

# How Essington Lewis pulled off an industrial miracle

*Australia needs a leader to marshal all necessary requirements for an emergency revival of Australian industry, to ensure domestic supply of medical equipment and machinery, and boost crucial economic functions underpinning food and energy security, to provide a sound economic platform to defeat the novel coronavirus. Australia's Essington Lewis, a private businessman who was appointed Director-General of Munitions during World War II, provides a shining example.*

*From a speech by Citizens Party Executive Member Noelene Isherwood.*

The story of Essington Lewis, born in 1881 in the South Australian town of Burra, a bush boy who loved the outback, horses, and most of all work, is taken from *The Steel Master: A Life of Essington Lewis* by Geoffrey Blainey.

At age 40 in 1921, following WW1 and on the eve of the Great Depression, Essington Lewis became the General Manager of Australia's famous mining company, BHP.

Six years earlier, as Australian soldiers were landing at Gallipoli in 1915, the first steel rail produced in Australia was rolled at BHP's new steelworks in Newcastle. At that time Lewis, who had been prevented by the Defence Department from enlisting due to his already irreplaceable capabilities, was responsible for the production works at Iron Knob and Whyalla which supplied the iron ore for that steel. Later in 1915 he was given control of BHP's contract to make shells for light artillery, and he supervised the building of a munitions annex at Newcastle—an early foretaste of what was to come.



Essington Lewis

In June 1922 within a year of becoming General Manager of BHP, Lewis made the controversial decision to close BHP's Newcastle steel plant for 9 months dismissing 5,000 men. During this time he analysed the efficiency of plant and men and managerial methods, examining everything which could save time, money, power, materials or paperwork. As part of his personal education, he began what was to be a lifetime of tours of domestic workshops, quarries, steel mills and coal mines as well as regular international tours to every conceivable country with industrial and mining ventures, observing everything. From the tip of South America to Iceland and everywhere in between.

Lewis believed in the 1920s that Australia would ultimately become so wealthy and populous that it would be "the new home of the British Empire". He believed that with the aid of science Australia could earn as much from selling wheat as from wool, that its dairy farms could become as rich as Denmark's, and that railways would enable even the Northern Territory to pasture millions of sheep as well as vast herds of cattle. The continent, he believed, could also support a powerful steel industry.

Due to his rural, working-class background, he was always most concerned about the working man, realising that an additional quota of efficiency and effort in the men who did the unexciting tasks was worth more than almost anything he could do as managing director.

But by 1930 the economic depression was deeper than ever. Governments virtually ceased to buy rails and fishplates for railway tracks, or structural steel and corrugated iron for new schools and public offices. The price of wool and wheat and butter had slumped, and all rural industries were sick; they ceased to buy wire and netting for fences or steel for new buildings, and so the demand for iron and steel fell away. BHP had to stop mills and draw fires in furnaces and dismiss men at the ironstone quarries. Three years after the good year of 1928-29 the production of pig iron at Newcastle had been more than halved and ingot steel had almost been halved. Half the men in the plants at Newcastle had lost their jobs.... Newcastle now was the sixth largest city in Australia with nearly 100,000 people but about a third of its breadwinners had no jobs. For three years BHP paid no dividend, and the only feasible aim was to avoid heavy losses rather than hope for profits.

It was this economic hardship which caused Lewis's intense disagreement with NSW Premier J.T. Lang. Whereas other Australian governments tried to follow the accepted maxims of tightening the belt, taking in sail, living within one's means—and a host of other trusted analogies which meant lower wages—Lang tried to keep wages high. He succeeded to a degree that has long been forgotten. Late in 1931 the wage paid by employers in NSW was 45 per cent higher than the SA basic wage, if allowance is made for Lang's shorter working week and child endowment tax.

Despite his disrespect for Lang, Lewis gave no support to the New Guard, the fascist Sydney group which hoped forcibly to overthrow the Lang government.

The financial year 1932-33 which started in gloom ended in hope. Within a few years Newcastle was making more than twice as much steel as it had made in the busiest year before the depression.

## Preparing for war

Because of Lewis's travels he had a deep knowledge of the industrial strength of the major nations. In 1934 he visited Japan. He was disturbed to learn of the swift pace at which their steel industry was

expanding, the strict government supervision of strategic industries, and Japan's growing capacity to make aircraft. "They are armed to the teeth and I was informed that in emergency they could build 100 [aircraft] per day"; Australia at that time had less than fifty active fighting planes in her entire air force.

So Lewis knew of the war build-up in Japan a full five years before he could convince the people of Australia that it was in peril. But once he had grasped a problem, he did all in his power to solve it.

"Quickly he drew up a plan for the directors to consider: not a grandiose but an attainable plan. Devised within a day or two of leaving Japan, it was a simple summary of Australia's inability to meet an armed attack. Australia, Lewis suggested, should build her own ships; a few had been built in World War I but 'at terrific prices'. As BHP now produced cheap steel, and Australia was industrially more mature, Lewis believed ships could now be built cheaply. He suggested that BHP, instead of ordering its ore carriers abroad, should build them on Walsh Island at Newcastle, thus creating an industry which in an emergency could build mine-layers, torpedo boats and small destroyers. He saw no reason why aircraft could not be made in Australia, and even though the cost would be high he thought his company could enlist the help of others in such a scheme. Meanwhile he thought his company should buy six passenger aircraft—preferably ones that could be converted promptly into military aircraft—and use them between Whyalla, Melbourne, and Newcastle. They also would lead to the training of pilots and ground staff and the construction of airstrips.

"BHP, he decided, should learn from the Department of Defence what could be done to defend Newcastle, and the company should then help fortify the port. 'Knowing nothing of defence, I presume', argued Lewis, 'that if even our ports were captured a guerilla warfare would take place.' If that happened, and Australia were cut off from outside supplies, then guerilla tactics would require an Australian plant capable of making tanks and field artillery—preferably in the interior. Lewis saw no reason why his company could not make them. He thought BHP should create big stockpiles of coal, iron ore, and above all the raw materials such as ferro-manganese which had to be imported. His company should also buy up Australian scrap iron—vital for the steel making process—instead of allowing the Japanese to buy it for export. His policy might force the Japanese to buy more iron ore from Whyalla and even pig iron from Newcastle, thus helping BHP to finance Lewis's war preparations."

In the face of danger, Lewis had overnight changed his attitude to government interference. If Australia was to prepare for war, the federal government would have to direct the economy more closely.

In a personal effort to wake up the population, he also overcame one of his deepest aversions—publicity and talking to the media. He was elected president of the Australasian Institute of Mining and Metallurgy and gave a presidential address at Newcastle before a large audience containing leading industrialists. He decided to speak his mind. Believing that in the coming war Australia would need far more scientists and engineers and skilled tradesmen than she now possessed, and that they would have to tackle complicated problems in new industries, he decided to call for a revolution in technical education. To that theme he could easily pin discreet warnings of the international situation.

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It was 18 months after Lewis delivered his first warnings to the Australian government, that Defence chiefs under the Lyons government became convinced of the danger of war and began to seek greater defence funding, but this was laboriously slow and grossly inadequate.

In January 1936 a private syndicate comprising BHP, W.S. Robinson of Broken Hill Zinc Corp. (later Western Mining) and General Motors Holden's L.J. Hartnett, and several other partners, registered the Commonwealth Aircraft Corporation of which Lewis became Managing Director. The company began producing the first of 40 Wirraway aircraft in April 1938.

Five months later on the eve of war, the Royal Australian Air Force had 164 planes on the active list, of which seven were Wirraways. And when near the close of 1941 Japan entered the war, 101 of Australia's 177 first-line aircraft were Wirraways. It was unusual in the history of aircraft production because nearly all of its 50,000 parts were made in the one plant rather



Production of shells at Maribyrnong, Victoria.

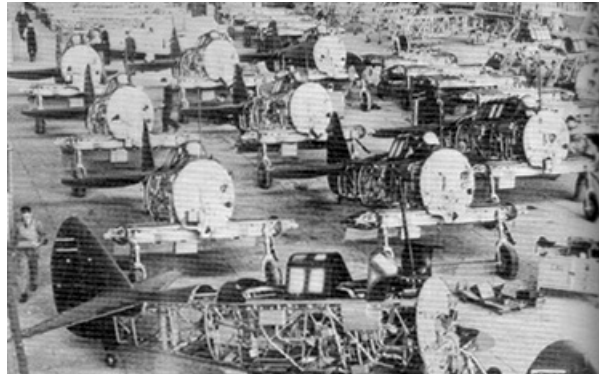


Production of arms at Lithgow, NSW.

than farmed out to a ring of specialist factories; this was through necessity rather than choice, for Australia had few specialist firms to which orders could be sent.

On leaving Japan in 1934, Lewis decided his company should learn how to make munitions, and the board voted an initial sum of £20,000 in 1936 to buy machines and precision tools for a pilot munitions plant at Newcastle. It was already working sixteen hours a day when war with Germany was declared.

More vital than the munitions were the special steels. Special steels with distinctive qualities were necessary if Australia was to make her own machine tools—the lathes, drills, chisels, punches, stamping presses, forges, and the high-speed cutting tools on which every engineering process depended. In essence, special steels were needed to make the machines which in turn made the machines of war. Special steels also went into gun forging, armour-plate, aero engines, torpedoes, and many other items which had to withstand unusual pressure or heat or tension.



Wirraway planes.

By the time Japan declared war, BHP was capable of producing more steel, both of the orthodox and special varieties, than the country needed. The steel industry, the cornerstone of the country's industrial structure, was more ready to meet the shocks and stresses of war than any other. It was producing the cheapest steel anywhere in the world and was exporting to Britain.

Lewis's intention to begin a shipbuilding industry also came to fruition and BHP launched its first naval patrol vessel from its new shipyard in Whyalla on 12 May 1941. Less than a year and a half later the first freighter of 8,000 tonnes deadweight was launched by Mrs Lewis. None too soon since in 1942-43 two of the company's largest ore ships were sunk by enemy submarines.

It's important to note that BHP financed its various preparations for war without government aid. And later, throughout the war, Lewis insisted on receiving nothing, neither salary nor expenses from the Commonwealth. This is one of the reasons why BHP continued to sell iron ore to Japan. Lewis believed it was more important to fund Australia's war effort, than to deny the Japanese what they needed for theirs, as they would simply get it from elsewhere. The sales of iron ore continued until the government banned it in 1938, however Prime Minister Robert Menzies continued his controversial export of pig iron until 1939.

### **'Industrial dictator'**

When war officially began in September 1939, Menzies asked Lewis to become business consultant to the Department of Defence, and eventually a year or so later to take responsibility as the Director-General of Munitions "with a charter as wide as the seas and as high as the sky". The government's munitions factories and the private munitions annexes were not busy. Their main weakness was less a lack of equipment than lack of orders. Neither the Menzies government nor popular opinion gave the war effort a high priority until May 1940 when Hitler swept aside Holland and Belgium and invaded France.

"No other Australian had been plucked from private life and given such formidable powers as Lewis was given.... The phrase often used to describe the post was 'industrial dictator'; and it was accurate. As permanent head of the new Department of Munitions, of which the Prime Minister himself was ministerial head, Lewis controlled the production of all ordnance, explosives, ammunition, small arms, aircraft and vehicles and all the materials and tools used in producing such munitions. If the Minister of Munitions decided that boots or beer were munitions he was empowered under the National Security regulations of 15 June 1940 to declare them to be 'munitions'; and forthwith they became munitions.

"Lewis was given a seat on the Defence Committee and the same access to war cabinet as the chiefs of staff of the armed services. Unlike the chiefs of staff, he was exempt from the rules that regulated all officers of the Crown; he was specifically excluded from the rules of the *Commonwealth Public Service Act*. In carrying out his mission he could acquire factories, machines, tools, inventions or raw materials. He could compulsorily acquire any buildings. He could issue contracts to private firms without calling tenders. He could spend as much as 250,000 pounds on a project without seeking the minister's approval. And he could delegate his power to any subordinate and then revoke that power at will. 'That this may well constitute a wholesale invasion of the settled routine of industrial production, I have no doubt', said the Prime Minister. 'It is preferable to a wholesale invasion of the British Empire and of Australia in particular.'

“Menzies realised that one man had to be allowed to bulldoze his way through the traditional safeguards of the rights of taxpayers, property owners, civil servants and even members of parliament. Menzies thereby departed from many of these principles of which he, perhaps more than any other Australian politician of his generation, was the symbol. Likewise Lewis, in accepting the appointment, departed from his own principle of opposing government interference, a principle of which he, more than any Australian businessman, was the symbol.”

In the space of a few days Lewis recruited the most talented industrialists and organisers ever assembled in one Australian team. Within that team nearly every leader from an outside industry worked in partnership with a senior civil servant, the outside man usually carrying the senior title of “director” and the inside man usually carrying the title of “controller”.

The Board consisted of:

- Noel Brodribb: Deputy Director General (Chemical engineer previously in charge of munitions);
- Harold Clapp: Aircraft Production (former chairman of Victorian Railways Commission);
- L.J. Hartnett: Ordnance Production (GMH Man Director);
- W.J. Smith: Production of Gun Ammunition (manufacturing background with Australian Consolidated Industries);
- T. Donaldson: Director of Explosives Supply (from ICIANZ);
- Sir Colin Fraser: Director of Materials Supply (Geologist and leader of Broken Hill mining);
- Col. Fred Thorpe: Director of Machine Tools and Gauges (Military engineer);
- E.V. Nixon: (Director of Finance (Accountant and Businessman);
- Prof. J.B. Brigden: (Came from Dept of Munitions);
- J.K. Jensen: Secretary (came from Dept of Munitions);
- Ben Chifley: Director of Labour (Loco driver and former Minister of Defence in the Scullin Ministry).

New Directorates were later added to embrace: Armoured fighting vehicles, radio and signal supplies, locomotives and rolling stock, small craft, and several administrative areas.

John Jenson said: It was absolutely exhilarating after several years of inertia and frustration to be getting action, “on the nail” so to speak.

Lewis took the chair at the first meeting of the board and began the agenda by reading the long list of likely demands for arms and ammunition—ranging from the 252 anti-aircraft guns to the 575,000,000 rounds of small arms ammunition. Some weapons on the list had never been made in Australia and could only be made with special machine tools, skills, and raw materials. That was only one of the problems which he handed to his directors in the long meeting that ended about midnight.

In Board conferences Lewis invited those seated at the table to speak in turn on each problem. He listened carefully and when all who wished to speak had spoken he summed up the arguments in a way which usually indicated his likely answer. Those who disagreed could then challenge him for the last time, after which he announced his decision. Lewis showed such skill around the table in winnowing the essential arguments from the inessential that his decisions were not often queried.

In his first six months the output of munitions was almost quadrupled, but more was needed.

Essington Lewis subordinated his interests completely to the common interest. He claimed no credit for his own work, and was quick to praise what others did. The crisis seemed to heighten the greatness in him. He worked his backside off. He would often visit a dozen plants in a day. From Melbourne to the Air Force base at Richmond in NSW to the Blue Mountains, to Orange or Wellington and Dubbo and home to Sydney or Melbourne. These tours lifted morale and tugged at the sluggish lines of communication which so often choke massive organisations.

He always made it clear that although the bureaucrats were loftier in the hierarchy, they were the servants of the toolmakers, fitters, and munitions workers. The aim of his department, he emphasised, was to produce munitions, not ink and paper.

### **Working with Curtin**

In October 1941 when John Curtin took over from Menzies, widespread changes in the war effort were expected. Curtin expressed his attitude to the man who, in the opinion of some senior Labor ministers, had been jeopardising his country’s safety; he gave Lewis *more* power!

The first thing Curtin did was to increase the priority for better quality, more modern combat planes, expanding aircraft production to the maximum that the nation could attain. Realising Lewis’s superiority, he appointed him Director



Lewis and Ben Chifley.

General of Aircraft Production as well as his previous role as Director General of Munitions.

Production of the Beaufort bomber began immediately. Parts for 20 Beauforts were shipped to Australia, but once those parts were used Australia had to build her own 1,200 horse-power engines or go without. The project was so intricate that one English aeronautical expert argued that it was beyond Australia's skills.

Production called for an army of men and women who had no industrial experience; four of every five engaged in aircraft production had not previously worked in any factory. It called for hundreds of sub-contractors to manufacture parts for the engine. Above all the project called for speed. Australia manufactured ten Beaufort bombers by the end of 1941 and six months later it produced the seventy-fifth. In all Australia manufactured 700 Beauforts and 329 Beaufighters—a similar aircraft which was used as a fighter in a wide area between Australia and the Philippines.

By February 1942 the war cabinet decided that Boomerang aircraft should be built. Just over a fortnight later the Japanese bombing of Darwin increased the urgency for an Australian intercepting-fighter. A total of 248 Boomerangs were built at Fishermen's Bend in Melbourne.

The aircraft campaign reached its peak in July 1944 when it employed 44,000 men and women. At the end of the war it was capable of producing the most advanced types of jetpropelled aircraft; it was building the high-altitude fighters known as Mustangs; and soon after the war it completed its first Lincoln bomber, which carried eleven times the Beaufort's bomb load. In all 3,500 trainers, fighters, and bombers were built in Australia during the war.

The key to everything that Lewis achieved, however, was the explosion in the machine tool sector, as we wrote in our 1999 pamphlet, [\*The fight for an Australian Republic: From the First Fleet to the Year 2000\*](#).

"The Federal Government set up the Commonwealth Machine Tools Committee in March 1940. This became part of the Department of Munitions, under Lewis. ...

"[Historian] D.P. Mellor, in 'The Role of Science and Industry', recounts: The years 1942 and 1943 witnessed an astonishing increase in the number and variety of locallymade machine tools. There was also a great deal of ingenious improvisation in the use of existing machines. Precision tools of a kind whose local manufacture would previously have been regarded as impossible became almost commonplace.

"At the peak of production in 1943 some 200 manufacturers employed 12,000 persons for an annual output of 14,000 machine tools. By the middle of 1944 what had been Australia's greatest single technological weakness had become a major source of strength. This remarkable transformation owed much of its momentum to the drive and energy of Colonel Thorpe. Over the whole war period the value of machine tools made in Australia was approximately 23 million pounds. Australia's needs were met and orders were delivered to the British Army in Egypt, to South Africa, New Zealand and India. From making a few machines of medium size Australian manufacturers attained the position of being able to make precision tools of a size and quality that compared favourably with other nations....

"There is, generally speaking, no machine too large or too intricate for the Australian engineer to tackle, if the need is sufficiently urgent.... There are now available through the cooperation of manufacturers, engineering shops, certain garages, instrument makers, tool making establishments and others, more than 180 organisations producing tools and gauges to the extremely fine tolerances demanded by modern engineering practice and munitions manufacture."

Much of Australia's post-war industrial expansion was firmly based on the new industrial skills and techniques mastered under Lewis's leadership during the war.

Lewis, who hated publicity, refused a knighthood for his extraordinary contribution to the nation, even though recommended by Curtin himself. Lewis wrote: "I feel that I owe Australia everything and that Australia owes me very little. Again, permit me to say how very deeply I appreciate your kind remarks and your courtesy to me at all times."

Lewis deeply respected Curtin and his ability as Prime Minister, as well as Ben Chifley who was Treasurer and Minister for Post-war Reconstruction. Like Lewis they had a strong belief in hard work; they were also nationalists who extolled loyalty and disliked pretension. Whereas before the war Lewis had resented the Labor Party's desire to regulate industry, during the war he was the main instrument of Labor's desire to regulate industry. Curtin as PM could not have had a more loyal servant than Lewis; nor could Lewis have asked for more loyalty than he received from Curtin.

After the war Lewis continued as GM of BHP but due to industrial strife and a general lack of impetus for production it took quite a few years to get production back to wartime levels. This production-oriented can-do man, was often highly frustrated with these changes; he especially grew to hate accountants, of whom he said: "Accountants can prove that nothing is possible".

Lewis continued to support all kinds of advanced industrial and manufacturing enterprises. For example, when the first Holden car officially rolled off General Motors- Holden's assembly line at

Fishermen's Bend, Victoria, on 29 November 1948, it was sold to Essington Lewis who had given crucial help to the Australian car project from its inception. Lewis refused it as a gift and insisted on buying it. Holden vehicles quickly became an Australian institution and by 1958 could claim 43 per cent of car sales in Australia. A million had been sold by 1960. It's hard to believe that that same company is now on the brink of international bankruptcy.

Lewis died in 1961 at his property "Landscape" just north of Melbourne. When his possessions were cleared from his office, they discovered a short text which had been framed on his wall for many years. It simply read, "I am work".