/8/1945, p. 1160b.
\end{flushright}
equipment for its own use for the improvement of production techniques brought about by war-time development...It is particularly necessary to thoroughly train apprentices for the types of work engaged in by the Company due to the nature of our operations and the wide diversity of equipment used.84

The employers' desire for skilled labour was reflected in their insistence that the proportion of apprentices to tradesmen, which had been loosened to 1:1 for the War effort, should remain the same after the War, whereas the Union demanded that, once the War was over, it should revert to the normal ratio of 1:3.85

It should be noted in this context that there was division of labour between dilutees and apprentices in wartime production on account of the difference in the levels of their skills. As to turning operations, for instance, it was the common practice that trainees were assigned to roughing down, whereas finishing was left to apprentices.86 For the employers, apprentices were more reliable than dilutees. After all, important jobs could not be entrusted to those with only six-months' training.

Moreover, for the employers who were about to embark on the enterprise in newly emerging branches of the industry and to produce what hitherto had not been produced in Australia, it was, above all else, higher classes of skilled tradesmen, especially toolmakers, that they had to resort to. Because of the paucity of such workers, due not only to the general shortage of tradesmen but also to the newness of the required work itself, the employers themselves had to create the class of workers equipped with special skills necessary for their own businesses:

In view of the fact that the machine tool industry in Australia is virtually in its infancy, my company has found extreme difficulty in the past in securing tradesmen suitable for this class of work. An efficient machine tool fitter is trained through apprenticeship rather than developed from a tradesman fitter...[T]he only way the machine tool industry can be

developed in Australia is by the industry itself training apprentices, who, in due course, will become the tradesmen needed.87

Some employers emphasised the necessity to make 'specialists' who catered for particular needs of each company out of their own apprentices:

[After having given apprentices a general training] we give them special training...so that they may become specialists. We find that apprentices trained by ourselves are the most suitable for our work...We want to train apprentices for service in our own works and consider that the company is fully capable of giving full permanent employment to all apprentices trained when they come out of their time.88

The practice to teach apprentices special skills for the company and retain them as tradesmen after the completion of their apprenticeship was becoming more and more common.89 This can be regarded as a beginning of a kind of in-house training in Australia, although it should be borne in mind that the training of general engineering skills was never dispensed with. As a matter of fact, the curriculum of the engineering apprenticeship hardly changed since the 1920s. The training of apprentices covered the whole range of engineering skills, proceeding from the operation of basic machines, like the drilling, milling, shaping, slotting machines, to fitting and turning, and further to marking-off and the making of dies, jigs and fixtures.90

For the employers, apprentices were not mere cheap skilled labour which could be dispensed with after five years, but an 'asset' on which their companies' future depended.91 Especially since the early 1930s, the employers have always challenged the traditional apprentice-tradesman system. The wartime experience, however,

87 Ibid., p. 1547.
taught them that the system could not be subverted, because after all tradesmen held control over production. Without their skill, the future of the industry was unconceivable and, thus, apprenticeship training proved to be indispensable for producing craft-type skill.