ARMS PRODUCTION AND WAR SUPPLY IN SOUTHERN AFRICA 1939 - 1945

LIMITATIONS OF THE INDUSTRIAL WAR EFFORT OF SOUTH AFRICA AND ZIMBABWE DURING THE SECOND WORLD WAR

BY

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DEDICATION

To my wife Susan.

May your dreams come true.
ABSTRACT

When the Second World War broke out in 1939, South Africa and Zimbabwe joined the war on the side of the Allied Forces, against Nazi Germany. The military exploits of units and individuals from both countries as they fought in East Africa, North Africa, Europe, and the Far East, have been well documented. On the home front, the countries of Southern Africa were required to supply the Allies with raw materials which were so vital to the Allied war effort. At the same time, the region could not receive from Europe and America the machinery, tools and other industrial products necessary to sustain these colonial economies in war conditions. This led to a small-scale war-driven Import Substitution Industrialisation which included arms manufacture for the Allied war effort. This industrial war effort of Southern Africa has not been well documented.

This thesis will discuss the production of munitions of war in South Africa and Zimbabwe as a contribution to the study of the effects of the Second World War on Africa. The thesis will argue that South Africa was not well prepared for the industrial war effort mainly because there were few large factories which could be readily converted to munitions production. Such factories had to be built from scratch. Machinery for these factories had to be imported or made locally at the expense of quality. There was also a shortage of technically skilled manpower leading to the racially-charged principle of "dilution of labour" which was complicated by the existing "job colour bar" in the factories. Equally important for South Africa was the fact that there was a significant political opposition to the war effort before and during the war.

Zimbabwe's industrial war effort was small mainly because the country's technical, financial and manpower resources were small. Also, the Government of Southern
Rhodesia, while publicly preaching the importance of industrialisation, in practice discouraged secondary industries in favour of agriculture and mining. The consequence of this was that, besides the establishment of training schools for Commonwealth pilots, Southern Rhodesia's greatest contribution to the Allied war effort was the production of food and strategic minerals. By the end of the war, secondary industries were still being considered as activities of a secondary nature in the total colonial economy of Southern Rhodesia.

This thesis will further argue that rather than stimulating local industrialisation, the policies of the Governments of South Africa and Southern Rhodesia in some ways actually retarded the growth of secondary industries during the Second World War. The net result was that South Africa's contribution to the war effort in technical, financial and manpower terms was much smaller than that of other Dominions of her stature. Thereafter, as white politics swung more to the right after the war, the need to maintain the momentum of a war-driven industrialisation led to the excessive exploitation of African workers in both countries. Unlike in some other parts of the British Empire, the war effort of the countries of Southern Africa did not produce a sense of African advancement. For the economic consequence of the Allied war effort was the increased exploitation of the African worker. In the political sphere, the war effort also helped to swing the settler colonialists to the extreme right and delayed the establishment of democratic systems of government for another forty years.
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<td>AE&amp;I</td>
<td>African Explosives and Industries Limited</td>
</tr>
<tr>
<td>ARMS COR</td>
<td>Armaments Corporation of South Africa</td>
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<tr>
<td>BTI</td>
<td>Board of Trade and Industries</td>
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<tr>
<td>COFAC</td>
<td>Central Ordnance Factories</td>
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<tr>
<td>COTT</td>
<td>Central Organization of Technical Training</td>
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<tr>
<td>DDT</td>
<td>Dichlorodiphenyltrichloroethane</td>
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<tr>
<td>DGS</td>
<td>Director-General of Supplies</td>
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<tr>
<td>DGTS</td>
<td>Director-General of Technical Services</td>
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<tr>
<td>DGWS</td>
<td>Director-General of War Supplies</td>
</tr>
<tr>
<td>DTS</td>
<td>Director of Technical Services</td>
</tr>
<tr>
<td>EATS</td>
<td>Empire Air Training Scheme</td>
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<tr>
<td>EGSC</td>
<td>Eastern Group Supply Council</td>
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<tr>
<td>EPT</td>
<td>Excess Profits Tax</td>
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<tr>
<td>ESCOM</td>
<td>Electricity Supply Commission</td>
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<td>FPC</td>
<td>Food Production Committee</td>
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<td>ICI</td>
<td>Imperial Chemical Industries</td>
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<tr>
<td>IDAC</td>
<td>Industrial Development Advisory Committee</td>
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<tr>
<td>IDC</td>
<td>Industrial Development Commission</td>
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<tr>
<td>ISCOR</td>
<td>South African Iron and Steel Corporation</td>
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<tr>
<td>MFU</td>
<td>Matebeleland Farmers Union</td>
</tr>
<tr>
<td>MIC</td>
<td>Military Industrial Complex</td>
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<tr>
<td>MPB</td>
<td>Munitions Production Board</td>
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<td>NAZ</td>
<td>National Archives of Zimbabwe</td>
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<td>NP</td>
<td>National Party</td>
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<td>NPS</td>
<td>National Physical Laboratory</td>
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<tr>
<td>NSCB</td>
<td>National Supplies Control Board</td>
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<tr>
<td>OB</td>
<td>Ossewa Brandwag (Sentinels of the Ox-Wagon)</td>
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<tr>
<td>Acronym</td>
<td>Description</td>
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<tr>
<td>RADAR</td>
<td>Radio Detection and Ranging</td>
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<tr>
<td>RAF</td>
<td>Royal Air Force</td>
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<tr>
<td>RAR</td>
<td>Rhodesia African Rifles</td>
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<td>RATG</td>
<td>Rhodesia Air Training Group</td>
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<tr>
<td>RISCO</td>
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<tr>
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<tr>
<td>ROFAC</td>
<td>Rhodesia Ordnance Factory</td>
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<tr>
<td>RRAF</td>
<td>Royal Rhodesian Air Force</td>
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<tr>
<td>SAA</td>
<td>Small Arms Ammunition</td>
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<tr>
<td>SAR&amp;H</td>
<td>South African Railways and Harbours</td>
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<tr>
<td>SOFAC</td>
<td>Salisbury Ordnance Factory</td>
</tr>
<tr>
<td>TNT</td>
<td>Trinitrotoluene</td>
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<tr>
<td>UDF</td>
<td>Union Defence Force</td>
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<tr>
<td>UDI</td>
<td>Unilateral Declaration of Independence</td>
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<td>USSR</td>
<td>Union of Soviets Socialist Republic</td>
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<td>VFTPC</td>
<td>Victoria Falls and Transvaal Power Company</td>
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<td>WSB</td>
<td>War Supplies Board</td>
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<td>WSC</td>
<td>War Supplies Committee</td>
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<tr>
<td>ZISCO</td>
<td>Zimbabwe Iron and Steel Corporation</td>
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CHAPTER ONE - INTRODUCTION

Problematising Military Industries In Southern Africa

In the twentieth century, the industrial manufacture of armaments has become a critical factor in determining the war potential of nations. When the Second World War broke out in 1939, a leading British economist observed that:

War, nowadays, is an industrial proposition. It is more influenced by the science of economics than by the art of strategy. The present war will not be won on any playing-fields, at Eton or elsewhere, but in the mines and workshops of a thousand grimy industrial towns.

Equally, the crucial importance of manufacturing in wartime has stimulated the economies of some belligerent countries where other conditions for industrial expansion were favourable. However, in developing countries, arms production has seldom been an inducement for the growth of dependent peripheral economies, because arms production industries are often not profitable on a small scale. Very often, political and questionable security considerations have at the same time induced developing nations to start local military production lines, even at the detriment of the local economy.

The debate as to whether in Southern Africa the Second World War revolutionised the underdeveloped economies from mainly producers of minerals and agricultural primary products to become newly industrialised manufacturing economies, or whether the war merely stimulated a process that was already underway, or whether it actually retarded such development, has not yet been convincingly concluded. In the case of South Africa and Zimbabwe, there is still much to be said for both sides of the debate. What appears to be agreed upon by many historians is that the Second World War was an important
turning point in the political and economic development of Africa in general and of Southern Africa in particular. The war is often taken as an important benchmark in the periodisation of the industrial processes of the region. Yet, curiously, very few historians have investigated the role of war-related industries in the secondary industrialisation of the region. Their readers are often left with no option but to believe that the establishment of factories during the war was a sine qua non for the secondary industrialisation of South Africa and of Zimbabwe, even though little evidence is presented and few examples of war-related production activities are shown which led directly to the process of industrialisation.

This thesis seeks to relocate arms production into the debate on the industrialisation of Southern Africa. The available literature has tended to emphasise manpower issues in the discussions of the region's industrialisation. This was so mainly because of the politically-charged atmosphere created by minority white rule over an overwhelmingly black majority population in both South Africa and Zimbabwe. Because of this political anomaly, every important debate was seen as white versus black, and right versus left or west versus east, even during times when the two groups were supposed to be on the same side, as during the Second World War. Now, in this post-apartheid and post-cold war era, some fundamental questions must be asked again without the racial and political constraints of the immediate past.

As far as arms production and the industrialisation of Southern Africa are concerned, a number of vital questions have not been asked. Which factories produced arms in South Africa and in Southern Rhodesia during the war? What type of arms did they produce
and how did they produce them? When did actual production start and when did it end? How many people worked in these factories and what was the gender and racial composition of this work force? What were the technical problems that were encountered in these factories and how were they resolved? How many items were actually produced and at what cost? Answers to these questions would go a long way in explaining the relationship between arms production and secondary industries in the two countries. Perhaps in the years immediately after the Second World War it was current news that certain factories produced war products or that they provided certain war services. However, more than half a century after the war, it becomes necessary to start by reminding readers that there really was an industrial war effort in the region.

Almost all current discussions on arms production in Southern Africa start with Armcor, yet it only started producing armaments for the apartheid regime in 1964. It is important to note that in its entire history Armcor has never managed to produce the quantity and variety of arms and ammunition as those produced by the Union factories for the Allied war effort during the Second World War. Even with the short lived apartheid nuclear capability scare and Denel's much-publicised Rooivalk helicopter gunship, the question can still be asked whether at any time South Africa really possessed what has come to be called the Military-Industrial-Complex (MIC).

It was Dwight D. Eisenhower, ex-general and retiring President of the United States of America who first used the term Military-Industrial-Complex in his presidential farewell address in 1961. Eisenhower warned the American nation of the "conjunction of an
immense military establishment and a large arms industry." He added that the United States:

must guard against the acquisition of unwarranted influence, whether sought or unsought, by the military – industrial complex. The potential for the disastrous rise of misplaced power exists and will persist.⁷

In order to understand the MIC, even the leading American theorists were sent scrambling as far back as the American War of Independence, through the American Civil War, the First World War and the Second World War to try to put into context what Eisenhower had been talking about in 1961. One such prominent theorist came to the conclusion that the MIC as a topic had for a long time suffered from historians' neglect, that without the time dimensions which constitutes the historian's framework, the MIC was denied its proper depth and breath. He went on to explain that:

"For whatever reasons, as long as historians avoid facing the issues of power head on, subjects like the MIC will be denied the time perspective, which can so enrich social scientists' concepts, whose theories and models tend to be restricted by their belief that they need go back no further than World War II to understand the present-day MIC. By training and instinct, the historian knows better.⁸

In apartheid South Africa, the said "disastrous rise of misplaced power" was evident in the militarisation of South African white society which the state and Armscor justified as necessary in their fight against an erroneously perceived Communist take-over. The Cold War connotations of the MIC might partially explain the narrow focus on Armscor by the few historians who have written anything on arms production in Southern Africa.⁹ It may also partially explain why leading European military industrial companies continued to supply Armscor with advanced military technology (including nuclear technology) at a time when the United Nations were talking of military and economic sanctions against
the apartheid regime. In the historiography of South Africa it is therefore evident that there is a "historians' neglect" of the subject of the MIC before the Cold War rhetoric of Armscor. There is a need to trace the historical development of arms production in the region up to and including the Second World War, in order to understand the role of arms production in the industrial development of the region.

The next crucial question is whether military industries in general can really be considered to be economically viable. In developed countries, arms industries have been justified in terms of the existence of "spin-offs". The argument is that there is a transfer of technology from military to civil industry. Expenditure on military research and development is said to produce new knowledge, techniques and materials which may have direct civilian application. Such examples as the standardisation of components and production-line systems which is essential to the machine tool industry have been evoked to justify arms industries. The iron and steel industry has also been cited as the result of an industry that developed to cater for the requirements of heavier armaments which found alternative applications in civil engineering.

However, the "spin-off" assumptions have been challenged even in developed countries. K.E. Boulding has highlighted the huge internal "brain drain" associated with European military industries from the time of Achilles to the nuclear age. He argues that, economically, it was the defeated countries (Germany and Japan) who won the Second World War. These countries became psychologically demilitarised societies and were able to devote virtually all their intellectual and technological resources to getting richer. Both countries achieved economic development miracles within two or three decades while
the men who should have been designing development technology in the United States and the Soviet Union were probably building missiles and other sophisticated devices of assured mutual destruction. This directly led to the fall of the Soviet Union and contributed greatly to the relative decline of the American economy since the 1970s.\textsuperscript{12} Boulding, writing from a 1987 perspective makes the conclusion that:

The awful truth seems to be that swords make pretty miserable ploughshares; they are the wrong kind of material and very expensive. If we want ploughshares, it is much better to make them directly and to put research into them directly\textsuperscript{13}

In South Africa, the factories that produced arms and ammunition during the Second World War were not always a result of import substitution strategies for the local market. The best of these factories, like the Royal Mint and the Imperial Chemical Industries (ICI), were virtually transplanted in toto from England.\textsuperscript{14} The capital which they used was British capital, and the munitions produced were for Allied defence (more properly for Imperial defence). After the war, these factories had to close down and many residual military materials and tools had to be destroyed because they could not be adapted for civilian use. The real mark which the arms industries made was the enormous drain of local raw materials and the huge diversion of local cheap labour which in the long run arguably proved detrimental to civilian industrial development both during and after the war.\textsuperscript{15}

Under the later apartheid regime, arms production resulted in a high dependence on imported (mostly smuggled) components. The cost of these components absorbed much of the potential foreign exchange savings of local production. Also, there were direct and indirect production costs that made domestic production even more expensive for the national economy than importing the same equipment outright.\textsuperscript{16} But, of course, these
costs were justified in terms of national security, a questionable assertion which was frequently exposed when the metropolitan suppliers periodically restricted the vital supplies of components and spare parts. This dependent manufacturing effectively made apartheid armaments industries hostages, making them most vulnerable to western political and economic blackmail. The paradox was not unique to South Africa, for it has been observed in other developing countries which have also been accused of:

irrationally producing armaments that cost more in total expenditures and/or foreign exchange than they would if imported outright. The overriding objective of such arms production is not to save or minimise costs through domestic manufacture, but rather to maximise public expenditures on, and hence profits in, domestic capital goods and machine-building industry – even at the cost of high expenditure of foreign exchange. These high expenditures (not coincidentally) benefit the foreign producers who are engaged in joint ventures with local producers.17

Let us now turn in a preliminary way to Southern Rhodesia. Southern Rhodesia's industrial war effort during the Second World War was tied to that of the Union of South Africa right from the beginning. The main objective of the War Supplies Committee formed in 1940 was, "to examine the resources of the colony for the manufacture of munitions and civil supplies, in co-ordination with the Union of South Africa."18 Most striking, however, was the similarity of the two countries' arms and ammunition production processes and their organisation. It appears as if Southern Rhodesia was acting as a branch of the South African arms industry, and most of her products were made to fulfil orders given to the Union of South Africa by the Allies. The similarity in the history of the organisational development of the war effort in the two countries is also striking. When the Union of South Africa established the Director-General of War Supplies at the beginning of the war, Southern Rhodesia established the War Supplies

7
Committee. Both organisations were transformed to combine their original functions with civilian goods production under the Director General of Supplies and the Department of Supplies respectively, and both did that in 1943. When the Union established the Industrial Development Corporation, Southern Rhodesia responded with the Industrial Development Commission for the same purpose.¹⁹ It is almost as if Southern Rhodesia was a smaller mirror image of the Union of South Africa in all the phases of the war effort and in their relationship with civilian industry.

Southern Rhodesia was therefore clearly dependent on the Union of South Africa in technological development, in arms manufacture in particular and in the industrialisation process as a whole. It was an example of a case of an economy in "the periphery of the periphery", depending on another dependent economy. It is also clear that at no time during the war was Southern Rhodesia able to overcome the basic problems of shortage of machine tools, inadequate skilled manpower and foundry resources problems which formed the basis of its dependence on South Africa.²⁰ Also, the conflict between local capital in Southern Rhodesia and South African capital affected the quantity and quality of Southern Rhodesia's manufactured products and that conflict was very much evident in the area of arms production. In fact, it was that conflict of capital that stifled the continuation of arms production in Southern Rhodesia after the war.

Southern Rhodesia's post Second World War history is dominated by two events: the Federation of Rhodesia and Nyasaland, 1953-1963; and Ian Smith's Unilateral Declaration of Independence(UDI), 1965 - 1979. The former period was not very eventful in the field of arms manufacture as the country's defence and foreign policies
were dictated from London and therefore dependence on the United Kingdom was total. After 1965 the economy of Rhodesia was subjected to United Nations sanctions. Rhodesian propagandists claimed that Ian Smith's Security Forces were able to withstand a protracted guerrilla war because Rhodesian industry was able to manufacture those war materials so vital to the continuation of the war. Some industries such as Willowvale Motors, Trevor Davies (Ltd), K.E.W. Engineering and others are said to have remained viable during the sanctions period only because they were engaged in the manufacture of war equipment which the government readily bought. What is not normally highlighted is the fact that these factories were merely engaged in the assembling of parts smuggled into the country through South Africa. Technology and manpower for servicing sophisticated equipment and the pilots who flew smuggled helicopters came from South Africa. The so-called Rhogun advertised in the Rhodesia Herald in the 1970s was actually an Israeli Uzzi sub-machine gun which was assembled in South Africa and distributed in Rhodesia. The three countries were partners in sanctions-busting and Rhodesia could never have sustained the war for such a long time without South African backing on the industrial front, on the economy as a whole and in the war effort. The Smith regime was even more dependent on South Africa not only in the acquisition and maintenance of weapons of war, but also in its whole defence policy which was based on manipulating the Communist scare of the Cold War to justify the military sustenance of minority white rule over an overwhelmingly black population. If United Nations sanctions were "a blessing in disguise" for some sectors of the Rhodesian economy between 1965 and 1980, in the field of arms production, sanctions did not lead to the development of any self-sustaining arms manufacturing industry. A
Military Industrial Complex did not develop in Rhodesia. Rather, sanctions deepened Rhodesia's military dependency on South Africa.

**Review of Relevant Literature**

**South Africa.** An interesting debate on South Africa's industrial contribution to the war effort started during the war itself and continued up to the early 1950s, after which it became marred by local political developments. Michael Vane published a pamphlet in March 1943 entitled, *Apathy Supercharged: A Criticism of Our War Effort*. Vane asked the question, "Are we doing everything in our power to defeat the enemy?" Between September 1942 and January 1943, some five articles had been published in *The Reef* newspaper which chronicled the work being done by gold miners in Transvaal towards production of munitions. To follow this up and as an answer to Vane's question, a brochure was published by the Transvaal Chamber of Mines in April 1943. It was entitled, *War Work on The Witwatersrand: Munitions Making in Gold Mine Workshops*. The brochure was basically a propaganda instrument to dispel the rumours that most Afrikaner miners were showing apathy to the war effort. It contained very little if at all on the economic impact of that war effort either on the gold mining industry or on the economy as a whole.

Another propaganda instrument was G.H. Swingler's undated pamphlet, *The Union of South Africa Works for Democracy Through its Industries: Through its Manpower, and its Women*. It was published in the United States of America. Swingler scorned the erstwhile popular notion that Hitler smiled when he heard that, South Africa, whose total armaments industry then consisting of a small factory for the production of .303
ammunition, had declared war on Germany. Swingler went on to write that in a few months, the Union was manufacturing and using the implements of war on a scale comparable to any of Hitler's opponents. He asserted in partisan fashion that "The story of the unparalleled rapidity and vigour of this war effort is the story of the emergence of a new industrial South Africa".

In 1943, H.M. Moolman published another pamphlet in Washington entitled, South Africa at War. It highlighted how South Africa fitted into "the strategic picture" and work on "the industrial front". The pamphlet is very informative but it echoed the propaganda works already published. However, this particular one was aimed at influencing the United States of America to give more support to South African industry in view of British difficulties in doing so.

After the war, H.J. van der Bijl made an official record of the Union's contribution towards the war effort. The report was entitled, A Record of the Organisation of the Director General of War Supplies (1939 - 1943) and Director-General of Supplies (1943 - 1945). It summarises the war production programmes, technical production, manpower issues, commercial production, control of commodities and civilian supplies. The report can be taken as the official testament of South Africa's contribution to the war effort. As such, however, it avoids (perhaps deliberately) any serious discussion of the economic problems that might have been caused by the war effort. It admits that grave shortages of civilian supplies did occur and the war supplies programmes themselves were threatened with closing down. This is said to have led to criticism from the public and from some industrialists. These substantive criticisms were,
however, belittled in the report and brushed aside in one sentence thus, "Criticisms, when they were helpful, were welcome, but even ill-informed criticisms, sometimes amounting almost to positive abuse, at least served some purpose – they were a safety valve for the pent up frustrations of the would-be profit makers." 32

In 1946, A.G. Thomson compiled a separate report for the South African Federation of Engineering and Metallurgical Associations on the work of the metal industries during the war. The report is entitled, "The Years of Crisis". 33 It is a vital source of information on the contribution of the metal industries to the war effort. It also gives account of individual metal firms that were involved in munitions production, listing altogether 78 such firms, each giving its own story. However, the majority of the articles in the report are basically a eulogy of each firm's role and contribution to the war effort. There is very little analysis of economic questions of viability, profit, linkages and spin-offs. The accounts start and end with the individual firms. In summarising the report, however, Thomson observed that, "Some wartime manufactures are doomed to disappear, and were in fact, established with the sole object of alleviating temporary difficulties of supply." 34 The "industrial-front heroes" tone set by van der Bijl and Thomson is repeated in many post-war studies without question. Even respected scholars like Eric Rosenthal, A.J. Norval, D.H. Houghton, Stuart Jones 35 and many others take the view that the industrial war effort was a stimulant for the industrialisation of South Africa.

Even David Killingray and Richard Rathbone, in their important book, Africa and the Second World War, write that, "The Second World War was an experts' war, a conflict in which scientists ceased to be viewed as eccentric 'boffins' and were, rather, drawn into
the very heart of planning at the highest levels. Yet unfortunately, there is no mention in that book of such scientists or expert in the military in Africa except for the occasional agricultural experts. This, I think, is a serious omission. Even though the industrial war effort of South Africa and Zimbabwe were small by international standards, and were full of problems as this thesis will seek to demonstrate, the fact still remains that these two African countries actually set up factories specifically for the manufacture of arms for the Allied war effort. Their experience, small though it was, deserves a chapter in any book that discusses Africa's war effort during the Second World War.

One early analytic attempt was R.B. Spiro's 1944 publication, Rationalisation of South African Industry: Suggestions for Industrial Post-War Planning. Spiro observed that most South African manufacturers during the war readily admitted that their products were more costly than similar products in other countries. He noted that this did not only concern products made by the war-created industries, but also products which were manufactured in pre-war times. He also noted that if one asked a South African manufacturer why his costs were higher, one would hardly get a satisfactory reply. After a thorough examination of the poor performance of South African industries in 1944, Spiro suggested that the only way forward was the rationalisation of all South African industries in line with international trends.

Another important contemporary analysis is that made by T. Gillooly in his Development of South African Industry, published in 1946. Gillooly analysed industrial census returns from 1938 to 1942 and concluded that while the general trend was one of growth, certain industries like building declined and that the growth of the shipbuilding industry
was "an example of a local industry flourishing to an abnormal extent under purely fortuitous demand, a growth which must needs perish when the artificial protection afforded by the circumstances of war is no longer present." Not everyone agreed with this link between the war and industrial capacity.

One of the greatest marshalls of South African war-time industry, H.J. van Eck, strongly castigated the prophets of post-war economic doom such as Gillooly. In his *South African Industry: Post-War Prospects*, van Eck disagrees with the view that "mushroom industries" were established during the war, that these industries would disappear after the war and that secondary industrialisation in South Africa would face a post-war recession. He pointed out that there were many factors that had contributed to secondary industrialisation in South Africa, such as the availability of resources, improved management, increase in skill especially among the women, and wholehearted cooperation on the majority of employees. Van Eck went on to state that it had to be obvious that the great achievements of secondary industry during the war were based on the sound foundations that had already been laid before the war and certainly did not result from the so-called mushroom growth during the war. He wrote that, "Had the war not come many South African industries would have developed much further and much faster than during the war because they would have been able to get plant, raw materials and manpower."

In a more recent 1983 publication, A.B. Lumby superficially attacked the views expressed by van Eck. In two very informative chapters on industrial development in South Africa before and after the war, Lumby expressed the opinion that South Africa's
industrial policy up to 1939 was "partially self-defeating". He asserted that industrial expansion relied too heavily on gold mining to the extent that it became a, "parasite feeding upon the very sector which, so it was planned, it was eventually to replace." It was only the outbreak of the Second World War which led to the establishment of major new branches of industry. This, Lumby wrote, "was particularly the case in the iron, steel and engineering sectors for the manufacture of munitions and the production of armoured cars." But that is as far as Lumby goes; having made his sharp attack he made no follow up of his approach to link arms production to secondary industrialisation in South Africa.

In their multi-volume account of the South African Forces in the Second World War, H.J. Martin and N. Orpen devote a whole volume (volume 7) to "Military and Industrial Organisation, 1939 - 1945." This is perhaps the most exhaustive account of the country's industrial war effort. The book provides vital statistics and a great deal of industrial information, presented with the attention to detail characteristic of a military operational report. The contribution of individual firms is highlighted, with the gold mining industry and the South African Railways and Harbours clearly outstanding. However, the book is basically a eulogy of South Africa's war effort. It does not compare the Union's contribution with that of other Dominions, and it completely ignores the political climate of the war period which was so glaringly divisive.

In the second volume of his Smuts biography, "The Fields of Force, 1919 to 1950", W.K. Hancock observed that South Africa was militarily naked when the war broke out in 1939. This, Hancock concluded, was mainly because of the incompetence of General
Hertzog and his Minister of Defence, Oswald Pirow. This incompetence was compounded by the fact that "Pirow's tenure of office had coincided with a period of boom during which neither the government nor the industrialists, nor the people of South Africa were willing to contemplate any substantial switch of economic resources to military preparations." Hancock observed that when the war broke out "politics inside the boundaries of the Union constituted the main impediment to military deployment beyond these boundaries and to civilian economic mobilisation." South Africa, which had a bigger total population than Australia, contributed less manpower and economic resources to the war effort. Hancock argued that the Australians were able to use population and nation as interchangeable terms, and therefore their volunteer contribution was greater. On the other hand, the South African population was not homogenous and because of that their war effort was comparatively small.

In an entry to The Oxford Companion to the Second World War, Ian Phimister points out that the majority of unenfranchised Africans saw no point in getting involved in a white man's war, in which they as an oppressed people did not figure anywhere in its aims. At the same time, "a large section of the ruling white minority were strongly opposed to the war. Embittered by the British victory in the South African War (the "Anglo Boer War" of 1899 - 1902) and alienated by the subsequent policy of Anglicisation, most Afrikaners wanted nothing to do with what they saw as the UK's latest war. Only English-speaking whites, actually a minority of a minority, were unequivocally prepared to die for King, and a far-away country."
In a recent work entitled *Manufacturing Apartheid*, Nancy L. Clark approaches the industrialisation of South Africa from the point of view of the role of state corporations like ISCOR, ESCOM and the IDC. While pointing out that, "state corporations were central to South Africa's wartime definition of the country's industrial methods and labour utilisation," Clark observes that during the war the two most serious challenges to their operations were, "first the increasing propensity of their private partners to increase profits at the expense of state enterprises; and second, the difficulties in exerting control over workers, black and white under changing industrial conditions."

The result of these developments was the declining financial returns for the state corporations and growing profits for the private firms. For example, ISCOR's profits fell by half between 1939 and 1942 despite price increases in 1941 and 1942. Also, in 1945, ESCOM recorded a loss for the first time in its history at a time when its private competitor, the Victoria Falls Power Company, netted more than £6 million profit. Clark concludes that besides creating the ideal opportunities for the industrial expansion of South Africa, "the war had also exposed the serious contradictions inherent in such development."

As a modern study of state corporations, Clark's book still completely ignores any other scholarship on parastatals in the rest of Africa. One of its critics observed that, "While citing a number of works on Asia, Europe and Latin America...there is not a single entry of African scholarship outside South Africa in the bibliography (with the curious exception of Frederick Cooper's - On the African Waterfront)." This tends to locate Clark on the wrong side of the debate on the thorny notion of South African
exceptionalism, a concept which Mahmood Mamdani seeks to destroy. By highlighting the similarities and common problems in the industrial war effort of South Africa and Zimbabwe, this thesis aspires to put another dent in the theory of a South African exceptionalism or special historical path in Africa.

In his 1977 PhD thesis, D.E. Kaplan singles out the increase in base metals output by ISCOR as the most outstanding feature of South African wartime industrial development. He acknowledges though, that similar expansion occurred in engineering and in a range of capital goods industries. Kaplan, however, concludes that, "many of these developments were 'precocious' in the sense that they owed their origin to particular wartime conditions which 'allowed' South African industry to develop the manufacture of a number of sophisticated products which, given 'normal times', would not have occurred until a much later date." \(^{57}\)

For all this, Kaplan's core focus is on class conflict, capital accumulation and the state. His main statement is that before 1948, secondary industry was able to accumulate surplus value. The means used by the state, that of the increased coercive exploitation of black labour, became necessary, according to Kaplan, for the further increase of the rate and mass of surplus value. As such, he goes on to argue, the material conditions of production were not compatible with the introduction of blacks into the state structure because this would have slowed down the rate of accumulation of surplus value. Kaplan is at pains to prove that "South Africa exhibited a very 'pure' form of bourgeois democracy" \(^{58}\) because according to him the state, "never exhibited even the traces of dictatorship or army rule nor were the state bureaucracy ever to emerge as an
independent social force." Kaplan's social analysis approach is followed up by other social formation materialist theorists such as Graeme Bloch.⁵⁹

A more recent (and perhaps more relevant) debate on South Africa's war effort is the role played by African, Coloured and Indian South Africans during the First and Second World Wars. The most prominent works on this topic are, of course, Albert Grundling's Fighting Their Own War, K.W. Grundy's, Soldiers Without Politics, and Ian Gleeson's The Unknown Force.⁶⁰ The main theme in these publications is the highlighting of the fact that there were African, Coloured and Indian soldiers who fought and died for the Union in both World Wars. The official South African view was that non-white people could only work but not fight for the Union, and yet they did fight, some of them armed only with assegais.⁶¹

However, most of these late trumpets of non-white heroism tend to focus more on the exploits of "black" soldiers in the various theatres of war than on the home-front, which is the focus of this thesis. Bill Nasson correctly diagnoses this deficiency in his review of Ian Gleeson's The Unknown Force. Nasson wrote that:

"What the reader never gets, though, is a proper sense of the range and complexity of African, Coloured and Indian responses towards the Union in the crises of 1914-1918 and 1939-1945, nor of the economic and social motors of rural and urban volunteering." ⁶²

This thesis will, among other themes, focus on the range and complexity of non-white participation in the industrial war effort of the Union of South Africa and of Southern Rhodesia during the Second World War. My findings are that the "dilution" of skilled and semi-skilled labour with non-white workers in Union war factories was far more
widespread than official reports have shown, and that there was widespread use of forced labour for Southern Rhodesia's war effort.

**Zimbabwe.** There is not much that has been written on the civil history of the Second World War in Zimbabwe. During the war, some facts were recorded in the *Year Book and Guide to the Rhodesias and Nyasaland.* This publication was the official colonial mouthpiece which also served as the main advertising agent for the two Rhodesias and Nyasaland. Because the publication of war effort facts and figures was prohibited during the war, this publication becomes important as it is the only public source of official war effort figures. However, even though it mentions some economic and social aspects of the war, there is no attempt to make an academic analysis of the effect of the conflict besides the repeated view that the war was good for Rhodesian industrialisation.

Another colonial propaganda instrument was an unpublished brochure circulated in 1945, entitled *Southern Rhodesia: Past and Present.* Chapter 2 of this brochure, "Southern Rhodesia at War", touches on various aspects of the war, including the military and industrial contribution of Africans in Rhodesia's war effort. It is a good summary of the official Rhodesian view of the colony's war effort. However, the expressed aim of the brochure was to lure European settlers into the colony after the war. As such, its language was sweetened in order to please would-be-settlers, and any controversial issues are adroitly avoided.

In his 2 volumes entitled *The War History of Southern Rhodesia, 1939 - 1945*, J.F. McDonald chronicled the organisation and military exploits of Rhodesian soldiers during
the war.\textsuperscript{65} He did not attempt to analyse the industrial war effort even though he had access to the reports of the War Supplies Committee and the Munitions Production Board. McDonald was commissioned by the Government of Southern Rhodesia to write the war history of the colony and was given unlimited access to all official records. He, however, decided to ignore the socio-economic aspects of the war and to concentrate on the military exploits of Rhodesian soldiers on the various war fronts. At best, MacDonald's two volumes could be described as battle history. Less charitable, however, is McLaughlin's criticism that this is, "a case of someone who got hold of documents which are closed to all but those who will make poor history from them."\textsuperscript{66}

A more analytical view of Southern Rhodesia's war effort is attempted by Gann and Gelfand in their biography of Godfrey Huggins.\textsuperscript{67} This biography is important because it asks the difficult questions that other official commentators have tried to avoid, and the authors try to provide some answers. However, although the biography devotes three chapters to the war effort and its effects on both Africans and Europeans in Southern Rhodesia, there is very little that is said on the effect of the war on the industrialisation of the colony. The authors focus too narrowly on the Empire Air Training Scheme, which they claim, "formed Southern Rhodesia's greatest individual contribution to the war."

They claim that, from this single scheme:

Farmers and industrial firms suddenly found an almost insatiable market, and Guest calculated that Imperial expenditure on the scheme alone almost equalled the indirect benefit which the country derived from its entire gold-mining industry.\textsuperscript{68}

This thesis will argue that it was not only the Empire Air Training Scheme that impacted significantly on the socio-economic life of the people of Southern Rhodesia. Agricultural,
Industrial, mining, financial and manpower resources were all strained to their limits for the war effort, and, contrary to official rhetoric, there were more social, economic and political problems that were a direct result of the war effort than there were indirect benefits.

The impact of the war on labour organisation in Southern Rhodesia has been better covered than the industrial war effort. In a 1973 publication, O B Pollack described the resistance of urban workers in the immediate post-war years and alluded to the fact that this resistance started during the war as a response to problems created by the war effort. However, Pollack did not go into any detail as to how exactly the conditions in Southern Rhodesia during the war caused the organised strikes of the late - 1940s. His figure of 11 000 Africans who were involved in forced labour for the war effort is also misleading. David Killinger quotes official figures of 33 145 Africans involved in Southern Rhodesia's forced labour for the war effort. Also, Pollack fails to appreciate the significance of the 1942 strike by African workers at the Shabani asbestos mine. His comment that the strike was "a disorganised affair of between 700 and 1200 strikers with no obvious leadership", assumes that the striking African workers were ignorant of the strategic importance of asbestos to Southern Rhodesia's war effort.

There is a plethora of general works that have emphasised different aspects of Southern Rhodesia's war effort, while commenting on the various aspects of the political economy of the country. Most notable is Ian Phimister's An Economic and Social History of Zimbabwe, 1890 - 1948, which contains an interesting section on "Industrialisation in the Periphery". Phimister analyses the relationship between secondary industrialisation, the
state and other sectors of the economy of Southern Rhodesia up to 1948. He notes that Southern Rhodesia established "a small ordnance factory in Bulawayo" in 1941 and that the siting of the Imperial Air Training Scheme in Southern Rhodesia induced a "massive expansion of the domestic market" which complemented the war-time interruption of competition from overseas. Phimister also provides valuable statistics to illustrate the expansion of particular industries between 1939 and 1948.

A recurrent theme in Phimister's argument is the constant link between the forces of secondary industrialisation in Southern Rhodesia and those of the Union of South Africa. He quotes tellingly from Southern Rhodesia's Minister of Finance and Commerce who observed:

If we look at the development of secondary industries in the Union today, we see that not only do they, in many instances, supply the requirements of the Union itself, but that they have developed to such an extent that the raw material is now going overseas in a much more condensed form...giving a much greater return to the producer...And that is what we have to aim at in Rhodesia.

The importance of that quotation lies in the manner in which the Government of Southern Rhodesia found congruency in their industrial methods and goals with those of the Union of South Africa. In this thesis, I will argue that in the arms production industry the congruency expressed above was only found on the political and organisational level. On the industrial technology level, Southern Rhodesia was more a dependent of the Union of South Africa than an equal.
Theoretical Framework

The hypothesis of this study is based upon a concentric theoretical framework with three themes, A, B and C, whose relationship can best be illustrated diagrammatically as in Table 1.01 below.

TABLE 1.1: CONCENTRIC PRESENTATION OF THEMES

![Diagram of concentric circles labeled A, B, and C]

At the core of my study (theme A) I seek to establish the existence of and measure the magnitude (in terms of quantities produced, their quality and costs) of the armaments industries in South Africa and in Zimbabwe during the Second World War. My special focus will be on the technological, financial and human resource constraints surrounding these industries. Engulfing that core, is theme B which seeks to analyse the relationship between the arms production industries of the Second World War and the process of secondary industrialisation of the two countries. Central to this theme is the question whether the production of arms was a stimulant to, or whether it was the result of, a positive policy of secondary industrialisation in the region, or whether in fact it slowed down that industrialisation. Peripheral to all of these is theme C which seeks to
understand the total impact of the war effort on the economic, social and political lives of the people of South Africa and Zimbabwe.

There is no desire in this research to formulate a new historical philosophy or to follow dogmatically any of the established analytical frameworks. Rather, there is an attempt at extending the military history of Southern Africa from mere "battle history" to reflect some economic, social and political aspects. This is a multi-disciplinary study which seeks to understand the military, the economic and the social dynamics of the Second World War in the context of Southern Africa's racially charged political atmosphere. It is therefore difficult to restrict oneself to any one particular theoretical framework as certain forms of inquiry may not fit the theoretical framework of other equally important levels of discussion. Therefore, on each and every level of discussion the most suitable method of analysis will be used. Where empirical data is required and if it is available, quantitative methods of analysis will be employed in the spirit and tradition of the "new economic historians". Where politico-economic situations need to be analysed, an appropriately materialist interpretation of history will be used. Where military structures need analysis, a structural examination will be employed to highlight the uniqueness of individual events.

When in February 1947, Professor H.M. Robertson was appointed head of the "Civil" side of the Union War Histories section of the South African Department of Defence, he was immediately confronted with the problem of defining "civil" history in relation to a war.78 Robertson found that a definition of the scope of "civil" history merely by exclusion of military activity was not adequate because even though civilian bodies such as the
Director-General of War Supplies controlled the civilian manufacture of arms and equipment utilising civilian labour, the demand for such manufacturing was dictated by military activity.\textsuperscript{79} It is impossible therefore to have a meaningful discussion of munitions production while at the same time ignoring the market for which that production was intended, and that market was the military. If some sections of this thesis tend to delve too much into the military sphere, it is mainly because attempts to separate the "civil" from the "military" aspects of a war are still as problematic today as they were in 1947.

An important question to be asked right at the beginning is why my commentary in this thesis leans more on the economic than on other equally important realms of social inquiry? Is it more important to discover the impact of the war upon economic trends than upon other aspects of society? The answer is no. There are important political, administrative, military and labour trends in Southern Africa whose development were greatly affected by the war. These and other aspects of the war will be discussed but only in so far as they affect or are affected by arms production.\textsuperscript{80}

Production, even of the most technical of military equipment, is an economic activity. Contrary to some strands of popular opinion, economics does not take a backseat in time of war, and the need to observe sound economic practice in this context becomes even more important. One of the most important of the Allied Forces' principles of war, "Economy of Effort", is in itself an economic principle.\textsuperscript{81} It recognised the fact that the resources available to each belligerent for war were not limitless. In the case of South Africa, H.M. Robertson made the observation:

\begin{quote}
\text{The common idea, that in war it is production that matters and that there is no need to count the costs, is utterly false. Unless one counts the costs very closely maximum all-round production will not be achieved. And,}
\end{quote}
unless consumption is restrained in the less essential uses, the resources available for the successful waging of war will be squandered. The "civil" history of the war must be largely a history of obtaining economy in the most effective utilisation of resources for war. It must above all be an economic history.\textsuperscript{62}

Another problem with the writing of a civil history that focuses on the production of munitions of war is that it has to rely mostly on official records. The production of munitions of war in Southern Africa has been and still is a function of the state. The documentation of that production and the assessment of its impact on society has been closely associated with official policies of the Governments involved, and therefore, it has been highly politicised.\textsuperscript{63} In the case of South Africa however, from 1947 when official documentation of the civil history of the war was started, there was a deliberate attempt to exclude the discussion of the political climate surrounding the Union's industrial war effort. In his capacity as supervisor to the writing of the Union's civil history of the war, in February 1947, Robertson wrote:

\begin{quote}
Strictly speaking, the civil history of the war ought to include a history of the political events which resulted in the Union's participation in the war, and of the continuance of political differences which affected its prosecution. This would undoubtedly result in going beyond the boundaries of ascertained fact, as it would necessitate exploring the realms of opinion, and assessing personal motives or grounds for political action. I recommend that all political discussion be excluded.\textsuperscript{64}
\end{quote}

The above concluding statement is quite untenable, coming as it did from a most highly respected academic and one who was to have edited all the narratives of the intended civil history of the Union's war effort. The result was that, even though some very enthusiastic people were contracted to chronicle all aspects of the civil history of South Africa's war effort, the official version which was published in 1959\textsuperscript{65} was a hollow narrative full of facts and figures but lacking the social connection which could only have
been provided by locating all that activity in the wider and more volatile political arena of Southern Africa of the 1940s. If in some of the sections of this thesis there is a tendency to emphasise the political circumstances surrounding the industrial war effort of the region, it is mainly because of the belief that socio-economic activity cannot be totally divorced from the political environment under which human beings operate.

**Limitations Of Military Sources**

Because of the military nature of munitions production, a major limitation of this thesis is that it necessarily has to rely mainly on state archives for sources. Unfortunately, the majority of official reports deliberately left out production figures because it was official war policy not to publish details which, if they got into enemy hands, could compromise their operations. After the war, the official records were opened only to a few individuals, most of whom used the sources to write official regimental and battle histories of the war. The most tragic thing about the South African record is that some very valuable documents were destroyed by officials between 1945 and 1949.

After the 1947 publication of *A Record of the Organisation of the Director-General of War Supplies (1939-1943) and the Director-General of Supplies (1943-1945)*, R.R. Macgregor as Secretary of D.G.S. decided to destroy 20 tons of the official documents that had been used to compile that report. Only a few files survived. Robertson, who was waiting for these same papers to begin the compilation of the official civil history of the war, was infuriated. He wrote:

> Nevertheless, as far as I can judge, while some of the files which have been preserved are of trifling importance, all those of important sections of the Director-General have been destroyed *holus bolus*. Surely it was not competent for the D.G.S. organisation itself to decide what to keep
and what to destroy, without reference to the body established by law to control destruction of Government paper.\textsuperscript{88}

The destruction of official documents did not stop with D.G.S. On 18th May 1949, L. Fourie, Chief Narrator (Civil) in the Union War Histories Section of the Department of Defence, learned by chance that the Department of Commerce and Industries had submitted "three lorry loads" of war effort files to the Government Printers for destruction.\textsuperscript{89} On investigation of the incident, it was discovered that many thousands of war effort files from various departments had already been destroyed. Some were misplaced and could not be traced, while others were lost in transit when the Central Statistics Department (C.S.D.) moved from Johannesburg to Pretoria. The investigation also revealed that some files were still being destroyed and a frantic effort was made to try and save the few remaining papers. One report of the investigating team reads:

Mr. Fourie, accompanied Mr. Smit to a room where a woman member of the staff was engaged on the destruction of files concerning the control of soap and oils. A cardboard box containing files which had been torn up stood at the side of a table on which two further stacks of files had been placed for destruction. Mr. Smit agreed to suspend the tearing up of documents until the Union War Histories' had been given an opportunity to scrutinise the records concerned.\textsuperscript{90}

In South Africa, when the National Party (NP) came to power in 1948, they not only directed the rewriting of South Africa's war history, but they also carried out a series of purges from the South African Defence forces of all those officers and men who were too closely associated with the war effort. These actions culminated in the infamous 1953 "Erasmus Purges".\textsuperscript{91} The effect of these purges was, among other things:

(a) The removal of distinguished combat officers from their positions...
(b) The attempted disintegration of those combat regiments that had distinguished themselves in the Second World War...
(c) The elimination of whatever vestiges of African, Coloured and Indian advancement that had taken place within the U.D.F.\textsuperscript{92}
In the light of the inadequacies of official records discussed above, the deliberate destruction of relevant files, and the political purges of the officials who had first hand information on the war effort, there is no doubt that many questions may be left unanswered at the end of this thesis. However, if any of those questions encourage some debate or any further research which will shed more light on the nature and extent of the industrial war effort in Southern Africa, then this thesis will have served some purpose.
ENDNOTES


4. Some important labour related works include the following:


10. Examples are the French companies, Aerospatiale and Eurocopter.


13. Ibid., 9.

14. See chapter 3 of this thesis.

15. See concluding chapter to this thesis.


19. See chapter 5 to this thesis.

20. S 747/M/17, Census of machine tools, skilled labour, raw materials and foundry resources, National Archives of Zimbabwe.


22. Ibid., 201.


39. Ibid., 18.


41. Ibid., 5.


43. Ibid., 219.

44. Ibid., 221.


47. Ibid., 332.

48. Ibid., 331.

49. Ibid., 330.


53. Ibid., 109.
54. Ibid., 132.
56. M. Mamdani, Citizen and Subject: Contemporary Africa and the Legacy of Late Colonialism, David Philip, Cape Town, 1996.
58. Ibid., 12.
68. Ibid., 153.


72. Names that quickly come to mind are;
   T.O. Ranger
   G. Arrighi
   R. Gray

73. I.R. Phimister, An Economic and Social History of Zimbabwe
     1890 - 1948: Capital Accumulation and

74. Ibid., 252.

75. Ibid., 250

76. See chapters 3 and 5 of this thesis.

77. See chapters 4 and 6 of this thesis.

78. Prof. H.M. Robertson was seconded from the University of Cape Town, where he was a lecturer, to act as Assistant Editor (Civil), Union War Histories, for a period of two years. His main task was to supervise the writing of South Africa's Civil History of the war.


80. As this study leans more on the economic aspects of arms production, it is not possible to do justice to all the other aspects of the war effort that will be mentioned in this study. For a better understanding of the military, political organizational, labour and other aspects of the war effort, it is recommended that interested readers consult the works cited in the bibliography which deal with specific aspects in greater detail.


82. S.A.J.E. Vol.16. No.4, Dec. 1948, 408
83. The one aspect of the war effort that can be approached as history from below is labour relations. In the politically charged atmosphere of Southern Africa during the 1940s, this simply translates into, "The role of non-white people in the war effort". This aspect of the war effort has been well documented as can be seen from the bibliography. However, it is difficult to try to construct a subaltern history that focuses on industrial policy during a major war, for policy makers cannot claim to be part of the subaltern.


86. Examples of these regimental histories are given in the literature review to this thesis.


89. Ibid., Memorandum B to 0(1)21/151/1, 27th May, 1949.

90. Ibid.


92. Ibid.
CHAPTER TWO

THE WAR POTENTIAL OF SOUTH AFRICA ON THE EVE OF THE SECOND WORLD WAR

South African Industry Up to 1933

In Europe and in the Americas, the production of and trade in arms of war shifted from state control to private industry during the industrial and military revolutions of the nineteenth century. This was the time when Europe was undergoing a shift in the underlying economic ideology of trade from mercantilism to private manufacturing, laissez-faire and capitalism.\(^1\) It was this policy of private manufacture of and trade in firearms that led to the growth of such giant firms as Armstrong and Vickers of Britain, Krupp of Germany and Schneider and Forges of France. These and later firms of the United States of America monopolised modern weapons production and supplies to all parts of the world up to the Second World War and beyond. South Africa was one of the recipients of such arms, especially from Britain.

In South Africa, several gun dealers had attempted to manufacture a variety of arms especially around the Cape. However, a large number of those who advertised themselves as "gun makers" were either involved in the assembling of European-manufactured firearms or they were just some general dealers who operated various shops where firearms imported from Europe were also sold as a profitable sideline.\(^2\) There were several
technological, economic and political problems that accounted for South Africa's lack of a viable arms industry before the Second World War, and these will be discussed in this chapter.

At the time of the European industrial and military revolution in the nineteenth century, the predominant structural change in the South African economic system was the rather sudden transformation during the period 1870-1890 of the mainly agricultural economy to a mineral economy. It was only during the twentieth century, under the influence mainly of the First World War and of post-war protection, that secondary industry began to play an important part in the structure of the South African economy. Railway construction to and from the diamond and gold-fields was the only heavy industry and the rest of manufacturing consisted of the processing of farm products, building constructions, printing, explosives for mines, wagons and carts, leather tanning, boots and shoes, clothing, matches, soap, candles and some gas and electricity production. The few engineering workshops were only adjuncts to the mines and railways. The all important South African Iron and Steel Industrial Corporation (ISCOR) was only created in 1928 and it only became properly operational from 1933.

Despite the depression of the late 1920s and early 1930s, and the cyclical fluctuations thereafter, secondary industry steadily grew in importance in the thirties. This growth was greatly aided by the government policy of tariff protection of manufacturing industry instituted in 1925. However, by 1939 the bulk of this industry was still concentrated in the
Transvaal, with a little manufacturing in the Cape, Port Elizabeth and Durban. Table 2.1 clearly illustrates this regional distribution of industries.

Yet, even the industrial effort of the Transvaal was not in itself enough to stimulate the local manufacture of ordnance and warlike stores. Only a very small portion of firms were starting to specialise in the production of certain items which were, for the most part, mining requirements, such as rock drills, winches and tube-mill liners. In a comprehensive analysis of South African industry during the Second World War, A.G. Thomson commented of these earlier manufacturing firms that, "Generally speaking, however, the industry in the Transvaal was in the nature of a vast repair shop for the mines and had a very limited experience of manufacturing." The Union Artillery Depot and Workshops were still concerned mainly with the inspection of armaments, maintenance, repair, preservation services of armaments in commission, and mobilisation reserves. The only manufacturing that they did was that of gun-wheels made from South African timber. But, even this was made difficult by the problems encountered in obtaining thoroughly seasoned suitable timber. Nevertheless, by 1932, some 400 such wooden gun-wheels had been manufactured in South Africa and were in use with various artillery batteries in the Union Defence Forces (UDF). Next, we need to consider the wider political context of Union war policy in this period.
### TABLE 2.1: REGIONAL DISTRIBUTION OF SOUTH AFRICAN INDUSTRIES

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td><strong>Cape Western Area</strong></td>
<td></td>
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<tr>
<td>Value of Gross Output £'000</td>
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<td>23,590.2</td>
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<tr>
<td>Percentage of Union Total</td>
<td>22.2%</td>
<td>20.8%</td>
<td>17.3%</td>
<td>17.5%</td>
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<tr>
<td>Value of Net Output £'000</td>
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<td>11,441.9</td>
<td>17,128.0</td>
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<tr>
<td>Percentage of Union Total</td>
<td>22.1%</td>
<td>22.4%</td>
<td>18.6%</td>
<td>18.7%</td>
</tr>
<tr>
<td>Number of Employees '000</td>
<td>25.9</td>
<td>42.6</td>
<td>58.1</td>
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<td>Percentage of Union Total</td>
<td>20.9%</td>
<td>19.6%</td>
<td>16.5%</td>
<td>16.8%</td>
</tr>
<tr>
<td><strong>Port Elizabeth</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value of Gross Output £'000</td>
<td>1,966.9</td>
<td>8,007.5</td>
<td>12,465.5</td>
<td>15,558.0</td>
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<tr>
<td>Percentage of Union Total</td>
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<td>7.1%</td>
<td>6.2%</td>
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<tr>
<td>Value of Net Output £'000</td>
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<td>3.1%</td>
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<td>5.1%</td>
</tr>
<tr>
<td>Number of Employees '000</td>
<td>4.2</td>
<td>10.9</td>
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<td>18.3</td>
</tr>
<tr>
<td>Percentage of Union Total</td>
<td>3.4%</td>
<td>5.0%</td>
<td>4.6%</td>
<td>4.4%</td>
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<tr>
<td><strong>Durban and Pinetown</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value of Gross Output £'000</td>
<td>6,139.3</td>
<td>15,327.0</td>
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<td>34,804.5</td>
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<td>12.4%</td>
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<tr>
<td>Value of Net Output £'000</td>
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<td>5,930.4</td>
<td>11,198.4</td>
<td>15,063.4</td>
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<tr>
<td>Percentage of Union Total</td>
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<td>11.6%</td>
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</tr>
<tr>
<td>Number of Employees '000</td>
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<td>25.0</td>
<td>38.5</td>
<td>46.4</td>
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<tr>
<td>Percentage of Union Total</td>
<td>11.1%</td>
<td>11.5%</td>
<td>10.9%</td>
<td>11.2%</td>
</tr>
<tr>
<td><strong>Southern Transvaal</strong></td>
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<td></td>
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</tr>
<tr>
<td>Value of Gross Output £'000</td>
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<td>36,193.3</td>
<td>82,403.0</td>
<td>120,133.7</td>
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<td>Percentage of Union Total</td>
<td>32.3%</td>
<td>31.9%</td>
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<td>Value of Net Output £'000</td>
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<tr>
<td>Percentage of Union Total</td>
<td>37.4%</td>
<td>34.7%</td>
<td>44.0%</td>
<td>46.7%</td>
</tr>
<tr>
<td>Number of Employees '000</td>
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<td>74.2</td>
<td>154.9</td>
<td>184.5</td>
</tr>
<tr>
<td>Percentage of Union Total</td>
<td>28.2%</td>
<td>34.1%</td>
<td>43.9%</td>
<td>44.6%</td>
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<tr>
<td><strong>Rest of Union</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Value of Gross Output £'000</td>
<td>14,409.1</td>
<td>30,322.8</td>
<td>44,521.3</td>
<td>64,581.5</td>
</tr>
<tr>
<td>Percentage of Union Total</td>
<td>29.1%</td>
<td>26.7%</td>
<td>22.3%</td>
<td>20.0%</td>
</tr>
<tr>
<td>Value of Net Output £'000</td>
<td>5,119.2</td>
<td>13,088.8</td>
<td>17,997.4</td>
<td>22,625.7</td>
</tr>
<tr>
<td>Percentage of Union Total</td>
<td>25.7%</td>
<td>25.6%</td>
<td>19.5%</td>
<td>17.7%</td>
</tr>
<tr>
<td>Number of Employees '000</td>
<td>45.1</td>
<td>65.2</td>
<td>87.0</td>
<td>94.6</td>
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<tr>
<td>Percentage of Union Total</td>
<td>36.4%</td>
<td>30.0%</td>
<td>24.7%</td>
<td>22.9%</td>
</tr>
</tbody>
</table>

**Source:** Official Year Book of the Union of South Africa

Nos. 20-24, 1939-1948. (Manufacturing Industries)
The League Of Nations And The Evolution Of Union Defence and Disarmament Policy

The South Africa Act of 1909 which became effectively the Union's constitution, did not create any structures for the Union to pursue foreign policies independent of that of Great Britain. It was only in 1926 that the Balfour Declaration made it possible for the Union of South Africa to establish a Department of External Affairs. However, even though it was generally agreed that the Balfour Declaration accorded the Dominions the right to formulate and execute foreign policy without reference to the British government, the extent of this independence was not clearly defined and was susceptible to more than one interpretation. In particular, no one seemed to know for certain whether the Dominions were obliged to go to war should Great Britain do so. Many South Africans regarded the Union's participation in the League Of Nations as a chance for the Union to develop its own foreign policy and its own defence policy. But, Afrikaner leaders like General J.B.N Hertzog also believed that South Africa's participation in world politics in general, and in the League of Nations in particular, would confirm the independent status of the country. However Hertzog did not wish the Union to become embroiled in international disputes by so participating. South African politics was fundamentally inward looking, with the biggest issues being the questions of race and colour. These were the problems surrounding South Africa's participation in the Disarmament Conference of the League of Nations.

Article 8 of the Covenant of the League of Nations recognised that, "the maintenance of peace requires the reduction of national armaments to the lowest point consistent with
national safety", and the Council was to "formulate plans for such reduction".\textsuperscript{9} South Africa, being in its early stages of exercising independent foreign and defence policies, did not have much to reduce on in its national armaments as its peace-time armaments and its defence expenditure were already very small.\textsuperscript{10} At the first Assembly of the League of Nations on 14 December 1920, pending the full execution of the measures for the reduction of armaments as recommended by Article 8 of the Covenant, a resolution was adopted that the members of the League would not, "exceed for the first two financial years following the next financial year the sum total of expenditure on the Military, Naval and Air Services provided for in the latter Budget".\textsuperscript{11}

According to the instructions of the Council, on 8 March 1921, the Secretary-General forwarded the resolution in question to the governments of all the member states of the League, requesting them, "to inform him whether they proposed to give effect to this Recommendation."\textsuperscript{12} There was no general agreement on disarmament, but considerable interest was aroused on how the League could effectively pursue a disarmament programme. However, in the British Empire and Commonwealth, there was a general tendency to follow the British Government's stance which was in harmony with the recommendation, provided that, "At the same time, His Majesty's Government desire to point out that, if the recommendations of the Assembly are not adopted by other Powers, their policy must be liable to reconsideration."\textsuperscript{13}
The replies of the governments of Australia, Canada, New Zealand and India followed the British Government's response. However, South Africa did not follow the British line and in the longest submission to the League on this issue, General Smuts argued for why South Africa had to be excused from following the rest of the Commonwealth. Smuts expressed the feeling that while his Government was in cordial agreement with the aims of the Assembly in thus making a practical suggestion to carry out Article 8 of the Covenant, the Union desired to notify the Council of the League, of some "exceptional conditions", which made it uncertain to what extent it would be able to adopt the recommendations in the immediate future. Smuts explained that the Union had never possessed a standing naval or land force, and there was no air force, Imperial or Union. It had not yet had time to develop fully its citizen force, the organisation devised for that purpose by the Union Parliament in 1912 having never been brought into effective being owing to the interruption caused by the First World War and a period of total inactivity since the cessation of that war.

The general also explained that before the Great War, the Imperial Government had maintained considerable forces stationed in the Union for defence purposes. The Imperial and not the Union Government assumed responsibility for the naval defence of South African ports, waters and trade sea routes. After the Great War, the Imperial Government had withdrawn practically the whole of the Regular Garrison stationed in the Union before the war, and it was only logical that the Union would have to assume the military obligations which before 1914-18 had been assumed by the Imperial Government for the purposes of local defence.14
The other "exceptional conditions" pertained to the Union's peculiar "geographical situation and circumstances", which Smuts unashamedly described in strong language typical of much Afrikaner supremacist racism against black people. He wrote as follows:

(1) The territory of the Union covers 473,000 square miles and contains a native population in the process of emerging from barbarism, which outnumbered the European population by 4 to 1.

(2) There are, however, in South Africa, territories surrounding the Union, but within the Union's economic and political sphere, wherein the Native population outnumbered the European population in far greater proportion. Seeing that the Union is far and away the strongest civilised state in Central and Southern Africa, the peaceful and orderly development of other states and territories, and the welfare and good government of the indigenous native races of Africa and the African Continent in the Southern Hemisphere, are matters of vital concern to the Union.

(3)...Besides, by accepting the Mandate for South-West African territory, she has not only largely increased her seaboard, but has rendered herself liable for the peace, order and defence of a large territory, containing large numbers of natives, hardly developed from the stage of barbarism."15

The most heated debate on the Disarmament Committee was perhaps that generated by sections 5 and 6 of Article 8 of the Covenant. These read as follows:

5. The Members of the League agree that the manufacture by private enterprise of munitions and implements of war is open to grave objections. The Council shall advise how the evil effects attendant upon such manufacture can be prevented, due regard being had to the necessities of those Members of the League which are not able to manufacture the munitions and implements of war necessary for their safety.

6. The Members of the League undertake to interchange full and frank information as to the scale of their armaments, their military, naval and
air programmes and the condition of such of their industries as are adaptable to warlike purposes.\textsuperscript{16}

At its meeting on 22 February 1933, the Committee, before beginning its examination of the report of the Sub-Committee on the Manufacture of Arms of War, adopted by majority vote a resolution to tackle two questions before continuing with any more work.

(1) Shall the private manufacture of arms be suppressed?

(2) Shall the manufacture of arms be internationalised?\textsuperscript{17}

In their submission to the debate, the Danish, French and Spanish delegations proposed the abolition of the private manufacture of arms because of the dangers inherent in such manufacture.\textsuperscript{18} They argued that, everywhere, the private manufacture of arms and ammunition, like all other economic activities, aims primarily at a profitable return upon the invested capital. There must therefore be a constant increase in the demand for arms, which can only be maintained in an atmosphere of strained international relations. They further argued that the "evil effects" of private arms manufacture as given in a 1921 report had not been addressed and nothing had changed. These "evil effects" were explained as follows:

Armament firms have attempted to bribe Government officials both at home and abroad. Armament firms have disseminated false reports concerning the military and naval programmes of various countries in order to stimulate armament expenditure. Armament firms have sought to influence public opinion through the control of newspapers in their own and foreign countries. Armament firms have organised international armament rings through which the armament race has been accentuated by playing off one country against another. Armament firms have organised international armament trusts which have increased the price of armaments sold to Governments.\textsuperscript{19}
It was also argued that the interests of private manufacture encouraged differentiation and an increase in the power of the weapons produced, a state of affairs which was not in keeping with the spirit of the Disarmament Convention. The aims, it was stated, should rather be to encourage the standardisation of armaments with a view to making them more readily available. However, since the "evil effects" of armaments on peace could not be done away with by the solutions proposed by those who were in favour of the maintenance of private manufacture, the abolition of private manufacture was proposed irrespective of any social or political considerations, simply to meet the requirements of the Convention for the Reduction and Limitation of Armaments.\textsuperscript{20}

On the other hand, the delegations of Belgium, the United Kingdom, Germany, Italy, Japan and the United States of America were of the opinion that the proposal for the abolition of private manufacture of arms should not be adopted. In their opinion, the dangers arising from the adoption of this proposal would be greater than those which may be inherent in the existence of private manufacture.\textsuperscript{21}

At the request of the Chairman of the Committee for the Regulation of the Trade in and Private and State Manufacture of Arms and Implements of War, the President of the Conference sent, on 28 October, 1932, a questionnaire to the states invited to the Conference, with a view to obtaining certain particular information regarding the manufacture of arms in the different countries. In answer to the question, "For the purposes of the manufacture of arms and implements of war, is a special permit
required?", the South African reply was that, "No special permit is required to manufacture arms, etc., but no individual other than a member of the Union Defence Forces may be in possession of a fire-arm without a permit."\textsuperscript{22}

The second question was, "What undertakings in the territory under jurisdiction of your state are chiefly or largely engaged in the manufacture of the articles coming under categories i, ii, iii and iv of the 1929 draft Convention with regard to the Supervision of the Manufacture of Arms and Implements of war (document A.30. 1929.ix)?

(a) Are they state owned?

(b) Or are they operated,
   Subsidised,
   Under concession or
   Under supervision by the state?

(c) Or are they entirely private undertakings?"\textsuperscript{23}

The South African reply to that question was that there were no undertakings in the Union Of South Africa engaged in the manufacture of articles coming under Categories i, ii, and iii of the 1929 Draft Convention with regard to the Supervision of the Manufacture of Arms and Implements of War. With regard to Category iv, certain military aircraft were being manufactured at the Headquarters of the South African Air Force, the raw material and engines being imported from overseas. The undertaking was state-owned and did not manufacture for trade.\textsuperscript{24}
The third question to be considered was, "How were the sales of the total output of all these undertakings and, if this information is available, of each of them distributed in percentages (weight, value) between foreign markets and the home markets during the years 1927 to 1931?" The South African answer was that, "There were no sales." On the fourth question, "Are there any laws or administrative regulations in your country forbidding all soldiers or members of the military administration in active service to hold paid posts in private armament undertakings?", the South African reply was a simple, "No".

It appears therefore as if South Africa's participation at the Disarmament Conference was more like that of an observer than a participant. The questions that were being considered were far beyond the scope of the South African defence system, both in terms of the military manpower establishment and in terms of the military equipment in use. The South African voice was not crucial in any decisions made, and the decisions taken at the Conference did not affect South Africa's defence policy or lack of it. At the end of the 1932 session, the South African Chief of General Staff, Major General A.J.E. Brink, who had attended that session, reported that,

The results of the conference after a session of six months are very disappointing: practically nothing had been accomplished. It is hoped that the next session due to open early in 1933 will result in a Convention which will relieve to a considerable extent the burden of armaments which, at present, is adversely affecting the economic position of the world in general.25

However, in the Union parliament considerable debate did take place on South Africa's participation in the League of Nations. In 1932, the member for Wonderboom, Dr. H. van
Broekhuizen quizzed the Prime Minister, General Hertzog, on why the Union had to contribute £20 000 to the League of Nations at a time when the League was clearly not effective in ensuring world peace. Members were particularly bitter about the fact that no action had been taken against Japan in response to its aggression against Manchuria. In reply, Hertzog expressed disappointment on "what has happened recently in connection with the action of the League of Nations on the Japanese - Chinese question." But, he went on, in his opinion, the League's lack of force was not the biggest problem. As he saw it, the League should never have been given any force at all, not even the power to use the force of sanctions which the League had at its disposal. Rather, the General envisaged a League with nothing but moral authority.

A more volatile Question was perhaps the one put to the Prime Minister by the member for Wynberg, Roper, who asked:

I would like to ask the Prime Minister if he is in a position to make any statement as to the progress of disarmament - as to whether any tangible results are expected from the Disarmament Conference; and I would also like to know what the instructions are which have been given to our delegates to that conference. The Prime Minister has been somewhat secretive about this.

Repling on behalf of the Prime Minister, General Smuts explained that the League was not only of great value in promoting peace in international relations, but that it was also of special value to small nations like South Africa, because it gave them the international status which they wanted, and it gave them the international platform from which to speak. Smuts added that disarmament was a most serious subject to tackle in the present temper of the
world. To him, there had never been a more inopportune time to deal with disarmament than when nations were still actuated by fear, and there was a general sense of insecurity not only in a military sense, but in an economic sense.\textsuperscript{30} When members of Parliament pressed the Prime Minister to make a policy statement, Hertzog did not reply to the questions raised. Instead, he impatiently went into a vicious verbal attack on the opposition, which created a near Parliamentary crisis of procedure that took a long time to resolve.

It can be concluded from the foregoing that before 1933, South Africa had no meaningful independent defence policy, neither was there any viable defence plan. The Union's defences before the First World War were provided by the United Kingdom, and so were armaments for both land and naval forces, and there was no air-force. After the First World War, the Union defence policy or lack thereof, was not affected by South Africa's participation in the Disarmament Conference of the League of Nations. Although Union leaders like Smuts preached that South Africa be exempted from the disarmament drive because of "special conditions", at the same time there were no steps taken in the Union to effect rearmament. Even the Prime Minister, Hertzog, could not make a clear policy statement on the Union's defence and foreign policy when called upon to do so in Parliament. This was the charged foreign and defence situation into which the controversial Oswald Pirow was now appointed Minister of Defence in 1933.
The Five Year Defence Plan

When Oswald Pirow was appointed as the Minister of Defence in March 1933, he immediately started working on what later became known as the Five Year Defence Plan. This plan, among other things, made provision for "a general organisation which will enable us, in time of extreme national emergency, to render available for purposes of defence all reserves of raw materials and foodstuffs, all means of transport on land, by sea or in air, and all engineering and industrial resources of the country." This contingency was hailed as a turning point in South Africa's defence policy. For although the biggest part of the plan dealt with the reorganisation and training of the defence manpower establishment, there was also an effort at addressing the technological aspects of defence.

As a start to the technological innovations, a battery of artillery was to be mechanised on an experimental basis. The incipient Air-Force was to be reorganised with the much publicised, "1 000-Pilot Scheme" and it was to be re-equipped with helicopters and a quota of multi-engined aircraft. This led to the more difficult question of the manufacture of aircraft spare parts and of aircraft engines. Oswald Pirow told Parliament that he hoped that it would be possible to induce British manufacturers to start an aircraft manufacturing industry in South Africa. However, Pirow acknowledged the difficulty that such a venture would entail. He went on to explain that an engine building industry dependent solely on military aviation would involve an impossible burdensome government subsidy. Failing some such arrangement, the Defence Department would have seriously to consider the manufacture,
under licence, of aero-engines in its own workshops at Roberts' Heights. As Pirow explained to Parliament:

I may say that this is not a very expensive item. We build our aeroplanes there already. We do not just assemble them. We have the raw material available, and I think we may say we definitely manufacture aeroplanes in this country. It would take very little to turn out well known British engines, such as the Armstrong and Rolls - Royce; but that would of course have to be done under licence.33

The manufacture of small arms ammunition, rifles and machine guns was also on the priority list. The Minister pointed out that such an industry would have either be run by the Department of Defence directly, or be under strict departmental control. He expected the manufacture of small arms ammunition to reach 10,000,000 rounds, investigation having shown, that with that quantity, it would be possible to manufacture ammunition in South Africa not greatly in excess of the price which would be paid to import it.34

The Five Year Defence Plan met with difficulties from the very beginning. In 1935, in his first Annual Report, the newly appointed Chief of the General Staff, Major General Sir Pierre van Reynveld, drew attention to the deficiencies in equipment of the Union Defence Force. He wrote that:

Though considerable progress has thus been made in affording adequate training facilities, the provision of equipment has proved much more difficult. The problem is partly a financial and partly a manufacturing one...
The facilities at present for the manufacture of warlike stores in South Africa are negligible and all factories overseas are working under the highest pressure to meet their own local requirements.35
Also in 1935, a study by the Quartermaster General and the Director General of Technical Services revealed that South Africa could only manufacture simple warlike stores locally, but even that required that suitable machinery be imported. The study focused on plans for establishing a small arms ammunition plant in Pretoria and a motor-engine factory which might eventually undertake the manufacture of aeroplane engines.36 Thus, the Pirow position remained on the agenda.

Enquiries were also made in the United Kingdom concerning the possible export manufacture of 3 inch infantry mortars, which it was hoped to establish in the Union. Further consultations were held with a German firm over the manufacture of anti-gas respirators, though the Director of Technical Services believed that costly local manufacture would be uneconomic. The newly-established South African Iron and Steel Corporation (ISCOR), was also asked to investigate the supply of steel of the correct specification for bullet-proof steel helmets, based on the steel helmets already being made on the Witwatersrand for "native" mine workers. On instructions from the Chief of the General Staff, these enquiries were extended to cover rifle grenades, bodies for armoured motor transport, shields for mortars and Vickers machine-guns, bombs, 18-pounders, small arms ammunition and rifle barrels.37

ISCO anticipated little difficulty in making suitable steel for rifle barrels and the British War Office was asked to supply manufacturing details and information on costs of production.
The aircraft and Artillery Depot at Roberts' Heights had begun experimenting on the manufacture of jigs and tools for the production of aircraft bombs, and a trial order was to be placed as soon as these were ready. A process manual for the manufacture of 18-pounder shells was received from the War Office and manuals for mortar ammunition and grenades were also asked for. The Chief Mechanical Engineer of the South African Railways and Harbours was consulted regarding the manufacture of armoured cars based on a Ford V-8 cylinder chassis, making profitable use of the Australian experiment with a Ford - 4 cylinder chassis which had proved to be under-powered. The War Office was also asked whether Dunlop might try its hand at the manufacture at its Durban factory of bullet-proof tyres.\(^{38}\)

Even the initial stages of these enquiries were long drawn out and unproductive. For example, it was not until January 1936 that any drawings for the 3 inch mortar were received from the United Kingdom. Also, the War Office specifications for steel for rifle barrels and helmets provided inadequate guidance to ISCOR as they merely specified the tests which such steel had to pass and gave no information as to their composition or method of manufacture.\(^{39}\) The consequence was that, two years hence, the Five Year Defence Plan was already running behind schedule, and it had already had to be modified in the manpower establishment requirements which had appeared to be the Plan's strongest points. As far as the equipment establishment was concerned, Oswald Pirow admitted in Parliament that all was not well:

\[\text{I must frankly admit that the position in this connection is not very satisfactory. There are various reasons for this. There is e.g. the difficulty experienced overseas in deciding on certain types of weapons. There is}\]
also the pressure at which factories are working in Britain to supply her own needs. There is further, the consideration that the overloading of the Defence Vote in any one year, in respect of equipment not immediately required, may cause misunderstanding. In addition, our technical department is exploring the possibility of manufacturing in South Africa various military necessities hitherto imported.40

The negotiations in connection with the establishment of an ammunition factory had also been protracted, owing to the government’s insistence that the factory was to be taken over by the Union as a going concern and after severe tests as to guaranteed output. The matter was put in the hands of a Cabinet sub-committee and the final decision on the tenders submitted was not released timeously. With regard to war stores generally, financial considerations led to a change in policy. The Minister of Defence announced:

In future we shall hold only such stores as are incapable of being manufactured in the Union. A survey of our industrial possibilities for war purposes is in hand, coupled with an elastic industrial mobilisation plan which will ensure a supply of necessary stores without dislocating civil requirements and without that measure of profiteering which, in the past, appears to have been inextricably bound up with supply in time of war.41

The survey of the Union’s industrial possibilities on which the new defence equipment policy rested was never released, even to Parliament. That aside, another survey conducted two years later in 1938 yielded disappointing results. It disclosed that there were grave deficiencies in the manufacture of special alloy steels, that there was a complete lack of forge shops and acid open hearth furnaces, and that the quality of steel foundry works was very poor. The survey also revealed that the few engineering firms in the Union, though keen to manufacture, lacked the sense of national responsibility laid down in specifications. Also, the use of gauges was not yet fully understood and, in fact, only one firm in the Union had been found to possess a tool room.42 It is no wonder the new defence equipment
policy was received with some scepticism in the Union Defence Force. The Chief of the General Staff accordingly instructed his Quartermaster - General and his Director of Technical Services (DTS) to "produce the mobilisation and war supply of any particular item locally, either by purchase, commandeering, manufacture or other means fair or foul".

The War Supplies Board.

In 1937, a War Supplies Board (WSB) was formed, though the circumstances surrounding its formation were not clear and were kept secret. It is possible that the Defence Department was given the task of "spreading its tentacles almost imperceptibly beyond the military sphere into the industrial", without the general public noticing the process. As a revealing matter of record, the appointment of the War Supplies Board was never published in the Government Gazette. It was first acknowledged publicly on the 2nd of March 1937 when the Minister of Defence was obliged to reply to a question in Parliament. The Minister then gave the names of the members of the Board as:

Chairman: Colonel F.R.G. Hoare, Director of Technical Services, Union Defence Forces. Members: Mr. W.J. Lamont, Department of Commerce and Industries; Mr. A.G.E. Pienaar, Union Tender and Supplies Board; Mr F.J. Fahey, Board of Trade.

The Minister further explained that the Purpose of the Board was, "To investigate the possibility of manufacture of warlike stores in South Africa and the increased output of clothing and other necessities at present manufactured in the Union in the event of war."

However, a 1936 memorandum gave the Board greater powers as follows:
to investigate -

(1) the possibility of manufacture of warlike stores in South Africa;
(2) output in peace and means of increasing output for war;
(3) the availability of stores such as clothing, etc. which might be obtained in sufficient quantities from normal stocks in South Africa in an emergency;
(4) the control of essential materials on the outbreak of war;
(5) the placing of annual contracts for warlike stores so as to ensure that a nucleus staff and suitable machinery will be maintained during peace time;
(6) consideration of steps to be taken during peace - time to provide for the organisation of industries so that the change - over from a peace to a war policy may be effected smoothly. 

During its short life, the War Supplies Board initiated a number of experiments, vigorously pursued departmental enquiries, and placed a multitude of orders for warlike stores on an experimental basis. Yet, most of these produced disappointing results. The production of bullet-proof tyres was revamped, but this had to be stopped after the United Kingdom and the United States of America suspended their own experiments. The production of armoured cars was hampered by the unavailability of suitable vehicle chassis on which to build armoured stock. When the Ford Company offered one of their chassis for the experiment, there was no drawing office equipment and no staff in the Union to design the proposed local armoured car.

The War Supplies Board also experimented with the manufacture of aircraft bombs. This initiative was held up because of the unavailability of jigs, tools and gauges. Still, experiments continued and, by the end of the year, lists of firms thought to be capable of the manufacture of miscellaneous ordnance stores, clothing and necessaries and medical
stores had been obtained from the Quartermaster - General and from the Department of Commerce and Industries. There were many other difficulties to overcome, and as a result, progress was very slow. During the financial year 1936-37, though £10,000 had been set aside on the estimates for experimental work on local manufacture, only £1 381 was spent. It was found to be impossible to spend money on experimental work on an effective scale if there were not enough technical officers to plan and organise, or sufficient drawing office staff to provide the necessary drawings, or if experiments in one direction had to be held up for lack of satisfactory steel, and in another direction by a lack of gauges.⁴⁹

Private Arms : The Lost Chance.

As far back as 1929, some European arms manufacturers had tried to set up shop in South Africa. In that year, a private company made a request to the Department of Defence and to the Board of Trade and Industries (BTT) for permission to erect an arms manufacturing factory in South Africa. The company advanced the following argument:

Now that so many industries are developing in the country, it seems to us that it would be immensely beneficial if the Government were to install a unit of Small Arms and Sporting Rifles, as such would be the means of a very valuable training school in mechanics for the youth of the country.

Such manufacture calls for the highest class of mechanical skill, and a youth serving his time in a works of this description would have the best opportunity of developing into a high grade mechanical craftsman. A plant to produce 100 Rifles a week would afford the opportunity for the employment of quite a reasonable number of apprentices. In addition, sporting rifles could be made up to the demand of the country.⁵⁰

The Board of Trade and Industries was excited about the possibility of an armaments industry in the Union. However, because of the strict Government control of arms and
ammunition, the Board could not but let the Department of Defence have the final say in
the matter. They explained that the Board was only concerned in the matter from the
position of encouraging the development of manufacturing industries in the Union. As it
turned out, the Department of Defence refused predictably to allow the private manufacture
of munitions in the country. Their reasoning was that the turnover in small arms was
exceedingly small. As rifle barrels were renewed as required by Union Defence Force
Armoury staff, this gave the weapons a life of an indefinite period. It was explained that the
Union standard rifles were the M.L.E.S.H.V. (Short rifle) and the M.L.E.C.L.H.V.Mk. 1
Star (Long Rifle). The Union Defence Force was said to hold sufficient stocks of the former to
meet all anticipated requirements, while stocks of the latter were sufficient for some years
to come, and demand was dwindling. The department explained further that while a local
factory would admittedly be an advantage in war, military requirements in peace were so
very small that a factory could not rely on them for turnover. The turnover in sporting
weapons was also considered to be insufficient to support a factory, and it was asserted
that the demand would not be steady. It was also explained that a substantial subsidy and
heavy protective duty would be necessary to make competition with overseas factories at all
viable.  

When Oswald Pirow presented his Five Year Defence Plan to Parliament in 1934, opposition
to private arms production was again voiced. Steytler told Parliament:

I think that ammunition, rifles and guns should be manufactured by the
Government itself, because if it is left to private individuals or companies,
who make a profit out of it, then there will be a danger of their
encouraging a war and trouble.
Another member of parliament, a Mrs Reitz, opposed private arms manufacture for racial reasons. She feared that private manufacturers might end up selling weapons to Africans who might then use these weapons to undermine white civilisation. As she explained:

When I consider that the main reason why the minister is increasing the defence of this country is that we may act as the upholders of white civilisation in Africa, and when I realise the way in which natives might be exploited by private firms, I do feel very strongly on this matter, and I feel that, as far as lovers of peace are concerned, and the safety of our white population, it would be a retrogressive step. — Our position among those hordes of natives that we have here is such that if the manufacturing of arms and ammunition is to be established in the Union, it should be very carefully controlled, and I should like to have an assurance from the Minister on that point.  

The Minister of Defence Oswald Pirow, shared the views expressed above. In his view, apprehension on the consequence of the possibility of the arming of Africans was by no means ill-founded. The Minister agreed with the position that if any factory were to be started by private enterprise, then in the interest of the European, "and also in the interest of the native population," that industry would have to function under the strictest possible Government control. There were some lonely opposition voices in Parliament, like that of Sturrock, who urged the Minister not to listen to alarmists who were using imaginary dangers to try to frighten the authorities into establishing state factories at the expense of private enterprise. But, such voices were few and they were not listened to by advocates of restrictive state enterprise.

Private arms production was more strongly opposed in 1937 during the experimental era of the War Supplies Board. In March 1937, the Witwatersrand Consolidated Exploration and
Finance Company approached the Minister of Defence with a proposal to set up an armaments firm with capital of £1,000,000. The company asked for a monopoly for five years for the supply of all peace-time requirements, including field guns, machine guns, rifles, and armoured fighting vehicles, but excluding small arms ammunition and small experimental orders. When the offer was made, the Prime Minister, the Minister of Finance, and the Minister of Commerce and Industries were in London for the Imperial Conference. The Prime Minister was greatly perturbed by the news of this private initiative, and a telegram was quickly dispatched, instructing Oswald Pirow not to continue with consultations for the proposed deal. The telegram reads:

The Prime Minister is anxious that the principles of the private manufacture of armaments should have full Cabinet consideration, and thinks that it is desirable also that there should be opportunity for completing the examination of the financial implications of the proposals. Under the circumstances, the Prime Minister hopes that no commitments binding the Government have been or will be undertaken...and desires you to hold the matter in abeyance for Cabinet consideration upon return of himself and his colleagues.

Colonel Hoare of the War Supplies Board was also alarmed by the offer. He feared that a monopoly might actually hinder the Union's rearmament programme rather than hasten it, especially if the anticipated output was not reached. Hoare expressed the fear that "a virtual monopoly would involve the Union in the risk of placing all its eggs in one basket." The War Supplies Board therefore advised the Minister not to grant any monopoly to any company for the manufacture of warlike stores. The Board also felt that the plans of the company did not take sufficient account of the many special problems which had to be overcome in the successful manufacture, to a high degree of precision, of intricate
munitions of war. It was also felt that the granting of a monopoly would seriously prejudice the Board's efforts in organising the available industries for munitions production, as firms could not be expected to carry out investigations and work on experimental orders which would only benefit a rival company.\textsuperscript{59}

In 1938 it was also requested by some interested parties that one or more complete armament factories, in running order, be transferred from Czechoslovakia. Among those particularly specified was an aeroplane engine-manufacturing factory and a gas mask installation. These suggestions were rejected by the Union Government. Other private enterprise initiatives, like the offer by Dunstwart Iron and Steel Works to install a shell-forging plant, and De Beers Consolidated Mines' offer to build a private munitions plant at their workshop in Kimberly, were also rejected.\textsuperscript{60}

In 1939, the Birmingham Small Arms Company offered to erect a factory in the Union for the manufacture of rifles. It proposed to set up a factory at its own expense, in stages, each stage occupying some six months, starting with a barrel plant and ending with a complete installation for rifle manufacture. It also proposed to set up a plant for the manufacture of light machine guns, again in three sequential stages. However, the company required a guarantee of orders for a minimum of 200 rifles per week, and would have wanted further safeguards before going on to full machine gun manufacture. These proposals, together with another Czechoslovak proposal for the building of a Bren gun plant, were considered in August 1939, but they were rejected as being too extravagant.\textsuperscript{61}
With the exception of the Small Arms Ammunition (SAA) factory at the Royal Mint, and the Modderfontein explosives factory which will be discussed in the next chapter, nothing came of the plans to establish private or state armament firms in the Union in the years immediately prior to the outbreak of the Second World War. Many offers were made by foreign and local private companies to participate in the country’s rearmament programme, but official policy discouraged private enterprise in this field, even though it was proving impossible to establish any large-scale state arms factories. The decision by the War Supplies Board to rely on small experimental orders and to shut out established companies for fear of monopolies, was an exercise in self-strangulation, for when it was realised that the Board was not achieving any of its objectives, it was dissolved in September 1939.

There were also those on the Board of Trade and Industries who had insisted upon the need for a state arms factory. They argued that the policy of trying to organise the productive capacity of existing engineering firms for war production would interfere with the general industrialisation of the country. This view was, however, based on a misconception, for there was no way that any state factory could have produced any arms locally without affecting the raw material situation, the manpower situation and the machine tools situation on which civil industry depended so much. H.M. Robertson made the correct observation when he wrote:

In retrospect, it is clear that, with or without state factories, the unavoidable price which would have had to be paid for re-armament in the few crowded years before the outbreak of war would have been the dislocation of industry and the devotion of all available productive resources to the manufacture of warlike stores. And this was a price that
no section of the community appeared willing even to contemplate, let alone to pay.  

Defence Human Resource Problems.

In 1938, while pointing out the political, geographical and socio-economic constraints that the Union was facing in its defence preparations, Oswald Pirow also emphasised the lack of adequate human resources. He pointed out:

In the first place our man-power resources when compared with those of even second-class powers are very limited. A proper defence scheme will, therefore, have to counterbalance the small number of its troops by their superior fighting value and their large scale equipment, actual or relative, with automatic weapons.

However, South Africa’s human resource problem was partly self-made and was mainly a result of the racist attitudes of both the Afrikaners and the English-speaking white South Africans. Several calls had been made to include non-whites in the Union Defence Force, and each time the calls were acknowledged but nothing was done. For example, in 1934, pleas were made in Parliament to include coloureds in active combat roles in the Union Defence Force, in view of the proud record of the Coloured Cape Corps in the First World War. Oswald Pirow acknowledged these pleas and promised to do something to accommodate non-whites in the Union Defence Force. But, he pointed out that, under the Defence Act of 1912, nobody who was not of European descent was covered by the Act, that non-whites were not liable for military service and that there was no intention for calling them up. The said Defence Act was a result of an omnibus bill drafted and presented to Parliament in 1912 by Smuts when he had been Minister of Defence. Although the bill in its opening passages referred to “the liability of every citizen to defend his country
in time of grave danger", another section of it made provision for excluding non-whites from wartime service in a combatant capacity, and from the peacetime training or financial contributions expected of white citizens.  

This exclusion of non-whites was partially overlooked during the First World War due to the recognition of the sheer desperation of the British Empire, whose defences all over the Commonwealth were based on "native" armies. Accordingly, white South Africans found themselves fighting side by side with non-whites from other parts of the Commonwealth, and the Union Government itself was forced to mobilise its own non-white volunteers for the Imperial war effort. South African opposition was overcome partly by the fact that the costs of the non-white contribution to the war were paid by Great Britain. But even when they faced common danger in Europe, one white South African was reported to have said,

When you people get back to South Africa, don't start thinking that you are whites, just because this place [France] has spoiled you. You are black, and you will stay black.  

Behind facade lay a deeply ingrained white fear of militant armed blacks. Certainly, Smuts was not alone when he expressed the fear that militarising Africans, "might prove a danger to civilisation itself."  The fear that Africans might turn the guns on the white man had always been at the back of many white men's minds. This fear was well captured by George Orwell when he wrote:

But there is one thought which every white man... thinks when he sees a black army marching past. 'How much longer can we go on kidding these people? How long before they turn their guns in the other direction'?
It was not surprising then, that by 1938, even when informed observers acknowledged the fact that shortage of manpower would jeopardise the fulfilment of the Five Year Defence Plan, Oswald Pirow still did nothing to include non-whites in the Union Defence Force. When he was quizzed in Parliament about the issue, Pirow repeated the same statement and made the same promises that he had made four years earlier in 1934, and on which he had taken no action. He declared:

The possible training of our non-European population for purposes of war has frequently been mentioned in the press. While I feel certain that our people will never sanction the training of non-Europeans in the use of arms, they can be of very great assistance in other ways. The coloured population could provide a number of very necessary transport battalions. The natives could be trained into camp service units to relieve the white man of all but his actual military duties and to act as ammunition carriers right into the front-line. In addition, selected labour battalions from the Rand mines operating under skilled miners with unlimited quantities of dynamite at their disposal, could, if occasion demanded, literally move mountains.69

Oswald Pirow: A Pro-Nazi Minister Of Defence?

When Oswald Pirow was appointed as the Minister of Defence in 1933, he was well respected by both the English and Afrikaans-speaking white population. But, from 1936, Pirow began to make some serious mistakes. At the time of the civil war in Spain, Pirow visited General Franco's headquarters instead of calling on the Republican Government. Thereafter, Pirow raised the hopes of Hitler and embarrassed the British by stating that there would be no peace in Europe until Germany had been given adequate compensation for past losses. He also stated that though the restoration of Tanganyika (Tanzania) and South West Africa (Namibia) to Germany was not practical, he personally wanted to see
Germany with a fair foothold in Africa.\textsuperscript{70} Pirow later went on to interview Hitler without subsequently divulging to the world what had transpired at the meeting. In short, Pirow was manifesting his pro-Nazi feelings openly, and as a result he lost most of his English-speaking political friends. And, when at the outbreak of the war, he sided with Hertzog on the neutrality issue, some observers called him "the little Hitler of South Africa."\textsuperscript{71}

A Parliamentary Committee appointed in 1940 to investigate the technical and stores position of the Union Defence Force found that Pirow had spent very little of the large sums voted for Defence during the six years immediately prior to the outbreak of the war. In fact, it was discovered that Pirow had spent not a single penny of the £6,000,000 approved by Parliament in 1938.\textsuperscript{72} The Smuts Government did not think that this was all just coincidence, and it blamed Pirow for deliberately keeping the Union Defence Forces in a state of unpreparedness for questionable motives.

Pirow himself was not worried about these accusations. In his biography of Hertzog, he wrote:

I was not worried about these agitations, firstly because the Defence Department when I left it was in first class condition - General Sir Pierre van Ryneveld, the then Chief of Staff, will testify to this - and secondly because my Defence Policy was in fact that of General Hertzog.\textsuperscript{73}

Instead, Pirow went on to congratulate himself for having formed the Special Service Battalion whose objective, according to him, was "not to train more soldiers, but to make better citizens of these young men." He also asserted that this battalion was a great
experiment in white social fraternisation, where members of rich families would rub
shoulders with sons of poor white Afrikaners or bywoners. However, a more ominous
picture of Pirow's designs for this nationalist Special Service Battalion could be inferred from
his statement that "I frankly admit that the idea, in so far as it originated with me - General
Brink, Sir Pierre van Ryneveld and others were co-authors - came from the example of
Hitler's Youth Camps." 74

It has been argued on Oswald Pirow's behalf that the pressure of European re-armament
during the two years immediately prior to the outbreak of war made it difficult for South
Africa to obtain the required supplies. It has also been argued that the deficiency and
obsolescence of Union Defence Force equipment was not necessarily a serious matter. For,
in the event of war, because of its remoteness from Europe, South Africa could count on a
six months grace period to acquire the very latest armaments.75 However, these arguments
do not explain how supplies that were not available in peace-time were likely to be delivered
in war-time to a country whose plans were based on a policy of neutrality, and whose
Minister of Defence was allegedly pro-Nazi. This was so much the case that in 1940, Smuts
as Prime Minister and Minister of Defence complained that he had inherited from Oswald
Pirow, "the plan and nothing but the plan." Predictably, the English press in South Africa
took the opportunity publicity to tear Pirow's character apart. One of those people who
contributed significantly to his fall from grace was Bob Connolly, whose cartoons in the
Rand Daily Mail in 1940 tell their own story of how Pirow was perceived by empire loyalists.
A selected few of these cartoons are reproduced below.
FIGURE 2.2: BOB CONNOLLY'S CARTOONS OF OSWALD PIROW

RAND DAILY MAIL, SATURDAY, MARCH 14, 1940.

THE DREAMER

By Bob Connolly

BE CAREFUL IT DOESN'T GO OFF!“

By Bob Connolly

IT MAKES A LOUD NOISE ANYWAY!
HE WAS ONLY BLOWING BUBBLES

By Bob Connolly

AN APOSTLE OF FREEDOM

By Bob Connolly
Lack Of Political Will To Fight For Empire

South Africa's ruling white population had always been a minority in a country which has an overwhelming black population, and a large number of coloureds and people of Asiatic descent. Of this small white population, the majority were Afrikaners, while English-speaking whites were the minority of the minority. This white ethnic imbalance was clearly visible in the Fusion Government between 1933 and 1939, in which Hertzog, representing the majority of Afrikaners, was the Prime Minister, and J.C.Smuts, representing mostly English-speaking whites was the Deputy Prime Minister. However, the two white groups had some common ground. The two leaders had fought against Britain in the South African War (Anglo-Boer War of 1899-1902). They both supported the League of Nations (though for different reasons), and they shared the feeling that the Treaty of Versailles had not been fair to Germany. Despite their many differences, the two white groups derived mutual advantage from fusion. Where possible, both leaders avoided raising issues that might lead to the disintegration of their unity accord. And, in 1938, the two leaders even made an agreement to remain neutral in the event of a European war, even if it involved Britain.

In fact, neither Smuts nor Hertzog ever initiated debates on the European crisis in Parliament, nor did they volunteer any information on Government policy on that crisis. Even during the Munich crisis of 1938, which happened while the Union Parliament was in session, the Fusion Government did not make any statement except in answer to Opposition questions in Parliament, but even these answers did not indicate Government policy. But this is not to say that political unity was not at times strained. Cabinet itself
was severely tried, for example, over the "Native Bills". In this connection, the divergence between the views of the more liberal Hofmeyr and some of his English-speaking colleagues and those of the Prime Minister and Oswald Pirow was acute. This was so much so that some contemporary observers commented that "General Smuts and General Hertzog were about as happy in harness together as a horse and a zebra".79 Nevertheless, their views on the European crisis remained mutually vague and there was an effort to accommodate each other. Smuts for example had ventured in 1938 to say that if Britain were attacked and in danger, then and only then should the Union consider helping her.80 This was designed to accommodate Hertzog. For his part, although Hertzog pledged that the Union Government would fulfil its Simonstown obligations, as a Nationalist, he refused to commit the Government to side with Britain, "until the interests of the Union are really threatened."81 There was to be no sacrifice for Empire.

There are several events and incidents which led to the breakdown of the political mutual accommodation of the two white races in South Africa immediately before the outbreak of the Second World War. One such aggravating incident took place in February 1938, at the opening of Parliament, when the Afrikaner anthem "Die Stem van Suid Afrika" was played together with "God Save The King." This was done on the sole authority of Hertzog. On Union Day, again on the sole authority of Hertzog, "Die Stem" was played at the Defence Force parades, but this time, "God Save The King" was calculatingly not played. When English-speaking white interests protested, Hertzog made a statement in Parliament to the
effect that, "Die Stem" was the national anthem of the Union, while "God Save The King" was merely a symbolic prayer asking for God's blessing on the King.82

At the start of the centenary celebrations of the Great Trek in 1938, Oswald Pirow led a mounted Commando to see the wagons off from Cape Town.83 It was this mounted Commando which later evolved into the Ossewa Brandwag (Sentinels of the Ox - Wagon), that notoriously militant element of Afrikaner nationalism which was pro - Nazi, and which laid stress "entirely on blood in true Hitler fashion".84 At the end of the celebrations, General J.C Kemp unilaterally declared that from then on, "Roberts' Heights" (that symbol of Imperial defence in South Africa, second in importance only to Simonstown), would be known as "Voortrekkerhoogte", thus literally transforming it into an Afrikaner monument.

These and numerous other touchy incidents led to mutual suspicion and lack of trust between nationalist Afrikaners and English loyalists in South Africa. Smuts therefore did not inform Hertzog of his shift from their neutrality agreement in the case of any European war which involved Britain. On the other hand, Hertzog did not tell Smuts that he would go for nothing else but strict neutrality in any European war, even if Britain was involved. This was the politically polarised situation in which the Union found itself when the Second World War broke out in 1939.
When the time for decision came, Hertzog presented to his Cabinet a pre-determined ultimatum for neutrality, with the words, "This is what I have decided upon." 85 When Smuts opposed neutrality, the Cabinet was decisively and irreparably split. The matter was taken to Parliament, where Hertzog tabled his motion for neutrality and Smuts carried an amendment calling on the Union to, "carry out the obligations to which it has agreed (Simonstown and the rest) and continue its co-operation with its friends and associates in the British Commonwealth of nations." 86

Initially, to a degree, Hertzog had a sound argument, that to lead a divided people into a war which was not primarily their war, would undo all the efforts of preceding reconciliation and renew the old hatred and bitterness between "Boer and Briton". But, when he went on to defend Hitler's actions, condemning, "the monster of Versailles", and comparing Hitler's struggle for German liberty with his own struggle for South African liberty, Hertzog lost the confidence of even some of his closest friends. When the war vote was taken, his neutrality motion was rejected by Parliament by 80 votes to 67. The Governor-General then called upon General Smuts to form a Government, and thereafter Smuts declared war against Germany.

The outbreak of the Second World War exposed the pro-Nazi leanings of leading sections of the Afrikaner leadership. It also accentuated the polarizing tendencies of Anglo-Afrikaner society in South Africa which ultimately led to an irreconcilable split. That scenario was again well captured by Bob Connolly who went on to capture it in the Rand Daily Mail newspaper
through his famous cartoon entitled, "The Fork in the Road". This and some of Connolly's Hertzog-bashing cartoons are reproduced in figure 2.3 below. That the Union of South Africa was led into war by a pro-Empire government which had a small majority of 13 in Parliament was troubling for the political development of the country in the long run. In the short term moreover, that precarious political situation was to be a particular liability to the daunting military and industrial effort which the Union would required to undertake during the Second World War.

**FIGURE 2.3: BOB CONNOLLY'S HERTZOG-BASHING CARTOONS**

*THE FORK IN THE ROAD*  
*By Bob Connolly*
HERTZOG'S AMAZING
DEFENCE OF
HITLER

SURPRISE!

By Bob Connolly
THE DEAD-END KIDS

By Bob Connolly
ENDNOTES

Archival references in this chapter are from various South African archives as indicated in the bibliography.


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34. Union of South Africa - House of Assembly Debates, 2 May 1934, col. 3040.


38. *Ibid*.


41. Ibid., col. 2503 - 2504.

42. B.C.825/C4.1.1., Five Year Defence Plan, 49.

43. Ibid, 5.


47. B.C.825/C4.1.1., Five Year Defence Plan, 10.

48. Ibid, 12.


50. H.E.N No.755/99/2/1, Niven and Mitchell Ltd, to the Secretary for Defence, copied to Secretary of Trade and Commerce in R.H.N./B.T.I., 7 Jan 1929 and 14 Jan 1929 respectively,

51. Ibid, Chairman: Board of Trade and Industries, 31 Jan, 1929.

52. Ibid, Chief of the General Staff, U.D.F. to Chairman, Board of Trade and Industries, 20 Feb., 1929.


54. Ibid, col. 3051.

55. Ibid col. 3064.

56. Ibid, col. 3056.


60. Ibid, 37 - 38.


64. Ibid, 2 May 1934, col. 3061.


66. Ibid, 58.

67. Ibid, 3.


72. Rand Daily Mail, 26 Jan, 1940.

73. O. Pirow, James Barry Munnik Hertzog, Timmins, Cape-Town, 1957, 218.

74. Ibid, 219.

75. The Round Table, Vol 30, No 119 1940, 712 - 714.


77. This was a verbal agreement.


79. The Round Table, Vol 30 No 117 1939 - 1940.


82. O. Pirow, James Barry Munnik Hertzog, Timmins, Cape Town, 1957, 203.


CHAPTER THREE

ARMS PRODUCTION IN SOUTH AFRICA: 1939 - 1945

THE TECHNOLOGICAL LIMITATIONS

Formation Of The Director General Of War Supplies

When South Africa finally joined the war, one of the priorities was to equip the volunteers who flocked to the recruiting centres. However, the rate at which volunteers were recruited far outstripped the rate at which the Quartermaster's stores could supply rifles, uniforms, boots and blankets. The man most credited for South Africa's war effort, H.J. Van der Bijl, did not exaggerate when he wrote that young South Africans, "rushed to the colours at a rate that became quite alarming to those who had to provide the equipment necessary to enable them to put up a fight." South Africa had always found it easier to import military equipment than to manufacture, but now, because of wartime constraints, overseas sources of supply were restricted, and in some cases even blocked completely. The many orders placed by South Africa for arms, ammunition and a variety of other equipment had to be cancelled. The only alternative left was local manufacture. These are the circumstances under which the Director-General of War Supplies was formed in September 1939.

Perhaps the most significant changes in the Union of South Africa's industrial war effort during the Second World War were brought about by the Director-General of War Supplies (D.G.W.S.). But, the origin and significance of the organisation is clouded by conflicting reports. The official reports of the organisation written during and immediately after the war claim that the idea was conceived by the Smuts Government.
in October 1939 and that before that date, "From the industrial point of view, South Africa had never attempted to equip herself for war production."³

One of these reports claims that towards the end of September 1939, discussions took place between the Minister of Defence (who was then General Smuts) and the Chief of the General Staff, in regard to the control and working of the Technical Services side of the Department of Defence. The main discussions concerned matters affecting the rapid and efficient training of mechanics under war conditions, and the acquisition of technical military stores and materials in the shortest possible time, with due regard to cost and quality.⁴

It is said that, as a result of these discussions, early in October 1939 Smuts decided to appoint a small independent committee consisting of three members to advise him and to investigate the planning and organisation of the various branches of the Army Technical Services. The committee, in consultation with the responsible military heads, was to make suggestions in order to promote efficiency and economy. Having been given wide powers of investigation, the committee commenced its enquiries on the 10th October, 1939, and it submitted its final report to Smuts on November 26th, 1939.⁵ The Committee's major recommendation was that, for the period of the war:

A special directorate for the acquisition of all war supplies, whether by purchase or manufacture, be created, independent of military jurisdiction, and that such directorate shall be placed under the control of the most capable business manager obtainable, who shall be directly responsible to the Minister of Defence.⁶
The recommendations of the Committee were accepted by General Smuts, and the existing National Emergency Regulations were amended to make provision for the creation of a Directorate of War Supplies, and for the appointment of a Director General. Immediately after the amendment of the regulations, the Government announced the appointment and composition of the Directorate of War Supplies, with H.J. van der Bijl as Director-General.

On the other hand, official Afrikaner history after the Second World War claims that the idea of a D.G.W.S was conceived well before the outbreak of war in Europe. That the state would require power to control the economic process of the country in the event of war, is said to have been foreseen as early as April 1939, when the National Supplies Control Board (N.S.C.B) was established within the Department of Commerce and Industries. It is claimed that it was the N.S.C.B which was given the task of making a survey of the country's resources and industrial key-men, and to determine the form and extent of measures to be taken to safeguard the Union in the event of war. This Afrikaner nationalist history claims that, immediately after assuming power, the Smuts Government merely gave statutory existence to the N.S.C.B by Proclamation No 201 of September 1939, and that it was the N.S.C.B which directly led to the formation of the Director General of War Supplies. However, these claims appear to be an attempt to extrapolate the N.S.C.B backwards, to give credit to Oswald Pirow and his team for its formation. The most reliable evidence available shows that the N.S.C.B was formed in September, and not in April 1939.
The important thing, however, is that both reports recognise the Government instrument that gave power to the Director-General of War Supplies as Proclamation No 201 of 1939, as it was amended by Proclamation No 294 of the same year. The powers of the D.G.W.S were spelled out in clauses 3 - 5 of that Proclamation as quoted below:

(3) The Director-General shall have the power to Purchase or enter into contracts on behalf of the Union Government for the purchase or production of any goods mentioned in sub-regulation (1) hereof, without submitting the matter to, or obtaining the approval of, the Union Tender and Supplies Board.

(4) (a) The Director-General may order any person who deals in, or, in the course of his business or trade, handles any goods referred to in sub-regulation (1) hereof, to furnish the Director-General from time to time with any information whatsoever available to him relating to any such goods which he or his servant or his agent has or had in his possession or custody or over which he has or had any control or which he is capable of manufacturing.

(b) Any such person as aforesaid shall, at the request of any person (hereinafter referred to as an inspector) who produces a document which purports to have been issued by or on behalf of the Director-General and which authorises him to act on behalf of the Director-General, produce to the inspector any book or document at his disposal which relates to any such goods as aforesaid and permit the inspector to make a copy thereof, or to take an extract therefrom, and shall furnish the inspector with such other information (whether written or oral) relating to such goods as the inspector may demand from him.

(c) Any person who, having received an order mentioned in paragraph (a) hereof, fails to comply therewith within a reasonable time, or fails to comply with a request or demand mentioned in paragraph (b) hereof, or who knowingly furnishes the Director-General or an inspector with any incorrect information, or who hinders an inspector in the performance of his duties, shall be guilty of an offence.

(5) (a) The powers granted under regulations 6 and 7 to a Minister of State may be exercised by the Director-General in relation to any goods or and which are needed for use for defence or military purposes.

(b) Sub-regulations (2) and (3) of regulation 6 shall apply to any goods or land taken by any officer authorised by the Director-General, as if they had been taken by an officer authorised by a Minister of State under sub-regulations (1) of regulation 6 ; and sub-regulation (2) and (3) of regulation 7 shall apply to any order issued by the Director-
General as if it were an order issued by a Minister of State under sub-
regulation (1) of regulation 7.¹²

The early days of operation were difficult for the Director-General of War Supplies. The
setting up, as an adjunct to the Defence Department, of such a large central purchasing
organisation controlled by civilians to produce and purchase Defence requirements was
"a complete innovation in South Africa". As regards munitions production, the
D.G.W.S. had to venture into a field of highly specialised manufacture in regard to which
South Africa had very little experience to guide it. Hitherto, Defence requirements of
stores and equipment were obtained through the Union Tender and Supplies Board and
by indent from overseas on demand initiated by the various Military Heads of Sections.
As a result, there was no existing reservoir of staff or machinery from which the
Director-General could draw the nucleus of his new organisation. With the exception of a
small staff of inspectors taken over from the Defence Technical Services,¹⁴ the
machinery and staff organisation of the D.G.W.S. had to be built up from practically
nothing.

Soon after the Directorate was established, the question arose as to whether its
headquarters should be situated in Pretoria or Johannesburg. The senior military officers
and the sectional heads of the Defence Department were unanimous in the opinion that
the D.G.W.S should be stationed in Pretoria, if possible at Defence Headquarters so as to
be in the closest possible contact with the Chief of the General Staff, the Secretary for
Defence and other important heads of military sections. On the other hand, there were
those who felt that, as a business organisation, the D.G.W.S. should have its
Headquarters in Johannesburg because Johannesburg was the largest business and industrial centre in South Africa.\textsuperscript{15}

It was logical politically that close continuity of contact between the D.G.W.S., the Military Authorities and other Government Departments would best be maintained by the establishment of the Headquarters of the Directorate at Pretoria. In an effort to strike a balance between military, administrative and industrial interests, a second and more active Headquarters grew up in Johannesburg, where the technical offices were located. However, the Johannesburg Headquarters grew at the expense of the Pretoria Headquarters, and by 1941 only a small local office remained at Pretoria.\textsuperscript{16}

**Organisation of the Director - General of War Supplies.**

The form taken by the Organisation of the Director - General of War Supplies kept on changing throughout the war depending on its changing tasks. However, Table 3.1 illustrates the form taken by the Organisation shortly after it commenced to function in definite shape and when it was merged with the subsequent Director - General of Supplies.
TABLE 3.1: DIRECTOR - GENERAL OF WAR SUPPLIES ORGANISATION

CHART

DIRECTOR-GENERAL OF SUPPLIES ORGANISATION CHART

D.G.W.S. 1939-1945

TECHNICAL PRODUCTION
MUNITIONS AND GUNS
EXPLOSIVES. A.F.V'S
ENGINEERING STORE

COMMERCIAL PRODUCTION
ARMY FOOD
" TEXTILES
" BOOTS
MECHANICAL TRANSPORT

DIRECTOR-GENERAL
OF SUPPLIES

STATUTORY SECRETARIAT
AND ADMINISTRATION

Exemptions
Tribunal

Coastal
Representatives

Custodian of
D.G.S Property

D.G.S. 1943-1945

CIVILIAN SUPPLIES
IMPORTS AND EXPORTS
AND COMMODITY CONTROLS

Advisory
Panels

Zonal
Committees

Diagram illustrating the form taken by the organisation of the Director-General of War Supplies shortly after it commenced to function in definite shape, and when merged with the subsequent Director-General of Supplies organisation.

SOURCE: A Record of the Organisation of the Director-General of War Supplies 1939-1943 and Director-General of Supplies 1943-1945, Johannesburg, 1945, 7.

The most significant change as far as organisation was concerned, was the incorporation, under the D.G.W.S, of the Department of Defence's Directorate of Technical Production, with its Munitions Production Committee. O.J. Hansen was initially
appointed to the position of Chairman of the Munitions Production Committee.17 However, when T.P. Stratten, as the Director of Technical Production replaced Hansen as Deputy Director - General, he also took over the position of Chairman of the Munitions Production Committee. The Director of "T " Production, with Headquarters at ESCOM House, Johannesburg, was responsible for organising and directing the production and supply of all the technical requirements of the Defence Department.18

The committee which played the leading role throughout the war period was, of course, the Munitions Production Committee. Its main task was, " To advise and act on behalf of the Director - General of War Supplies on the acquisition and manufacture of munitions."19 The Munitions Production Committee was, among other duties, also given the task to "investigate and organise engineering resources throughout the country", "advise in the rationing in manufacture of essential materials for key industries", and "advise generally on the acquisition of materials required for the manufacture of munitions."20

Besides the Munitions Production Committee, there were a number of other committees that were created to work under the Director - General of War Supplies. The most notable of these committees were, the Army Boot Committee, the Army Textile Committee, the Labour Committee, the Machine Tools Committee, the Contact Committee of the Transvaal Iron and Steel Engineering and Industries Federation and the Registration and Exemptions Tribunal.21
Of the above, the Contact Committee was outstanding in presenting capacious criticisms on the organisation and functions of the Munitions Production Committee. Members expressed concern on such issues as methods and distribution of work; delays in payment; alteration of orders and specifications; investigation of books and demands for refunds on firm price orders. For these and other presentations, the Contact Committee members earned themselves the dubious name, "Complaints Committee."22

There were also committees which were not directly under the D.G.W.S. but which contributed significantly to the industrial war effort. These committees included the Apprentice Appeal Committee, the Central Organisation for Technical Training Committee(COTT), the Chamber of Mines Munitions Production Committee and the Civil Aircraft and Stores Evaluation Board.23

A number of problems arose from the organisation of the D.G.W.S. The first was that some organised bodies such as the Chamber of Mines, and the Chamber of Commerce and Industries, demanded representation on these committees. The D.G.W.S. consistently refused these demands. The reasoning was that if representation was given to one, all similar bodies could claim the right to be represented, and since there were dozens of such organised bodies in the country, the committees would become too large.24 It was further argued that, if a man on a committee represented an organised body he could not act without the concurrence of that body, and that would have caused a lot of delays in decision-making. The Director-General himself argued that, "I have selected the men on the Panel and the Committees on the strength of their personal qualifications to serve in a personal capacity, and I can not agree to these men
being selected for me by the organised bodies. This policy resulted in a certain measure of disappointment and generated criticism from those organisations which felt that an invidious distinction had been made against them.

The desire by the Defence Department to control the D.G.W.S. led the Minister of Defence to appoint a number of controlling bodies, some of whose functions were overlapping, confusing and unnecessary. For example, a War Supplies Directorate was appointed whose members included the Director-General of War Supplies and his two deputies, the Secretary for Defence, the Chairman of the Union Tender and Supplies Board and the Chairman of the National Supplies Control Board. This organisation did not serve any useful purpose and it ceased to meet after January 1940. Its place was taken by the War Supplies Committee which was appointed in March 1940. This committee tried to come to terms with the incompatible requirements of urgent defence needs and the necessity of long term planning, but failed to work out a viable plan of action. The War Supplies Committee was dissolved in November 1940 and was replaced by the War Committee whose membership included the Minister of Defence, the Minister of Finance, the Minister of Native Affairs and the Minister of Railways and Harbours. This committee also failed to improve arms production and only functioned until October 1941 when it was also dissolved.

In 1942, with the expansion of the area and the increase in the intensity of the war, the D.G.W.S. was reorganised to deal with the demands of civilian consumption as well. The Director-General of War Supplies became the Director - General of Supplies (D.G.S), and his powers were increased to cover the more contested areas of commodity control and
the regulation of imports and exports. However, the powers of the D.G.S. did not cover Food Control, Government Price Control, Building Control, and Petrol Control.\textsuperscript{27}

**SUMMARY OF ARMS AND WAR MATERIALS PRODUCTION PROGRAMME**

What did South Africa actually manufacture locally for the war effort? The official comprehensive list of the country’s munitions production programme is given in Appendix 1 to this thesis. Here, for brevity, the arms production programme has been summarised as follows:

Nearly 6 000 armoured cars, 11 000 3-inch mortars, some 5 million grenades, 12 million rounds of small-arms ammunition, over 500 000 anti-tank land mines, 500 000 25-pounder shells, as well as 3.7-inch howitzers, steel helmets, aircraft hangars, bridges, floating barges, cement and firebricks, steel-wire rope, electric motors and generators, power pumps, heavy steel tubes and fittings, aircraft and vehicle tyres, rubber and canvas hose, boots and shoes, electric cable and electrodes and chemicals.\textsuperscript{28}

In addition to the above summary, some 13 000 Allied ships were repaired at South African ports.\textsuperscript{29} A number of signalling and wireless equipment products were also produced in South Africa. The most famous in this category was the South African Radar Programme,\textsuperscript{30} of which more will be said later in this chapter. Food production was another important programme of the war effort. This agrarian war effort has been well covered in J.M. Tinley’s book, *South African Food and Agriculture in World War II*.\textsuperscript{31} It will not be fair to try to summarise that brilliant work in a few lines. However, it should be emphasised that on the industrial and technical side of the agrarian programme the dehydration and canning of fruits and vegetables reached admirable proportions. Some 28 000 tons of canned fruit, 25 000 tons of jam and more than 30 000 tons of tinned
vegetables were produced during the war. Besides feeding South African forces, a large portion of this food was exported to other Allied countries.

There are a number of official reports which narrate the different aspects of the industrial war effort of South Africa during the war. Two of these reports are so detailed in their narrative and in their presentation of facts and figures that it is not possible to present all the production details here. Also, Volume 7 of Martin and Orpen's series, *South Africa at War*, presents some useful facts and figures and makes some partisan commentary on South Africa's industrial war effort. Therefore, only a few comments will be made here on selected themes of the industrial war effort which have not received adequate coverage in the earlier official reports. Some of the issues raised here will be revisited in greater detail later in this chapter when some case studies are looked at.

**MACHINE TOOLS FOR MUNITIONS PRODUCTION**

In fulfilling the above program, the D.G.W.S. had to confront a number of problems. The first difficulty was the unavailability of machine tools. When the war broke out in 1939, there was only one private firm in the whole of South Africa which possessed a tool room, and of the state enterprises, only the South African Railways and the Royal Mint possessed any special tools. Yet, the manufacture of munitions is a job which requires a variety of special purpose tools such as lathes, small cutting equipment, gauges and special jigs. As these tools were in great demand in the United Kingdom, the Union had to make its own tools if it was to produce any ammunition.
The manufacture of machine tools took up valuable time and resources and sometimes the end result was not satisfactory. For example, the manufacture of the first capstan lathe to be built in the Union was started in October 1940 and was only completed in June 1941. Many firms had to build their own lathes, presses and other machinery to their own designs, and in many cases this was done from scrap material. When the D.G.W.S. ordered a machine for hydraulically testing bombs which was urgently required, the firm contracted to do the job could not produce it fast enough. There were no drawings available and the machine had to be built up from a rough sketch with alterations being made by trial and error as and when required. This problem of machine tools prompted the D.G.W.S. to create another department, the Directorate of Technical Inspection, whose job was to supervise the manufacture of machine tools.

More formidable than the above practical difficulties was what A.G. Thomson called, "the psychological readjustments" which had to be made by both the workers and the managers in all the industries. The manufacture of high precision gauges involved fine industrial tolerances which were new to everybody. Thomson summed it up as follows:

Directors and managers had thus to be convinced of the necessity of spending several thousand pounds on gauges before a single article could be produced. They had then to learn from experience that the production of gauges could not be rushed, but that an apparently simple gauge might easily take four or five days to produce. Looked at from the former standpoint, such a gauge had the appearance of being worth a few shillings only, and it was by no means easy to appreciate the necessity of spending unlimited time on both master and working gauges.

Also very important and yet still unknown in the Union was tool storage, supervision and maintenance. In the majority of factories, very valuable tools and jigs were left lying around the shops indiscriminately. Deterioration was therefore very rapid with
consequent deterioration of the standards of work. What had formerly seemed an unnecessary expense, namely a tool - store and a well equipped tool - room with a well-paid tool - room man, soon proved to be a vital war necessity.

Another drawback to South African munitions production was the lack of drawing - room facilities. Most South African technicians had previously been accustomed to work from a general blueprint and had used their own judgement for the finer details of any particular piece of work. With the manufacture of munitions, however, each and every piece to be manufactured required a separate drawing and yet no appropriate drawing - room facilities existed. For example, it was a commercial drawing - office which traced drawings for the first howitzer and trench mortars for the Defence Department. In a number of initial production processes, time and resources were wasted in the "cut and try" methods of amateur backyard hobbyists using makeshift drawing rooms to produce blueprints.

MINING AND OTHER FOUNDATIONS OF WAR PRODUCTION

The official reports are full of praise for the mining sector which is said to have made up one of the several sound foundations on which munitions production was based. In South Africa, gold mining was the most important mining activity before, during and after the war. Yet, gold mining was not necessarily compatible with munitions production. Gold mining took up the bulk of the few machine tools that were available in the country and also occupied a vast tonnage of the railway traffic. This became a constant source of conflict with the machine tool demands of munitions production, and
with the transportation requirements of the munitions programme. As early as February 1940 a senior representative of the Gold Producers Committee explained:

that he wished to bring to the notice of the D.G.W.S. the fact that there had been occasions when very heavy purchases had been made for Defence and that, in consequence, the stocks of barbed wire for camps, had been very seriously depleted. While this had not unduly inconvenienced them, nevertheless they considered that occasions might arise in future where their supply position might be seriously jeopardised.41

Only three months from the date of the above submission, the Gold Producers Committee felt that the Defence Department’s consumption of machine tools was seriously threatening the viability of the Gold Mining Industry. When the D.G.W.S. made enquiries for the local purchasing/manufacturing of large quantities of certain machine tools, the Gold Producers Committee of the Transvaal Chamber of Mines wrote:

The Chamber is alarmed that these enquiries, if met from local stocks, might seriously embarrass the mines. ... and it will be greatly appreciated with regard to future requirements of the Defence Department if the quantities to be ordered could be estimated in advance as far as possible, and obtained ex import to avoid any necessity of dislocating the local market.42

Also, the United States of America, on whom the gold mining industry relied so heavily for specialised services, made it known that gold production at all costs had very little to do with supplying the war effort.43 A committee appointed to review the progress of munitions production in 1941 reported:

The increase in mining tonnage which has already taken place since the war started has, therefore, had a large restrictive influence on munitions production and any further increase in mining tonnage will have a further restrictive influence.44
The other "sound foundations" on which South African war production rested were summarised as follows:

(1) The iron and steel industry, whose raw material resources include a vast reservoir of iron ore of the purest grade.

(2) Great resources of coal and electrical power.

(3) The existence in the Union of two of the world's largest single units of explosives production, which proved capable of rapid expansion to meet trebled requirements.

(4) The great engineering resources of the State's Railway Workshops, the Mines Shops and the many private engineering shops that have grown up around the great primary industries.

(5) The Union's structure of secondary industries - boots, textiles food packing and canning, which was built up progressively since the last great war.  

Contrary to the above presentation, the iron and steel situation of South Africa was not that good. The average consumption of steel in South Africa during the three years preceding outbreak of the war was about 1 000 000 tons per annum. Yet, the actual South African production of ingot, including production from electrical furnaces, was about 450 000 ingot tons per year and the amount of finished material obtained was about 400 000 tons per year. This means that South Africa was producing only about 40 percent of its own steel requirements before the war.

When South Africa joined the war, all War Supplies requirements of steel were obtained from ISCOR, and imports of steel went to the Mines and civilian secondary industries. The position changed completely when the United States of America refused to supply steel under Lend-Lease arrangements for the mines. South Africa's steel situation became critical, and in February 1942 the Union Government appointed a Controller of
Steel. However, even the Controller of Steel could not improve the steel crisis, and South Africa continued to rely on external supplies for steel required even for munitions production. The Deputy Controller of Steel explained in 1942:

that within the last few weeks we have been given an allocation of steel from the U.S.A. and the U.K. and if this supply is received it will, to a large extent, alleviate our difficulties. If, however, supplies are not received from Overseas, a very serious position will result.\textsuperscript{47}

That other mineral resources were not as vast as officialdom would have had us believe was evident from the alarm that the Director of Munitions Production raised on learning that large quantities of scrap metal were being exported. \textsuperscript{48} The Munitions Production Committee thereupon instructed the Chairman of the Board of Trade to refer all applications for the export of scrap metal to the Committee. After much lobbying, Government Notice No 650 of 1940 prohibited the export of the following metals: Aluminium, Copper, Zinc, Lead, Gunmetal, Phosphor Bronze and Brass.\textsuperscript{49}

Even though copper and zinc could be obtained from Northern Rhodesia (Zambia), and lead could be obtained from Australia, the general non-ferrous metals situation in South Africa was not healthy at all. At a meeting in 1942 a Dr. Van Eck explained:

that the position on the whole regarding the supply of non-ferrous metals, including War Supplies requirements, and the Mines requirements, is getting very tight. Scrap metal was exported until about a year ago, and he enquired whether any attempt has been made to establish a scrap recovery plant for non-ferrous metals. Dr. Van Eck stressed the importance of using scrap instead of virgin metal.... Dr. Van Eck regarded the position as extremely urgent.\textsuperscript{50}

The engineering resources of the Railways were also not as great as generally depicted. It was noted in 1941 that in the event of any urgent additional railway line being required, no stock of railway material existed. Though rolling stock could be produced at
ISCOR at short notice, this could only be done, "to the virtual complete exclusion of all other steel requirements, in particular War Supplies and Mines."\(^5\)

As far as the availability of electricity for war industries was concerned, this seemed to be assured with the expansion of the Victoria Falls and Transvaal Power Company (VFPC) before the war, and with van der Bijl as Chairman of the state-owned ESCOM.\(^5\) However, while electrification improved the efficiency of war industries, the war situation in its turn retarded the expansion of the electricity industry. In the boom years before the war, electric power consumption increased faster than employment, which according to Renfrew Christie, "is a fair indicator that the technical composition of capital was increasing until the war."\(^5\)

When the war came, another prominent industrialist, Arthur Hadley, complained in September 1939 that, "the monstrosity-war overrides everything. Soldiers call for munitions, munition-makers call for electric power. The authorities pinch what they can to save the lives of the soldiers at the front."\(^5\) So it is arguable that Renfrew Christie was nearer the truth when he concluded that, all in all, the war was a liability to the expansion of the electricity industry. As he concluded:

Despite the great increases in production and in machine use during the war, the ratio of power consumption to employment fell, as the number of "dilutees" increased. It seems that despite the extensive industrialisation that war brought, the technical composition of capital, as reflected in electricity consumption, fell between 1941 and 1948, after which it rose again.\(^5\)
Further, the power supply in the Pretoria area was dependent on the Pretoria Municipal Power Station which by 1941 was not interconnected with the Witwatersrand Grid System. Any breakdown or sabotage of the Pretoria Power Station would thus cause a stoppage at the Royal Mint, at the Pretoria Railways shops, at the Government Printing Works, and at other essential Government Departments. Only ISCOR could carry on operating, but very insecurely from its standby power station. Even though the inter-connection of these power systems had long been considered the natural and correct development of South Africa’s power supply system, the authorities had been reluctant to provide the £80 000 required to make that vital connection.

MUNITIONS PRODUCTION CASE STUDIES

(1) The Howitzer Programme

Experimental work on the local manufacture of the 3.7" howitzer field gun had started before the war. In July 1938, the War Supplies Board asked two private firms, Selby Engineering and Wright Boag and Company, to make four Mark 1 Pack Howitzers each. They were also asked to make the jigs, tools and gauges for the manufacture of these guns on a large scale, as no such tools existed in the country. However, the required drawings, gun forgings and the steel specifications had to be ordered from Britain, and delivery of the order took a long time. By March 1939, the order for four Howitzers had been reduced to one each for the two firms involved, "as it became evident that the progress of the weapon was much slower than at first envisaged". Progress was made even slower by the unavailability of the nickel steel plate for the cradle, the trail legs and the bullet-proof steel for the shield of the Howitzers. These
were ordered from Vickers of England, but delivery was delayed because of the bureaucratic requirement of an export licence which took time to process.\textsuperscript{60}

The other big problem during the initial stages was the cost of producing the experimental guns. In 1938, the War Supplies Board had asked the War Office of the United Kingdom for the price of manufacturing one Howitzer gun in the U.K., so as to compare the prices with the local tender. They were informed that the gun cost £623 while the carriage and sights cost £1 250, giving a total of £1 873. This, however, was not consistent with the price of £4 000 each which South Africa had paid for four Howitzer guns which they had acquired in the 1920s for artillery training.\textsuperscript{61}

By the time that South African firms were ready to start manufacturing their first Howitzer guns, it was learned that the Mark 1 Howitzer was being phased out in the U.K., and was being replaced by the Mark 1V. A recalculation of the cost of producing the new type of gun revealed that, "based on the man hours and materials so far used in making the model, would be something like £7 720 for one gun and carriage, and £7 500 each if ten equipment were made."\textsuperscript{62} The War Supplies Board was now finding it financially impossible to embark on the production of the new type of gun, and equally finding it irrational to continue on the large scale production of an obsolete gun. Yet unwilling to throw away the resources of their experimental effort, the War Supplies Board still ordered the two contracting firms to amalgamate their work so that at least one Howitzer and one Mark 1 carriage could be completed by the end of 1939. However, by the time the war broke out and South Africa declared war on Germany,
even that single experimental but already obsolete South African Howitzer had not been completed.

In this context of disadvantage, the Union Defence Force's Chief of General Staff impressed upon the newly appointed D.G.W.S. that, "As far as our land forces are concerned, this [Howitzer] is the most important artillery weapon for warfare in Africa... in fact no other will do". Subsequent efforts to acquire 160 Howitzers from the United Kingdom then failed because of Britain's own rearmament programme, and South Africans were advised to order from India. But the reply from India was that its small output was fully booked for local and overseas orders until the Autumn of 1940. An order was then placed for 100 Howitzers from the United States of America. At the same time, enquiries were made for specifications of the American 75mm mountain gun which performed the same fire functions as the 3.7" Howitzer. Orders were also tendered for modern fighter-bomber aircraft and anti-aircraft guns. But to safeguard its patent rights, the United States refused to provide the technical specifications of its guns to South Africa. In the period before the 1941 Lend-Lease Act, the Americans in fact refused to sell any of their aircraft, guns or ammunition to South Africa. They however indicated that if South Africa were to find an American commercial firm to manufacture the guns for the Union, then the required technical specifications would be released to that American firm. It did not take long for the futility of trying to obtain guns from outside to dawn on South Africa. It was also learned that the only factory in India which was still
manufacturing the pack Howitzer, the kind which South Africa was trying to order, was closing down because that equipment was now also considered obsolete. The newly-appointed D.G.W.S. then decided to cancel all orders and to concentrate on the local manufacture of guns. On reviewing the experimental programme that had been started before the war, it was also discovered that the single experimental gun had still not been completed and that costs for that project were rising.66

It was with this background in mind that the D.G.W.S. decided to set up a Central Ordnance Factory (Cofac) for the local manufacture of guns. The factory was set up at Village Main in Johannesburg in June 1940, and was equipped in the first instance with requisitioned and second-hand machine tools. It subsequently took over the experimental departments of Wright Boag and Company and of Selby Engineers' mechanics, machine tools, jigs and gauges.67 The experimental gun was retained at Cofac as a sample for assembly and was frequently in use for testing the fitting of gun components or for testing ammunition.

Some 23 private firms in addition to Cofac and the South African Railways and Harbours were involved in the programme for the local manufacture of Howitzers. However, all their workshops combined could not provide sufficient tools and gauges required for the job. When the Lion Match Factory failed to produce single purpose lathes, Southern Rhodesia's Munitions Production Board was ordered to concentrate on the production of these.68 Springs and packings for the howitzers were finally obtained from India after an earlier consignment from the United Kingdom was lost at sea. The sights and sightings
for the guns came from Australia, although the Australian dial sights were manufactured for a different type of gun.\textsuperscript{69}

For all this, by the beginning of 1941 only one Howitzer gun had been completed. This gun was displayed throughout South Africa and Zimbabwe as part of the "War Train" to encourage recruitment into the munitions factories of both countries.\textsuperscript{70} For propaganda purposes, at the official handing over of the weapon to the Union Defence Forces on the 16th of February 1941, the D.G.W.S. announced that every component of the gun was of South African origin, "including the most intricate of all accessories - the sights".\textsuperscript{71}

The acid test of the Howitzer programme was whether Cofac would be able to equip the First South African Division for operations in Abyssinia (Ethiopia) with the first guns produced. When enquiries were made in September 1940 as to when the first batch of Howitzers would be ready, the Chief of the General Staff rightly predicted that he doubted whether his troops would be able to receive any guns by the end of the year. He wrote:

If the deliveries had commenced in October as originally forecast the equipment might well have been used in Abyssinia for which terrain they were a suitable weapon. Events in the North moved too fast for the S. African schedule, held up as it was by production snags, and the Howitzers were not used in the Abyssinian Campaign.\textsuperscript{72}

In fact, the South African Howitzers were not used in any campaign whether by the Union Defence Forces or by any other forces. H.J. Martin and Neil Orpen lamented:

Through a perversity of fate, only time would show that South African troops were never to use South African 3.7-inch howitzers in action during the whole of the war, but with the Royal Mint in Pretoria as one of the
main sources of accurate gauges, some 23 firms, in addition to Cofac and the S.A.R.& H workshops, became involved in the manufacture of these easily handled weapons.73

Even though there were serious reservations as to the usefulness of the Howitzer for many operational purposes, South Africa continued to produce these guns between 1941 and 1945, but on a small scale.74 The Howitzer programme was also hampered by the fact that the firms were not able to concentrate on one type of gun. After the "Selby Gun " type, South Africa went on to experiment on the Mechanised Howitzer between 1941 and 1943. They also experimented on the 25 Pounder, the Six Pounder, and between 1944 and 1945 they tried the Pack Howitzer.75

Enthusiasm for the locally manufactured Howitzers also faded because of the numerous defects that these guns experienced. Some defects were quite small and locally dealt with, "e.g. the loose pin on the range drum or the excessive wear on the hauling ropes". Some of these defects were dealt with by the simple method of altering the drill. But others were more serious, and could not be easily solved. One such serious defect was shell crumpling. One technical report recorded:

"it was noticed during an experimental tank shoot with 3.7" Howitzer and ammunition, both of local manufacture, that all the cartridge cases were badly crumpled on firing, showing that there was defective obtrusion between the cartridge cases and the chamber, thereby allowing the gases to escape to the rear and foul the breech and firing mechanism."76

All local experimentation by the leading engineers in South Africa failed to detect the cause of this defect. Another technical report recorded:

In July the D.G.T.S. had to admit bafflement and cabled South Africa House to ascertain from the War Office, the maximum tolerance above the limit in the chamber diameter and also to seek from them a probable
cause of the crimping of the cartridge case which seemed to occur quite inconsistently with any causes that suggested themselves here.\textsuperscript{77}

There were other problems with the Howitzer programme. For example, most parts of the South African Howitzer were not interchangeable even with other South African-manufactured guns.\textsuperscript{78} This lack of flexibility was a problem especially when it was necessary to try to fit in some components from India and the United Kingdom. This reduced the operational usefulness of the South African Howitzer for war purposes and prompted speculation and experimentation in its alternative uses.\textsuperscript{79}

It was in the light of the above production problems that the Eastern Group Supply Council of which South Africa was a member suggested that the Union should concentrate on the repair of Allied ships and aircraft which were operating in the region. In line with its new role, South Africa was to downgrade local gun manufacture to priority number five, leaving the top three priorities to ship repairs, Middle East repairs and local aircraft repairs.\textsuperscript{80} That was how South Africa came to earn itself the title of "the repair shop of the Middle East".

\textbf{(2) Ship Repairs.}

Before the war, ship repair work in South Africa was confined to minor overhauls and the maintenance of whaling and fishing trawlers. This was done entirely in Durban and Cape Town, the only ports possessing graving docks. Only 150 men were employed in these docks.\textsuperscript{81} In 1941, the Mediterranean was closed to Allied shipping and all Allied ships to and from the East had to pass through South Africa. More than 60 percent of that traffic which came round the coast to South Africa was in need of repair.
In the first six months of 1941 the number of firms doing ship repair increased from four to fifty. New machinery was installed by both Government and private firms. A new Railway workshop devoted entirely to ship repairs was established at Durban. South Africa's contribution in alleviating the shipping crisis of the Allied Forces grew increasingly crucial. Table 3.2 gives the number of ships that were repaired at South African Ports between 1940 and 1945, and Table 3.3 shows the number of artisans employed whole-time on ship repairs during that period.
### TABLE 3.2: VESSELS REPAIRED AT SOUTH AFRICAN HARBOURS 1940-1945

**Vessels entered at Harbours, 1940 to 1945**

<table>
<thead>
<tr>
<th>Year</th>
<th>Cape Town</th>
<th>Mossel Bay</th>
<th>Port Elizabeth</th>
<th>East London</th>
<th>Durban</th>
<th>Other Ports</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1940</td>
<td>2,921</td>
<td>144</td>
<td>720</td>
<td>641</td>
<td>1,982</td>
<td>190</td>
<td>6,598</td>
</tr>
<tr>
<td>1941</td>
<td>2,985</td>
<td>69</td>
<td>602</td>
<td>445</td>
<td>1,994</td>
<td>147</td>
<td>6,242</td>
</tr>
<tr>
<td>1942</td>
<td>3,113</td>
<td>36</td>
<td>399</td>
<td>300</td>
<td>1,973</td>
<td>181</td>
<td>6,002</td>
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<tr>
<td>1943</td>
<td>1,386</td>
<td>5</td>
<td>231</td>
<td>167</td>
<td>1,800</td>
<td>137</td>
<td>3,115</td>
</tr>
<tr>
<td>1944</td>
<td>852</td>
<td>4</td>
<td>219</td>
<td>161</td>
<td>923</td>
<td>136</td>
<td>2,295</td>
</tr>
<tr>
<td>1945</td>
<td>701</td>
<td>3</td>
<td>260</td>
<td>181</td>
<td>872</td>
<td>111</td>
<td>2,228</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Net Registered Tonnage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1940</td>
<td>11,335,386 663,255 3,214,113 2,689,766 7,380.004 221,444 25,503,958</td>
</tr>
<tr>
<td>1941</td>
<td>10,479,135 188,587 1,918,362 1,320,330 7,973,541 209,675 22,089,630</td>
</tr>
<tr>
<td>1942</td>
<td>12,247,702 91,383 1,589,621 913,588 8,673,820 377,438 23,983,552</td>
</tr>
<tr>
<td>1943</td>
<td>4,934,392 9,943 756,748 332,756 4,811,890 191,263 11,086,992</td>
</tr>
<tr>
<td>1944</td>
<td>2,679,647 144 676,399 250,368 3,147,426 131,752 6,885,736</td>
</tr>
<tr>
<td>1945</td>
<td>2,764,683 12,989 897,990 489,346 3,254,545 121,197 7,540,750</td>
</tr>
</tbody>
</table>

### TABLE 3.3: Vessels by Nationalities entered at Harbours, 1940 to 1945

<table>
<thead>
<tr>
<th>Year</th>
<th>British</th>
<th>American</th>
<th>Dutch</th>
<th>Italian</th>
<th>Japanese</th>
<th>Portuguese</th>
<th>Scandinavian</th>
<th>Nationalities</th>
<th>Total</th>
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<tbody>
<tr>
<td>(a) Number</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1940</td>
<td>1,939</td>
<td>214</td>
<td>251</td>
<td>18</td>
<td>58</td>
<td>5</td>
<td>368</td>
<td>159</td>
<td>3,012</td>
</tr>
<tr>
<td>1941</td>
<td>1,795</td>
<td>464</td>
<td>225</td>
<td>-</td>
<td>16</td>
<td>18</td>
<td>356</td>
<td>281</td>
<td>3,155</td>
</tr>
<tr>
<td>1942</td>
<td>2,230</td>
<td>703</td>
<td>274</td>
<td>16</td>
<td>-</td>
<td>40</td>
<td>296</td>
<td>301</td>
<td>3,880</td>
</tr>
<tr>
<td>1943</td>
<td>932</td>
<td>378</td>
<td>92</td>
<td>8</td>
<td>-</td>
<td>30</td>
<td>154</td>
<td>150</td>
<td>1,744</td>
</tr>
<tr>
<td>1944</td>
<td>645</td>
<td>184</td>
<td>50</td>
<td>-</td>
<td>-</td>
<td>33</td>
<td>79</td>
<td>107</td>
<td>1,098</td>
</tr>
<tr>
<td>1945</td>
<td>679</td>
<td>196</td>
<td>29</td>
<td>-</td>
<td>-</td>
<td>32</td>
<td>60</td>
<td>101</td>
<td>1,097</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Net Registered Tonnage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1940</td>
<td>8,678,660 858,534 1,056,68 74,596 304,243 23,310 1,379,17 534,538 12,909,734</td>
</tr>
<tr>
<td>1941</td>
<td>8,326,441 1,781,405 2 83,520 81,746 2 925,364 13,489,248</td>
</tr>
<tr>
<td>1942</td>
<td>10,442,318 2,872,469 1,055,49 222,892 180,267 1,233,27 987,940 17,290,224</td>
</tr>
<tr>
<td>1943</td>
<td>4,467,120 1,611,839 4 110,592 135,712 8 391,847 7,835,709</td>
</tr>
<tr>
<td>1944</td>
<td>2,587,886 836,421 1,590,81 145,179 993,526 298,962 4,338,811</td>
</tr>
<tr>
<td>1945</td>
<td>2,965,130 868,566 521,897 260,310 151,909 210,053 178,702 4,621,970</td>
</tr>
</tbody>
</table>

Source: BC 825 C 4.1.1. Industrial Manpower Papers (Ship Repairs)
A narrative intended for the aborted civil history of the war gives examples of South Africa's ship repair activities during the war in a familiar tone as described below. One of the biggest repair jobs undertaken was that of the 12 000 ton tanker "Daronia", which was torpedoed and arrived at Durban with two large holes amidships. The 18 000 ton "Ceramic" and the 9 000 ton "Testbank" also had to have extensive repairs done. The armed cruisers "Alcontara" and "Camarvon Castle" were refitted at Port Elizabeth after engagement with the enemy, and the "Tynebank" was fitted with a special false deck. Warships such as H.M.S. "Nelson", "Revenge", "Renown", "Royal Sovereign", and "Illustrious" were also worked on in South Africa.

Examples of the conversion work done were the 15 241 ton liner "Cormorin" converted into an armed cruiser at a cost of £150 000. The SS "Jerusalem", formerly an Italian passenger liner, was rebuilt as a hospital ship in South Africa. The passenger liner "Canton", which had been used as an armed cruiser, was rebuilt as a troop ship, and the "Cap St. Jacques," formerly a Vichy vessel, was rebuilt and refitted as a hospital ship with accommodation and equipment for 450 patients and 90 medical staff. The three great passenger liners "Isle de France ", "Mauretania" and "Nieuw Amsterdam" had their boilers overhauled at Port Elizabeth.

But, even this "great effort " could not disguise the fact that limited dry docks, lack of skilled labour and other facilities were causing grave congestion in the ports. As early as 1941, there were often twenty ships waiting outside Durban and vulnerable to submarine attack. In the middle of 1942, seventy-eight ships were lying idle in and outside South African ports, and the average for 1942 was forty or about half a million
tons. Because naval ships were given priority, the loss in civilian tonnage due to long periods of waiting was about 1 000 000 tons per year. 

The main hold up in repair was due principally to the shortage of graving docks. This difficulty was compounded by the fact that most harbour facilities started during the war could not be fully completed until after it had ended. Thus, construction of Duncan Dock at Cape Town which was started in 1940 was only finished in 1945. The construction of the Sturrock Graving Docks, also in Cape Town, started with much fanfare in 1942 was again only completed in 1945. This was to be the largest graving dock in the Southern Hemisphere and was to be able to take the largest ship afloat. The British Government supplied all the permanent machinery and paid £3 100 000 for that construction. Unfortunately, it could not be ready for use before the war was over.

A new dry dock, the Princess Elizabeth, was started in East London in 1942. The 1 200 ton caisson was built, but shortage of other material again delayed its completion until 1947. At Port Elizabeth, the preliminary work for an electrically-driven slipway had been done before the war broke out but progress during the war was very slow as the machinery was not available locally and could not be obtained from overseas either. The making of the machinery, slipway and cradle was long and difficult for the South Africans, and the work was only completed in 1944.

After the fall of Singapore in February 1942, and the consequent loss of any docking facilities in the Far East, and the intensification of the war against shipping in the Atlantic, an even greater amount of repair work fell upon South Africa. The ship repair
industry needed at least 400 more skilled artisans to deal with the influx of ships in South African ports. These were not available and the industry had to operate with only a small number of Dutch artisans evacuated from Java in April 1942.88

Labour issues will be dealt with in more detail in the next chapter, but in the ship repair industry the shortage of artisans in the ports was so chronic that a comment here is necessary.89 The Controller of Industrial Manpower transferred as many men as he could from the Rand, but the situation did not improve. Ship repair was a highly skilled industry which demanded experience and versatility. Unlike in the munitions factories where dilution was possible on a large scale, in ship repairing dilution was only done up to 25 percent with apprentices and, because of the physical demands of the job, very few women were used.

Comparative working conditions were not attractive. Although conditions for transferred artisans were made as comfortable as possible, wages at the coast were not as high as on the Rand and extra allowances were not always forthcoming.90 Moreover, regulation of the hours of work by the Controller of Industrial Manpower to not less than 54 and not more than 60 hours per week made overtime in the ship repair firms difficult. They were allowed in cases of emergency to do up to 72 hours overtime for one week or 66 hours for four weeks on end but time off had to be given later to compensate. It was found impossible to keep below this maximum and the Controller of Industrial Manpower had to authorise extra work even though the machines were double-shifted so that work continued through the night.91
Further, South Africa had only few workers specialised in ship repair work. A handful of overseas artisans did provide some help, but much of the work had to be done by trial and error methods. This was sometimes dangerous considering that many of the ships repaired had intricate mechanical systems of exclusive design which even in England would have required special workshops. So it was a great relief for South Africa when the Mediterranean was reopened to Allied shipping in 1943. Although Britain urged that the repair organisation be kept at full strength for future eventualities, most of the heavy work particularly in East London, Port Elizabeth and Durban was scaled down from 1943 onwards.92

(3) Manufacture of War - Gases in South Africa

One industrial war - time activity that did not find its way into South African official reports was the production of chemical weapons. Allied intelligence reports confirmed in 1940 that the Axis Powers were prepared for chemical warfare. Gas was first used by the Germans on the Western Front in 1916, and the Italians used mustard gas in Ethiopia in 1936. When South Africa joined the war it was noted that the country lacked the materials for chemical warfare, that overseas stocks would not be available for South African use and that there was no hope even for future supplies.93 It was in the light of these developments that the South African Chief of General Staff decided that research should be initiated into the possibility of producing war gases in South Africa.

With the help of the United Kingdom, a special military unit was formed with the task of planning, design and construction of a factory for the large scale production of war
gases. The unit was designated the 99th Technical Works Company, (S.A.E.C.) and was commanded by Lt. Col. W. Blelock. Two factories were constructed. The larger of the two factories was erected at farm No 19 Klipfontein, Northrand and, was designed for the Union Defence Forces. The second factory was sited at Firgrove, on the shores of False Bay and was constructed entirely for use by United Kingdom authorities only.

Even though the secrecy involved meant that the factories could not be placed under the D.G.W.S., it was recognised that successful operation of the factories could best be achieved by employing civilian operatives and by administering the factories through a Board of Directors. Accordingly, a secret Board of Management was constituted with full administrative powers, but it was responsible directly to the Chief of General Staff. The Board had representatives from the United Kingdom Ministry of Supply, the Gold Producers Committee and from the Union Defence Forces.

The operation of the factories required a complement of nearly 2000 workers for full production. The officers and other ranks of the 99th Technical Works Company were therefore demilitarised but they were retained under Defence control. Additional specially selected staff and operative personnel were seconded from the mining industry. The new organisation was designated Chemical Defence (C.D.) Factories (U.D.F.). The work carried out in these factories was kept so secret that no one outside the operative personnel knew what was being manufactured. No records have been found of production figures or any other statistics. A parliamentary report only mentions that, "The factories commenced production on scheduled date and continued successful
operations until January 1945, when the personnel were placed on 'stand-by' until the conclusion of war with Japan." 

The manufacture of war gases was arguably "the most hazardous task ever carried out on a large scale in the Union". As such it is suspected that some people were poisoned, suffered injuries and that some could have died. Unfortunately there are no records to give us any figures. The official version is:

"There were no fatal accidents resulting from the operation of these plants, but many hundreds were injured. Fortunately, very few of the injured suffered any permanent disability and this satisfactory condition was due to the excellent medical facilities provided by the S.A.M.C. under the command of Capt. P. Dalton. These included a 40-bed hospital within the precincts of the Klipfontein Factory, where casualties received the necessary specialised treatment under most modern conditions." 

Fortunately for humanity, the products of these and similar factories scattered throughout the world were never used in the conflict. The Axis Powers had huge stocks of war gases all ready for use, but they lacked the means of effective delivery. They were deterred by the rapid growth of the Allied Air Forces and by the knowledge that Allied resources were adequate for the projected task of immobilising their industries by bombing key points, such as railway yards and to harbour installations, with persistent blister gases.

The successful advance of the Allies from the coast of Normandy ended the danger of gases being used in Europe, although there was still the possibility that the Japanese would employ this weapon in the final defence of their homeland. Allied stocks at that time however, were adequate to meet any demand from the Far East. It was because of
this situation that Allied factories including South Africa's, were ordered to cease production and to place their personnel on "stand-by".

In developed Allied countries such as the United Kingdom and the United States of America, the "stand-by" order to war gas factories presented little difficulty, since personnel not essential for the maintenance of plant and equipment could be absorbed in associated industries without much difficulty. In less-developed South Africa however, the chemical industry was very small and such reservoirs for the temporary absorption of skilled men did not exist. It was impossible to keep a large body of men idle on maintenance at the C.D. Factories (U.D.F.) and it was necessary to find a solution to the problem. Accordingly, when the Allied Command discovered that D.D.T. could kill flies and mosquitoes which were wreaking havoc in the operational areas, South Africa was quick to offer its factories for the production of D.D.T.

The conversion of the war gas factories to the production of D.D.T. was very expensive for South Africa but it was considered to be the better of two evils. An official report recorded:

Faced with the expense involved in retaining specialised and skilled workmen in an idle factory, and having regard to the fact that these men would be required to decontaminate these highly dangerous plants, together with the urgency of Allied needs, it was decided to equip the existing Klipfontein Factory for the manufacture of D.D.T. 98

But South Africa lacked the machinery and tools essential for the conversion of the factory. Thus the task of conversion was carried out under enormous difficulties and the plant only started producing D.D.T. in July 1945, merely one month before the end of
the war. Therefore, the D.D.T. that was produced in South Africa was never used for the
de-infestation purpose for which it was intended. Again, the D.D.T. factory had also to
lie idle when the war ended.

As an uncomfortable war legacy, the war gas plants were also still lying idle, but
dangerously contaminated. Hundreds of tons of the most highly toxic materials lay in the
bulk storages at the two factories. It was imperative to decontaminate the plants
thoroughly, every nut and bolt, every square inch of ground had to be treated since a
single drop of the toxic liquid could cause serious injury. Also, bulk stocks had to be
removed from the factory area and treated in accordance with military directives. This
dangerous work was estimated to have to occupy experienced staff a minimum period
of four months at Figrove and eighteen months at Klipfontein. And then there was the
D.D.T. plant which also needed to be decontaminated. It was with these burdens and
options in mind that the Board recommended and the South African Government
agreed, that the manufacture of D.D.T. should be continued even after the war under
Government ownership at Klipfontein.

(4) Production of Ammunition: The South African Mint.

The most concise history of the evolution of the South African Mint before the war is
probably that given by E.H.D. Amdt in 1939. Amdt chronicled the evolution of the
Mint starting with plans of an off-shoot of the Burgers Mint, in the 1870s, being
established as the Kruger Mint in the 1890s, changing to the Pretoria Mint in 1922, to
the South African Mint and finally to the Royal Mint. Its main conventional activities
included the minting of coins and the manufacture of Dies, Seals, Medals and Metal
Badges. It was only in 1934 that the Mint was ordered to manufacture for export, small arms ammunition up to the "cup" stage only.\textsuperscript{100} The process was extended the following year to the production of complete cartridges and bullets.

In 1936 the Mint was required by the Defence Department to undertake the manufacture of some components of .303 ammunition at the rate of 10,000,000 per annum. The plant for this was ordered and installed in 1937/38. Further, in 1938 the Defence Department agreed that the Mint should undertake the complete production of .303 ammunition and not just of the components.\textsuperscript{101} That mass production had not yet started when the war broke out.

Shortly after the outbreak of war in 1939, it was decided to make considerable extensions to the existing plant. The Mint was also instructed to inaugurate the manufacture and loading of Q.F. Cases at the rate of 7,500 per week, Shell Fuses at the rate of 12,000 per week, as well as Armour Piercing and Frame Tracer Bullets. The necessary plant was ordered and installed in the early months of the war. There was a need for the extension of the Gauges and Tool Room and of the Gauges and Tool Inspection section. Provision was also made for Proofing under the Department of Defence in order that there could be independent testing of all ammunition produced.\textsuperscript{102}

Further factory development for the production of small arms was hampered by the scarcity of labour in and around Pretoria. In 1940 it was decided to utilise existing space at Kimberley to build an extension of the small arms ammunition factory. Kimberley was chosen because of its large working class population of coloured men and women,
some of whom could be harnessed to the war effort, and also because it was situated many miles inland and therefore not likely to be endangered by stray aircraft from stray enemy carriers in the Indian Ocean.\textsuperscript{103} The most difficult part was the duplication of the Pretoria plant to these other locations as there was no capability for the designing of a new factory. An official report describes how the problem was solved:

Accordingly, over one week-end the existing .303” production machines were stripped and specifications of all component parts obtained by actual measurement, drawing and photography. The plant was then re-assembled and went back into production, but the drawings and photographs were carried away to another Union machine shop and work was begun at once on the manufacture of additional plant.\textsuperscript{104}

With the expansion of the Mint’s munitions production, the demand for tools became high and the shortage of skilled tool makers became acute. It was therefore decided in 1942 to open an additional tool-room in Johannesburg so as to have access to the supply of toolmakers living in Johannesburg and along the Reef. A garage was leased and adapted for Mint work and the staff was kept engaged there until 1945.\textsuperscript{105}

The contribution of the Royal Mint to the industrial war effort of the Union has received much praise from all official sources, and in large part that praise is well deserved. However, some disturbing findings of an investigation carried out in 1942 did not find their way into official commentary. The investigation was carried out by W.A.J. Day and two other members, who became known as “The Day Committee”. The Committee was appointed by the Minister of Finance on the 15th of June, 1942 with the following terms of reference:

To examine, in conjunction with the Director of the South African Mint, the internal organisation of munitions production work of the Mint, and to advise the Minister of Finance on any steps which may be necessary to provide for the most efficient organisation of staff and of production
procedure, with a view to securing the most rapid and economical output of munitions.\textsuperscript{106}

The first observation that the Committee made was that the internal organisation of the Mint was not conducive to the large scale munitions production that was required of it. The Director of the Mint, J.T. Necklace, had concentrated all power in his own hands and there was no delegation of authority whatsoever. The director had appointed only one senior engineer and only one senior administrator before the war, and despite the fact that by January 1942, the personnel establishment of the Mint had increased to 28 times the 1939 figures as shown in Table 3.4 below, there were no other senior people appointed to any posts.\textsuperscript{107} Worse still, the Director did not discuss any matters of policy even with his Deputy Director. The Committee observed of this situation:

Under the existing conditions, it would be calamitous if the Director were to be away from duty for a lengthy period due to sickness or other causes, as he has been handling personally far too many matters of policy and executive control, with the result that no one else has full knowledge of the decisions reached and the reasons for them.\textsuperscript{108}

\textbf{TABLE 3.4: STAFF EMPLOYED AT THE SOUTH AFRICAN MINT}

<table>
<thead>
<tr>
<th>ADMINISTRATION</th>
<th>1.1.1939</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pretoria</td>
<td>Kimberley</td>
</tr>
<tr>
<td>Administration</td>
<td>31</td>
<td>251</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>43</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>AMMUNITION</th>
<th>Pretoria</th>
<th>Kimberley</th>
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<th>COINAGE AND BADGE AND MEDAL</th>
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<tr>
<td>Pretoria</td>
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<td>Kimberley</td>
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Source: F33/377: T.E.S 5700 ANNEXURE "C"

Another observation made by the Committee was that, "a definite low wage mentality exists at the Mint," especially as far as white female workers were concerned. This
created considerable disgruntlement among women workers, which led to loss of output and a high rate of staff turnover. The Committee noted that:

The bulk of the female operators commence at a rate of 35/- per week and advance by incremental progression, over a period of two and a half years, to a maximum of £2.10.0. per week. Where the operators are on piecework the basic rate is 5/- per week less. The low rate of pay does not attract sufficient healthy, strong and efficient workers, and the Mint has perforce to be satisfied mainly with the female labour which can not obtain employment elsewhere.\textsuperscript{109}

With the increasingly competitive field for female labour in the Defence Department, and throughout the country generally, the Mint was obviously placed at a great disadvantage. The rate of turnover at the Pretoria factory averaged 171 per month in 1942, representing 51 per cent of the number recruited over a period of six months. Table 3.5 also shows the rate of turnover of Mint employees for the first six months of 1942.

\textbf{TABLE 3.5: S.A. MINT: TURN-OVER OF STAFF - SOUTH AFRICAN MINT}

\textbf{STATEMENTS OF TURNOVER OF STAFF FOR PERIOD}
\textbf{1\textsuperscript{ST} JANUARY - 30\textsuperscript{TH} JUNE, 1942}

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<thead>
<tr>
<th></th>
<th>Recruited</th>
<th>Resigned</th>
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<tr>
<td>European Males</td>
<td>518</td>
<td>110</td>
</tr>
<tr>
<td>European females</td>
<td>1700</td>
<td>1026</td>
</tr>
<tr>
<td></td>
<td>2218</td>
<td>1136</td>
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</table>

Particulars of the
1026 European females
who resigned

: ex Loading Field....... 424
: Badge & Coinage........ 170
: Miscellaneous........... 432

Total 1026

During the six months, 224 natives
Left the service of the Mint.

Statistics of recruitments of natives were not
kept for the full period but native recruits for
: May 1942 numbered       275
: June 1942 "             266

Source: F33/377 : T.E.S 5700 Annexure "F"
Those women who could not move to other jobs tried to overcome the low wages by working excessively long hours of overtime. Large numbers of female workers were regularly on the premises at Pretoria from 7 a.m. to 7 p.m. Inevitably, the average working week for female Mint employees substantially exceeded 55 hours. This situation was also aggravated by the fact that all the Mint factories used only two working shifts per day instead of three 8 hour shifts. This system was self-defeating in respect of efficiency and output, as workers became physically and mentally tired and work output decreased. Sickness and accident rates increased and the quality and quantity of work was detrimentally affected. The investigators recorded:

The Committee observed that many of the daily - paid and salaried staff had a tired appearance and were showing signs of strain. Evidence was given of physical and mental breakdown.\(^{10}\)

A crucial finding was that the rate of production from the munitions section of the Mint was far below that initially estimated. For example, in the case of .303 ammunition, it was forecast in January 1942, the output in June of that year would be 24 000 000 rounds; in March the figure was reduced to 16 000 000; in April it was further reduced to 9 000 000, but the actual production proved to be only 8 560 000.\(^{11}\) The forecasts given for the period up to the end of 1942 were even more ambitious, but they were accompanied by reservations regarding availability of skilled labour, arrival of new plant and machinery, and the completion of new buildings.

However, the Committee felt that these forecasts were misleading. They felt that it would have been preferable to have submitted one estimate showing anticipated output with the existing facilities, and a second estimate based on fulfilment of the conditions
referred to in the reservations. A look at Table 3.6 will give an idea of just how far the estimates were from actual production figures. These were the figures that were sent to the War Office in London for the purposes of estimating the total strength of the British Empire and Commonwealth. It is fortunate that Southern Africa did not become a theatre of war, because the ammunition situation would have led to disastrous consequences.
### TABLE 3.6: COMPARISON OF PRODUCTION WITH FORECASTS (IN MILLIONS)

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<tr>
<th>DATE OF FORECAST</th>
<th>NOV. 1941</th>
<th>DEC. 1941</th>
<th>JAN. 1942</th>
<th>FEB. 1942</th>
<th>MARCH 1942</th>
<th>APRIL 1942</th>
<th>MAY 1942</th>
<th>JUNE 1942</th>
<th>JULY 1942</th>
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**Source:** F33/377: T.E.S. 5700 ANNEXURE "1"
Central to many of the problems highlighted above, was the question of the administrative control of the Mint in general, and of the munitions production sections of it in particular. The Mint was controlled by Treasury and the Public Service Commission, and the staff was subject to Public Service conditions. This arrangement was not entirely satisfactory, as decisions regarding staff, plant, and policy could not always be made or obtained speedily. Also, Public Service practice with its bureaucratic red tape did not always coincide with the needs of a large factory to which the time factor must have been all important.

After a review of all relevant factors, the Committee among other things, recommended the adoption of the following measures:

(a) that munitions production be separated from Coinage and placed under a Manager of suitable grading.
(b) that the policy governing munitions production at the Mint should be controlled by the Department of Defence (through the Director General of War Supplies) in view of its vital interest in the items manufactured;
(c) that personnel for the filling of all posts of Engineer, Assistant Engineer and Foreman, as well as other technical supervisory posts on munitions production be subject to approval by the Director General of War Supplies.\(^\text{112}\)

It was because of the Committee's recommendations that in October 1942, the Director-General of War Supplies assumed direction of the Mint's ammunition plant, and a member of his staff was appointed to the new post of Director - Manager (Ammunition).\(^\text{113}\) Several other officers were then obtained from sources outside the Public Service, where they were not otherwise available. Engineers and production controllers were loaned by the Mines and commercial firms, and most of them remained with the Mint until the end of the war.
The Director General of War Supplies and his staff were determined to improve the output of ammunition at all the factories of the Mint. However, there was one Committee recommendation which the D.G.W.S. ignored, with disastrous consequences. The Kimberley plant was only capable of the production of .303" ammunition components, which on completion were sent to a loading field in Pretoria for filling and packing.\textsuperscript{114} There was no direct rail communication with the Loading Field proper, except via a Defence Department siding near the Pretoria Mint. The location of this siding was poor in regard to serving the Loading Field, and deliveries by road necessitated the negotiation of a very steep gradient.

Also, the area occupied by the majority of the buildings at the Loading Field was stony, which was very dangerous when dealing with explosives. The hilly feature and the rocky terrain also increased the risk posed by ground lightning strikes. Sensing the potential disaster that this location presented, the Committee had observed:

A satisfactory Loading Field, capable of dealing expeditiously and economically with present and future requirements, cannot be arranged on this site. It is recommended that consideration be given to an alternative site at the earliest possible date.\textsuperscript{115}

The D.G.W.S. did not act upon the Committee's recommendation. In the early hours of the 1st of March 1945, the Grant Magazine of the Defence Department was rocked by an explosion. The resulting fire simply rolled down the hill scorching the Loading Field and its buildings, equipment, and workers. An internal report had this to say about the accident:

The casualties to the Mint staff were heavy consisting of 14 Europeans (3 men and 11 women) killed, and 120 (22 men and 98 women) injured, and 12 male natives killed and 166 males and 3 females injured. Our buildings and plant were demolished or damaged to such an extent as to reduce
our loading production of .303 small arms ammunition by approximately seventy-five percent. As a consequence our production of these components at the Kimberley factory and of tools at the Johannesburg factory had to be brought into line, resulting in a large reduction of the number of employees at those factories as well as in Pretoria.\textsuperscript{116}

The South African Radar.

South Africa's most ambitious technical programme during the war was perhaps the development of a local radar system. The word RADAR comes from the descriptive phrase "Radio Detection And Ranging", which in laymen's language means, the use of radio waves to find the direction and distance of objects in water or in the atmosphere in conditions of poor visibility. Radar's best characteristics are that it can "see" farther than human eyes in all weather conditions, day and night. Radar was developed independently between 1934 and 1936 in France, Germany, the Netherlands, Italy, Japan, the United Kingdom, the United States of America and the former Soviet Union.\textsuperscript{117} During the Second World War, radar became the basis of Allied defences against enemy aircraft, submarines and U boats.\textsuperscript{118}

The most detailed story of South African radar development has been told by Peter Brain and others in a 1993 publication.\textsuperscript{119} The authors describe how the Bernard Price Institute of the University of the Witwatersrand designed and built a robust set known as JB. The individual who was most outstanding was a Dr. B.J.F. Schonland, who set up and commanded the Special Signals Service (SSS), the military unit which set up a chain of radar stations and filter rooms all round the coast of South Africa. Most of these stations were controlled by women. Some J.B. radar sets from SSS also saw service in Kenya and in the Sinai Desert.\textsuperscript{120}
The South African radar programme was so secret that no one outside the programme had any idea of what was going on, not even the Allied forces. In 1940 when a Royal Air Force (RAF) radar officer visited Mombassa to investigate the possibility of placing a radar station for the air defence of Mombassa, he was surprised to find that a South African basic JB was covering the area from Mambrui, 160 kilometres from Mombassa. The RAF officer reported back to London:

It is interesting to note that the South African Army were providing elementary home-made R.D.F. in this area, giving a range of some 35 miles but with no reliable height estimation for aircraft flying at normal heights.\[121\]

In 1941, one South African JB set ended up in Alexandria under a British unit and, “nobody knew what sort of secret weapon it was”. The South African scientist, Francis John Hewitt, who was operating the unit was advised to use a new British GL radar set which other units were familiar with. However, “being a dedicated JB man he refused this offer”, and the South African set was later scrapped.\[122\] There were also some technical problems with the JBs which reduced their effectiveness. For example, the set that was at Mambrui was supposed to be linked to Mombassa by radio and telephone to alert Allied forces when enemy aircraft were approaching. Neither of the communication links ever worked satisfactorily. The location had been chosen on the assumption that if Italian bombers wanted to attack Mombassa, they would fly along the coast. However, Peter Brain noted that:

in fact on the only occasion when they came [Italian bombers], they flew South over the ocean, out of range, came in behind the 180 degree coverage of the aerial, and were picked up only after they had bombed the airstrip at Malindi and flown out to sea.\[123\]
The story of the development of the South African radar has been told with the familiar triumphantist tone of South Africa's incredible ability for engineering improvisation. Yet, there is still a further claim which has not yet found its way into South African literature until now. The effect of that claim suggests that it was a South African scientist who invented the radial scan in 1932 which British scientists then stole from him and subsequently developed into radar.

In February 1951, Pieter Justinus de Wet, a South African who had moved to London after the war, wrote to the South African High Commissioner in London as follows:

After years of research at the University of Cape Town, I was awarded the Gold Medal of the Institute of Patentees in London for the Invention of Radial Scan on 12 October 1932. The Principle of Radial Scan, as used in many forms of Radar is now well known; but I was not informed by the NPL Radio Research Staff of their intention to use my Invention of Radial Scan for the Service of the Crown, nor have they acknowledged this fact since recent hostilities. Because of this, it seems possible now for the Ministry of Supply to suppress any claim for award merely by denial, and to deprive me of any benefit, although my Invention was of the greatest value in war.

Information from the South African High Commissioners' files indicate that P.J. de Wet was indeed the holder of British Patent No. 319454, "which is the first and only Patent for the Discovery and Invention of Radial Scanning to produce a pictorial image on a screen". This invention was indeed demonstrated in London in December 1932 at the Royal Institute of Patentees at which members of the National Physical Laboratory(NPL), were present. De Wet alleged then, that some NPL Radio Research staff who were also demonstrating a radio set took his diagrams without permission and never returned them to him. On 25th July 1935, the same NPL Radio Research staff is said to have demonstrated to the Air Ministry in London the use of Radial Scan for Radar. De Wet
went on to charge that the NPL demonstrations were, "exactly as indicated in my Radial Scan Diagram".\(^{126}\)

As these were obviously serious charges of plagiarism, investigations of the claims were carried out in London. At the end of the investigations, the Principal Patents and Awards Officer of the Royal Ministry of Supply rejected de Wet's claims. The officer reiterated an earlier assertion that the claims of de Wet's patent were, "confined to the use of a fixed radial slot for selection of the image", and not for all radar applications.\(^{127}\) He therefore ended the matter by writing to de Wet:

I am directed to inform you that no evidence exists that your invention, the subject of British Patent No. 319454, was used either by the National Physical Laboratory or by any member of the Radar Research Teams, or that the invention was embodied in any device used by the Crown.\(^{128}\)

From the foregoing, it seems reasonable to concur with the opinion that some South African scientists were involved in the delicate research which resulted in the discovery of radar. However, given the cut-throat nature of the arms production business, the question whether the principles of radar were discovered in South Africa or whether De Wet was pushing the image of South Africa's engineering prowess too far, will probably never be answered.

At the same time, it is surprising that the only comprehensive book on South African Radar during the Second World War does not mention Pieter Justinus de Wet at all, even though two of the authors were at the University of Cape Town during and after the war, and must have known De Wet and known about his claims.\(^{129}\) Also, even
though most of the experiments for the JB projects were done at Signal Hill in Cape Town, and at Cape Point, there is no mention in that volume of the involvement of top scientists from the University of Cape Town, even with knowledge that people like de Wet were working on radar experiments from that university. Instead, Peter Brain's book gives the impression that the South African Radar programme was started and executed solely by Basil Schonland of the Bernard Price Institute and his team of scientists, all from the University of the Witwatersraand.  

In the final analysis, the South African Radar programme was not the success story that Peter Brain and his co-authors would like us to believe. It was only a large scale experiment which did not yield quite the expected depth or range in results. The main limiting problem appears to have been the degree of secrecy surrounding the whole programme. New Zealand which started work on locally manufactured Coastal Watching(CW), and Coastal Defence(CD) radar sets at the same time that South Africa embarked on the JB programme, had much more success. New Zealand scientists worked very closely with their Navy, Army and Air Force, and in fact, all their sets were operated not by scientists, but by military service personnel. Also, all New Zealand's CD and CW components were manufactured by private industry and only servicing was done by the Department of Scientific and Industrial Research. In the light of this, Brain himself acknowledges:

But the New Zealanders, perhaps because of their isolation and their far greater naval involvement, took other directions early; a home-made airborne ASV set was under trial at the same time, and an experimental naval installation was working on the cruiser HMS Achilles. In all, they put about twenty locally produced ASV sets into aircraft up to October 1941, before the South Africans, who were obsessed with secrecy, had installed even one.  

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END OF TECHNICAL PRODUCTION.

South Africa started to scale down on the production of munitions as early as 1943 when a series of high level discussions were held with a view to ascertaining the country's role in what Union officials called stage two of the war. It was considered that stage one of the war would end with the defeat of Germany and in stage two only Japan would still be fighting against the Allied Forces. The production policy that evolved from these discussions was based on the assumption:

No Government statement in regard to South Africa's military contribution in Stage 2 has yet been made, but it is believed that on account of her colour bar and other internal problems, South Africa is unlikely to employ her armed forces to any extent, if at all, in the Eastern countries in the war against Japan. Consequently her war effort in Stage 2 will be almost, if not entirely, confined to her "home front" effort.

Most of the discussion was centred on anticipated employment problems, especially the relocation of workers who were employed in munitions factories and the creation of employment for soldiers returning from the front. This challenge will be discussed in more detail in the next chapter. The technical considerations concerned mainly the proposal for post-war production of Defence requirements at Kimberley.

Technical advisors were contemplating the disposal of most of the war-related factories but the Minister of Commerce and Industries, in consultation with the Chief of the General Staff thought that the Kimberley plant could be kept open for post-war Defence production. The Minister then decided to appoint a committee to advise the Government on the matter. The terms of reference of the committee were as follows:

To investigate and report upon the feasibility of incorporating the various South African Mint plants in a scheme whereby certain productive activities for post-war Defence requirements might be concentrated at

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Kimberley, where in addition the large scale repair of ordnance and armoured fighting vehicles might also be undertaken.\footnote{134}

The Committee did not take its job seriously, and after only two meetings they submitted a rather arrogant one page report to the Minister, which stated that Kimberley was not suitable for post-war Defence production because it did not conform to military requirements.\footnote{135} However, the Committee did not say what these requirements were. In a move that clearly illustrates the tensions that existed between the Government and its technical advisors, the Minister rejected the report and in a bitter tone asked for a technical assessment of Defence requirements. The Minister's letter to the Chairman of the Committee reads in part:

\begin{quote}
...that the Committee's task was not to establish what military requirements would be either from an administrative or strategical point of view.... This latter aspect is a matter of Government Policy which can only be determined in the highest quarters having all the facts of the situation at its disposal.

You are, therefore, desired once more to call your Committee together and explain to them that it is the Minister's desire that as complete as possible a report should be submitted at the earliest possible date dealing with the technical considerations involved in any scheme envisaged in the terms of reference of the Committee.\footnote{136}
\end{quote}

It was then that the Committee prepared a second report for the Minister, but again the report was not a result of any serious research. The technical issues included in the second report were a result of "discussions with the military representatives on the Committee". They concluded that the maximum post war expenditure of .303" ammunition by the Union Defence Forces was estimated at twelve million rounds per annum, and that of 9mm ammunition only two million rounds per annum, and that these were too small to be able to sustain a factory. The expenditure of pistol and

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revolver ammunition was said to be negligible and did not warrant post-war planning. Artillery ammunition and mortar bombs were said not to be required in sufficient quantity to justify the retention of any plant for their local manufacture. The extent of the peacetime repair work on ordnance and armoured fighting vehicles was considered to be small and could be effected in existing military armouries and workshops.\textsuperscript{137}

It appears however, as if the technical references in the report were only for the consumption of the Minister. The real reason that the Committee was against the idea of Kimberley retaining a post-war Defence industry was because the workforce that would have benefited most from such an industry would have been mainly natives and coloureds. It was noted that semi-skilled coloured and native labour was available at Kimberley at approximately ten percent lower wages than at Pretoria. For this reason, there were 4,000 people employed at the Kimberley factory and the authorities were anxious to retain the services of these people. This fact was also noted by the Committee at one of their meetings as follows:

Mr Wilson said that this meeting was probably inspired by the desire of the Kimberley people to provide employment and this was the crux of the matter. The meeting was to see whether Defence Department want to set up workshops at Kimberley. If there is no answer to this then Kimberley has to be investigated from another angle.\textsuperscript{138}

In their final report, the Committee again pointed out their opposition to the manpower preferences of Kimberley. In defiance of the Minister and of the Chief of the General Staff, the Committee totally rejected the proposal for the concentration of Defence industries at Kimberley. They wrote that:

The only points in favour of the continued manufacture of small arms ammunition at Kimberley on the post-war anticipated demand arise from
the provision of small scale employment of semi-skilled labour available in that district, and the positive retention of the factory as a shadow plant...

After full consideration of all aspects of the position, the Committee submits that Kimberley offers no technical advantages for the concentration of munitions production activities.¹³⁹

All these discussions, technical considerations and the recommendations of the Committee slowed down technical production and in some factories actually brought it to a standstill. When the war finally came to an end, South Africa was already psychologically and administratively waiting for the order to stop production. A War Stores Disposal Board, established in 1944 quickly closed down all munitions factories and their thirty annexes, "with all possible haste".¹⁴⁰ Besides the Klipfontein factory which was now producing D.D.T, only the small arms ammunition plant at the Pretoria Branch of the South African Mint remained, alone, just like it was before the war.

CONCLUSION.

In conclusion, it must be noted that there were many factors that restricted the technical production side of South Africa’s industrial war effort. The kind of technical expertise required was new to both the managers and the workers. The machinery and tools for this new kind of production were not available. There were few skilled artisans and there were even fewer technical drawings on which to work. Even such delicate work like the repair of sophisticated Allied warships had to be done on a trial and error basis. There were also some organisational and administrative problems in a number of munitions production establishments.
So much so that on the technical side, South Africa's industrial war effort was far below that of the other Dominions of her stature like Australia and India. For example, at a time when South Africa was still battling with the production of small arms ammunition and aircraft bombs, Australia was already manufacturing various types of war planes as shown in Table 3.7 below. Even in small arms ammunition which was the country's largest programme, South African production was far below that of Australia whose monthly production for 1943 alone is shown in Appendix 3.\(^\text{141}\) Also, as demonstrated above, South Africa's radar programme was far behind that of New Zealand.

India had six munitions factories which were fully operational before the outbreak of war in 1939. By 1941, at a time when South Africa was finding it difficult to repair Allied warships, the Indian shipbuilding industry was manufacturing minesweepers, anti-submarine motor boats and tank landing craft.\(^\text{142}\) On the technical side therefore, South Africa's industrial war effort could only surpass that of neighbouring Zimbabwe and was closer to that of New Zealand which is smaller in size, had less resources and a smaller population than South Africa.
### TABLE 3.7: AUSTRALIA'S AIRCRAFT PRODUCTION 1941-1945

<table>
<thead>
<tr>
<th>Aircraft</th>
<th>1941-2</th>
<th>1942-3</th>
<th>1943-4</th>
<th>1944-5</th>
<th>Total 1939 To 31 Aug 1945</th>
<th>Number Ordered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beaufort</td>
<td>76</td>
<td>285</td>
<td>312</td>
<td>27</td>
<td>700</td>
<td>700</td>
</tr>
<tr>
<td>Beaufighter</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>281</td>
<td>329</td>
<td>450</td>
</tr>
<tr>
<td>Lancaster-Lincoln</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>61</td>
</tr>
<tr>
<td>Lancaster-Tudor</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>12</td>
</tr>
<tr>
<td>Wirraway</td>
<td>320</td>
<td>-</td>
<td>30</td>
<td>60</td>
<td>717</td>
<td>870</td>
</tr>
<tr>
<td>Wackett Trainer</td>
<td>187</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>Boomerang</td>
<td>-</td>
<td>105</td>
<td>102</td>
<td>43</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>Mustang</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>18</td>
<td>350</td>
</tr>
<tr>
<td>Tiger Moth</td>
<td>508</td>
<td>66</td>
<td>-</td>
<td>35</td>
<td>1,070</td>
<td>1,070</td>
</tr>
<tr>
<td>DH.84 Dragon</td>
<td>-</td>
<td>87</td>
<td>-</td>
<td>-</td>
<td>87</td>
<td>87</td>
</tr>
<tr>
<td>Mosquito</td>
<td>-</td>
<td>-</td>
<td>6</td>
<td>82</td>
<td>115</td>
<td>370</td>
</tr>
</tbody>
</table>

**Engines**

| Twin Row Wasp    | 74     | 223    | 343    | 228    | 870                       | 870            |
| Single Row Wasp  | 152    | 85     | 32     | -      | 680                       | 680            |
| Gypsy Major      | 315    | 460    | 230    | -      | 1,300                     | 1,300          |
| Merlin           | -      | -      | -      | -      | -                         | 100            |

Excludes 2 C.A.C. Bombers and 8 gliders.

It may be appropriate to end this section by taking a closer look at the man who made South Africa's war effort possible. Hendrik van der Bijl worked as Chairman of ESCOM, Chairman of ISCOR, Chairman of the Industrial Development Corporation(IDC), Director-General of War Supplies and then as Director-General of Supplies. He was the economic planner for South Africa under the Hertzog government until 1939 and then under the Smuts government until 1948. As Director-General of War Supplies, van der Bijl co-ordinated work in some six hundred factories and built forty new ones, culminating in the grand steelworks at Vanderbijlpark. The influence of van der Bijl could be felt in each and every wartime project. When he died in 1948, it was recorded that he was not only the creator of South Africa’s heavy industry, but that, “he was South Africa’s war-effort”.

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More than anybody else therefore, van der Bijl was most aware of the fact that South Africa’s war effort was not as great as it was expected to have been. At a banquet which van der Bijl attended in London after the war, the South African war effort was highly praised by some British enthusiasts. Alice Jacobs had this to say about van der Bijl’s reply to all that praise:

H.J., embarrassed by the very flattering remarks and knowing full well the mighty effort put forward, under front-line conditions, by the people of Great Britain, replied that he felt rather like the old Negress who, with her small son, was attending the funeral of her husband. The Negro Minister conducting the burial was evidently in an eloquent mood and praised the departed man so highly that after listening a while the mother turned to the child and said: "Come on home, chile, we’s gotten to the wrong funeral."\textsuperscript{145}
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   Human & Rousseau, Cape Town, 1995, 36.

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   Director General of War Supplies: Report on Organisation,
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    Sept., 1939, sect 2.(1).

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    Nov., 1939.

    on Organisation, Principles of Purchase and Production, p 3.

    A 16.4, p 3.

15. *Ibid., A 10.1.*
    Director-General of War Supplies: Memorandum on the
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18. Ibid, 749/1 Munitions Production Committee - Minutes of the 10th Ordinary Weekly Meeting held on 11th June, 1940. See also, B.C.825 A 16.4, Annexure 2: War Supplies Department: Executive Organisation And Officials.

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27. Ibid, No 23, 1946 Chapter xxx, "The Union of South Africa and the War."


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(2) A Record of the Director - General of War Supplies (1939 - 1943) and the Director - General of Supplies (1943 - 1945), Johannesburg, 1948.


36. Ibid, 126.

37. Ibid, 126.

38. Ibid, 2.


40. Ibid, 3.

41. D.W.S. 738: D.G.S.50, Meeting Between Director General of War Supplies and Gold Producers Committee, held on 22 February, 1940.

42. Ibid, Letter from Gold Producers Committee to D.G.W.S., 29th May, 1940.


45. A Record of the Organisation of the Director - General of War Supplies 1939 - 1943 and Director - General of Supplies 1943 - 1945, Johannesburg, 1945, 16.

46. D.W.S.749/1 Vol. 1: D.G.S. 52, Minutes of a Special Meeting of the Munitions Production Committee held at Escom House on 19th March, 1942, Item 3, "Raw Materials Position".


49. Government Notice No 650, 26th April 1940.


53. *Ibid*, 120.

54. *Ibid*, 120.

55. *Ibid*, 120.


64. B.C.825: C1.11, 10.


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71. A Record of the Organisation of the Director - General of War Supplies 1939 1943 and Director - General of Supplies 1943 - 1945, Johannesburg, 1945.

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74. (1) Ibid, 142,
(2) B.C.825: C1.11, 51-54.

75. B.C.825: C1.11, 34 - 77.

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80. B.C.825: C1.11.

81. Ibid, C4.1.1, Ship Repairs, 1.

82. Ibid, C4.1.1

83. Ibid, C4.1.1

84. Ibid, C4.1.1

85. Ibid, C4.1.1

86. Ibid, C4.1.1

87. Ibid, C4.1.1

88. Ibid, C4.1.1

89. Ibid, C4.1.1

90. Ibid, C4.1.1.
91. Ibid. C4.1.1
92. Ibid. C4.1.1.
94. Ibid. 2.
95. Ibid. 2.
96. Ibid. 2.
97. Ibid. 3.
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102. (1) D.W.S. 700/5 : D.G.S.17
(2) F.33/377 T.E.S.5700
108. Ibid. 6.
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110. Ibid., Report of the Committee, 12.

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114. A Record of the Director - General of War Supplies 1939 - 1943 and Director - General of Supplies 1943 - 1945, Johannesburg, 1945, 63.


120. Ibid., 61-107.

121. Ibid., 26.

122. Ibid., 27.

123. Ibid., 25.


125. BLO 13; Ref 12/2874: Pieter Justinus de Wet-Radial Scan Principle, Item 1.

126. Ibid.
127. Ibid. WAJ Harris to J. de Wet, 23rd Nov., 1950.

128. Ibid. 5th March, 1951.

129. P. Brain and Sheila Lloyd(de Beer).

130. In the absence of any other explanation, it is tempting to think that there might have been a deliberate plot to exclude the University of Cape Town as an institution from taking part in the radar programme during the war, and to be silent about any of their connections with the project before and after the war.


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135. Ibid.

136. Ibid. F.J. Du Toit, Secretary for Commerce and Industries, to Prof. W.G. Sutton, Chairman of the Committee, 16th Oct., 1944.


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142. 15/1535: India's War Effort, Issued under the authority of the Government of India, 13th Nov., 1941.


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CHAPTER FOUR

ARMS PRODUCTION IN SOUTH AFRICA : 1939 – 1945

SOME SOCIO-ECONOMIC PROBLEMS

Introduction

A recently published presentation of the socio-economic aspects of South Africa's participation in the Second World War gives the impression that all the country's manpower, industrial, financial and other resources were harmoniously mobilised for the war effort.¹ On the home-front, it proudly points out that armies of men and women toiled day and night in munitions and other factories to produce the war materiel required by the South African Defence Force units who were heroically fighting against the Axis aggressors. In this effort, it is argued, the South African Government financed most of the country's war effort from revenue and not from loans. Of course, leaders are told, the Union Government could not have managed to mobilise these vast financial resources without the great help provided by the mining sector, and especially by the gold mines.²

There is undoubtedly some truth in the patriotic presentation of South Africa as having mobilised much of her resources for the Allied war effort. However, some leading scholars like W. K. Hancock have pointed out that South Africa's war effort was small compared to other Dominions of her stature like Canada, Australia and New Zealand.³ Even for such a comparatively modest war effort, South Africa faced some important problems which should not be glossed over. This chapter attempts to highlight the most glaring of these difficulties in South Africa's munitions production industries. It also examines selected home-front activities of the country's war effort. In analysing these problems, it is observed that South
Africa’s war effort on the “home-front” was characterised by division rather than by unity of purpose. The labour situation was especially poor because of racial discrimination in the armed forces and because of the job colour bar in the workplace. This led to more industrial strikes during the war than in the previous decade. This negative situation was compounded by the political division among the white population, a good number of whom were sympathetic to Hitler.

It is further argued here that the South African Government did not necessarily adequately finance the war effort and that it was not even able to do so because of fears of internal political problems that would have resulted from a war induced financial crisis. Moreover, the much-praised gold mining industry did not always act as the financial backbone of South Africa’s war effort. Rather, on a number of occasions, it was actually a liability to South Africa’s war effort. It is also suggested that South Africa did not always act in unison with other Allied Governments but that much time and effort was lost in quarrelling with the United States of America and with the United Kingdom over one aspect or another of South Africa’s contribution to the war effort.

Financing the War Effort

A Cautious Approach. Throughout the war, South Africa’s financial policy was conditioned by the country’s internal political situation, which was characterised by sharp political division among the white population, and the colour bar against the black population. As regards the white population, the South African Government was faced with a strong Afrikaner opposition, sympathetic to Hitler’s cause and antagonistic to South Africa’s participation in
the war. The South African Government was therefore unable to commit the country to war without reservations and this was particularly evident in the country's cautious financial policy. During the first eighteen months of the war, the South African Government therefore tried to mobilise the country's resources on a scale involving the minimum disturbance of the existing economic structure of the country. Few restrictions were placed on civilian consumption and there was neither import nor export control. The Government was endeavoring to win support for its war policy by depriving the opposition of some of the more obvious grounds for criticism. In March 1940, the Minister of Finance, J.H. Hofmeyr presented a budget which provided no more than £14 million for Defence. This phase of limited involvement in the war was, however, brought to a sudden end by the Italian declaration of war on the allied forces in June 1940. From then onwards South Africa was committed to a more active role, but it was still obliged to weigh its military and financial contribution to the war effort against the risks which such commitments were likely to provoke in the country's fragile domestic politics. With Axis forces in East Africa now poised within long-range striking distance of South Africa, it became more urgent to support the country's Defence Forces in every way possible. In financial circles, the immediate problem was where the South African Government would get the money required to finance an enhanced defensive capability.

Some debate was generated by an academic at the University of Cape Town, Professor Sheila van der Horst, with her article, "Financing The South African War Effort," in which she suggested that the Government could raise the money required either by special taxation or by borrowing from the internal money market. After a thorough discussion of the dangers of inflation that these Government measures might generate, van der Horst concluded that,
"The tacit cry of 'business as usual' instead of 'economy and yet more economy,' is a grave source of weakness to the South African war effort." Yet, when it came to real action, there was a certain lack of realism about the steps taken by the Government to finance the war effort. Despite the obvious financial strain that the war was exerting on the United Kingdom, on 11th June 1940, the South African High Commissioner to London, acting on instructions from the country's Minister of Finance, approached the Bank of England with a view to raising a loan on the London money market. Simultaneously, tentative inquiries were made about the prospects of raising a loan from the United States of America.

The whole question was referred to the United Kingdom Treasury and the High Commissioner was informed that a loan on the London money market could not be contemplated. The Treasury was equally discouraging about the prospects of an American loan, for, it was pointed out, a loan for military purposes was likely to conflict with American Neutrality Laws. The United Kingdom Treasury emphasised the idea that South Africa ought to be able to finance its additional defence expenditure from local resources. The failure of this attempt to finance the war effort by borrowing on the international money market made an immediate internal loan inevitable. In October 1940, the South African public was invited to subscribe to the first of a series of "Union War Loans". During this tricky time, relations between South Africa and the United Kingdom also became strained over the Union's refusal to join other Dominions in alleviating the balance of payments problems which the Sterling area was experiencing against the United States of America. The crucial importance of the Empire's contribution to British balance of payments was described by Cowen and Westcott as follows:
Sterling debt, as Sterling balances, was the major contribution which the Empire made to the British war effort. It was the means by which colonies in Africa felt the brunt of total war and in the post-war period was to provide the argument that colonial development should be regarded as some kind of reward for war-time colonial sacrifice.  

It was also believed that an absence of South African exchange controls was permitting a considerable flight of capital from Britain to South Africa and from there to the dollar area. This became a cause of irritation to the United Kingdom Treasury which estimated that during 1940, gaps in South African exchange control had permitted the flight of £14 million from the United Kingdom to the United States of America, including £6 million belonging to South African residents. The South African Government was then informed that although the United Kingdom Government wished to maintain freedom of capital movement between Britain and South Africa, the leakage of British capital into the dollar area would have to be stopped, even at the cost of stopping the movement of funds to South Africa. Although the threat of pressure was clear, it was hoped that the South African Government would recognise the necessity of following the other Dominions and impose more effective exchange control regulations of its own. However, South Africa did not impose such regulations.

The Defence Budget. In the 1939 – 40 financial year, direct expenditure by the Department of Defence was £6 ½ million. The actual Defence Vote for that year was just under £3 million, but this was supplemented by an Additional Defence Account of just over £4 million which was kept secret and was only revealed to the Select Committee on Public Accounts in 1941. In April 1940, the War Expenses Account was created, out of which all expenses on the military establishment of South Africa and on defence measures were to be
met. In terms of Section 1 (1) of the Finance Act No. 27 of 1940, the Account was to be credited "with such monies as Parliament may from time to time appropriate to the account", with effect from the 1st of April 1940. As from that date, the Additional Defence Account created by Section 1 of the Finance Act, 1939, was closed. The balance on this account, together with the balances on the Aircraft Replacement Fund, and the Artillery and Machine Gun Replacement Fund were transferred to the War Expenses Account. In his first budget for 1940 – 41, the Minister of Finance estimated that the sum necessary to finance expenditure on the War Expenses Account would be £14 000 000. Of this amount, £12 000 000 would have been raised from Revenue, and £2 000 000 from Loan Funds. However, the Minister was forced to ask for an additional Budget of £32 000 000 of which £8 500 000 was to be raised from revenue and £23 500 000 from loans. Again this was not enough to cover the War Expenses Account, and a Second Additional Appropriation Act provision was made for a further £14 000 000 for Defence, to be raised entirely from loan funds. In the final analysis, the total expenditure on the first War Expenses Account for 1940 – 41 was close to £62 000 000, of which £20 500 000 was from revenue and £39 500 000 was from loans.

The scope of the War Expenses Account was extended by Section 5 and Section 21 of Act No. 41 of 1942. Section 5 of the said Act regularised the financial deals of the South African Government with Allied nations for the war effort as follows:

(1) The Minister of Defence may authorise the sale or the letting or sub-letting of any property to the use of which the Defence Department of the Union is entitled, to any Government allied with the Government of the Union, at such price or for such consideration as may be approved by the Treasury.

(2) The Minister of Defence or any person authorised thereto by him may act as the representative of any Government allied with the Government of the Union, for the purpose of entering into contracts relating to the acquisition or hiring of goods or services, and may as such representative, and subject to
repayment by such Government, make such payment out of the War Expenses Account ... as any such Government may be liable to make in terms of any such contract.17

The War Expenses Account was closed on the 31st March 1947, in terms of the Finance Act No. 57 of 1946. The total amounts spent on war expenses and militarization under the War Expenses Account between 1940 and 1947 were close to £700 000 000. Appendix 4 shows the actual statements of the War Expenses Account giving the details of expenditure and the sources of funds from the first account in 1940 to the last account in 1947.18

The Labour Situation In Munitions Factories

General. A survey of the South African economy before the outbreak of the war concluded that, "South Africa has the labour, coal, a number of minerals and a diversity of agricultural raw materials required in industry."19 Yet, while the mineral and agricultural raw material situation may have appeared to be favourable, the labour situation was far from the comforting picture presented by the survey. The biggest problem was that of the job colour bar. Before the war, the conditions of workers in all spheres of the South African economy were governed by the Industrial Conciliation Act and the Wage Act of 1937. Both these acts entrenched the rights of white workers in the work place and discriminated against African and Coloured workers.

When war broke out, neither the Government nor industrialists had any intention of departing from the existing job colour bar. Instead, the small white population went on to try to monopolise even the military jobs that were created at the outbreak of war. This was so much so that, when the white population was called upon to provide skilled labour for the armed forces with their need for technicians and skilled mechanics, and to provide skilled artisans in the engineering industry that had been expanded by munitions production, there
was an acute shortage of skilled labour. This shortage of skilled labour was a direct result of the job colour bar, as it was an artificially created shortage.

In July 1940, the Director-General of War Supplies (D.G.W.S.) established a Labour Committee with representation from many sectors of industry. The aim of this Committee was, “to regulate the supply of labour and to ensure that it was used to the best advantage.”\(^{20}\) In its investigations, the Committee found that in the munitions production factories, the labour policy was based on market forces and persuasion. But the competition for artisans had become intense, leading to their movement from shop to shop, being lured by ever higher wages. By the end of 1940 it had become clear that market forces were detrimental to a stable workforce in the munitions factories. The Labour Committee reported that it was “unable to make any progress under existing conditions”, and that munitions production was being hampered by a shortage of engineers.\(^{21}\) The Committee had therefore failed to regulate the supply of labour, and it reported that, “The country is at the end of its skilled labour resources, and in fact a critical shortage exists.”\(^{22}\)

There were other reasons why the skilled labour crisis was deepening. One of the major contributors to the crisis was the mining industry. The Labour Committee found that the mining industry, especially the gold mines, had expanded production and was poaching skilled artisans who could have been employed in the munitions factories. While the Government propaganda machine presented an image of all South African industries working together for the war effort with patriotic zeal, the Labour Committee found otherwise. It reported:

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Employers find that munitions work is usually less lucrative than normal work for Gold Mining groups, and as gold mining is considered part of the war effort they are in many cases not anxious to take on war work; similarly, workers are concerned with financial rather than patriotic considerations. The position has deteriorated over the past months.  

There had been a number of agreements between employers, employees and their unions in the Engineering Industries, but as the skilled manpower crisis deepened, these “gentlemen’s agreements” broke down. Also, the agreements did not apply to the mines, or the municipalities, or the new “mushrooming” workshops. Skilled workers soon found out that they could secure higher wages in these establishments. Having failed to control the situation, the Labour Committee recommended that wages be regulated and that the movement of artisans be controlled. In his study of the South African labour situation during the war, Peter Alexander observes that:

It was at this point and in these circumstances that van der Bijl, having received the Labour Committee’s report, recommended the introduction of labour control. As we have seen, it was not an absolute shortage of skilled workers which provoked this decision, but, as the report put it, shortage of ‘patriotism’ displayed by workers (but not their union leaders) and by sections of capital, including the mining houses. However, the main thrust of control was directed against workers rather than the mining industry, and it tended to benefit, in particular, the larger engineering employers.  

Control of Industrial Labour. War measure No. 6 of 13 February 1941 provided for the appointment of a Controller of Industrial Manpower. The job was given to Ivan Walker, the Secretary for Labour. The Controller of Manpower (as he was often called) was given among others, the following powers:
(d) to prohibit any person from performing work not of a specified type in a controlled industry;
(e) to prohibit any person from performing any specified work, or any work of a specified type, in a controlled industry;
(f) to prohibit the engagement, resignation or discharge, without his prior consent, in a controlled industry – of any specified employee, or of any specified class of employee, either generally or in a specified area or in a specified establishment.
(g) ...to regulate the remuneration of employees, the hours of work and any other conditions of employment in any controlled industry or any establishment in any such industry;
(h) to terminate or suspend the employment of any employee in any establishment.\textsuperscript{25}

War measure No. 6 also provided for the appointment of a Labour Control Board "which shall consist of the controller, as chairman, and such other members, representing employers and employees in equal numbers."\textsuperscript{26} Although the Board was supposed to represent all industries, in practice it only co-opted employers and trade unions in the engineering industry. Also, although the Controller had to consult the Labour Control Board before taking action, he was not bound to act on such advice. He could also act alone.

A number of trade unions initially welcomed the introduction of labour control especially since the Secretary of Labour was the one appointed as the Controller. However, others thought control, "amounted to the virtual conscription of engineering labour".\textsuperscript{27} The Amalgamated Engineering Union concluded that:

> The workers in the Engineering Industry consider that the authority invested in the controller should be subject to such modification as would allow the industry some measure of control, as the principle in the proclamation is of a dictatorial rather than a co-operative nature.\textsuperscript{28}

While the Labour Committee and the Controller of Industrial Manpower were theoretically concerned with industry in general, the mines, the larger municipalities and the South African
Railways and Harbours Administration were not subject to controls. Consequently, recommendations and regulations were directed mainly towards the engineering industry. On the 19\textsuperscript{th} of March 1941, engineering was declared a controlled industry. Initially the engineering industry was defined as including the production of iron and steel, the erection and maintenance of machinery, structural metal work, the manufacture of metal goods and the construction of marine craft. By 1944 however, engineering also included the electrical fitting of ships.\textsuperscript{29} One of the first steps that the Controller of Industrial Manpower took was the scheduling of engineering trades for the purposes of controlling them. First to be scheduled in March 1941 were journeymen blacksmiths, boilermakers, coppersmiths, electricians, fitters, millwrights, moulders, pattern makers, toolsmiths, turners and welders.\textsuperscript{30} These were told that they could not change their employment without the approval of the Controller. As the shortage of skilled artisans continued, the schedule was extended by 1942 to include journeymen shipwrights, boatbuilders, telephone and telegraphic electricians, wireless mechanics, plumbers leadburners and draughtsmen. By 1945, the scheduled trades included journeymen sheetmetal workers, rivetters and toolsetters.\textsuperscript{31} Control of industrial labour was therefore extended as the shortages arose and rather than being a solution, labour control was itself a measure of how bad the 'patriotic' commitment of skilled labour had become.

Further, the Controller of Industrial Manpower banned the advertisement of jobs for scheduled journeymen. He also prevented artisans from establishing their own businesses and required that no new engineering business could be started without the consent of the Controller.\textsuperscript{32} Also, the South African Defence Forces were ordered not to recruit artisans who had been employed on munitions production. Some men were also released from military
service so that they could return to their civilian occupations.

Another control measure used by the Controller of Industrial Manpower was the regulation of hours of work. Before control was established, some shops worked their artisans twelve hours a day, seven days a week, while in other shops artisans could be lying idle due to the difficulty in the distribution of war work and hold ups in production. The Controller recommended a minimum of 54 and a maximum of 60 hours a week for all scheduled occupations. This, according to the new Factories Act of 1941 meant 46 normal working hours and up to 14 hours of overtime. No employer could allow work at more or less than these hours without the permission of the Controller.

The strict regulation of hours of work caused considerable trouble in the ports as ships docked and had to be repaired at very short notice. Inevitably, the maximum hours were frequently exceeded but it was impossible to obtain permission from the Controller on every such occasion. The Controller was therefore forced to allow certain exceptions and, as a result, men on ship repairs could work a 66 hour week, and if the work was urgent, they could work up to 72 hours.

In 1943, once the Mediterranean was re-opened, following the invasion of Italy the level of work declined, especially in Port Elizabeth and East London, and it was not possible to keep all the men fully employed for 54 hours a week. The Controller responded by enforcing a temporary reduction to the 46 hour week, prohibiting all overtime and forcing the accumulation of all accrued leave. He also authorised the return of transferred men to their previous employment. This reduction in hours of work sparked off unrest in the controlled
industries, with a number of trade unions objecting to the Controller’s actions.

Dilution of Labour. At the start of the war in 1939, South African government policy was that no “natives” were to be used as ‘dilutees’ in industry. “Natives” could only be employed as unskilled labourers in munitions factories, and then only on work needing strength and endurance.\(^\text{36}\) Coloured and Asiatic men and women were already being used in Kimberley and Ladysmith in munitions factories, but these could not solve the skilled labour crisis. Provision for the use of white male emergency labour existed in the Industrial Agreements, a by-product of the 1920s so-called “civilised labour policy” of white privilege, and this had been exploited, but the results were minimal. A 1941 Labour Committee report advised that, “Women workers offer the only free source of labour remaining.”\(^\text{37}\) This naturally referred to white women.

White women were preferred by employers, craft unions and the Controller alike, all of whom assumed that it would be easier to replace them after the war. White women were employed at wages which rose from 1s.4d. per hour, to 1s.9d. after six months experience, while their white male counterparts were paid 2s.1d. per hour, rising after three years to 2s.8 1/2d. per hour.\(^\text{38}\) Initially these women could be employed only on the operation of machine tools, light welding, core making and armature winding. Later, the fields of work were widened to include work on single purpose lathes of all types and work on the manufacture of electrical equipment. The scales of pay were also raised, but never enough to equal that of their white male counterparts.\(^\text{39}\)
By the end of 1942, more than 6,000 women were employed as dilutees in the engineering industry. Most of these were emergency workers, with only a few at the Pretoria Mint who were engaged under pre-war conditions. The geographical distribution of these women is illustrated in table 4.1 below.

### TABLE 4.1: WHITE FEMALE WORKERS IN THE ENGINEERING INDUSTRY, 1942

<table>
<thead>
<tr>
<th>Location</th>
<th>No. Employed</th>
<th>Employers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port Elizabeth</td>
<td>78</td>
<td>SAR &amp; H</td>
</tr>
<tr>
<td>Durban</td>
<td>120</td>
<td>Gillmasters &amp; Lion Match</td>
</tr>
<tr>
<td>East London</td>
<td>30</td>
<td>SAR &amp; H</td>
</tr>
<tr>
<td>Cape Town</td>
<td>169</td>
<td>Simonstown Dock Yard</td>
</tr>
<tr>
<td>Bloemfontein</td>
<td>82</td>
<td>SAR &amp; H</td>
</tr>
<tr>
<td>Pretoria</td>
<td>3,003</td>
<td>Mint</td>
</tr>
<tr>
<td>Johannesburg</td>
<td>1,659</td>
<td>Cofac et al</td>
</tr>
<tr>
<td>Kimberley</td>
<td>1,239</td>
<td>Mint</td>
</tr>
</tbody>
</table>

**TOTAL:** 6,380


**Black Workers in Munitions Factories.** In 1944 at a critical time of the war, C.S. Richards wrote that, "From many points of view, the biggest industrial asset we possess is our supply of non-European (mainly native) labour – yet the wastes here are prodigal."
These wastes were caused mainly by the job colour bar and wage discrimination which aimed at confining workers to unskilled manual work while reserving all skilled trades to a limited quantity of white workers. During the war, this situation had to change as the shortage of skilled white workers in industry reached crisis proportions, and black workers were required to work as dilutees. The black workers found themselves being drafted to do work which they had previously been barred from doing.

In October 1944, an official report stated that out of a total of 21 136 workers employed in Government munitions and annexe factories, 13 794 were black, 3 495 were white female workers, and only 2 314 were white males. However, the report tried to undermine the contribution of blacks in munitions industries by suggesting that they were employed only in unskilled manual labour. The report stated:

Thus, in the Mint plant at Kimberley — equipped for the production of cartridge cases and bullets for small arms — only 3 per cent of skilled labour was used, the majority of "dilutees" being Coloured women. The Lenz filling plant in Johannesburg also had 3 per cent skilled labour and most of the "dilutees" were Native men, as endurance and strength were needed; while at the Pretoria Central Mint the "dilutees" were mainly [white] women operatives, deftness and skill being needed in the production of fuses and jigs. In the comparatively intricate work of the Mint tool room, producing dies, gauges and other tools, 57 per cent of skilled labour was used and the "dilutees" were mainly white women.

The above analysis was however, misleading. Two industrial surveys carried out by independent investigators from the Bureau of Information in 1943 and 1944 subsequently revealed that there were more blacks in munitions industries who were employed in skilled and semi-skilled work than most official reports showed. The independent reports also showed that in a number of cases production improved as a result of the use of reliable black labour in skilled work. One of the reports singled out a munitions factory which was
producing 10 1b. practice bombs and noted as follows:

The making of a 10 1b. practice bomb requires 50 separate operations. On every one of these operations only Natives are employed at this factory. The time limit allowed per completed bomb is 16 minutes. The average time limit achieved is 15½ minutes. Three hundred Native operatives in all are employed, with one skilled white supervisor to every group of ten. His sole manual occupation is to set the tools. 44

The report pointed out that the costs per bomb made in this factory was only 5/- as compared to what were understood to be the costs for a similar bomb in England which were 11/6d. This may have been because the factory did nearly the whole job under one roof, whereas in England production of individual parts was widely distributed throughout the country. Yet the reporters had more good reason to conclude that the employment of "native" operatives had a great deal to do with the wide disparity in factory labour costs.

As compared to white women dilutees, the report concluded that the factory produced more when using male "native" labour than when using white women. The report stated:

It appears that earlier in the war semi-skilled European girls were engaged on the operative jobs required for the manufacture of practice bombs. Later they joined the Services, or left to join other factorles, and they were replaced by Natives. A few white girls are still employed in the packing department. These girls earned 1/8 per hour and their average output over a period of 16 hours was 4 000 bombs. The natives currently employed earn 8d. per hour and carefully kept statistics reveal that their output is 4 000 bombs over a period of only 11 hours. It is also stated by the factory that the finished bomb shows a great improvement in workmanship and there are fewer rejects than when white semi-skilled labour was used. 45

Further, the report noted that the factory in question operated more efficiently with highly-motivated 'native' workers than with white women who were more casual in attitude. It went on to state:
These Natives work an 8-hour day and receive overtime up to 11 hours. They all do overtime and have almost to be prevented from continuing beyond the time limit. It is stated that after 10 hours the Native will grind on with the same output as at 3 hours. What was especially noted was the keenness of the Natives. Each concentrated and was absorbed in his work to the exclusion of everything else around him. If his operation broke down due to a machine fault, he called the supervisor immediately. There was no time-wasting. The factory's experience with European girls was that they chat, linger in the cloakrooms and seize every opportunity for letting up in their work.\(^{46}\)

Other factories visited by the survey team corroborated the stories told about black workers in the munitions and other war-related factories. However, the biggest drawback is that some of these factories did not keep any statistics of the number of blacks employed, their wages, the number of hours they worked and their production figures. This was mainly because as far as 'natives' were concerned, they were not defined as "employees" in the Industrial Conciliation Act of 1937.

**Trade Unions and Industrial Disputes.** Thanks to a collaborationist union leadership few strikes of major importance by white workers occurred during the war. There was one by the Iron Moulders in 1942 in protest against the employment of emergency labour and the extension of hours.\(^ {47}\) The most well-known white workers' strikes were those by the Amalgamated Engineering Union which took place in Durban among the ship repair artisans in 1944 and 1945. Peter Alexander argues that it was engineering artisans who experienced the full force of labour control such as restrictions on movement, compulsory transfers and wage freeze. In Durban, these artisans had also to compete for accommodation with thousands of other newcomers in the city. These hardships were compounded by food shortages in 1944 which were most acute in Durban.\(^ {48}\) However, the immediate cause of the Durban strikes was the worker's demand for higher wages which the South African
Government was refusing to grant for fear of a similar demand by white artisans in the mining industry which would have undermined the profits of the gold mines.49

Although some white trade unions protested against the strike laws, by 1943 most of them were in favour of the continuation of the war measures after the war. A motion at the annual conference of 1943 expressing appreciation of the Government's conciliatory attitude was passed. This was so much so that in 1944, General Smuts was able to congratulate the white trade unions on "the great measure of industrial peace which the country had known during the war."50

On the other hand, strikes by black workers during the war were considerably more numerous. In 1941, in the stevedoring industry in Durban, some daily paid African labourers went on strike demanding wage increases. As the port was full and a shipping crisis was looming, stevedoring was therefore declared a controlled industry. When in 1942 these same workers downed their tools again twice, the strikes were declared illegal and some black troops were brought in to 'normalise' the situation in the docks.51 At the beginning of 1942, work stoppages became frequent, and in the food canning industry these stoppages held up much needed food supplies for the South African Defence Forces.52

The South African Government resorted to the use of War Measure No. 9 of 1942 which provided for the appointment of an arbitrator to resolve any labour dispute that might adversely affect the prosecution of the war.53 Immediately after War Measure No. 9 was promulgated, various African trade unions (which were not officially recognised) applied for arbitration under it. When the expected arbitration did not materialise, a series of lightning
strikes by African workers swept the country. These included strikes by workers in the dairy industry on the Rand, in the meat distribution industry and in the municipalities especially in Johannesburg.\textsuperscript{54}

In reply to this wave of strikes by African workers, War Measure No. 145 of 1942 was promulgated. It provided for the appointment of an arbitrator for Native labour disputes under the conditions of War Measure No. 9, except that it completely forbade strikes and lockouts by Africans.\textsuperscript{55} However, strikes did not stop and by 1944 strikes had become even more frequent. The actual figures for the number of strikes during the war are given in table 4.2 below.

\textbf{TABLE NO 4.2: STRIKES IN SECONDARY INDUSTRY, 1939 – 45}

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of Strikes</th>
<th>No. of Strikers</th>
<th>Man Days Lost</th>
<th>Wages Lost £</th>
</tr>
</thead>
<tbody>
<tr>
<td>1939</td>
<td>20</td>
<td>4 871</td>
<td>4 246</td>
<td>353</td>
</tr>
<tr>
<td>1940</td>
<td>23</td>
<td>1 849</td>
<td>6 475</td>
<td>2 550</td>
</tr>
<tr>
<td>1941</td>
<td>35</td>
<td>5 450</td>
<td>23 199</td>
<td>12 628</td>
</tr>
<tr>
<td>1942</td>
<td>62</td>
<td>14 051</td>
<td>49 547</td>
<td>12 058</td>
</tr>
<tr>
<td>1943</td>
<td>53</td>
<td>9 162</td>
<td>47 719</td>
<td>22 058</td>
</tr>
<tr>
<td>1944</td>
<td>53</td>
<td>12 222</td>
<td>62 709</td>
<td>9 632</td>
</tr>
<tr>
<td>1945</td>
<td>60</td>
<td>16 215</td>
<td>91 180</td>
<td>32 030</td>
</tr>
</tbody>
</table>

The "Imperial" Factor in South Africa's War Effort

The most direct involvement of the United Kingdom in arms production in South Africa during the war was through a British company, Imperial Chemical Industries Limited (Imperial), and its subsidiaries, Africa Explosives and Industries Limited (AE&I), and Cape Explosives Limited. Imperial had for many years manufactured small arms cartridges and components to the order of the Government of South Africa. In 1937 the company clinched a deal to supply and install an ammunition plant and a rolling mill plant in South Africa for the manufacture of munitions for the South African Government. 56 Imperial agreed to supply to South Africa the following:

(a) the plant specified in the second schedule . . . such plant being suitable for manufacturing components for the specification cartridges and for loading and assembling such components at the rate of 10,000,000 rounds per annum when the plant is working on a 36-hour per week basis;

(b) the plant specified in the third schedule . . . such plant being suitable for the manufacture of strip for cases and bullets. 57

Imperial undertook to send engineers and other skilled personnel to Pretoria to supervise the construction of the buildings and the erection of the plants. The company further undertook to allow the South African Government to send technical personnel to Imperial's subsidiary company, ICI Metals Limited at Birmingham for the purposes of receiving technical and operating instructions for the plants. Clause 10 of the Agreement stated:

IMPERIAL undertake that they will (unless prevented from so doing by the outbreak of war or British Government interference or prohibition) give such a full and proper course of training and instruction to the technical personnel and operatives proposed to be employed by the Government as will enable such personnel and operatives to produce the specification cartridges at the Government factory from raw material and components supplied by Imperial: . . . 58

On their part the South African Government agreed to pay to ICI the sum of £103,912 in five
instalments, to erect the required buildings and to provide the required labour force. Most important, the South African Government undertook not to sell any of the specification cartridges to any foreign Government but to reserve for themselves the right to sell to the British Government or to the Government of any Colony or Dominion of the British Commonwealth. They also gave a ten year monopoly to Imperial for the supply of:

(1) all their requirements for the specification cartridges and components therefore in excess of the current production thereof at the Government factory at Pretoria;

(2) all their requirements of other types of rifle and machine gun cartridges up to and including a caliber of 26mm.

In order to strengthen its monopoly, Imperial included a clause which forced the Union Government to buy raw materials for the munitions plants from a subsidiary of Imperial already operating in South Africa, namely, African Explosives and Industries Limited (A.E.&I.). This company was engaged in the manufacture in South Africa, at Firgrove and Modderfontein, of explosives for industrial use. Clause 20 of the Agreement stated that:

IMPERIAL who own or control 50% of the share capital of A.E. & I. will use their best endeavour with A.E. & I. to procure that A.E. & I. enter into a contract with the Government for the supply to the Government of Cordite and percussion caps on the following terms and conditionally upon A.E. & I. being prepared to enter into such a contract Imperial will render to A.E. & I. all necessary technical help and assistance and will supply them on agreed terms with all plant necessary to enable them to implement such contract to the satisfaction of the Government.

In terms of the Agreement, early in 1939 Imperial completed the installation of the .303 ammunition factory at the Royal Mint in Pretoria. The South African Government had erected the buildings from layout plans provided by Imperial. The plant was designed with a one-shift normal peacetime capacity of 10 million .303 per annum, or 30 million on a three-shift
wartime output.\textsuperscript{62} Shortly after the completion of the plant, a request was made by the Defence Department for a quotation from Imperial to supply the necessary additional plant for the production of flame tracer and amour piercing ammunition. Imperial gave a quotation in May, 1939, but the Defence Department did not accept it until after the outbreak of war when it no longer held good.\textsuperscript{63}

On the other hand, A.E. & I. had speedily installed a T.N.T. plant at Somerset West which came into production in February 1940. And in accordance with Clause 20 of the 1937 agreement, A.E. & I. constructed at Modderfontein a factory for the manufacture of Rifle Cordite. The first delivery of Rifle Cordite from the factory was made in November 1938 and by early 1939 the factory had been extended to produce Ordnance Cordite as well.\textsuperscript{64} A.E. & I. had also started .303 Percussion Cap Filling, had designed buildings for the construction of a Bomb and Shell Filling Plant, were doing 5- Grain Detonator Filling, and had been making Wet Service Guncotton Slabs and Dry Primers.

When war broke out in 1939 and when it became necessary for South Africa to increase its production of munitions, the South African Government requested A.E. & I. to provide and install additional plants for the manufacture of munitions in South Africa. A.E. & I. was the only company that was contracted by the South African Government to install all plants for the manufacture of munitions in South Africa during the war. The agreement entered into between the Director-General of War Supplies and A.E. & I. for the installation of all such munitions plants constituted a "Principal Munitions Agreement", the terms of which we will consider next.
The Principal Munitions Agreement.

Under the Principal Munitions Agreement, A.E. & I. and its local subsidiary company, Cape Explosives Works Limited, agreed to "purchase, install and establish plants", for the manufacture of munitions in South Africa. A crucial part of the agreement was the definition of "plants" which was given as follows:

"PLANTS" shall mean all machinery equipment and apparatus for the manufacture of munitions paid for or to be paid for by the Government and shall include all buildings or extensions or additions to existing buildings to house such machinery equipment and apparatus, all necessary services and all spares therefore included in the schedule annexed to each Subsidiary Agreement entered into in terms thereof.65

The first effect of the above definition clause of the Principal Munitions Agreement was to give a monopoly to A.E. & I and its subsidiary, for the purchase, installation and establishment of all munitions plants in South Africa. This was in fact an extension of the monopoly negotiated by the parent company, Imperial Chemical Industries Limited, in its 1937 agreement with the Government of South Africa. The second effect of that clause was the transfer of all the obligations and undertakings by Imperial under the 1937 agreement to A.E. & I and Cape Explosives under the Principal Munitions Agreement.

The first problem in this arrangement arose from the fact that the South African Government had made an arrangement with the Government of the United Kingdom for a 50/50 financial settlement (to be discussed fully in the next section) at the end of the war for all capital and operational costs arising out of the Principal Munitions Agreement.66 As it was the intention that all the plants erected by Imperial on behalf of the South African Government between July 1937 and December 1940 should be covered by the Principal Munitions Agreement, it became necessary to make separate provision for the costing of the Capital and munitions
manufactured before the new agreement. In view of the difficulties of applying the new proposals in regard to overheads for the period between 1937 and 1940, it was agreed that both the Capital and factory costs should include expenditure on factory administration. It was further agreed that the South African Government should pay Imperial the sum of £10 000 to cover all claims arising from the work undertaken in the erection of the plants and the production of munitions. That payment would cover erection and management fees, interest on capital, depreciation and obsolescence on the Company's own plants up to 31st December 1940.

The Company was further required to prepare a statement setting out the costs of the various plants erected and the products supplied up to 31st December 1940. After taking into account the amounts already paid by the South African Government in respect of Capital costs, the Company was to present its statement to the South African Government for payment. That statement was provided by a firm of British auditors, Price, Waterhouse, Peat and Company, and it amounted to a total of £304 927.3.3.68

Financial Adjustments: South Africa – United Kingdom

When the Eastern Group Supply Council (EGSC) held its first conference in Delhi in November 1940, the South African Government was allocated a munitions production programme much larger than its current technical, manpower and financial resources could meet.69 While the technical aspects were later covered by the Principal Munitions Agreement discussed above, and the manpower issues were dealt with by the Controller of Industrial Manpower in the manner described earlier, the financial issues remained outstanding. At the Delhi Conference, it was agreed that questions of financial liability should not be allowed to
interfere with the implementation of war production programmes. Australia had even agreed to allow the question of capital costs of Munitions Plants to stand over until the end of the war.70

Mindful of costs is the South African Government’s general outline of “how we stand in relation to proposed allocation of proposed programme to Union” Smuts estimated the capital cost of building plant and machine tools for the full Delhi programme allocated to South Africa to be between £4 500 000 and £5 000 000. He also estimated an annual expenditure of £14 000 000, out of which £1 400 000 represented capital expenditure for extensions of the explosives and chemical production plants. An additional £2 343 000 was budgeted for as operating expenditure for latter extensions of plant.71 Smuts went on to plead:

The enlarged programme contemplated by Delhi for South Africa thus involves heavy capital outlay and heavy annual production costs for outputs which go immeasurably beyond requirements of South Africa and of anything we had contemplated and it would help us in formulating decision upon final scheme to know that His Majesty’s Government in United Kingdom could see its way to contribute towards financial commitments involved.72

When the question was put to London, the Treasury made it clear that it “would prefer not to make a contribution towards the capital costs of munitions works in the Union”. This, it explained, was owing to the United Kingdom’s own enormous commitments and to the difficulty of arranging the details of financial assistance of this nature.73 However, Britain was reluctant to refuse point blank if South Africa desired to pursue the matter, and it wanted to ascertain how strongly South Africa felt about the matter before giving a final reply. The Union was thus further advised:
In view of the uncertainty of the final development of these Munitions Plants and the difficulty of devising in advance a satisfactory method of joint financing it seems that the most practical procedure is the one adopted by Australia namely to proceed with the work on the understanding that the amount of liability for capital costs to be borne by the two Governments should be held in abeyance for settlement after the war.74

Pretoria expressed the view that there was much to be said for an arrangement such as that made by the British Government with Australia. Smuts's government agreed that part of the costs for the Delhi programme should be borne by South Africa but emphasised that it was not possible to determine what proportion of the costs South Africa could be expected to meet before the war was over. It was stressed:

With the expansion however of our munitions effort since the Delhi Conference the burden on us of financing the whole of this capital cost in the meantime is becoming a heavy one. Unlike Australia, we are not borrowing in London for war expenditure, but are finding all the funds required in the Union... It seems to be reasonable to ask that we should have some assistance in meeting this burden. It is therefore suggested that, as a provisional arrangement, pending the final decision after the war, the United Kingdom Government should assist by providing for this capital expenditure on a fifty-fifty basis.75

This repeated insistence by Smuts showed that the Union was not prepared to openly increase its financial commitment to the war effort. Yet, opinion in London was that South Africa had such strong financial resources as to be able to carry the whole of the capital costs of the Union's Eastern Group programme. In addition, the United Kingdom Ministry of Supply regarded a British contribution of 50 percent as excessive, for on their initial estimates, not more than 25 percent of South African production would be for British use. That estimate was, however, later revised and it was agreed that the United Kingdom would receive 50 percent of South African munitions production.76 It was on that basis of a 50 percent share of production that the United Kingdom Government agreed to General Smuts's
50/50 proposal:

United Kingdom Government have expressed their appreciation of Union Government's agreement to leave final decisions as to a division of these capital costs until after the end of the war. U.K. Govt. are willing to fall in with suggestion that as a provisional arrangement they should assist by providing for this capital expenditure on a [fifty-fifty basis].

The first claim by the South African Government under the 50/50 Agreement was sent to London in September 1942. Although it included only those items sponsored by the Eastern Group Supply Council, the claim was based upon expenditure incurred by the South African Government for munitions production dating back to the 3rd of September 1939. The covering letter to the claim statements reads in part:

In accordance with the provisional arrangement agreed to it is requested that you approach the United Kingdom Government for an advance of £1 800 000 as a contribution towards the expenditure of £3 604 132.23 as per statements A and B on munitions plant for the period 3rd September, 1939, to 31st March, 1942, pending a final decision as to a division of these capital costs after the war.

At a meeting attended by Britain and South African officials held in London to consider South African Government claims, the United Kingdom representatives pointed out a number of problems arising out of the different interpretations of the 50/50 Agreement between the two countries. The United Kingdom interpretation was that the 50/50 Agreement did not apply to expenditure incurred by the South African Government in munitions production prior to the Delhi Conference. As regards items of expenditure not included in the original Eastern Group Supply Council programme for South Africa, it was explained:
The U.K. Government would be prepared to apply the 50/50 arrangement to projects undertaken by the S.A. Government at the request of the E.G.S.C. with the approval of the Ministry of Supply or as a result of a direct request from the Ministry of Supply or the Ministry of Aircraft Production or to other projects which could be regarded as directly related to the Delhi recommendations.  

It was also pointed out that the claims submitted by the South African Government seemed to include items of production as distinct from capital expenditure. For example, the expenditure relating to Armoured Cars which was included in the claims presumably did not relate to the capital costs of land, buildings and plant, but to the costs arising from the assembly of the imported vehicles. It was also stressed that suitable records should be kept by the South Africans in order that consideration might be given in the post war settlement to the United Kingdom's interest in any profits that might accrue. The British Government also expressed its interest in the residual value of the capital assets and in any South African Government plans for the disposal of the plants after the conclusion of hostilities.

Meanwhile, the Minister of Finance continued to pursue his extremely cautious financial policy in order to avoid internal political tensions which might arise as a result of South Africa's financial war effort. No provision was made in the 1942-43 financial year for expenditure on South Africa's Eastern Group Supply Council programme, all operations being carried on through a suspense account. The Minister was hoping to cover South Africa's expenses from the contributions that were expected from the United Kingdom Government under the 50/50 Agreement. However, by the beginning of March 1943 the United Kingdom Government had not yet paid for South Africa's first claim of September 1942, and the Director General of War Supplies had not yet submitted any other claims for onward transmission to London. As a
result, the Minister of Finance found himself unable to balance the budget and an internal political crisis loomed if money were not found to cover the shortfall before the March end of South Africa's financial year.

As a matter of urgency, on 14 March, the Minister of Finance cabled the South African High Commissioner in London to request the United Kingdom Government to pay to the Union a sum of £2 250 000 before 31st March, even without the submission by South Africa of the requisite documents supporting claims of expenditure. When London queried the basis on which the payment was being requested, the South African High Commissioner's office decided to negotiate for a "loan" to be held against future United Kingdom liabilities to South Africa on the strength of the 50/50 Agreement. The money was released, and the Minister of Finance was then saved from embarrassment, but that incident deepened the misunderstanding of the interpretation of the 50/50 Agreement between South African and the British officials.

All along, South African officials were of the opinion that the 50/50 Agreement entailed joint ownership of the plants between Whitehall and Pretoria. That way, the Union would be left with no wholly national obligations after the war. But, as the South African High Commissioner's office had negotiated the first London payment as a "loan" to prop up Smuts' Minister of Finance, it implied that the South African Government was prepared to repay the amount after the war. Britain considered that that was the manner in which all "advances" they were going to pay to South Africa should be treated, strictly as loans to be repaid. Yet both sides refused to accept the interpretation of the other, and the confusion and suspicion continued until the end of the war.
Financial adjustments negotiations were restarted in September 1945 when South African Treasury officials led by a Brigadier Williamson went to London for the purposes of negotiating a final settlement. After a quick compromise from both sides on matters of principle, it was agreed that the negotiations should be narrowed to the consideration of a financial statement on which both sides wanted specific answers in the form of figures.83

Both sides were willing to compromise, for each was anxious for a final liquidation of commitments and financial obligations. However, the negotiations proved tougher than expected as details of production figures were required in order for there to be agreement on the totals presented by South African officials. It was suggested that a United Kingdom representative should visit South Africa to gain first hand knowledge and details of the origin of South Africa’s claims. Bedford, the Under Secretary (Contracts) in the United Kingdom Ministry of Supply, was appointed to go to South Africa where he was authorised to finalise the settlement negotiations with South African officials. Bedford arrived in South Africa in October 1945 and set up an investigative office in Pretoria. Bedford was both a good investigator and a keen negotiator and he managed to lay the basic framework for agreement between the United Kingdom and South Africa. However, he fell ill before the conclusion of an agreement, and had to return to London in March 1946. He was replaced by G.R. Rice, who took the negotiations into 1947. By then it was being felt that the negotiations were dragging on for too long, and also important was the fact that the South African Government had set the date for the closure of the Union’s War Expenses Account at the end of March 1947. In view of these developments, H.E. Duigan, the Assistant Secretary (Financial) in the Union Department of Defence, called an urgent meeting in Pretoria for the
9th of January, to finalise the financial settlement negotiations.

At this meeting, a comprehensive settlement of all outstanding financial matters between the United Kingdom and the South African Governments was reached. It was agreed that the 50/50 Agreement be accepted by both Governments as final. However, it was stressed that the agreement covered only the contributions towards the capital expenditure incurred by the South African Government on munitions production, and that it did not cover expenditure incurred solely for South African Defence Force requirements. Britain was not willing to provide a subsidy for 'national' spending.

There was general agreement to most items on the agenda, but there was still some divergence of opinion relative to certain items of capital expenditure amounting to £137,992 which was included in the "Assets Claim" against the United Kingdom Government, and which was afterwards withdrawn as inappropriate. After discussion it was agreed to reinstate the amount in the claim. This addition had the effect of raising the estimated total expenditure by the South African Government to over £9,000,000. However, in order to avoid more queries and argument it was further agreed to adopt the fixed lump sum of £9,000,000 as representing the final expenditure on capital assets for munitions production to be borne on a 50/50 basis by the two Governments. The final statement agreed to by both sides was summarised as in Table 4.3 below.
### TABLE 4.3: ANALYSIS OF THE FINAL SA - UK SETTLEMENT

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) NETT expenditure as at 31st March 1946</td>
<td>£8355889</td>
</tr>
<tr>
<td>(2) Expenditure from 1st April 1946 to 30th September 1946</td>
<td>114015</td>
</tr>
<tr>
<td>(3) Expenditure formerly applied as a &quot;set off&quot; for assets sold</td>
<td>306557</td>
</tr>
<tr>
<td><strong>Total Gross Expenditure to 30th September 1946</strong></td>
<td><strong>£8776461</strong></td>
</tr>
<tr>
<td>(4) Expenditure for period 1st October 1946 to 31st December 1946</td>
<td>36916</td>
</tr>
<tr>
<td>(5) S.A. Mint Expenditure</td>
<td>14906</td>
</tr>
<tr>
<td>(6) Estimated value of outstanding orders awaiting investigation</td>
<td>121000</td>
</tr>
<tr>
<td><strong>Total Expenditure</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Amount accepted as a compromise, representing the overall total expenditure to be borne on a 50/50 basis</strong></td>
<td><strong>£9087275</strong></td>
</tr>
<tr>
<td><strong>Source</strong> 6/47/129: Minutes of Meeting, Department of Defence, Pretoria, 9 January, 1947</td>
<td></td>
</tr>
</tbody>
</table>

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**The American Factor In South Africa’s War Effort**

**Gold Mining and Finance.** In September 1941, the South African High Commissioner’s Office in London informed the Dominions Office that difficulties in obtaining supplies of steel and machinery for the gold mines from the United States of America since the introduction of Lend – Lease (discussed more fully in the next section) were giving cause for concern. General Smuts had repeatedly emphasised the importance of the gold mining industry as an essential part of South Africa’s war effort, and the United Kingdom Government was now asked to persuade the United States Administration to treat supplies for the gold mines as
essential for South Africa's war economy. However, the American Government could not be convinced that the materials and energy devoted to gold production could not be better employed in making a more direct contribution towards the war effort.  

Efforts were made by South African officials in Washington and by the United Kingdom Treasury to persuade the Americans to change their attitude, but in November 1941, the Secretary of State for the Dominions warned that the shortage of steel in the United States did not encourage hope of a softening of the American attitude towards the production of gold during war-time. Throughout 1942, the gold mining industry was beset with problems of supply especially of steel. Uncertainty about the provisioning future of the industry undoubtedly influenced South Africa to pile up gold reserves instead of selling gold for Sterling. But the policy of accumulating gold tended equally to convert the whole problem into a vicious circle. A Whitehall Treasury official commented:

[Gold] is piling up in South Africa and will continue to do so, and this does not make any sense to many Americans .... Mr Hofmeyr's policy seems at making it as plain as possible to the world that their production of gold is serving no war purpose whatever.  

It was made clear that insistence simply upon the importance of gold production to the South African economy and financial stability was not enough. If the Americans were to be persuaded to give a high priority to steel supplies for the gold mines, it would be necessary to show that gold output benefited the war effort of the whole Sterling area. But, as one British official complained:

Instead, we ask South Africa to hold Sterling; she replies that she does not want to hold Sterling, but will repatriate against gold, the rest of her Sterling debt. By itself this is too temporary and too insufficient a palliative. It removes our last claim on South Africa, and gives us the prospect of having less than nothing with which to buy South African gold in the future....when
our needs are likely to be greater.69

In the meantime, the question of South African gold production was becoming a political issue in the United States. On the 8th of October 1942, an order closing all American gold mines above a certain size in order to release manpower for other mining operations essential to the war effort had the effect of stimulating the already mounting American criticism of gold mining. Critics asked the Washington Administration why South Africa, the world’s greatest gold producer, should receive Lend – Lease aid to cover not only munitions supplies, but civilian requirements and supplies for the gold mines? Was it right, they asked, that in a time of desperate shipping shortage, 180 000 tons of freight space should be used to carry American Lend – Lease supplies to nourish South African gold mines?90

The stand-off between the South African Government and the United States was finally resolved by an agreement on a system of reciprocal Lend – Lease in which South Africa agreed to balance as far as possible her imports by South African supplies of raw materials and aid to United States forces abroad, especially in Southern Africa, the Middle East and India. This agreement came into effect on 13th March 1943.91 Also, in February 1943, a Joint Supply Council for South Africa, the United States of America and the United Kingdom was created. At the first meeting of the Joint Supply Council, the United States representative produced a memorandum in which Washington emphasised that supplies for the gold mines were to be regarded as a quid pro quo for substantially greater South African coal exports. A.T.C. Slee summarised the American mood of conditional reciprocity:

Explaining the American position, Mr. McVeagh, the U.S. Minister stated that his Government did not want to bargain with gold mining supplies in exchange for greater coal exports, but unless the Union co-operated fully in what was probably the greatest contribution it could make to the war effort, the U.S.A.
would not be able to supply “critical” materials to a non-war industry.  

**Lend-Lease.** The American Lend-Lease Act of March 1941 was aimed mainly at enabling the United Kingdom to obtain much needed supplies from the United States of America without immediate payment. Eventually, this facility was extended to some 40 countries including South Africa. The Lend-Lease Act gave the President the authority to supply defence articles to any country whose defence he deemed vital to the defence of the United States of America. There were initial doubts as to whether South Africa should be given supplies direct from the United States or through the United Kingdom, but in November 1941 South Africa was declared eligible for direct lend-lease aid.

Besides purely military supplies, lend-lease eventually covered a wide range of essential non-combat materials such as steel, machinery, ships, aeroplanes, food and even tobacco, which was important for the maintenance of the morale of the fighting forces. Among other requirements, South Africa’s priority orders were for steel and machinery to keep the gold mines functioning as explained in the previous section. However, on the first suggestion to the South African Government that they should pay for the items received from the United States, South African officials refused to pay except for combat material only. As already explained, they still feared a financial crisis at home through high expenditure which was likely to trigger domestic political unrest. This became the basis for the biggest misunderstanding between the South African Government and the United States Government during the war.

After some debate, Washington notified that as from 13th March 1943, South Africa would be
required to pay cash for all items other than combat and direct military requirements. After further dispute, in which the South African Government refused to guarantee the supply of essential raw materials to the United States as a form of reciprocal aid, it was agreed that all transactions between the two countries would be financed on a cash basis. However, when the United States at the end of the war presented a bill of $895 million for payment, the South African Government refused to pay and offered their own figure of $40 million. This angered the American negotiators who called the Union offer "contemptible" and demanded that the South African Government be forced to pay up.

In arguing their case politically, the South African negotiators made it clear that their Government's decision was influenced by internal politics. They pointed out that the majority of the South African population was made up of black people who were not in a position to make any financial contributions to the war effort. Of the white population, the majority were Afrikaners, most of whom had not even wanted South Africa to join the war in the first place. The South African negotiators further argued that whatever aid they received from the United States was not used for the benefit of South Africa, but was all used to fight a common enemy. Also, the South African negotiators emphasised the fact that before February 1940, South Africa had not entered into any direct contract with the United States except through the United Kingdom. They pointed out that since they were going to pay the United Kingdom for the maintenance of fighting forces outside South Africa, it would appear as if they were being asked to make a double payment.

On the other hand, the United States insisted that the South African Government and the pro-government press had misled the Union public about the nature of the debt to the
United States, giving the impression that the Americans would expect no payment after the war. The irritated American view of the South African situation was summarised by Thomas Borstelmann as follows:

South Africa had contributed less to the war effort, in proportion to its national wealth and population, than any other Commonwealth country. In addition, the Union, unlike the rest of the Commonwealth, had refused to sign a reverse lend-lease agreement by which it would have supplied strategic materials as a contribution to the Allied war effort; instead, the United States had been forced to buy them from South Africa at the market price. At the same time, South Africa’s financial and economic position had improved sharply during the war, putting it in a better position to pay off its debts than any other Allied nation.

When the South African Government sent a delegation to the United States in July 1946, it appeared as if the stand-off would continue. The Americans entrenched their position by providing detailed statistics of South Africa’s war-time orders to the United States of America and how much they were worth. On the other hand, the South Africans repeated their handy emphasis on their unique and difficult internal situation. They further argued that the American calculations were beside the point, and that the Americans did not understand how the minds of South Africans worked. The South African delegation even refused the American proposal that the Union should at least pay a token sum of $50 million towards the cost of the combat material supplied to the South African Defence Force outside South Africa. They argued that to agree to such payment was tantamount to an admission that the South African Government had a liability to the United States to pay for all equipment supplied to South African Defence Forces outside South Africa.

When Smuts visited the United States in October 1946, the American and South African negotiators were still in a deadlock with no sign of either side compromising. The South African delegation then blustered that they would request Smuts to approach President
Truman directly to present their side of the story. Whether Smuts and Truman actually did talk about the lend-lease settlement is not reflected in the available literature, but in November 1946 while Smuts was still in the United States, the American negotiators dropped their demand of $895 million, and accepted a South African offer of $100 million in full and final settlement of all lend-lease debts owed to the United States Government.\textsuperscript{102} This sum of $100 million also covered the total value of all the equipment of the South African Defence Force’s Sixth Division which was supplied by the United States and which was to be retained by South Africa, and a number of Harvard aircraft and all other war material supplied by the United States which were also to be retained by the South African Government.\textsuperscript{103}

The question posed by many historical analysts is why after such protracted and sour negotiations did the United States Government literally turn around and decide to give so much of lend-lease equipment as a donation to the South African Government? The most acceptable explanation appears to be that advanced by Borstelmann, who argues that by 1946 the United States of America was becoming more concerned with the emerging Cold War than with petty squabbles with its anti-Communist allies.\textsuperscript{104} Smuts was known to be a staunch anti-Communist and the unfolding Cold War was high on the agenda when he visited the United States during the time of the lend-lease negotiations. Borstelmann argues that with the Truman administration increasingly defining American security in anti-Soviet terms, the United States sought to bolster its relations with non-communist governments throughout the world. On the African continent, South Africa was seen by the American Government as the one country possessing the capacity to withstand rising communism and should therefore not be antagonised.
Thus, though South Africa was ridiculed and attacked in the first session of the United Nations in 1946 for refusing to give up Namibia, the United States Government did not condemn the South African Government outright. When the question of South Africa's colour bar was debated in United Nations, Washington preferred to view it as the internal affairs of South Africa in which the outside world had no business interfering. With hindsight, it is now clear why at a time when racial issues were so volatile even in the United States, and at a time when there was agreement on the need for nations to achieve self-determination, why the United States was refusing to condemn a post-war South African Government which was introducing more racial repression and was planning as a colonial state to annex Namibia. Borstelmann explains:

In addition to eviscerating American anticolonialism and narrowing the scope of dissent and reform within the United States, growing American–Soviet confrontations in 1946 and 1947 increased the importance of South Africa to the Truman administration. Ironically, this happened in the same period when white repression of blacks in the Union escalated sharply and resurgent Afrikaner nationalism moved to the threshold of power. Rejecting the trend of the rest of the world away from explicit racial hierarchies, South Africa slid in the opposite direction. Anti-communism and racial hatred of the increasingly popular Nationalist Party pressed Smuts and the United Party to prove their own toughness on communism and black unrest. The Truman administration worried some about the Union's growing racial tensions but valued far more the alignment of South Africa in the emerging Cold War.\textsuperscript{105}

Despite the many challenges that it faced during the war, South Africa emerged as an important asset to the Allied Forces in Southern Africa. Also, despite the differences in approach, South Africa was able to give some assistance to its smaller partner and neighbour, Southern Rhodesia (Zimbabwe) in the area of command structures for the sub-regional forces, and technical assistance in the munitions production factories. In fact, as will be argued in the next chapter, Zimbabwe's war effort was tied to that of
South Africa in almost all aspects, and the problems that the two countries faced were therefore similar. The two stories should really be told together as one. However, for the purposes of academic emphasis in this thesis, the story of Zimbabwe's war effort will be dealt with separately in the following two chapters. It should however be noted that this is not a comparative study, but rather a continuation of the study of the socio-economic effects of the Second World War on Southern Africa.
ENDNOTES


7. Ibid, 84.


9. Ibid, 482.

10. Ibid, 483-485.


15. Ibid, 1940-41.

17. Act No. 41, 1942.

18. These statements are extracts from the annual Reports of the Controller and Auditor General of South Africa on the War Expenses Account for the years 1940-1947.

19. Agricultural and Industrial Requirements Commission, 1941, 105.


26. War Measure No. 6, 1941.


30. Ibid, 861.

31. Government Notices: No. 404, 19 March 1941; No 965, 10 July 1941; No. 1347, 24 July 1941; No. 1639, 14 Nov. 1941; No. 981, 02 May 1942; Nos. 1589-1590, 07 Aug. 1942; No. 401, 10 March 1944; No. 57, 12 Jan 1945.


34. Ibid, 862.
35. Ibid, 862.
36. Ibid, 863.
37. Alexander, Industrial Conflict, 95.
38. Official Year Book of the Union of South Africa, No. 29, 1956-57, 863.
42. Ibid, 864.
44. Ibid, A16.2.
45. Ibid, A16.2.
46. Ibid, A16.2.
48. Alexander, Industrial Conflict, 177.
49. Ibid, 177 - 179.
51. Ibid, 866.
52. Alexander, Industrial Conflict, 135.
53. Vivian, The Labour Situation, 43.
54. Ibid, 44.


57. Ibid, Clause 1.

58. Ibid, Clause 10.

59. Ibid, Clause 11.

60. Ibid, Clause 21.


63. Ibid.

64. Ibid.


66. The South Africa - United Kingdom Financial Settlement will be discussed in more detail in the next section of this chapter.


70. Ibid, Telegram M. 569, from OPPOSITELY to DECHIEF, 24 April 1941.

71. Ibid, Telegram C. 1643, from Minister of Defence to High Commissioner,
London, 18 Dec. 1940.

72. Ibid.

73. T.E.S. 1581: F6/572/5, Telegram C 2503, from DECHIEF to OPPOSITELY, 14 May 1941.

74. Ibid.

75. Ibid, Telegram C2503, from DECHIEF to OPPOSITELY, 14 May 1941.

76. Slee, Commonwealth Co-operation, 510.

77. T.E.S. 1581: F6/572/5, Telegram M 1272, from OPPOSITELY to DECHIEF, 28 Aug. 1941.

78. Ibid, D. Sloan (Secretary for Defence), to South African High Commissioner, London, 4 Sept. 1942.


80. Ibid.

81. Ibid.

82. Slee, Commonwealth Co-operation, 512.

83. Ibid, 524.

84. 6/47/129, Minutes of meeting held at Department of Defence, Pretoria, 9 Jan. 1947.

85. Ibid, Item 2.

86. Slee, Commonwealth Co-operation, 494.

87. Ibid, 494.

88. Ibid, 497.

89. S.D. Waley to British Chancellor of the Exchequer, 4 Sept., 1942. Quoted by Slee, 497.

90. Slee, Commonwealth Co-operation, 500.
91. Ibid, 501.


95. Ibid.


98. Borstelmann, Apartheid's Reluctant Uncle, 79.


100. Grobler, "To Pay and What to Pay?", 87 - 90.


102. Borstelmann, Apartheid's Reluctant Uncle, 55 - 82.

103. Official Year Book of the Union of South Africa, No. 29, 1956 - 57, 813

104. Borstelmann, Apartheid's Reluctant Uncle, 55 - 82.

105. Ibid, 56.
CHAPTER FIVE:

ARMS PRODUCTION IN ZIMBABWE 1939 – 1945

SOME TECHNOLOGICAL LIMITATIONS

Introduction

The Issues: The question whether in colonial Zimbabwe, the Second World War revolutionized the economy from being mainly a producer of minerals and agricultural primary products for British industry to become a manufacturing economy, or whether the war actually delayed such development is not one that is often asked. There appears to be some agreement among established historians that the Second World War yielded positive results in the political and economic development of Africa in general and of Southern Africa in particular.\(^1\) However, the most authoritative work so far on the impact of the Second World War on Africa does not include a chapter on Zimbabwe.\(^2\)

This chapter will focus on the technological and other production-related problems of Zimbabwe’s arms production programme during the Second World War. In choosing to emphasize the technical aspects of arms production, it is hoped first of all to understand the fact that Zimbabwe in its small way, actually attempted the technical production of munitions during the Second World War. Secondly, it is believed that the best way to understand the manner in which the industrial war effort influenced the general industrialisation process of the country (if at all) is by analysing the industrial war effort itself.
In this chapter it will be argued that before 1936 Southern Rhodesia did not establish any arms production industries, not only because the technological capacity to do so did not exist, but also because Britain discouraged such development for fear of competition with British industries. It will be argued further that when Southern Rhodesia finally started producing munitions during the Second World War it was not because the colony’s technological capacity was ready for such developments, but because of the sheer desperation of the British Government under pressures of a total war. It will also be argued that arms production was financially burdensome for the Government of Southern Rhodesia and it will be suggested that the much assumed technological spin-off from arms manufacturing to civil industry is difficult to identify.

From Lord Milner to General Giffard 1920 – 1936

The re-organisation of Southern Rhodesia’s defence forces brought about by the Defence Act of 1926 did not take into consideration the shortage of arms and ammunition.³ And yet it was that shortage which had provided the only reason for the Colonial Secretary, Alfred Lord Milner,⁴ to include Southern Rhodesia in his 1920 scheme to distribute certain Royal military equipment to selected colonies and dominions. For Southern Rhodesia, Milner’s Imperial arms distribution scheme removed the need to manufacture arms and ammunition in the Colony, and that option was not even considered until 1936.⁵

In a 1920 circular to drum up support for his Royal military equipment distribution scheme, Milner presented the following argument:
The arms in possession of the forces in question are at the present time in very many cases of an old pattern and sighted for Mark IV ammunition. No more ammunition of this pattern is being manufactured, and it is unlikely that any further supplies will be forthcoming after a short time; similarly it will be impracticable to supply spare parts.  

Milner concluded that it was a matter of the utmost importance to replace at the earliest possible moment the obsolete arms in the colonies and protectorates. He therefore proposed and the Lord Commissioners of the British Treasury agreed to sanction the issue free of charge, of a limited number of rifles firing more modern ammunition, to the local military and semi-military police forces of selected colonies and protectorates. The proposal also offered a free issue of 500 rounds of Mark VII ammunition per rifle. In addition, Milner offered to replace all machine guns of out-of-date patterns by more modern Vickers and Lewis machine guns, together with a free issue of 10 000 rounds of ammunition.

The Southern Rhodesia administration immediately ordered 3 000 rifles MLE with short sight Mark VII ammunition to replace obsolete long rifles. Fifteen Vickers guns were also ordered and they were prepared to take 50 Lewis guns, “all with free issue of ammunition”. However, the issue was not all that free because the Government receiving the donated equipment had to agree to certain conditions. First, the colony or protectorate concerned had to pay the cost of repairs, which for a Rifle S.M.L.E. was estimated at £1.5.0 each. Secondly, for the machine guns the colony or protectorate concerned had to pay the cost of repairs plus the cost of manufacturing certain parts which were missing. These were estimated in
the case of the Vickers gun at £52, each and in the case of the Lewis gun at £15 each. Thirdly, for ammunition the colonies and protectorates concerned were required to pay the cost of manufacturing .303 ammunition which was £8 per thousand rounds.\textsuperscript{8}

Between May and December 1922, Southern Rhodesia received from the United Kingdom, 2 500 rifles with 1 250 000 rounds of ammunition, 50 Lewis guns and 15 Vickers guns with 650 000 rounds of ammunition.\textsuperscript{9} This brought the small arms and ammunition situation in Southern Rhodesia on the eve of Responsible Government to that shown in table 5.1. After 1923, debates on the Defence Scheme of Southern Rhodesia continued to focus on the personnel establishment. However, it is evident that significant sums of money continued to be spent on the procurement of arms and ammunition for the Territorial Active Force and for the British South Africa Police (BSAP), which were still the country's main lines of defence.\textsuperscript{10}
### Table 5.1: Distribution of Population Arms and Ammunition in Southern Rhodesia 1922

<table>
<thead>
<tr>
<th>Place</th>
<th>'A' Adult Males in Area</th>
<th>Required for Defence of Place</th>
<th>Surplus for Patrols &amp; Column</th>
<th>Govt. Rifles in Area</th>
<th>Private .303 Rifles in Area</th>
<th>Reserve Required to Complete 'A'</th>
<th>Where Kept</th>
<th>Machine Guns in Area</th>
<th>Lewis Guns in Area</th>
<th>Strokes Guns in Area</th>
<th>Emergency Ammunition</th>
<th>Reserve Ammunition</th>
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<tr>
<td>No. 1</td>
<td>1244</td>
<td>994</td>
<td>250</td>
<td>386</td>
<td>316</td>
<td>569</td>
<td></td>
<td>4 V.M.G</td>
<td></td>
<td></td>
<td>13</td>
<td>2</td>
</tr>
<tr>
<td>Military District</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.303M.G.</td>
<td>2.450.</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Unstah</td>
<td>3362</td>
<td>2392</td>
<td>970</td>
<td>638</td>
<td>641</td>
<td>2095</td>
<td></td>
<td>8 V.M.G</td>
<td></td>
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<td>12</td>
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<td>Salisbury</td>
<td>585</td>
<td>435</td>
<td>150</td>
<td>85</td>
<td>330</td>
<td>170</td>
<td></td>
<td>3 V.M.G</td>
<td>1.303M.G.</td>
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<td>Hartley</td>
<td>900</td>
<td>700</td>
<td>200</td>
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<td>419</td>
<td></td>
<td>4. V.M.G</td>
<td></td>
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<tr>
<td>No. 4</td>
<td>2987</td>
<td>2212</td>
<td>775</td>
<td>513</td>
<td>584</td>
<td>1923</td>
<td></td>
<td>6 V.M.G.</td>
<td>2.303M.G.</td>
<td>1.450M.G.</td>
<td>15</td>
<td>2</td>
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<tr>
<td>Gwelo</td>
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<td>530</td>
<td>227</td>
<td>110</td>
<td>193</td>
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<td></td>
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<td>2.303M.G.</td>
<td>1.450M.G.</td>
<td></td>
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<tr>
<td>Bulawayo</td>
<td>393</td>
<td>343</td>
<td>50</td>
<td>206</td>
<td>126</td>
<td>81</td>
<td></td>
<td>2 V.M.G.</td>
<td>1.450M.G.</td>
<td></td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>Victoria</td>
<td>530</td>
<td>400</td>
<td>130</td>
<td>62</td>
<td>342</td>
<td></td>
<td></td>
<td>2 V.M.G.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Chartier</td>
<td>10 531</td>
<td>8006</td>
<td>2525</td>
<td>2473</td>
<td>2373</td>
<td>5792</td>
<td></td>
<td>33 V.M.G.</td>
<td>9.303M.G.</td>
<td>6.450M.G.</td>
<td>62</td>
<td>8</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>10 531</td>
<td>8006</td>
<td>2525</td>
<td>2473</td>
<td>2373</td>
<td>5792</td>
<td></td>
<td>33 V.M.G.</td>
<td>9.303M.G.</td>
<td>6.450M.G.</td>
<td>62</td>
<td>8</td>
</tr>
</tbody>
</table>

Source: S2290/4 - Memorandum on Defence, Southern Rhodesia
The change in focus from the re-organisation of the personnel establishment to matters of defence equipment started with Colonel W.H. Ralston in 1936.\textsuperscript{11} Having been appointed a member of the Council of Defence for Southern Rhodesia, Ralston concluded that the personnel maintained in the colony were adequate to deal with any internal disturbance. He pointed out, however, that the colony's forces could not deal with aggression from external sources because they lacked adequate equipment. Among other issues, the colonel pointed out deficiencies in the quantity of small arms ammunition held in reserve and the complete lack of artillery.

Ralston went on to explain that the supply of small arms ammunition held in reserve was too small even with the arrangement that South Africa would provide 5 000 000 rounds of ammunition in time of emergency. This, the Colonel argued, would be made even more difficult by the fact that there was no established mechanism for the transfer of such large amounts of ammunition and that South Africa was not even mentioned in the existing Defence Scheme for Southern Rhodesia.\textsuperscript{12} Ralston further proposed a full discussion of defence problems with South Africa and that a scheme should be drawn up for the whole of Southern Africa up to the Zambezi. He suggested that such a scheme should include a general plan and organisation of Defence. There would need to be arrangements for movement of troops to and from South Africa, as well as ammunition supply, including the reserve ammunition available for Southern Rhodesian forces. Ralston even had a plan for the distribution of anti-gas masks, and the colony-
wide distribution of aircraft and anti-aircraft defences.\textsuperscript{13}

When Colonel J.S. Morris, the Officer Commanding Southern Rhodesia Forces, was quizzed by the Department of Defence on the inadequacies identified by Ralston, he was rather defensive. He acknowledged the fact that in accordance with the directives issued by the Committee of Imperial Defence, the colony should have had in reserve 8 000 000 rounds of small arms ammunition.\textsuperscript{14} But, the average stock held by August 1936 was 2 500 000 rounds with 1 000 000 on order to meet current requirements. Morris justified himself by saying that 8 000 000 rounds of ammunition did not permit a turn-over of stock within a reasonable life period for the ammunition. If held in larger quantities, he argued, the reserves of ammunition might become unserviceable leading to wastage. Morris preferred to rely on South Africa to provide 5 000 000 rounds on request. However, when the question of obtaining ammunition from South Africa was followed up, it was learned that South Africa could only provide 1 000 000 rounds of small arms ammunition per month.\textsuperscript{15}

The need for a local arms manufacturing capacity was again highlighted by Major General G.J. Giffard in his 1937 proposals on the question of Southern Rhodesia’s role in Imperial Defence.\textsuperscript{16} Major-General Giffard was the Imperial Inspector General of the African Colonial Forces. He suggested that ideally, Southern Rhodesia should not aim at providing infantrymen, but should establish a training unit for officers and other ranks. He also advocated the establishment of a
mechanised armoured fighting vehicle unit and a mechanised artillery unit for the Colony. R.C. Tredgold, Minister of Defence for Southern Rhodesia, agreed with the Inspector General's suggestions, although emphasizing the need for cooperation with South Africa.

In welcoming the offer of a further contribution towards Imperial Defence by Southern Rhodesia, the Overseas Defence Sub-Committee of the Committee of Imperial Defence endorsed Giffard's recommendations. However, it was noted that the 3.7" Howitzers for the mechanised artillery unit and the vehicles for the armoured cars could not be made available from Britain owing to the heavy rearmament demand armament of the United Kingdom.\textsuperscript{17} It was also pointed out that it would not be possible for Southern Rhodesia to carry the whole of the initial cost of the vehicles and weapons required to fulfill their part in Imperial Defence. It was then that Giffard suggested that Southern Rhodesia should manufacture her own armoured cars and vehicles to tow the Howitzer guns. He observed that he had been impressed by locally-manufactured armoured fighting vehicles in the Sudan, and that Southern Rhodesia possessed even greater potential because of the availability of raw materials and spare parts.\textsuperscript{18}

It must be observed however, that Ralston's "revolution" coincided too well with the British Director General of Munitions' 1936 decision to re-equip all existing Imperial units with modern equipment.\textsuperscript{19} But, even allowing for the best of British intentions towards the defence of their colonies, it can still be argued that before
the outbreak of World War II, the "donation" of Imperial weapons perpetuated Southern Rhodesia’s technological dependence on the United Kingdom. Nor was it Imperial policy to encourage British colonies to build industries that might challenge home markets. Cowen and Westcott observed:

Before the Africa-wide spate of labour strikes in 1945 and the immediate post-war period, the Colonial Office had a premonition of things to come. In 1943 Dave (of the Office) insisted that the post-war problem for colonies would be jobs for workers in industries created during war-time, industries which, it was reported from Nigeria, had created ‘a body of African craftsmen’ who had become accustomed to 'new skills and new types of employment'. For the first time probably the Colonial Office in London recognised the growth of an industrial proletariat in Africa. In doing so, the Office faced the warning and threat of another premonition for the post-war period. The Ministries of Production, Food and the Board of Trade insisted that industrial development would draw labour away from the ‘most important’ colonial supply of raw materials. It was also ‘undesirable’ to give any long-term guarantees for the protection of industries that used British imports and competed with British exports.20

The War Supplies Committee

When the Second World War broke out, a number of individuals, private companies and organisations joined the Government of Southern Rhodesia in volunteering their services for the defence of the British Empire and Commonwealth. Individuals who owned private firearms were only too eager to lend them to the defence forces. As a typical follow-up to Major General Giffard’s challenge for the local manufacture of armoured cars, Duly, a mechanical engineer, offered to build an armoured car in his motor vehicle workshop which he gave to the defence forces free of charge.21
Experiments were also conducted in engineering firms leading to ambitious claims of inventions of a military nature. One such claim was made by E.G. Bays, a Private in the Defence Force who owned a factory and managed to manufacture Producer Gas which he called Traction Power Gas as a fuel substitute for armoured vehicles, trucks and cars.\textsuperscript{22} The experiment was not followed up, as Bays was soon called up for service. Calls by the Industrial Development Advisory Committee (IDAC) that he be released temporarily from Active Service to continue with his experiments were fruitless. The most far reaching contribution however, was the suggestion given by an engineer, R.W. Albertson of Gatooma (Kadoma), who wrote directly to the Prime Minister as follows:

I desire to submit the following suggestions that have been brought to me. Certain of the Engineering Works in the Colony could produce Armaments, Guns, Rifles etc. There are a number of very competent and highly trained Engineers also in the Colony, a few of these have had experience. I would suggest you call together a few of these and have them submit to you suggestions on the lines of protecting the Colony.\textsuperscript{23}

After voicing his concerns arising out of “technical difficulties in the way of adapting an engineering works for the production of armaments”, the Prime Minister agreed to present the suggestion for the consideration of technical experts.\textsuperscript{24} The result of those deliberations was the formation of the War Supplies Committee in July 1940. The War Supplies Committee was appointed by the Minister of Air in terms of the Emergency Powers (Defence) Act 1939. Its purpose was defined as “to administer control and advise the Minister on all matters relating to armament production”.\textsuperscript{25} Air Commodore C.W. Meredith was
appointed as Chairman.

In creating this committee the Minister of Air took into consideration pressure from various quarters. One pressure group were the countries of East Africa where a study on the viability of arms production was already underway. At the Governors Conference held in Nairobi in July 1940, the East African countries announced their intention to start the local manufacture of arms in the region.\textsuperscript{26} The Government of Southern Rhodesia had also received a Warning Order for a pending Eastern Group Conference in New Delhi to be convened by the Viceroy of India to which would be invited representatives from the Governments of Australia, New Zealand, South Africa, Southern Rhodesia, the territories of the East African Governors Conference, Burma, Ceylon, Hong Kong, Malaya and Palestine. The terms of reference of the Conference were, "To settle a Joint War Supply policy for the Eastern Group under which the maximum use will be made of the existing and potential capacity for war supply of each country,"\textsuperscript{27}

From the foregoing, it appears that the Government of Southern Rhodesia was reluctantly drawn into considering local arms production by forces that had more to do with the survival of the British Empire than with the distinctive defence of the colony itself. It also seems as if Southern Rhodesia hurriedly appointed a War Supplies Committee in order to be in line with the countries under the East African Governors Conference, and also in order to have something to present at the forthcoming Eastern Group Supply Conference in India. It can be argued
therefore that Southern Rhodesia was propelled into the realm of arms production not by domestic defence requirements but by external pressures for the defence of the British Empire during the Second World War.

**Rushing in where Angels Fear to Tread**

Officials were initially sceptical of the ability of the industrial sector of Southern Rhodesia to sustain an armaments production industry. The Rhodesia Scientific Association made a detailed analysis of the industrial capacity of Southern Rhodesia and their report was not encouraging.\(^{28}\) Meredith himself was not too optimistic. In 1940 he wrote to the Minister of Justice and Defence:

> It is futile to argue that because machine tools and artisans are available in Rhodesia production can or even should be immediately undertaken.... That local industry has potentialities there is no doubt, but there is also no doubt that in many quarters they are grossly overestimated... It can also be argued with equal justification that to exploit local resources to the fullest extent it is only prudent to investigate problems thoroughly, to organise on sound lines and to profit by the experience of others. If this is not done then it will merely be a case of rushing in where angels fear to tread...\(^{29}\)

Despite this scepticism, the War Supplies Committee held its first meeting on 24\(^{th}\) July 1940. Its membership comprised C.W. Meredith as Chairman, with three committee members and a secretary. One of the committee members, H.G. Issels, was a leading Bulawayo industrialist, whose company manufactured engineering components for the mines and also produced wagons.\(^{30}\) The terms of
reference of the Committee were:

(a) To examine the resources of the Colony for the manufacture of munitions and civil supplies with the object that its activities should be
(b) co-ordinated with those of the Technical Production Committee of the Union of South Africa.
(c) That the general production policy should be, firstly to assist the Union as far as possible, and thereafter to utilise the balance of our resources for Southern Rhodesia's needs.
(d) Examination of further co-ordination with the Northern Territories and if necessary, suitable representations made thereon to the Government concerned.31

The Committee's first task was to send a delegation to South Africa to visit its production centers and to obtain ideas. It was also necessary to make a complete count of all the machine tools, skilled labour, raw materials and foundry resources of the colony. This census revealed a number of important facts. The position regarding basic machine tools was found to be satisfactory from the point of view of numbers and condition but only for use by existing plant. However, the census clearly showed that the Colony could not rely on existing plant for munitions production purposes. The hours in which these tools were in use on normal work in industry were such that, without interfering with industry generally, very little time would be available in which to use them on armament production.32 It was therefore clear that any projected munitions programme should necessarily commence with the manufacture of machine tools.

The labour situation will be discussed in more detail in the next chapter, but a few points are worth mentioning here. From a survey of the skilled labour
available in the Colony, it was found that any production was necessarily bound up with an additional supply of white labour. It would therefore be necessary to call on white female workers, on the same lines as was being done in South Africa. However, it was suggested that in all cases armaments production with female workers should be kept quite separate from their normal work. It was also thought that it would be sufficient in most instances if one Journeyman was allocated to each section of new plant operated by female workers. The Journeyman would set up the work in the machines and attend to the tools while the women would do all the repetitive work. The white Journeymen and the white women required were thought to be readily available in the Colony, although subsequent developments proved this assumption to be unfounded.

Nor was the position regarding raw materials satisfactory. With the exception of base metals, asbestos and coal which will be discussed in the next chapter, the only metal which yielded any surplus to requirements was tin. However, the greatest demand from war industries would undoubtedly be for iron ore. Unless the Committee could obtain supplies of Pig Iron from outside the Colony, it was seen from the census that supplies of cast iron scrap and Pig Iron at the current rate of consumption were only sufficient for twelve months in the case of Bulawayo and Salisbury areas and five months in the case of the Midlands area.

Existing foundry resources were regarded as sufficient only for Southern Rhodesia's own small-scale industrial production. However, the type of casting
which was required for local industry was one on which unskilled labour could be employed with a small degree of expert supervision. Local foundries were thought to be capable of enlargement and foundrymen imagined that they could cope with any demands which might be made on them for the supply of castings which would be machined for munitions production within the Colony. However, the census again revealed that the Midlands area was very short in its foundry capacity. Only the Bulawayo and Salisbury (Harare) areas had any foundries at all, and the Umtali (Mutare) area had none. The Rhodesia Iron and Steel Company will be dealt with in more detail later, but its output of cast iron was low, producing only 650 to 700 tons a month.35

Arising from the Census Report, it was agreed that “In the opinion of the Committee, price control of scrap metal and certain other raw material [was] desirable.” The Committee authorised the Chairman and the Secretary to proceed with a Colony-wide Scheme for the collection of scrap metals, obtaining if necessary, sanction from Government through the Minister for Air. The Committee also authorised the Chairman and Secretary to negotiate with Government for finance for the purchase of scrap metal and other raw materials as considered desirable.36

Another problem was the high costs of transporting raw materials and finished products to and from the munitions factories. A number of industrialists were interviewed in 1940 and in almost every instance complaints were made that the
Rhodesia Railways administration was making no attempt to help.\textsuperscript{37} It was noted that Rhodesia Railways, although accepting the idea in principle, had no definite 'patriotic' policy of charging lower transport rates for locally-manufactured goods or for raw material intended for local manufacture, even those to and from munitions factories. Government then pressurised the Rhodesia Railways to review their rates.\textsuperscript{38} These were reviewed at the end of 1940, and in the case of munitions producing factories, the following favourable arrangements were agreed to. Raw materials were to be charged at public rates in the first instance, and a rebate down to ½ d per ton per mile allowed on submission of a certificate from the War Supplies Committee that the material had been used for the manufacture of munitions of war on behalf of the Government. On finished products, the War Supplies Committee was to furnish the Railways with a list of the various products concerned, together with the consignors and consignees, and the points between which the traffic would be railed, and unless there were special reasons for maintaining tariff rates, ½d per ton per mile would be charged.\textsuperscript{39} It was noted that the rate of ½d per ton per mile was the same as that maintained by the Rhodesia Railway on its own capital stores.

Despite the problems highlighted above, by January 1941 the War Supplies Committee felt so confident that they accepted orders from the Director of Technical Production of South Africa. They took orders for the manufacture of 25 000 complete No. 29 Bomb Pistols, even though no factory had as yet been built for such purpose. It was decided to proceed with the manufacture of these in
the Rhodesia Railway workshop and not to wait until a proposed munitions factory became operational. However, the forged stampings would have to come from South Africa, thus raising the cost of manufacture of one bomb pistol to an estimated 7/9d each.\textsuperscript{40}

The Committee also decided to accept an order for the maintenance of the 11½ 1b Practice Bombs at the rate of 1 000 per month at a price of 23 / - each. They also accepted an order for the manufacture of the 10 1b Motor Bomb body at the rate of 1 000 per week at a price of 8 / - each for the complete machine body. For the latter, the Committee had to accept a tender from the Rhodesia Iron and Steel Corporation for the manufacture of cast steel forgings for the 10 1b Motor Bomb body at a price of 5/6d each for bodies passed by the Committee's Inspector.\textsuperscript{41} By mid February 1941, the situation on orders received from the Director of Technical Production of South Africa stood as in table 5.2.
<table>
<thead>
<tr>
<th>ITEM</th>
<th>QUANTITY</th>
<th>PRICE</th>
<th>COMPANY ALLOCATED</th>
<th>REMARKS</th>
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<tr>
<td>No. 29 Bomb Pistol</td>
<td>2,000 per week for one year</td>
<td>7/9 plus 30%</td>
<td>Rhodesia Railway</td>
<td></td>
</tr>
<tr>
<td>Explosive Container Heads</td>
<td>Up to 5,000 per week</td>
<td>2/6 plus 30%</td>
<td></td>
<td>Turret lathes to be manufactured first by Rhodesia Iron and Steel Corp</td>
</tr>
<tr>
<td>11½ lb Practice Bomb</td>
<td>1,000 per month</td>
<td>23 / - plus 30%</td>
<td>ROFAC</td>
<td>Factory will only be operational by mid March 1941</td>
</tr>
<tr>
<td>10 lb Infantry Bomb</td>
<td>1,000 per week</td>
<td>8 / - plus 30%</td>
<td>Rhodesia Iron and Steel Corporation</td>
<td></td>
</tr>
<tr>
<td>Fuse Hole Plugs</td>
<td>10,000</td>
<td>2 / - each plus 30%</td>
<td>Rhodesia Welding and Engineering Company</td>
<td>Company failed to produce – Order cancelled</td>
</tr>
<tr>
<td>Container Head Small Size</td>
<td>100,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11½ lb Mark W.S.C. Bomb</td>
<td>3,000 per month</td>
<td>£1,350 per month</td>
<td>Bulawayo area, Salisbury area</td>
<td>Air Ministry to give the go ahead</td>
</tr>
<tr>
<td></td>
<td>2,000 per month</td>
<td>£1,350 per month</td>
<td>Midlands area</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2,000 per month</td>
<td>£900 per month</td>
<td></td>
<td></td>
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Source: S 482/22/39, National Archives of Zimbabwe.
The Scrap Metals Order 1941

The need to secure an assured supply of raw materials for the production of the above orders dominated the first six meetings of the War Supplies Committee in 1941. The main problem was the shortage of iron and steel. As mentioned earlier on, the Rhodesian Iron and Steel Corporation (RISCO) a private company controlled by the state-owned ISCOR of South Africa was unable to provide enough iron and steel to meet the demands of both munitions production and civilian industrial requirements.

RISCO only possessed one 3½ tonne electric furnace to melt down scrap metal which produced very small quantities of steel and steel products. The company had no access to pig iron and there was no way that any large scale production of steel could be accomplished without the availability of large quantities of pig iron. Even though RISCO's access to the available scrap metal in the country was protected by a 1937 law, it was inadequate for steel production even in peacetime, and some trade in scrap metal continued with South Africa and Northern Rhodesia (Zambia). Since RISCO was a private company, the W.S.C. felt that the only source of steel in the country, which was scrap iron, could not be left under the control of a private company with foreign shareholders. The W.S.C. accordingly, pressurised the Government of Southern Rhodesia to further restrict the trade in scrap metal and this resulted in the infamous Scrap Metals Order of 1941.
In the exercise of the powers conferred upon him as a competent authority by Section 20 of the Principal Defence Regulations, 1939, the Minister of Finance issued the Scrap Metals Order, 1941. Section 3, 4 and 5 of the Order read as follows:

3. No person shall import into the Colony any scrap metal except under and in accordance with a written permit issued by or on behalf of the Minister of Finance.

4. No person shall sell and no person shall buy any scrap metal except to or from the War Supplies Committee, P.O. Box 1379, Salisbury, or some person authorised by such Committee to buy or sell scrap metal on its behalf.

5. The maximum prices payable for scrap metal by or on behalf of the War Supplies Committee shall be at the following rates:

   (a) Iron known to the trade as No. 1 grade cast iron scrap, £6.10 per short ton f.o.r. Bulawayo or Salisbury.

   (b) Iron known to the trade as No. 2 grade scrap, £4.10 – per short ton f.o.r. Bulawayo or Salisbury.

   (c) Scrap steel, £2.5 – per short ton f.o.r. Bulawayo.46

Arrangements were made with the Rhodesia Railways for a national scheme for the collection and raiilage of scrap metal at special rates from all parts of the country to the holding parts of the War Supplies Committee. A circular was sent to all parts of the Colony with the message that the Railway Administration had agreed to co-operate with the Government of Southern Rhodesia in facilitating the transport of scrap metal to various foundries in Southern Rhodesia where it was urgently required for work of national importance. An appeal was therefore made to farmers, miners and the public generally to release all suitable scrap
metal in their possession. It was pointed out that arrangements had been made whereby they may hand it over to the Station Master at any station in Southern Rhodesia, and, where the weight was ascertainable, receive immediate payment at the rate of £1.10 per ton. A number of individuals and private companies were also contracted to ferry scrap metal to and from the railway stations. Later, the Rhodesia Railways extended the Scrap Metal Collection Scheme to include the use of their Road Motor Service.

The Scrap Metal Order caused some panic and anxiety among the companies dealing with scrap metal. Most affected were those companies which held large quantities of scrap and those which had existing contracts for the purchase or delivery of such scrap. W.S. Craster, who held a large stock of scrap metal, protested to the War Supplies Committee about the difficulties affecting the majority of scrap-holding companies. His main points were that no fixed selling price had been scheduled for the users buying from the War Supplies Committee. Nor was there any mention of the size of the individual pieces or their cleanliness, (freedom from steel, bolts, shafts, pins, bushings etc). These all affected the price. Craster felt that it would be impossible for him and his colleagues to carry on business under the conditions of the order as several small firms would suffer. He pointed out that there were far too many suppliers for the amount of engineering work in the Colony, so that no one firm was able to obtain sufficient work and staff to keep overheads down while at the same time installing labour saving and cost-reducing plant. Further, there were no safeguards for existing
contracts which was "contrary to British fair play and justice."

The Scrap Metals Order also affected the operations of RISCO whose production of steel relied only on Scrap Metal. It was impressed upon RISCO that the company ought to expand its operations and to find a more reliable raw material base of iron ore, if it were to be able to satisfy its war effort and other industrial obligations. However, as the company was under-capitalised, RISCO failed to raise the required capital to effect the necessary expansion programme. Fearing the collapse of the industry and fearing also the possibility of manipulation by the South African shareholders of the company, the Government of Southern Rhodesia nationalised RISCO under the Iron and Steel Act of 1942. It was only under Government control that RISCO started exploiting the iron ore and lime at Kwekwe which would later become the main source of iron ore for the present day Zimbabwe Iron and Steel Corporation (ZISCO).

The Bulawayo Production Committee And ROFAC

In 1941, the problem of the production of the 11½ 1b Air Force Practice Bomb became acute when it was required by the United Kingdom that Southern Rhodesia produce up to 7 000 bombs per month. The order was accepted but it became necessary for the War Supplies Committee to decide at what centre or centres production would take place because there was no factory in Southern
Rhodesia with a capacity to produce such a large number of bombs. At their Seventh Meeting the Committee decided that Tail Assemblies for the bomb both for Bulawayo and Salisbury requirements be produced in Bulawayo.\textsuperscript{55} It was decided that orders for war production should, for the present, be shared evenly between Salisbury and Bulawayo, with the exception, however, that orders for items to be delivered to South Africa should, for transport preference purposes, be placed in Bulawayo.

It was therefore proposed that a Sub-Committee be appointed to work out details of production in Bulawayo and to report progress to the War Supplies Committee. The Bulawayo Production Committee was appointed, with Major M.P. Sells as Chairman and Messrs. H.G. Issels and W.J. McAdam as members.\textsuperscript{56} The War Supplies Committee immediately proposed ambitious orders in Bulawayo for the production of, 2 500 completely assembled Air Ministry Bombs per month, of which 1 000 would be for South Africa. Orders were also placed for 2 500 W.S.C. Bombs per month and for 1 500 Air Ministry Type Tail Assemblies per month for Salisbury.\textsuperscript{57} The only problem, however, was that there was no factory in Bulawayo which could produce Air Bombs, or any munitions for that matter.

In May 1941, the Air Ministry further ordered the production of 8 000 11 ½ 1b Practice Bombs per month for the Rhodesia Air Training Group. Despite the lack of facilities, the Chairman of the War Supplies Committee considered that it was a very wonderful opportunity for the national engineering industry of Southern
Rhodesia to show that they could rise to the occasion. He suggested that South Africa be approached for components only "in extremis", and that the engineering industry "strain every available resource" to avoid obtaining components elsewhere. It was decided therefore to increase the production order for the Bulawayo Production Committee to 50 000 Air Ministry Type 11½ 1b Practice Bombs at a monthly rate of 4 000.\textsuperscript{58}

However, as a result of a survey of available industrial facilities, it became apparent that the War Supplies Committee would need to establish special workshops as an essential addition to the available production capacity of the Engineering industry. At its fourth meeting in 1941, the Committee had accepted in principle the desirability of establishing a Rhodesia Ordnance Factory and had agreed that the matter be treated as urgent.\textsuperscript{59} It was noted that the erection of the building would not be problematic, but that the acquisition of tools and the gathering together of staff was likely to be a big challenge. Land adjoining the Railway Workshops in Bulawayo was leased from the Rhodesia Railways for this purpose.\textsuperscript{60} Thus came into being in June 1941 the first factory in Southern Rhodesia specifically for the manufacture of munitions. It was called the Rhodesia Ordnance Factory (ROFAC) and it was controlled by the Bulawayo Production Committee. But, strictly speaking, ROFAC was merely an extension of the Rhodesia Railways' Bulawayo Workshop. The land on which it stood belonged to the Railways, the machinery in the factory was loaned from the Railways, and all the skilled personnel in the factory were Railway workers.
The Salisbury Production Committee and SOFAC

At the Eighth Meeting of the War Supplies Committee held in Bulawayo in 1941, it was decided to appoint a Salisbury Production Committee with terms of reference similar to those issued to the Bulawayo Production Committee. The question which immediately came up was that of the capacity of the firms available in Salisbury which could be converted to munitions manufacture. An inspection of local engineering shops conducted in May 1941 yielded disappointing results.

In the opinion of the inspection team, the available shops were, generally speaking, not laid out to undertake manufacture on mass production lines. Space was limited, machines were scattered and the majority were antiquated and most would need to be adapted before taking part in munitions production. It was the opinion of the Production Committee that if the cost of production was to be kept within the limits required by the inspection team, then a separate establishment would have to be set up. This, it was agreed, would be essential if the demand for increased production was to be met.

As it turned out, the production required by London from Southern Rhodesia was beyond the capacity of ROFAC. It was then decided to establish a factory in Salisbury under the name of the Salisbury Ordnance Factory (SOFAC) and to put it under the control of the Salisbury Production Committee (Munitions). The new
committee then rented a building adjoining and belonging to the Electricity Supply Commission (ESC). For the second time, in 1941, a makeshift factory was established on borrowed land, borrowed buildings, utilising borrowed equipment and borrowed manpower.

The Munitions Production Board

At the end of 1941, as orders increased and the components to be manufactured became more varied, it was decided that a new policy of production was necessary. In making suggestions to Government on the proposed new policy, the War Supplies Committee acknowledged the fact that there were definite limitations to the class of technical production that could be undertaken in Southern Rhodesia. Equally, they observed that the production of 100,000 11½ lb Practice Bombs for the Empire Air Training Scheme (EATS), was the only one to be attempted in mass production with the facilities available. It was also noted that at least 2,000,000 system components had to be produced for the manufacture of that number of bombs. It was suggested therefore that any new policy should take into consideration the fact that the 11½ lb Practice Bomb was an essential part of the Empire Air Training Scheme and that its production on a firmly established basis was a matter of first importance.

The second consideration was the requirement that the Colony undertake some repair work and manufacture sundry spare parts. The volume of these was small and could be easily handled. Owing to shipping and other difficulties, it was,
however, anticipated that the volume might increase particularly in regard to aircraft spares. It was also noted that after providing for these needs, the remaining machine tool capacity of Southern Rhodesia would only be capable of producing parts on a jobbing basis. The utilisation of that limited capacity to best advantage became the third consideration.

It was further observed into the 1940s that the Middle East Army Groups looked more and more to Southern Africa for tank and other spare parts. Their requirements were urgent and 7,000 separate parts aggregating some half a million pieces had already by 1941 been ordered. South Africa regarded these Urgent Middle East (U.M.E.) spares as its first priority and it expected Southern and Northern Rhodesia to view the need with the same priority. In view of the fact that South Africa had given considerable help to Southern Rhodesia interests in equipment, tools and materials for the setting up of their own factories, it was suggested that South African requirements be recognised in the proposed new policy.

By December 1941, the idea had been popularised that the Rhodesia Air Training Group (RATG), could set up their own manufacturing facilities for aircraft spares at less cost and more convenience than to have these be produced at ROFAC and SOFAC. As one of the main reasons for the creation of the central workshops in Salisbury and Bulawayo therefore disappeared, it was ultimately decided to
deliver to the RATG, all the machine tools which had arrived for installation at ROFAC and SOFAC. The idea of a spread of central workshops was therefore abandoned in favour of a single Munitions Production Board.\textsuperscript{68}

On the 5\textsuperscript{th} of December 1941, the Minister of Air dissolved the War Supplies Committee and appointed the Munitions Production Board in its place. The membership of the Board was in fact identical to that of the outgoing War Supplies Committee, then Air Vice-Marshal C.W. Meredith as Chairman. At its first meeting, the Munitions Production Board adopted the new policy proposed by the outgoing War Supplies Committee as its working terms of reference.\textsuperscript{69}

The Munitions Production Board was immediately faced with an acute shortage of aluminium for the manufacture of air bombs. This led to the 1942 decision for the recovery of aluminium from aircraft scrap. The Government authorised an expenditure of £1 000 for experimental aluminium recovery work. This scheme was for the recovery and manufacture of aluminium bars, forgings, castings, wire and alloys. Ridge of the Rhodesia Iron and Steel Corporation Ltd placed the resources of the Steel Works at the disposal of the Munitions Production Committee, and experimental work was started on the Steel Work's premises. This work and a survey of the probable scrap available led the Munitions Production Board to believe that the operation of an aluminium plant in Southern Rhodesia would be viable.\textsuperscript{70} As it turned out, that belief was again to be unfounded.
To begin with, a 300 lb pot furnace had to be built to smelt the three tons of aluminium scrap on site at the Steel Works. In March 1942, £5 000 for plant and equipment and £2 000 for buildings was voted by the Government. Dr. R.S. Young, Chief Research Chemist of the Rhokana Corporation of Northern Rhodesia gave valuable assistance when he visited the Aluminium Reclamation Factory and examined the process in April. Land adjoining the Steel Works premises in Bulawayo was intended as the site for the Factory. However, there was a delay in obtaining possession and a further delay in the erection of the building owing to the Government’s negotiations to take over the Steel Works. The Factory was ultimately sited on the Steel Work’s premises.

Arrangements had been made with South Africa to receive scrap for smelting and return of an equal weight less smelting losses. For the requirements of the Munitions Production Board, aluminium wire and billets would be sent to South Africa for the Manufacture of rivets and extruded sections and also die castings. By June 1942, duraluminium and aluminium scrap was coming forward from South Africa. In the meantime, scrap material and salvage in many forms was being collected by a general drive throughout the Colony and Northern Rhodesia and dispatched to the aluminium Factory. The Factory itself operated on a non-profit basis, and was under the direct control of the Munitions Production Board. Yet, despite all the fanfare and publicity accorded to it, Southern Rhodesia’s aluminium project did not yield the expected results.
The Munitions Production Board placed orders through its local Production Committees for the manufacture of various items required by the Rhodesia Air Training Group, the Southern Rhodesia Defence Force, the Union of South Africa and the Royal Air Force in Kenya. The orders reflected in the Board's accounts show work completed or in progress by the end of September 1942, totalling 250 000 items which involved the manufacture of some 5 000 000 components. In addition, the Board placed numerous orders through its local Production Committee for the manufacture of stores for the Army and Air Force, which were paid for directly by the consumers to contractors. Most of this work was done on a non-profit basis in accordance with the policy of the Board. A list of some of the most important work done by the Munitions Production Board is shown on table 5.3.
TABLE 5.3: LIST OF WORK DONE BY THE MUNITIONS PRODUCTION BOARD

<table>
<thead>
<tr>
<th>FOR THE RATG</th>
<th>FOR S. RHODESIA DEFENCE FORCES</th>
<th>FOR THE UNION OF SOUTH AFRICA</th>
<th>FOR R.A.F. KENYA</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Practice Bombs</td>
<td>Motor vehicle spares</td>
<td>UME Tank Spares</td>
<td>Practice Bomb</td>
</tr>
<tr>
<td>All Aircraft Spares</td>
<td>Motor vehicle repairs</td>
<td>Machine Gun Links</td>
<td>Bombs boxes</td>
</tr>
<tr>
<td>Aircraft repairs</td>
<td>Motor cycle repairs</td>
<td>Exploder containers</td>
<td>Acid filling apparatus</td>
</tr>
<tr>
<td>Aluminium</td>
<td>Bicycles</td>
<td>Bomb Pistols</td>
<td></td>
</tr>
<tr>
<td>Components</td>
<td>Bren guns</td>
<td>Practice Bombs</td>
<td></td>
</tr>
<tr>
<td>Special Steels</td>
<td>Mortars</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paraffin flares</td>
<td>Motor bombs</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grenades</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rifle rests</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Range Finder stands</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Towing gear</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Domestic appliances</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Soyer stoves</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pickets</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fencing material</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Badges</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Buttons</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: (a) Chairman's Report
(b) 5908 W.S.C. 68 and W.S.C. 0 - 95
In March 1942 a Department of Supply was created to co-ordinate all the kinds of supplies required during the war. The Department controlled three main divisions, namely, supply, distribution and production. Each of these divisions fell under a Controller who was responsible to the Director of Supplies. The Production Division was scheduled to start operating as from the 1st of October 1942 in order to inherit the functions of the Munitions Production Board which would wind up its operations on the 30th of September 1942.

While emphasis was being placed on the ability of the Supply Division to provide essential goods by means of a system of priorities, it was also apparent that much could be done to stimulate the production of components and spare parts for the maintenance of essential industry. This would also promote "war emergency industries", and the expansion of existing industries and encourage them to undertake the manufacture of goods not previously attempted but for which their plant were suitable. The incorporation of the Munitions Production Board under the Production Division of the Department of Supply was explained by A.B. Cowen, the first Director of Supplies as follows:

As the foregoing involved some rationalisation of the engineering industry designed to prevent duplication of similar work in different workshops, the full utilisation of specialised machine tools, conservation of materials in conjunction with the Iron and Steel Order etc., it became desirable to transfer the functions of the Munitions Production Board to the Division.

By 1943 the Production Division effectively controlled the whole of the practice
bomb requirements of the Rhodesia Air Training Group (RATG). They also had orders for large quantities of land mine igniters, live bomb exploder containers, tank and other U.M.E. spares. In order to reduce production costs, however, it was decided to concentrate the manufacture of bombs in Salisbury and to terminate production in Bulawayo by October 1943. A total of 117 530 bombs were manufactured during 1943 and out of these, 10 500 were dispatched to Kenya. Some 20 000 live bomb exploder containers were also produced for South Africa and 2 000 land mine igniter mechanisms for the East African Provision Office. Negotiations for the manufacture of the modified practice bomb continued and an order for 40 000 was received. However, the Air Ministry still had to decide whether or not the RATG would draw its total requirements from South Africa which had offered cheaper prices.

On the financial side, the bomb contracts of both ROFAC and SOFAC recorded losses throughout 1943. In view of these losses it was decided that 10 lb bombs be procured from South Africa at 8/3½d each for Bulawayo, including railage on returned boxes. This was more favourable than the price of 11/1d for the local bomb excluding transport. Apart from price considerations, the Air Ministry favoured the procurement of bombs from South Africa owing to the larger scale manufacturing undertaken there, the technical supervision available and the fact that certain of the components had in any case to come from South Africa. However, the standing contract of 40 000 bombs from SOFAC at 11/1d each still had to be honoured and the Production Division had to continue with
the manufacture of 500,000 Hand Grenade Centre Pieces for South Africa. This production commenced in November 1944 at the rate of 84,000 pieces per month.

**Termination Of The Arms Production Programme**

By the first half of 1945 and after the collapse of Germany, it became apparent that production of war equipment would cease. It was also recognised that the Production Division had established contacts on behalf of the Eastern Group Supply Council for the manufacture of a variety of articles required for purposes other than actual warfare. These were likely to take up to eighteen months to complete. It was therefore decided that in order to allow for the early closing of the Department of Supply, the Production Division be transferred as a unit to the newly and permanently formed Industrial Development Commission (IDC). The Commission would carry on and finally wind up the Production Division under the guidance of J.W. Phillips.

On the 1st of October 1945, the Industrial Development Commission was appointed Government Agent for the Administration of the Production Division (now known as the Production Group) as a separate entity. In making the arrangement, the Minister of Finance directed that the operation of the Production Group should be carried on for as long as orders continue to be received and the operations did not reflect a loss. The Commission was appointed as government agent for the administration of the Group with effect
from the 1st October 1945. It was, however, clearly understood that the Production Group would be kept entirely separate from the general operations and from the accounts of the Industrial Development Commission. The Commission, as the Agents of the Government, would levy an administration fee for its services but should not participate in profits or losses made by the Group. Any profit or loss would be for the account of the Consolidated Revenue fund or such other fund as the Treasury would from time to time direct.  

During the financial year ended 31st March 1946, contrary to item 1 of the terms set out by the Minister of Finance, the General Profit and Loss Account of the Production Group recorded losses on stock, bomb contracts, exploder containers, oil regeneration and bad debts to a total of £14 000. Typically, the Auditor General expressed concern over, "such heavy losses on bomb production during the period under review". He observed that total losses, together with Administrative expenses amounting to £7 422.16.6d reduced the Gross Profit for the year from £28 512.0.7d to a Net Profit of only £1 886.11.7d.

Under such circumstances, the Auditor General found it difficult to recommend the continued existence of the Production Group. The Eastern Group Supply Section was closed down on the 31st March 1947. From that date until March 1949 the Production Group only produced that which was necessary to fulfill existing contracts. By the 1st of January 1948, out of a balance of outstanding contracts worth £73 500, only £53 000 worth had been produced and the
remaining £20 000 worth was cancelled by mutual agreement. However, the Industrial Development Commission managed to repay the £359 000 capital advanced by Treasury from the non-military activities of the Production Group. They also paid to the Treasury a net profit of £37 146 for the years 1947 to 1949. On 31st March 1949, the Industrial Development Commission was dissolved and all matters relating to production were handed over to the newly formed Department of Trade and Industrial Development.

Conclusion

Despite obvious handicaps, there were arguments in favour of the continued existence of the Production Group (Munitions). In his 1945 report, the Chairman of the Industrial Development Commission, Geoffrey Musgrave, argued that the Production Group actively developed the manufacturing and raw material potential of the Colony for export for both military and other needs. He further argued that this contributed materially to the war effort of Southern Rhodesia and at the same time established good-will for the products of the Colony far beyond the boundaries of the region. He also contended, though without proof, that it expanded the export trade in the products of the secondary industries throughout the country and in this way provided finance to the state, independent of internal revenue. Musgrave eulogised the system of close quality inspection introduced during the war on the bomb production line which he argued, could be extended to other industrial establishments. He was also of the opinion that "a continuation of this system of inspection and consequent
guarantee to overseas buyers regarding quality should ensure an advantage to
Southern Rhodesia's bid for a share in the import trade of other countries." 89

From the Auditor General's point of view, however, the problem remained that of
the huge losses arising out of the bomb manufacturing contracts which made up
the largest part of the Production Group. In 1942, at the peak of arms
production in Southern Rhodesia, C.W. Meredith had remarked that the activities
of the Munitions Production Board reflected a record of achievement of which
members and the various staffs concerned might justifiably feel proud. He
declared that it was possible for the Board to stimulate the manufacturing sector
of the colony in both quantity and quality of output to a standard previously
unknown in Southern Rhodesia. 90 Yet, as demonstrated above, the production
accounts for that and subsequent years continued to record losses for both
SOFAC and ROFAC. Such losses continued to be recorded until March 1946 and
the Treasury continued to subsidise the arms production programme. After the
war, these Government subsidies could not continue in view of the acute
shortage of funds both in the Colony and in the United Kingdom during the
period of post-war reconstruction. Also, the stimulation by the munitions factories
of the manufacturing sector in general, which Meredith had been preaching, was
not clearly visible by the end of the war. What was visible was the enormous
drain of manpower, tools, and money from civil industry to temporary munitions
production.
Another crucial factor in the failure of arms production to continue after the war was the lack of a department of research and development. The local firms did not develop the ability to design any of the items they produced and had to rely on drawings from outside. This perpetuated the technological dependence of Southern Rhodesia on South Africa and Britain. With the rapid technological developments in weapons and delivery systems during World War II it was not possible for local manufacturers to cope with the latest requirements. This was exacerbated by the fact that most of the engineers in Southern Rhodesia's munitions factories were volunteers who were involved in other lines of production in the civil sector. This left the few female unskilled workers as the only permanent staff in arms production lines. There was therefore very little specialisation possible. And, with only 150 permanent workers in all munitions factories during the period of peak arms production, the arms production industry cannot be considered to have become a major employer in the Colony.

As far as machinery was concerned, neither can arms production lines be said to have contributed positively to the machine tool situation of the manufacturing economy as a whole. Rather, some sectors of industrial production had to sacrifice their machines in order to furnish them to arms production lines. Also, the 11½ lb Practice Bomb which was the mainstay of the arms industry had only one limited major market, the RATG. When South Africa offered to supply the RATG with cheaper bombs in 1943, the largest market of the local arms producers suddenly vanished. Remaining orders from Kenya and the Eastern
Group Supply Committee were too small to sustain production.

When it became clear that local arms production in Southern Rhodesia was coming to an end, some well-wishers suggested that perhaps the Colony could hand over its arms production infrastructure to private companies. In 1948, Field Marshal Sir Claude Auchinleck of the Committee of Imperial Defence proposed that the Colony be allowed to continue arms production with the help of European companies. A Mr. Buehrle of the Oerlikon Works of Switzerland was approached to submit a proposal for the local manufacture of arms and ammunition and for the development of the iron and steel works necessary for such an industry. In 1950, after unsuccessful Rhodesian lobbying of the Commonwealth Office in London, the project was not approved. It was noted that a Swiss company, Sulzers, was supplying the Soviet Union with arms and ammunition and that the chances of worrisome European political meddling in the affairs of the British Colony were increasing, especially considering the growing Communist scare of the emerging Cold War. That effectively ended Southern Rhodesia’s hopes of becoming a post-war producer of arms and ammunition.

From the foregoing, it can be concluded that the history of local arms production during World War II in colonial Zimbabwe is the history of an industry struggling to establish itself and to survive. In this chapter, rather than simply praising its industrial war effort, it is observed that arms production during the war actually exposed colonial Zimbabwe’s technological dependency on South Africa which
was itself a dependent peripheral economy. The many changes of control from the War Supplies Committee to the Munitions Production Board, the Department of Supply and the Industrial Development Commission, robbed the industry of the special focus and concentration of organisational effort required. The result was escalating losses for six consecutive years. As part of the Imperial War Effort, colonial Zimbabwe's local arms production made a useful contribution. As a business venture, the undertaking was a failure and any expected local industrial spin offs from local arms production were difficult to identify. Rather, it can be asserted as will be explained in the next chapter, that secondary industrialisation in Southern Rhodesia during World War II owed its expansion to other wartime activities inspite of, and not because of the existence of a struggling arms industry.
ENDNOTES


3. The Defence Act of 1926 obliged all white males between the ages of 19 and 22 years to attend military training. It also established the Southern Rhodesia Defence Force (SRDF) with Permanent, Territorial and Reserve elements as necessary. However, the Act declared the British South Africa Police (BSAP) to be “the first line of defence”, and authorised the creation of Police Reserve and Special Constabulary.


5. A3/22/1/2: “Free Issue of Arms by Imperial Government”, Circular, 12th Nov. 1920. No reference has been found which suggests that the issue of arms and ammunition was ever raised before Colonel Ralston started it in 1936, See S 780/12: Colonel W.H. Ralston to the Secretary, Department of Justice and Defence, 29 July, 1936.


7. Ibid., Telegram to High Commissioner Cape Town, 1st Dec. 1920.


11. S 780/12: Colonel W.H. Ralston to the Secretary, Department of Justice, 29 July 1936.
12. Ibid.

13. S 780/12: Colonel W.H. Ralston to the Secretary, Department of
Justice, 29 July 1936.

14. Ibid.,

J.S. Morris (Officer Commanding Southern Rhodesia Forces),
to the Secretary, Department of Justice and Defence, 28
Aug. 1936.

15. S 780/6:

J.C. Smuts, Minister of External Affairs, Pretoria, to the
Acting Prime Minister of Southern Rhodesia, 22nd Sept.
1936.

16. S 756:

"Imperial Defence: Co-operation of Southern Rhodesia", G.J.
Giffard to R.C. Tredgold, 11th Dec. 1937.

17. Ibid.,

O.D.C. Minute No. 305 of the Overseas Defence Sub-
Committee of the Committee of Imperial Defence, 5th July
1936.

18. S 780/22:

Address by Major General G.J. Giffard to the Council of
Defence on the Re-Organisation of the Defence Forces,
26th Nov. 1938.

19. M.M. Postan and J.D. Scott,

History of The Second World War: Design and
Development of Weapons, K. Hancock (ed.), H.M. Stationery

20. M. Cowen and

N. Westcott,

"British Imperial Economic Policy During The War", D.
Killingray and R. Rathbone (eds.), Africa and the Second
World War, Macmillan, London, 1986, 57-58. See also pages
55-56 and note the comparison with Kenya.

21. S 482/24/39:

Messages of Loyalty- Including Gifts and Offers of Service,
1935-1948.

22. S 811(2):

1940.

23. S 482/18/39

File No 1: R.W. Albertson to G.M. Huggins, Prime Minister,
24. S 482/18/39: Parliamentary Secretary to R.W. Albertson, 26th June 1940, and June 1940.

25. S 1925: Functions of the War Supplies Committee; including a Brief History of the activities of the War Supplies Committee and its successor the Munitions Production Board.


27. S 496: Eastern Group Conference Report - Volume 1, 1940.


29. S 482/22/39: C.W. Meredith to Minister of Justice and Defence, 4th Sept. 1940.


31. S 811(2) File No. 1: Treasury Instruction to War Supplies Committee, 18th Nov. 1940.

32. S 747/M/17: D. Broadhurst to Minister for Air, 2nd Nov. 1940.

33. Ibid.: Census Report, 1940.

34. Ibid.: Census Report, 1940.

35. Ibid.: Census Report, 1940.


38. S 747/M/17: C.W. Meredith to W.J. Skillicom (manager, Rhodesia Railways), 16th Dec. 1940.

39. Ibid.: W. Skillicom to C.W. Meredith, 18th Jan. 1941.

40. S 811(2): Fifth Meeting - War Supplies Committee, 1941.
41. Ibid., Jan 1941.


45. Southern Rhodesia, Government Notice No. 26, 10th Jan. 1941.

46. Ibid.

47. S 811(2): Circular Re-Scrap Iron and Steel: National Scheme for Collection and Railage of Scrap Metal, 1941.

48. Ibid., See for example R.W. Taylor of Gatooma, Transport Controller Contractor to Secretary, War Supplies Committee, 5th Feb. 1941.

49. S 747/M/17: Sixth Meeting - War Supplies Committee, Bulawayo 27th Feb. 1941.


51. Ibid., W.S. Craster to War Supplies Committee, 16th Jan. 1941.


54. Ibid., 175.

55. S 747/ M/17: Seventh Meeting - War Supplies Committee, 1941.

56. Ibid., 1941.

57. Ibid., 1941.
58. Ibid., Eighth Meeting - War Supplies Committee, 1941.
59. Ibid., Fourth Meeting - War Supplies Committee, 1941.
60. S 1952: Brief History of the Activities of the War Supplies Committee and Its Successor the Munitions Production Board, 1942.
61. S 747/M/17: Eighth Meeting - War Supplies Committee, 1941.
63. S 1952: Brief History..., 1942.
64. S 811(3) 1A: Memorandum on Policy and Future Programme, War Supplies Committee, 1941.
65. Ibid., 1941.
66. Ibid., 1941.
67. Ibid., 1941.
68. S 1952: Brief History..., 1942.
70. S 1952: Brief History..., 1942.
71. Ibid., 1942.
72. Ibid., 1942.
75. Ibid., 1942.
76. Ibid., 1942.
77. Ibid., Report for period Jan - March 1943, Supplementing Annual
Report, 1942.

78. Ibid., Report for Year Ending 31st Dec. 1943.


81. Ibid., 1944.

82. Ibid., 1945.


84. Ibid., Minute No. 4280 - Lloses: Production Group: Department of Supply, S.M. Winsor, Auditor General, to Secretary to the Treasury, 30th Nov. 1946.

85. Ibid., 1946.


87. Ibid., 1949.

88. Ibid., IDC First Report, 1945.

89. Ibid., 1945.


91. Ibid., 1943.


93. Ibid.
CHAPTER SIX

ZIMBABWE'S WAR EFFORT: 1939-1945

SOME SOCIO-ECONOMIC PROBLEMS

Introduction

Zimbabwe's secondary industrial sector saw some notable expansion during the Second World War as illustrated in Table 6.1 below. However, this expansion was confined mainly to agro-based industries and was not the result of the country's industrial war effort as some popular contemporary records have suggested. Zimbabwe's manufacturing industry during the war was driven mainly by the processing of agricultural products, especially food processing and canning. Manufacturing in the non-food sector developed more rapidly in the decade immediately after the war (1945-54), and this is the period when most analysts agree that the Zimbabwean economy really took off. It is important to acknowledge here that the post-war development of the Zimbabwean economy owes a lot to the groundwork laid by some war-time activities.

The view that the war effort was responsible for the country's industrialisation has been popularised by some concrete examples of wartime industrial expansion, such as the establishment of the Rhodesia Iron and Steel Commission (RISCO), the Industrial Development Commission (IDC), the Cotton Spinning Mills factories, the Triangle Sugar Estates, and plans for the Kariba Hydroelectric Scheme, all of which took place during the war. This view is further strengthened by the 1946 Census of Industrial Production Report which paints a very rosy picture of industrial production during the war.
### Table 6.1: Factory and Workshop Industries 1938 – 1944

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Firms</th>
<th>Number of Workers</th>
<th>Output £ 000</th>
</tr>
</thead>
<tbody>
<tr>
<td>1938</td>
<td>294</td>
<td>14 794</td>
<td>4 561</td>
</tr>
<tr>
<td>1939</td>
<td>289</td>
<td>15 219</td>
<td>4 873</td>
</tr>
<tr>
<td>1940</td>
<td>294</td>
<td>17 781</td>
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<td>1941</td>
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<td>19 596</td>
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<td>1942</td>
<td>293</td>
<td>21 629</td>
<td>7 951</td>
</tr>
<tr>
<td>1943</td>
<td>327</td>
<td>22 799</td>
<td>8 908</td>
</tr>
<tr>
<td>1944</td>
<td>330</td>
<td>25 322</td>
<td>10 641</td>
</tr>
</tbody>
</table>

**Source:** Fourth Report on the Census of Industrial Production 1938-1944, Department of Statistics, Salisbury, May, 1946.

The influential 1946 Census Report gave credence to subsequent reports and statements the total effect of which is the prevalent historical view that the war effort was the stepping stone in Zimbabwe’s road to industrialisation. The report states that, as regards output:

> The largest increase took place in the Factory and Workshop industries. The output of these industries increased consistently from £4 561 000 in 1938 to £10 641 000 in 1944 or by 133 percent whereas the output of all other industries increased by only 23 per cent during the same period.⁵

This chapter will analyse the position of war-related industries in the industrialisation of Zimbabwe during the Second World War. It will be argued that apart from its invaluable manpower contributions, the main focus of Zimbabwe’s war effort was in agriculture and food processing, and not in manufacturing industries. Zimbabwe’s agrarian war effort was most important in the development of state-aided capitalist agriculture which during the war, took precedence over manufacturing. Equally, that development could not have taken place without the use of state sanctioned African forced labour under the guise of
necessary war measures. In comparing the degree of Government support between secondary industry and agriculture, it will be argued that despite the Government rhetoric on industrialisation, less support was given to emerging secondary industries and more to ventures based on agriculture. In fact, in some cases, Government legislation was even aimed at discouraging the development of secondary industries during the war.

**Food Production During The War**

The first statutory organisation in the then Colony of Southern Rhodesia to meet and discuss the way in which the economy was to be handled in the event of war was probably the Food Control Board. This was formed before the outbreak of war, and its first meeting was held in Salisbury on the 27th of July 1939.\textsuperscript{6} In particular, the Board was to investigate the food position in the Colony, to ascertain to what extent it was self supporting, what local food production had to be stepped up and what foods had to be imported. A list of foodstuffs which were in short supply (both local and imported) was drawn up.\textsuperscript{7}

Three months of investigations by the Food Control Board revealed that the Colony was far from food self sufficiency. The bulk of the wheat consumed in the country was imported from Canada and Australia and it was rightly anticipated that in case of war, supplies would be limited. The bulk of sugar came from Portuguese East Africa(now Mozambique), and the Portuguese Government could not guarantee supplies in the event of war. It was also anticipated that maize, the staple food of the African
population and also the main stock-feed, would be in short supply because of the successive decline of maize acreage due to a shift by white farmers towards more profitable tobacco farming. Rather than waiting for war to break out, the Food Control Board resolved to act immediately and recommended to the Government the appointment of a Food Controller. In September 1939, the Food Control Board was therefore dissolved and replaced by a Supplies Advisory Board.

When war broke out, Southern Rhodesia was required to accommodate Commonwealth forces, prisoners of war, and to provide training facilities for the Empire Air Training Scheme. These had the effect of further increasing the internal demand for food. The Supply Corps of Southern Rhodesia now had to purchase and distribute foodstuffs and provide canteen lines to approximately 27 000 people at any one time. These included African soldiers of the Rhodesia African Rifles (RAR) and African "labour gangs" on forced labour under the Compulsory Labour Act of 1942. As D.J. Murray typically observed, the most significant change in the economic position of the agricultural sector of Southern Rhodesia in the 1940s was the change from conditions of surplus production to one of impending shortages. This presented a very serious challenge to the Government's food production effort for the war. The problem was made worse by the economic disunity of white farmers, most of whom belonged to one or other of two opposing unions. The Matabeleland Farmers Union (with Humphrey Gibbs as Chairman) represented mainly stock farmers from Matabeleland, and demanded lower prices for maize so as to reduce their stock-feed costs. On the other hand, the Rhodesia
Agricultural Union representing mainly maize farmers from Mashonaland and Manicaland, demanded higher prices for their maize.

The Ministry of Agriculture observed correctly that it would be impossible for Rhodesian white farmers to make a significant contribution to the agricultural war effort without a powerful umbrella white farmers' organisation. The most important step in the agrarian war effort was therefore taken with the 1942 formation of a single white farmers' union, the Rhodesia National Farmers Union (RNFU). The RNFU was formed to serve three main purposes. First, there was the need for a concerted effort by white farmers in order to meet war demands. Secondly, a strong white farmers' union would provide the settler government with much needed support in the white electoral political system. Thirdly, a strong and formalised "partnership" between a unified white farmers' organisation and the Government would help the settler state in the formulation and execution of what from the 1930s had become an increasingly racist and anti-African agrarian policy.10

Another important Government initiative was the formation in 1942 of the Food Production Committee (FPC). One of the first concerns of the FPC was the production of food grains, especially wheat and maize. Only 40 percent of the wheat consumed in the country was grown locally, the rest being imported. When war broke out however, there was such a shortage of wheat that some bakeries started making bread from flour mixed with cassava.11 The cassava was also imported from the Belgian Congo in bulk, but there was no risk of shortages in the short term. Maize was considered as especially
important for the productive war effort not only because it was the staple food for Africans, but also because it was used as the main cattle feed. Production conditions were not easy. A drought of 1941 - 1942 led to an acute shortage of maize which forced the Government to buy huge quantities of maize from South Africa, Kenya, the Belgian Congo and from Argentina.\(^\text{12}\)

A further serious problem for priority food production was the continuing significant movement by white commercial farmers towards tobacco farming. The increased consumption of cigarettes and pipe tobacco in wartime Britain and elsewhere led to higher prices being paid for tobacco to local planters. Also, because of the dollar shortage in Britain during the war, British companies were unable to buy as much tobacco as they wanted from America. This forced them to buy from the Sterling area in which Southern Rhodesia was a leading producer. The result was that the volume of flue-cured tobacco produced in Southern Rhodesia rose from 22.8 million pounds weight in 1938-39 to 42.3 million pounds in 1945-46.\(^\text{13}\) For "the first time since tobacco had been commercially planted in Rhodesia, every grower was making money."\(^\text{14}\)

However, drought and competition from tobacco were not the only causes of the shortage of maize. Some farmers were abandoning maize production because the producer price of 10/- per bag paid under the Maize Control Act was too low and could not support production costs.\(^\text{15}\) Others could not get good yields simply because of poor farming methods. A prominent tobacco farmer, Lewis Hastings, had observed as far
back as 1938 that the "typical Rhodesian attitude" was that "After me, the desert".\textsuperscript{16}

The historian Ian Phimister made the same observation in writing:

Equally damaging was the attitude of planters who did not care what happens ... as long as ...[they] can get as much wealth out of the land as quickly as possible. Many farms had an air of impermanence. When they changed hands, 'windows and ... everything that could possibly be turned up' were removed from them. Land was simply abandoned after two successive crops, stripped of tree cover and exposed to the elements, with the result that Mashonaland contained 'thousands of acres of wreckage' by the start of the 1940s.\textsuperscript{17}

After many compromises between producers and consumers, the Government gazetted maize price increases to a minimum of 11/- and a maximum of 13/6d per bag, guaranteed for three years from 1943. A bonus of 2/- per bag was also to be paid to farmers who practised good farming methods.\textsuperscript{18} To qualify for the bonus, maize farms had to be "adequately protected against erosion", and, "planted to a green-manure crop properly ploughed in."

The gazetted price increases and bonuses were, however, to be paid only to white farmers for maize delivered to the Maize Control Board. There was no increase for maize from African farmers even though the largest areas of the African reserves were under maize cultivation. The FPC maintained that it was only white farmers who were receiving a price far below what was profitable for them. It was generally considered by the settler government that African farmers were doing well, and that they would be more than satisfied with the 8/- per bag that they were receiving.\textsuperscript{19} When it was discovered that some white farmers were in fact buying maize from Africans at a cheaper price and then reselling that same maize to the Maize Control Board, all Africans were forbidden from
selling maize to anybody except to a newly created Central Market. In addition, Africans were encouraged to grow other, less competitive food-crops, like groundnuts, mhunga, rapoko, and beans whose prices were also fixed.

Another Government measure in the agrarian war effort was the change in the role of control boards from merely controlling domestic and export markets, to ensuring adequate supplies of agricultural products to consumers. In the dairy industry for example, a rationing system for all butter was introduced. The restrictions on the production of farm butter on unlicensed white farms were lifted. The quota system on the manufacture of farm butter introduced in 1938 was also abandoned. In 1943, the Dairy Control Board instituted a Price Equalisation Scheme to encourage winter production by increasing prices for butter fat produced in winter.

The price increases for butter were followed in 1944 by a Dairy Bonus Scheme which was to encourage the adoption of approved methods of farming. These price increases and bonuses and subsidies were continued even after the war. They provided white dairy farmers with incentives and the means to raise the quality and quantity of their produce through an improvement in farming methods. Conditions changed sufficiently by 1947 for the Secretary for Agriculture, C.L. Robertson, to be able to boast that, "The [dairy] industry is now in the process of discarding the old primitive unhygienic practices of the past for the more up-to-date and efficient methods of the present."

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Another area of great concern to the FPC was the production of beef. In December 1942, the Cattle Marketing Commission presented recommendations to Government concerning the beef industry. It was noted with concern that most butchers were not realising the 25 percent gross profit to which they were entitled. Instead, some were obtaining only 14 percent gross profit, and were therefore threatened with collapse. It was also noted that large numbers of cattle were being held up in the African reserves, and that there was a shortage of supply only of white farmers' cattle and not of 'native' cattle because Africans refused to part with their cattle at the low prices that they were being offered.24 Again, accusations were made that some white cattle auctioneers and speculators were going around the African reserves, buying off African cattle at cheaper prices for resale to the Cattle Marketing Commission. It was therefore recommended that ceilings be set for wholesale prices of cattle and for meat in order to encourage both the white cattle producer and the butchery trade.

The most crucial factor in the development of settler agriculture in Southern Rhodesia during the war was the use of cheap African labour to work on white-owned farms. Nevertheless, as David Johnson has recently demonstrated, the supply of cheap African labour was not unlimited, and white farmers did not always obtain it through market forces, but in a number of cases through "extra-economic forms of coercion."25 Before the war, where local Africans did not satisfy the labour requirements of settler farmers, migrant labourers were brought in from neighbouring countries. The need to guarantee a constant supply of African labour led to the signing of the Tripartite Agreement with Northern Rhodesia and Nyasaland in 1936.26 The Agreement bound the Governments of
the other two countries to supply Africans on demand, to work as labourers in the settler farms of Southern Rhodesia.

With the outbreak of hostilities, however, the labour agreements were often disrupted by the exigencies of the war effort and there was an acute shortage of African farm labourers. A Labour Committee then recommended that the Government should flush out all unemployed Africans from the towns and villages and send them to the white settler farms to work.27 This was the context in which the infamous Compulsory Native Labour Act was passed in November 1942. The effect of this Act was that the Government of Southern Rhodesia had given the Food Production Committee power to use African forced labour on white settler farms. This is the background against which the significant rise in African labourers on white farms from 92 051 in 1938 to 123 701 in 1944 should be viewed. A comparison of the labour figures in agriculture, mining and secondary industries between 1938 and 1944 is given in Appendix 4.

As many as 50 000 Africans28 may have been forcibly removed from their homes and grouped into "labour gangs" of 100 and sent away to wherever a white farmer wanted some work done. In most cases, gangs would be assigned to work in places that were hundreds of miles away from their homes. Theoretically, each African was compelled to work for only three months, after which they would choose whether to continue working as "volunteers" or to go back home. In reality, however, most Africans ended up "volunteering" to extend their services simply because there was no means of transport to go back home, as all transport in and out of the white farmlands was controlled by
the Food Production Committee. But, even then, worker desertions were not uncommon.

Besides the pain of being forced to work on settler farms, the African conscripts were paid a mere 15/- per month for the first three months, and 17/6d per month thereafter. However, even this small wage sometimes went unpaid as some struggling farmers failed to raise enough cash to pay the labourers. This was another cause for African desertions, and frequently the Food Production Committee had to step in to rescue farmers by paying the shortfalls in the wages of their African labourers.

The working conditions for the labour gangs on the white farms were also very harsh. The Africans were required to work from sunrise to sunset with only an hour’s break for lunch. Once they had completed a day’s work on one farm, the gang would move on after sunset to another farm where they would begin work the following morning at sunrise. There was also no time allocated for travelling during working hours because each farmer demanded his full day’s work from the labour gangs. Because the labour gangs were always on the move, there was also no attempt by farmers to provide suitable accommodation for them. Moreover, because of their large numbers, labour gangs could not be distributed among the huts of the permanent workers of any particular farm at night. In most cases, therefore, conscript labourers had to sleep in the open.
In summary, the agrarian war effort of Southern Rhodesia was, on one hand, a "heaven sent" opportunity which gave the Government the excuse to help out the otherwise struggling white settler farmers (those not involved in tobacco), and on the other hand, it provided the excuse of emergency need to legitimise the use of forced labour of Africans. The effects were considerable. Between 1943 and 1946, the value of agricultural production increased from just over £6 000 000 to £11 500 000. This included not just crop cultivation, but also food and crop processing. The few agriculturally-based industries that were set up were mainly for the processing of foodstuffs such as food dehydration and canning. Perhaps the most important of these industries was the cotton spinning works started in 1943, at Kadoma (Gatooma) by the Cotton Research and Industry Board. Agriculture moved from being the third sector of the economy to the second most important following secondary industry. Southern Rhodesia's High Commissioner to London, Lanigan O'Keeffe, expressed the general white Rhodesian feeling well when in 1940 he concluded:

As regards our agriculture, whilst in 1914 we only produced less than half a million pounds' weight of tobacco, this year we have a first-class crop amounting to more than 30,000,000 pounds, and we have a million bags of maize for export this year. All these figures compared with certain other long established countries are relatively small, but they go to show what this very young country and its enterprising settlers have been able to accomplish, and how useful we now are to the Mother country.

The Industrial Development Advisory Committee.

Perhaps the strongest link between Southern Rhodesia's industrial war effort and the industrialisation of the colony was the fact that the Colony's first industrial planning organisation was created during the war. The Industrial Development Advisory Committee (IDAC), was appointed through Government Notice No.439 of the 23rd of
August 1940. The terms of reference of the committee were to advise the Minister of Finance and Commerce on the ways and means of developing the primary and secondary industries of the colony.\textsuperscript{35}

At the first meeting of the IDAC, the Minister of Finance and Commerce, J.H. Smit, pointed out that many people in Southern Rhodesia were of the opinion that a war period was not the best time to consider the more intense development of secondary industries in the colony. This was the case mainly because all observers recognised the fact that the financial resources of the colony were required to fulfil the programmes of the war effort which were already in place. From the technical side, there was the question of supplies of machinery and plant for any intended new factories which, again, it was argued would be difficult to obtain from a Europe whose industries were preoccupied with the production of war material.\textsuperscript{36} However, the Minister was of the opinion that not only the Government, but more so the business community in Southern Rhodesia might be forced to support the development of secondary industries because of the difficulties that they were facing in obtaining supplies from Europe since the outbreak of war. The Minister went on to state:

Many articles which are at the present time imported under very great difficulties can very well be produced in Southern Rhodesia if the factories were there, and if we had the machinery and plant, and the technical staff to manage these industries. I am optimistic enough to believe that the inauguration of this Board will lead to future development in this country which very few people can yet visualise, and it will mark the beginning of a new era of industrial expansion in this country.\textsuperscript{37}
In persuading the newly formed committee to take an entirely new orientation on the development of secondary industries in Southern Rhodesia, the Minister emphasised how difficult it was to obtain supplies of machinery and plant for any of the Colony's primary industries. In his view,

We cannot get the necessary material for building of houses, bridges, water mains, telegraph and telephone lines, and for other things which are necessary even in War time to continue with the development of this country. Should this war continue for any length of time our economic development might be severely handicapped, and the progress might be hampered and perhaps in some instances come to a standstill.\(^{38}\)

With regard to military supplies, the Minister pointed out that:

Our own men go to War and we cannot supply them with rifles or ammunition. We cannot produce armoured cars or tanks. We have to send our men away practically empty-handed to fight unless the war material which they need to carry on the fight is obtained from the United Kingdom or from such countries as America.\(^ {39}\)

It was with these considerations in mind that the Minister was hopeful that the business community in Southern Rhodesia would support the Government's call for a new approach in the industrial development of the colony. He believed that apart from helping in the industrial war effort of the Empire, but also from the point of economic advantage, it would be necessary for the local business community to take a lead in pushing for the industrial development of Southern Rhodesia.

In its second year of operations, the IDAC was beset with organisational, operational and technical problems which led to calls from Government officials for it to be dissolved.\(^ {40}\) Because of these problems, on the 8th of July, 1942, Gordon, the Chairman
of the first Committee, resigned from his post and from membership of the Committee. This was followed by the resignation of the rest of the original Committee. The IDAC was then reconstituted under Government Notice No. 500 of 9th October, 1942, with Dudley Arthur Edwards as Chairman. The new broadened Committee had representatives from the Salisbury Chamber of Industries, the Rhodesian Mining Federation, the Bulawayo Chamber of Industries, the Rhodesia Agricultural Union, the Associated Chamber of Commerce and the Chamber of Mines.⁴¹ A wide range of economic sectors now came together in an attempted amalgamation of interests.

The IDAC rapidly expanded its compass. On the 16th of October 1942, D.O. Barnes was appointed a member by the Minister of Supply, to represent the Gwelo area producer interests. White worker representatives were also appointed on to the Committee to represent the Trades and Labour Council of Rhodesia and the Federation of Small Workers. The Committee also became represented on various Government regulatory bodies, including the Dehydration Committee, the Excess Profits Tax Advisory Board, the Mass Immigration Committee, the Coloured Community Advisory Board and the Industrial Alcohol Committee.⁴² Nevertheless, perhaps its most significant single placement was the appointment in September 1943, of a Dr. T.C. Lloyd as Technical Advisor.

In his first quarterly report on the industrial development of Southern Rhodesia during the war period, Lloyd⁴³ estimated that the post-war industrial development of the
Colony would be greatly influenced by the provisions of clauses four and five of the Atlantic Charter. These provided that:

4. "Fourth Point" - EQUAL ACCESS TO RAW MATERIALS
They will endeavour, with due respect for their existing obligations, to further the enjoyment of all States, great or small, victor or vanquished, of access on equal terms, to the trade and to the raw materials of the world which are needed for their economic prosperity.

5. "Fifth Point" - ECONOMIC COLLABORATION AND PROTECTION OF LABOUR
They desire to bring about the fullest collaboration between all nations in the economic field with the object of securing for all improved labour standards, economic adjustment and social security.

In some ways, these clauses represented a basis of economic idealism for post-war reconstruction, but in Lloyd's view they also proved to be a hindrance to the development of an industrial policy in Southern Rhodesia. The British Imperial argument had been that no definite industrial policy could be adopted for the Colonies during the war as it might conflict with the post-war economic policy of the Imperial Government. However, Lloyd came to the conclusion that he did "not consider that this policy of temporising is justified nor can I view the industrial future of a self-governing Colony as being wholly determined by interim proclamations which form only the basis of post-war economy."

With regard to clause four of the Charter, the raw materials of Southern Rhodesia had in normal times been available to overseas buyers, indeed more so than they had been available to buyers within the Colony. Lloyd noted with regret that so large a proportion of the Colony's primary products were in the hands of trusts and combines, whose capital was coming from overseas and were thus absentee owners of the Colony's raw
materials. The idea that the colonies should be a source of raw materials, which were to be processed in the mother country, had been the cause of more than one upheaval within the Empire. It was desirable therefore, in the Colony's interests, that local capital should acquire a greater measure of financial control over local raw materials, in order that these might undergo a greater measure of colonial industrial processing. Lloyd insisted that it was probably this feeling, more implied than expressed, which had led to the active encouragement of local Rhodesian capital to develop new Rhodesian industries. Still, as will be emphasised later in this chapter, the exploitation of the Colony's raw materials using international capital and for external use, especially that of base metals which were essential to the Allied forces as strategic minerals, was actually intensified during the war. The gap between aspiration and reality was wide.

One of the first decisions of the IDAC was to initiate measures for the protection of well-established factories and industries which were able to operate at an economic level. In December 1940, the IDAC recommended that it be made compulsory for all new factories to apply to the Government for a licence before commencing operations. The purpose was to enable investigations to be made with a view to ascertaining whether the Colony's requirements of the article which it was proposed to manufacture were already adequately being met by existing factories and to counter duplication.

Out of the various suggestions that came from different interest groups, the IDAC considered that a strict Factory Act similar to Act 28 of the Union of South Africa was not necessary. It was felt that such an act might prove to be an obstacle to the setting up of
new industries. The result was the promulgation of the Factory Control Regulations, 1942, which controlled the setting up of new factories.\textsuperscript{49}

When it started operating, the IDAC had a number of ambitious plans not only for the industrial war effort, but for secondary industry as a whole. This included plans for the production of Power Alcohol, the production of industrial oils and acid, the setting up of an industrial laboratory and the establishment of dehydration plants.\textsuperscript{50} However, most of the effort put into these and other projects came to virtually nothing, mainly because of the unavailability of funds and lack of Government support. The one IDAC project which received immediate Government funding was the dehydration of foods. But, as soon as it started operations, the Dehydration Committee was transferred from the IDAC to the Portfolio of Agriculture.\textsuperscript{51}

When the Prime Minister's Office made enquiries into the availability of adequate supplies of petrol for the war effort, the IDAC carried out investigations into the manufacture of alcohol from maize for special use by the Defence Forces. They were impressed by the urgent steps that had been taken by Australia to double the production of power alcohol in that country using wheat.\textsuperscript{52} Southern Rhodesia had a small private factory for the production of power alcohol which had been set up in 1936, but this was too small for mass production. On the 21st of November 1941, the IDAC made the following recommendations to the Minister of Co-ordination:

To inaugurate a Public Utility Company for the manufacture of Power Alcohol on a scale of production of approximately 2 000 000 gallons per annum.
That the use of an 80/20 petrol alcohol fuel should be made compulsory.

That the price to be paid for raw material and fuel should be fixed under Government guidance and control. That when the question of raw material is finally considered, the possibilities of using native grown produce and native grains will receive close attention.

That a competent and informed technical officer should visit the alcohol factories in South Africa with a view to obtaining adequate information on technical and financial aspects of production, especially in relation to the preparation and disposal of by-products.53

Despite two years of intensive investigations and several encouraging reports by the IDAC, the Government of Southern Rhodesia did not release any funds and did not give the go-ahead for the establishment of a Power Alcohol factory. It was only in 1943 that a permit was given to a South African company to establish an industry for the processing of alcohol. However, the Union company did not have the production of Power Alcohol as its Rhodesian priority. Instead, it went on to register primarily for the production of yeast and methylated spirits. A second South African company which was given a permit to process alcohol in Southern Rhodesia only registered to produce liquors and sparkling wines.54 That effectively ended the IDAC’s dreams for the wartime industrial production of Power Alcohol as a substitute for petrol.

Another commodity which was urgently required for war production purposes was glycerine, and yet, tons of recoverable glycerine were being run to waste each year in Southern Rhodesia for lack of processing facilities.55 At the request of the War Supplies Committee, the IDAC investigated the possibility of the manufacture of glycerine in the Colony. The question of viability and cost was discussed with interested parties such as
the Rhodesia soap manufacturers, and the Cold Storage Commission. Yet despite the
fact that war conditions created an increased demand for glycerine, and a marked
increase in prices, it was not possible to get Government funding for the war-time
production.

**Financing The War Effort**

Compared to South Africa and to other Commonwealth countries, Southern Rhodesia's
war expenditure was relatively small. The Government aimed at paying for the war from
revenue rather than from loan funds, but, as will be shown, again this was not what
happened. The methods of collecting war revenue were however, still considered to be
onerous. These included the introduction of such taxes as the Excess Profits Tax, a
special Tobacco Sales Tax, and the continuation of the unpopular Gold Premium Tax.
Disagreements in the administration of the financial austerity measures led to the
resignation of Smit, the Finance Minister, in 1942. As for his scornful Prime Minister,
Godfrey Huggins was of the opinion that Smit had resigned because he had been
making empty speeches about the growth of secondary industry, but had done nothing
practical about it:

> What hon. members have to face is that for many years now there has been a demand in our Colony that industries should be established here. The hon. member for Salisbury City (Mr. Smit) when he was Minister of Finance made a lot of speeches to chambers of industry telling them how sympathetic he was and how he wanted to see these industries developed. But what happened? Practically nothing.
Indeed, when in 1944 a bill for the establishment of the Industrial Development Commission (I.D.C.) was put before parliament, Smit had been categorically opposed to it on grounds of cost.\(^{58}\) When Max Danzinger subsequently took over the Finance Ministry, he incurred rather more expenditure on the war effort, but this got him into trouble with the Auditor General. Danzinger increased the existing taxes and tried to raise surplus cash by "getting people to invest in War Bonds and similar securities".\(^{59}\) However, this did not solve the problem, as a computation of figures from the Defence budgets of the war period show that more than £12 million of the £29,562,139 spent during the war was still from loan funds. Table No.6.2 below does not agree with the scholars Gann and Gelfand's acceptance of Danzinger's rosy achievement that:

He steered the country's finances through the most difficult parts of the war, and by October 1945 proudly reported to Huggins that since 1933 the colony disbursed some £16,569,000 from revenue and £4,775,000 from loans on the war effort; after the required financial adjustments had been made, he added, the colony would be seen to have largely succeeded in the Government's aim of paying for the war out of income; the ultimate amount disbursed from loans was not expected to exceed £2,250,000 and the Treasury still kept a sizeable amount in hand to tide the country over the aftermath.\(^{60}\)
## TABLE No. 6.2: SOUTHERN RHODESIA'S WAR BUDGETS 1939 - 1945

<table>
<thead>
<tr>
<th>Year</th>
<th>Expenditure From Revenue £</th>
<th>Expenditure From Loans £</th>
<th>Totals £</th>
</tr>
</thead>
<tbody>
<tr>
<td>1938-39</td>
<td>128 812</td>
<td>nil</td>
<td>128 812</td>
</tr>
<tr>
<td>1939-40</td>
<td>257 000</td>
<td>166 000</td>
<td>423 000</td>
</tr>
<tr>
<td>1940-41</td>
<td>829 000</td>
<td>100 000</td>
<td>929 000</td>
</tr>
<tr>
<td>1941-42</td>
<td>1 324 106</td>
<td>54 000</td>
<td>1 398 106</td>
</tr>
<tr>
<td>1942-43</td>
<td>3 280 972</td>
<td>3 930 615</td>
<td>7 211 587</td>
</tr>
<tr>
<td>1943-44</td>
<td>5 365 219</td>
<td>3 938 305</td>
<td>9 303 524</td>
</tr>
<tr>
<td>1944-45</td>
<td>4 936 847</td>
<td>4 231 263</td>
<td>9 168 110</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td></td>
<td></td>
<td><strong>£ 29 562 139</strong></td>
</tr>
</tbody>
</table>

**Source:** Extracts from the Estimates of Expenditure as presented to the Legislative Assembly of Southern Rhodesia for the years 1939-1945.

The bulk of the funds listed above were utilised for administration and to pay the salaries of soldiers involved in the war outside Rhodesia and for those on home defence. There was very little money put aside for the acquisition or manufacture of arms and ammunition. For example, in the 1941-42 financial year, out of a total war expenditure of £1 398 106, the Quartermaster General was allocated only £157 466. Of this sum,
only £14,628 was allocated to "Ordnance and Central Stores", £7,437 being for Headquarters and Administrative Staff and £135,401 going to a "Transport Branch". The funding of munitions production and associated experimentation was left to the War Supplies Committee and its successors which have already been discussed, and also to the grossly undercapitalised Industrial Development Fund.

The single most expensive war-time activity for Southern Rhodesia was the Rhodesia Air Training Group (RATG), which was part of the major Empire Air Training Scheme (EATS). According to Air Vice-Marshall Sir Charles Meredith, who it is claimed started the whole scheme from scratch and directed it throughout the war, the bulk of the funding for that scheme was provided by the British Government. Meredith revealed that when he left London in December 1939, he had been told to, "get whatever you want from the Southern Rhodesia Government and we will settle up later." This in fact amounted to a blank cheque, which, according to Meredith, the British Government honoured without any grumbling.

The British Government therefore paid the full costs of the RATG, including the provision of all aircraft, equipment, petrol and aviation fuels, oils and all road transport costs. The British Government also settled the pay and allowances of all Royal Air Force personnel other than those employed at RATG Headquarters. The pay and allowances of volunteer pilots from Australia, South Africa and Greece were recovered from the Governments concerned.
Nevertheless, the Southern Rhodesia administration had agreed to make a financial contribution to the Air Training Scheme, especially to those training aspects which directly benefited the capacity of the Colony. The final financial responsibility accepted by the Southern Rhodesia Government was for the following:

The capital expenditure on land and buildings and ancillary works for the whole of the Air Training Scheme including quarters and housing. The cost of all barrack equipment at Air Stations. The cost of RATG Headquarters. All pay and allowances for Rhodesian personnel serving in Rhodesia. Make-up pay and family allowances for Rhodesians serving abroad. That is, the difference between RAF. and Rhodesian rates. A cash contribution of £800 000 p.a. towards the operating costs of the Air Training Scheme.64

In addition to the above expenses, Salisbury also paid for the construction of at least 300 dwelling houses for Royal Air Force married personnel, and "a contribution to the evacuation of women and children from Britain."65 The administration also financed the Southern Rhodesia Supply Corps which organised bulk supplies of foodstuffs from which Air Stations drew their large quantities of food. In all, Southern Rhodesia spent an estimated £11 215 522 on the RATG as broken down in table 6.3 below.
TABLE No 6.3: RHODESIA GOVERNMENT EXPENDITURE ON THE RHODESIA AIR TRAINING GROUP.

<table>
<thead>
<tr>
<th>Financial Year</th>
<th>Revenue £</th>
<th>Loan £</th>
<th>Total £</th>
</tr>
</thead>
<tbody>
<tr>
<td>1939/40</td>
<td>56 336</td>
<td>34 873</td>
<td>91 209</td>
</tr>
<tr>
<td>1940/41</td>
<td>911 550</td>
<td>1 613 728</td>
<td>2 525 278</td>
</tr>
<tr>
<td>1941/42</td>
<td>1 301 283</td>
<td>941 130</td>
<td>2 242 413</td>
</tr>
<tr>
<td>1942/43</td>
<td>1 402 410</td>
<td>484 941</td>
<td>1 887 351</td>
</tr>
<tr>
<td>1943/44</td>
<td>1 453 326</td>
<td>396 832</td>
<td>1 850 158</td>
</tr>
<tr>
<td>1944/45</td>
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The Industrial Development Fund

One of the IDAC's first nationally-minded projects was to persuade the Government to set up an Industrial Development Fund. The purpose of the fund was given as:

(a) Assisting in the development and/or the establishment of industries.

(b) To finance experiments for the manufacture of Articles which could be produced in the Colony. 66

By March 1944, 21 applications for fund advances totalling £70 805 had been considered. Of this figure, 11 applications amounting to £22 090 were recommended, and 9 applications amounting to £36 715 were declined. By 31st March 1944, only £9 090 worth of loans had been granted, while the rest were not approved by the Minister of Finance, Max Danzinger. 67 It is relevant here to remember that Danzinger had, before being appointed to the Finance Ministry, criticised Government initiatives to encourage
secondary industries through the appointment of the IDAC. In his highly sceptical 1940
collection to the parliamentary debate, Danziger argued:

As far as I can gather there is, firstly this pathetic faith in committees, and
secondly, there is a more pathetic faith in the blessed idea of secondary
industries. So many people do not hesitate to go to any length almost as
long as they can see another secondary industry established in the
country. Not sufficient consideration is given to the point as to whether we
have enough markets in the country to support the industry or whether
such industry is going to be a help to the country or a handicap.\textsuperscript{68}

It is not surprising therefore, that the Minister and the IDAC differed greatly in regard to
the administration of the Industrial Development Fund. Despite the stated Government
position in favour of secondary industrialisation, Danziger was not prepared to grant
loans to applicants if their financial standing was such that they would be able to procure
loans from the banks or from other commercial financial institutions. The IDAC's view
was that with such restrictive a policy, Government assistance would only be granted
"to those applicants who might be in financial straits or, for reasons of bad management
and exploitation have not accumulated reserves."\textsuperscript{69}

The IDAC considered that the Minister's approach tended to favour the unsuccessful
entrepreneur, thus "bringing about unfair and undesirable competition to those far
sighted and well managed businesses that have been built up on reserves." The IDAC
took exceptional note of an application by Iguzi Saw Mills for £7 000 which the IDAC had
recommended, but which the Minister did not approve because the directors of Iguzi
had assets in excess of £16 000 which could be used as security to obtain loans from
any other financial institution. The Minister explained himself thus:

Without wishing to influence the Committee in any way, I may say that as
the funds available to assist secondary industry are limited, a loan of £6
000 to a company which should have no difficulty in obtaining this amount from other sources might prevent other proposed industries from getting started.\textsuperscript{70}

The IDAC was not impressed with the Minister's explanation and noted that, "If the Government persists in this attitude towards loans of this nature by granting loans only to those who are in distress and withholding funds from others in a sound position, then it will be applying the Means Test, and in some cases placing a premium on improvidence."\textsuperscript{71}

The small sums of national funding given to help secondary industries under the control of the IDAC stood in sharp contrast to the huge loans made readily available to industries based on agriculture. The IDAC complained that cultivation-based industrial enterprises which did not fall under its jurisdiction were more favoured with Government finance. Examples cited included £26 000 to Sabi Valley Development Co., for sisal cultivation and deorticication, and £80 000 to Triangle Sugar Estates.\textsuperscript{72}

T.C. Lloyd, the Technical Advisor to the IDAC, considered that the fact that the total loans to secondary industries under his control amounted to only a fraction of one percent of the loans given to agricultural-based industries, seemed to indicate that secondary industries were being neglected. In his view:

It is reasonable to suppose that the unfavourable response to many requests for loans, even when recommended by the IDAC, has caused many industrialists to go elsewhere for financial support for their projects. The Industrial Development Fund is not, therefore, fulfilling the purpose for which it was created.\textsuperscript{73}
It was clear therefore, that while the Government of Southern Rhodesia wanted to associate itself with the war-time growth of secondary industries, it was not willing to spend much money on that development. Indeed, back in 1939 when the Government set up a committee of inquiry into the economic development of the Colony, industrialists were expressly excluded from the committee. The result was that the Committee firmly advised the Government against an active policy encouraging secondary industrialisation. The committee concluded:

Private enterprise...could safely be left, without direct Government assistance, to develop worthwhile industries as opportunity occurred, and... it was unnecessary, if not undesirable, for the Government to devote funds to hastening such development.74

The National War Fund

A small source of funding for the war effort was the National War Fund, which controlled the collection and distribution of funds raised by public appeal for various purposes connected with the war. By March 1944, the National War Fund had collected £677 956, of which £253 152 was allocated to the Post-War Fund to assist ex-servicemen and their dependants in ways not covered by the Government's pensions and demobilisation regulations.75

A special "Spitfire Fund" was also financed from the National War Fund, while some of the funds were used to assist the Red Cross, Prisoners of War, Merchant Aid for Russia, the Merchant Navy, King George's Fund for Sailors, and for Air Raid Distress. Grants were also made to various other causes on special appeals. For example, amounts of £1 000 each were paid to the Free French Forces Fund and the Chinese Relief Fund.76
From 1943, the Government pledged a grant to the National War Fund on a pound to pound basis based on annual collections. The total Government contribution up to December 1944 was £100 000.

On the basis of a European population of 70 000, it was calculated that up to the end of 1944, the European population of Southern Rhodesia had contributed an average of £12 each to war funds. African monetary contributions to war funds were relatively small in view of the meagre wages of those who were lucky enough to earn such wages. However, despite these shortcomings, the African monetary contribution totalled a noticeable £28 000 by 1944, some of which was used to buy two fighter aircraft. One official 1945 report had this to say:

Hundreds of Africans have sold cattle and grain and donated the proceeds to the National War Fund. In 1943 they decided that they would like to present two fighter aircraft as “bullets” for the King; since the name, “Spitfire”, seems to be known in the remotest native kraal, the “Spitfire Fund” received wholehearted support. The required £10,000 was raised well within the allotted time, with the result that a Typhoon named “Matabele” has been presented to the Rhodesia Fighter Squadron in England and a Spitfire named “Mashona” is now being piloted by a Rhodesian in No. 237 Squadron.77

Price Controls And Industrial Protection

The period immediately following the outbreak of the Second World War was characterised by a general thrust by various governments to keep prices down. This was brought about mainly as an attempt to avoid a repeat of the post-First World War situation where most currencies crashed, leading to a severe depression.78 In Southern Rhodesia, price control was foreshadowed by the establishment of the Food Control Board in July 1939, the functions of which have already been discussed above. However,
the prices of most essential commodities still rose sharply immediately after the outbreak of hostilities. This led to the introduction of the Profitteering Regulations promulgated in 1941 in terms of the Emergency Powers Defence Act of 1939 giving the Minister of Finance the power to fix the maximum price at which any goods could be sold throughout the country.\textsuperscript{79}

In 1943, Price Control Regulations came into operation. These regulations provided for the appointment of a Price Controller with wide powers of administration and for the appointment of a Price Advisory Board to advise the Minister on the control of prices. The regulations empowered the "Competent Authority", to fix prices for the sale of "certain specified goods" by any person or by manufacturers to any other person.\textsuperscript{80} Among the specified goods were such items as petrol, tyres and tubes, batteries, building materials, beef, and many others.

Another method by which prices were influenced was by the protection of industries through tariffs.\textsuperscript{81} In most instances, the case for protection rests on social rather than on economic grounds. For Southern Rhodesia, protection rested chiefly on the need to maintain the high wages of white workers.\textsuperscript{82} It was not possible to employ a large number of whites in local industry unless prices were artificially kept high by protection because overseas manufacturers employing white labour at much lower rates could manufacture better quality goods more cheaply.
Compared to South Africa, Southern Rhodesia had very little protection of primary industries. Although the Government paid lip service to protection policies in agriculture, the protection of secondary industries was given much lower priority even though it was of more direct assistance to white workers. For a relatively smaller burden on national finances, employment was assured for a greater number of whites and also, immigration was encouraged. Although his ideas were not accepted during the war, Lloyd continued to argue that,

Judged by world standards, this colony has already adopted a policy of high wage rates for Europeans. Unless industries are to be carried on with a few Europeans supervising large numbers of natives, they will not be able to compete without protection. Rhodesia can only adopt a policy of free trade if it is adopted by all other nations and then probably to her detriment. To maintain a policy of free trade, when our powerful neighbour, the Union maintains a policy of protection, would amount to industrial suicide.83

Even after the war, Lloyd’s arguments for enhanced protection only received modest acceptance. While recognising the necessity of "controlled assistance" for certain industries, the Government of Southern Rhodesia was against the kind of protection which would raise production costs in mining and agriculture.84 The Government relied on recommendations made by a 1946 Committee of Enquiry into the Protection of Industries which advised that, in order to keep the cost structure down, assistance to secondary industries should be confined to end or consumer products. Ian Phimister commented that:

A policy of full-blown industrialisation was not feasible, concluded the Committee, because the level of protectionism which it would entail would throttle precisely those primary exports on which future imports of producer goods depended.85
EXCESS PROFITS TAX

In 1940 the Government of Southern Rhodesia passed the Excess Profits Act.\textsuperscript{86} The Act was meant to enable the Government to tax businesses 60% of any profits above a 15% margin made after the 1st of April 1939. In the words of the Prime Minister, Godfrey Huggins, the Excess Profits Tax (E.P.T.) was meant to ensure, "that no one as far as was within reason and as far as it was humanly possible to do so would be allowed to make a bigger income during the war than they had previously enjoyed".\textsuperscript{87} Farmers and the gold mining industry were exempt from the tax, leaving mainly the emerging secondary industries to carry the burden of this taxation.\textsuperscript{88} The IDAC opposed the introduction of this tax from the beginning, and they pointed out that, "it is generally the small industrial concerns that started operations during the years immediately prior to or since the outbreak of war on whom the burden of tax bears most heavily."\textsuperscript{89}

It was noted by the IDAC that the Act took no account of losses incurred during the period of building up a business, it made no allowance for normal expansion and treated profits consistent with normal development as being due to war time conditions. In December 1941, the IDAC made a presentation to Cabinet which pointed out the damaging effect of the Excess Profits Tax on the development of secondary industries in Southern Rhodesia. Cabinet was informed in no uncertain terms that it was the unanimous view of the IDAC that the Excess Profits Tax:

- Would prevent the establishment of new industries on any large scale;
- Was already retarding the development of existing industries;
- That it was a source of hardship to industries established in recent years owing to the absence of a starting rate;
That it was undoubtedly an unequitable form of taxation;

That in the view of certain members the amount of revenue from this tax would diminish and ultimately almost disappear;

That all industrialists interviewed by the Committee appeared willing and anxious to contribute in taxation whatever amount was found necessary to finance the successful prosecution of the Colony's war effort, but they objected to the Excess Profits Tax in its present unequitable form.90

The IDAC spent most of 1942 investigating the effects of the Excess Profits Tax on secondary industries. In December 1942, again the IDAC reported that, "On every side, the Committee had found it to be the general opinion that Excess Profits Tax was having a strangling effect on and retarding the development of industry".91 The IDAC condemned a Government proposal for the amendment of the Act, and called for the repeal of the Act altogether. However, a request to address the Cabinet again was refused by the Minister of Finance. On the other hand, the Government resisted calls for the repeal of the Act and went ahead with the promulgation of a token Excess Profits Tax Amendment Act of 1943.92 That Act did nothing to relieve the tax burden of the majority of struggling emergent secondary industries.

The Mining Industry

The establishment of secondary industries in Southern Rhodesia depended to a great extent on the availability of minerals produced in the Colony. For secondary industry, the most important mineral was of course iron ore. Although iron ore deposits were known to exist in large quantities in a number of areas, the exploitation of these deposits was still far from adequate. L.H. Gann and M. Gelfand wrote that,
Southern Rhodesia stood out as the only country in the world, blessed with lime and iron ores, coal and chrome, steel and an adequate railway, which as yet did nothing to develop its iron resources.93

A more progressive mining area was that of base metals such as asbestos, chrome, mica, tungsten, tantalite and coal, all of which were considered as "essential sinews of war."94 These comprised the bulk of the "strategic minerals" so essential to the Allied war effort. Traditionally, Europe acquired these strategic minerals from the Far East, but with the Japanese victories in that area, that supply dried up. Southern Rhodesia was one of the countries which received big orders for strategic minerals from the United States of America, from the United Kingdom and from South Africa.95

At that time, Southern Rhodesia was known to be the third largest producer of asbestos in the world after Canada and the former Union of Soviets Socialist Republics (USSR). Asbestos found an unlimited number of uses during the war. These included fireproof insulation for cables and wires, manufacture of friction materials such as brakes, packings, and gaskets for vehicles and machinery. There was special asbestos cement and other building materials, and fire resistant fabrics for the military and the navy.96

The main asbestos region was at Shabani, in the south-eastern part of the Colony. The Shabani mine produced chrysolite asbestos of very high quality. Asbestos production increased on demand but lack of transport to the coast hampered its maximum exploitation.97 Southern Rhodesia was also ranked as the third largest producer of chrome ore in the world after the Soviet Union and Turkey. When the two latter sources were cut off from Britain and the United States during the war, Rhodesia and South Africa became the two most important suppliers for the Allied Forces.98 In its solid state
and as a chemical, chrome found a wide range of uses including the planting and anodising of aircraft frames, leather tanning for combat boots, camouflage paint, and synthetic rubber manufacturing.

The main deposits of chrome were found in the Shurugwi area and also in the Umvukwe Mountains to the North - east of the Colony. Rhodesian chrome mining produced record output during the war and enjoyed high priority, becoming the main supplier to the United States of America after the Japanese onslaught had cut the Allies from their Asian supplies. One official explained:

The Philippines' chrome had been lost; Turkish chrome was the subject of a vast amount of negotiation... and it was difficult to obtain large quantities for our own use since the industry was organised to ship chrome through the Sea of Marmora and the Aegean waters were now denied to us...the answer lay in Southern Rhodesian chrome [and tungsten]...now that Burma is in Japanese hands.99

Only a small portion of Rhodesian chrome was smelted locally, with the bulk of the ore being shipped to England and to the United States of America for processing. However, shipping problems encouraged a world wide search for chrome resulting in the main consumers preferring sources which were nearer the areas of consumption.100 So that, despite the rise in production, the immediate post war prospects of chrome in Southern Rhodesia were also not considered bright.

One of the world's largest coal deposits was found at Hwange, sixty miles south of Victoria Falls. The Hwange deposits extended for 400 square miles and during the war were estimated to contain 4 000 million tons of good quality anthracite.101 These
coalfields supplied coal and coke not only to the mines and industries of Southern Rhodesia, but also to the copper mines of Northern Rhodesia, the Belgian Congo, Mozambique, Botswana, and to Allied ships calling at the port of Beira. The increase in the production of coal at Hwange was greatly encouraged by the demand for copper from Northern Rhodesia. However, there were fears that if the demand for copper should fall, the production of coal would also fall, but during the war, these fears proved to be unfounded.

Other base metals such as tin, tungsten, mica, and tantalite were also favourably affected by the war. However, the production of most of these was sub economic in Southern Rhodesia on a peacetime price rating. As an incentive, the Government of Southern Rhodesia provided financial support to producers of these metals so that they could continue to be viable. For example, by the end of 1943, loans amounting to £22 820 had been advanced to some tungsten producers. These loans were repayable from the proceeds of the sale of tungsten and were on easy terms of repayment. Because of these incentives, the number of tungsten producers increased from two in 1941 to 56 in 1943.102

The gold mining industry did not experience wartime fortunes as did the rest of the mining industry. Southern Rhodesia was known to be the second largest gold producer in the world after South Africa, with most of the gold going to satisfy Britain's basic need for gold bullion. However, during the war, gold found other uses such as colour
photography, manufacture of bearings, brazing alloys, silverware, dental and surgical equipment and military insignia and medals.¹⁰³

Like in South Africa, the most important factor that influenced the plight of the gold mining industry in Southern Rhodesia was the 1941 introduction of the Lend-Lease scheme by the United States of America.¹⁰⁴ In the United States, gold was not considered as an essential war product. Some mines in the United States were even closed. Because of the low priority of gold, the United States were unwilling to provide steel and other supplies essential to the gold mining industry under Lend-Lease arrangement except for cash. The Americans wished to see a gradual fall in the number of gold mines in Southern Rhodesia to be replaced by more direct war supplies such as manganese, bauxite and tin.¹⁰⁵ As a result, gold production fell from 826 485 oz. in 1940, to 568 242 oz. in 1945. Over the same period, 812 gold mines were closed.¹⁰⁶

**White Women And The War Effort**

A prominent Rhodesian woman writer whose son died in combat in Europe, Hylida Richards, observed that, when the war broke out, Rhodesian white women who had taken part in the First World War expected to be able to take up war work at once, but were disappointed when they found that there was nothing for them to do.¹⁰⁷ Richards wrote:

Bottles were collected in such numbers that one firm had to employ a special native to break them and many miles of bandage were rolled. First Aid classes were started and after a few batches had been turned out, the streets became unsafe. One slight stumble or a wan look, and members of the public were pounced upon by eager first-aiders.¹⁰⁸
As the war news became more serious, Rhodesian women became more anxious to help, but, wrote Richards, the only thing that could be done on a large scale was to raise funds. Of the many fund raising activities, Richards remembered the Pyramid Tea most. It started when eight women were invited to tea at Government House. Each paid one shilling and had to go home and invite seven guests to tea, each of whom would invite six others and so on until £5 000 could be raised. Richards wrote:

The teas went happily along for the first week. The women who would anyway be having many delicious morning teas, felt very content that by paying one shilling they could clear themselves of all guilty feelings. The next week, with three hundred and thirty-six teas, was not quite so easy, but being war work it was accomplished with a smile. It was the following week when 1,680 tea drinkers had to be found that things began to get difficult.... The next week the number of guests to be invited reached, 6,720, and Salisbury was in a dilemma.\(^{109}\)

As the number of fund-raising tea drinkers required increased each week, life-long friendships broke up when friends refused to accept invitations to tea. "There was collusion, blackmail and black marketing, for women were gladly paying for the privilege of not going out to tea." There were many other fund raising activities in which Rhodesian women had to be actively involved, so that to many urban white women, war work often meant a series of unplanned pleasures. Richards wrote:

In this effort to raise money Rhodesia was plunged into one long spate of amusement. Enjoy yourself and help the "Air Raid Distress!" Give yourself a rattling good meal and incidentally provide meals for homeless children! Buy a paper favour and provide medical aid for some poor wretch who has been dug out of a wrecked building! Take tickets for a dance, a concert, a ball, a raffle for a pearl ring! On and on it went until every night in Salisbury was a Gala night. True, some people bought tickets and did not attend, or gave them to young people, but the whole spirit was one of unwanted enjoyment.\(^{110}\)
It was only in 1941 that white women were able to join the newly established munitions factories in Salisbury and Bulawayo alongside their coloured counterparts as pointed out in the previous chapter. There were also a number of women's groups which were more actively involved in the war effort in one way or the other. The most prominent of these groups were the Women's National Service League, the Women's Auxiliary Air Service, the Women's Auxiliary Military Service and the Women’s Auxiliary Police Service.\textsuperscript{111}

One of the greatest undertakings of the Women’s National Service League was the provision of "comforts" to Rhodesian soldiers who were on active service outside the country. A notable "comfort" was the set of knitted garments which every Rhodesian soldier on active service received as part of their "rations". These were either made or collected by the Women's National Service League. An official 1945 Rhodesian record noted that,

\begin{quote}
Women on lonely farms and mines use the needle as their weapon, and the garments they knit are distributed to the fighting men, and not only Rhodesian. For example, since 1939 knitters for the Salisbury branch of the Navy League have made over 12 000 woollen garments for distribution by the Seafarers' Comfort Supply in London.\textsuperscript{112}
\end{quote}

Another most active group was the Women's Auxiliary Air Service. This group was formed in August 1940 with the aim of effecting, "where desirable, the substitution of women for men throughout the Air Force employed in the Colony of Southern Rhodesia".\textsuperscript{113} At the beginning, the number of trades in which women were accepted was limited. However, with the expansion of the RATG and the shortage of white males, more branches were opened to white women. The following are a few of the trades in which women were employed:
Radio Telephonists.- Operation of ground wireless equipment for communicating with aircraft in the air: sending and receiving of messages and instructions to aircraft.

Teleprinters.- Passing on signal traffic over line circuits by means of a teleprinter.

Fabric Workers.- Cutting and machining and fitting fabric to aircraft frames: applying by brush and spray, protective finishes.

Parachute packers.- Packing, handling, storage and care of parachutes.

Instrument repairs.- Stripping, cleaning, repair by replacement, testing of aircraft instruments and automatic controls.
Sparking Plug Testers.- Servicing and reconditioning of sparking plugs: detection of unserviceable plugs; gap setting and testing.

Flight Mechanics.- Airframe - The maintenance and minor routine inspection of airframes.

Flight Mechanics.- Engines.- Maintenance, inspection, starting, running up and testing of engines, dismantling and assembly of engines in so far as it affects repair by replacement.  

**African Labour And The War Effort**

Official Rhodesian records are full of praise for the role played by Africans as soldiers in the Rhodesia African Rifles (RAR), and in the Air Askari corps. There is also an effort to highlight the meagre African cash contribution to the war effort which was noted earlier in this chapter. However, most reports are silent on the role played by African labourers in various schemes throughout the whole country during the war. Besides the forced labour on the white farms discussed above, African labourers were required for the construction of air stations and aerodromes, for the construction of internment camps, for working in the mines, and in industry.
Another major gap in the literature on the African contribution to the Second World War is the absence of any reference to African women. It is as if these people did not exist at all, and yet it was the African women who sustained most African families when the African men were either away with the African regiments or with the labour gangs. It was also the African women who kept most white households going when the white men were away at war, and the white women were out on their "forced pleasures" for fund raising. In his analysis of the impact of the Second World War on labour organisation in Rhodesia, Oliver Pollak mentions in passing that, "So great was the demand for labour that for the first time we see a significant number of African women entering the labour market, primarily as domestic labour."115 Sadly, the voice of the African woman will remain unheard in this thesis because of the emphasis on the industrial war-front and fund-raising for the war effort in which the African woman was notably absent.

Of particular significance to Southern Rhodesia's war effort was the requirement of African male labour for the construction of air-stations and aerodromes for the Empire Air Training Scheme (EATS) at Salisbury, Bulawayo and Gwelo.116 The initial labour-force for this scheme was the recruitment of volunteers through the Roads Department. But, in September 1940 when there was a requirement for 5 200 labourers for aerodrome construction at Gwelo and Bulawayo, the authorities were warned, "of the absolute impossibility of recruiting those numbers by the voluntary method." With the local Africans tied to their small farming plots trying to take advantage of the promising rainy
season, and with non-indigenous labour not forthcoming, the Director of Works decided that "some form of conscription must be adopted."117

The Native Affairs Department was charged with the task of spearheading a massive African labour recruitment drive which would ensure sufficient labour for construction for at least one year up to June 1941. Native Commissioners, chiefs, headmen and messengers were all mobilised to coerce Africans into joining the labour force. But despite the Organising Officers’ attempts to spread the recruitment drive to as many districts as possible, there was an acute shortage of volunteers which led to a considerable use of force. Besides being busy in their fields, most Africans suspected that they were being recruited not to work on the aerodromes but to go and join the RAR which many Africans resented.118

In some districts the recruitment drive was successful while in others it was a failure. For example, by December 1940, 3 000 Africans were working at Thornhill and Moffat aerodromes having been recruited from surrounding districts.119 On the other hand, in the Matopo District most potential conscripts quickly moved away from the area, some illegally crossing the border into South Africa to avoid conscription. In Mutoko District, many young men went to hide in the hills to avoid being taken to Salisbury.120 Another reason why the Africans avoided being recruited for aerodrome work was that the wages were too low. The commencing wage of 15 shillings per 30 day ticket was far below that being offered in other sectors of the economy most of whom paid more than 20 shillings a month.121
In the final analysis however, the aerodromes and air stations in Salisbury, Bulawayo and Gwelo were built with African labour to the satisfaction of the Air Officer Commanding. The official observation was that, "the Natives employed in the aerodromes are working well and appear to be quite happy". However, a more accurate observation is that the Africans were forced to work on these construction sites. David Johnson in his PhD thesis wrote that,

> When Hugh Simmonds, the Secretary for Native Affairs, wrote to Meredith, in November 1940, that 'It has been necessary to use a certain amount of persuasion to induce Natives to enter employment at this time of the year (the ploughing and planting season)', he was making a gross understatement. Africans came forward for construction work on the aerodromes and other EATS projects under threats of fines and imprisonment.¹²³

**Conclusion: Zimbabwean Industry And The War**

The available evidence demonstrates that there was significant development of secondary industries in Zimbabwe during the Second World War. However, this development was most prominent in the agricultural based industries, especially food processing and canning. There was very little development in non-agricultural manufacturing mainly because of the Government’s negative attitude towards the country’s industrialisation process in general and towards the industrial war effort in particular.

From the Government’s point of view, the place of secondary industries in the economic development of Southern Rhodesia was not clear even after the war. This fact can be easily inferred from the contradictions arising out of three post war official economic
reports. On the one hand, the 1946 Census of Industrial Production Report which was discussed at the beginning of this chapter was enthusiastic about the role of secondary industrialisation while on the other hand a 1945 Mining Report and a 1946 Report on the Protection of Secondary Industries tried to downplay the importance of secondary industrialisation.\textsuperscript{124}

The 1946 Report of the Committee of Enquiry into the Protection of Secondary Industries in Southern Rhodesia (the Margolis Report)\textsuperscript{125} did not praise the achievements of secondary industries during the war, neither did it consider the prospects that secondary industry might become the mainstay of the Rhodesian economy. The Committee was of the opinion that between 1924 and 1944, the economy of Southern Rhodesia depended on the export of agricultural and mining raw materials and that the situation was likely to be the same for the foreseeable future.\textsuperscript{126} The Committee concluded that it was not desirable therefore, to encourage the growth of secondary industries to the extent of prejudicing the primary producers on whom the whole Rhodesian economy depended.

In making this conclusion, the Committee was inspired by the calculations made by a 1945 Committee of Enquiry into the Mining Industry of Southern Rhodesia.\textsuperscript{127} The Mining Industry Committee calculated that between 1924 and 1944, the "National Income" of Southern Rhodesia was directly related to its "Domestic Exports" which in turn, fluctuated in direct proportion to the mining and agricultural production of the country. The Mining Committee further calculated that secondary industry did not play
any significant part in the creation of that "National Income". The Margolis Report went on to underline the salient points raised by the Mining Committee with which they were in total agreement. They wrote in support of the findings of the former Committee:

Whilst these primary industries were prepared to agree that the judicious development of secondary industries in Southern Rhodesia was important, to the future welfare of Rhodesia; whilst they were prepared to admit that it might be advisable to protect certain infant industries for a limited period; whilst they agreed that protection against such practices as dumping was necessary, they were yet firm and unanimous in their opposition to any policy which would have the effect of permanently curtailing the economic development and expansion of primary industries. In certain instances they went so far as to oppose any assistance being granted to the secondary industries even if the effect upon the primary industries was of a guaranteed temporary nature.\textsuperscript{128}

On their part, the Margolis Commission chose to emphasise the "limited contribution of secondary industries to export trade" during the war period. What was highlighted was the fact that in the two years prior to the outbreak of war, the exports of the products of secondary industries as a percentage of the total exports of domestic produce, was only 8.9 percent.\textsuperscript{129} The Committee felt that the higher figures in respect of the later war years, "though an excellent indication of the technical ability of Southern Rhodesia in the manufacturing sphere, must be regarded as largely anomalous and cannot be regarded as permanent." The Commissioners wrote:

The secondary industries of this Colony must for the present be regarded as truly of secondary importance....and it would not be in their interest to accept assistance in any manner which might be calculated to be harmful to those very industries upon whom they are dependent for their market.\textsuperscript{130}

It appears therefore as if the popular view that the war effort gave a major boost to secondary industries in Southern Rhodesia was not shared by too many people in
Government circles. Ian Phimister calculated that, "During the first four years of the war, the annual rate of secondary industrial growth, including building and construction, and the supply of electricity and water, was relatively modest". Phimister seems to be agreeing with the conclusions of the Margolis Report when he writes that, "The other [problem] was an intensifying contradiction between secondary industry's desire for tariff protection and its need to import machinery and other producer durables".

It seems correct therefore to conclude that the popular Rhodesian view that the war effort was the stepping stone to Rhodesian industrialisation is a gross exaggeration of the facts. There is no doubt that Rhodesian industry made some necessary and desirable contribution to the war effort under very difficult circumstances, and that agriculture based industry in turn did gain something from the experience. However, the effect of that contribution and the resulting experience did not revolutionise the rest of Rhodesian secondary industry. This was mainly so because the focus of the Rhodesian Government both in terms of finance and labour, was on the development of mining for export and the production of food and other agricultural raw materials, also mainly for export and in line with the demands of the Allied Forces. Very little of the Rhodesian products were for use in local manufacturing industries. More effort was also placed on the training of pilots, a venture financed mostly by British capital. The Government of Southern Rhodesia gave very little financial and legislative support to the development of non-agricultural manufacturing in the Colony. So that, despite the industrial war efforts of the War Supplies Committee and the Industrial Development Advisory Committee, manufacturing emerged from the war still being considered as an activity of secondary importance to the economy of Southern Rhodesia.
ENDNOTES

All Archival references are to material kept in the National Archives of Zimbabwe in Harare.


5. Ibid.

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CHAPTER SEVEN

SUMMARY AND CONCLUSION

SUMMARY

This thesis has highlighted some of the most glaring technological, financial, organisational, political, social and economic problems faced by South Africa and Zimbabwe mainly in the industrial part of their war effort during the Second World War. Chapter 1 tries to problematise the whole discussion on arms production and how the two Southern African countries fit into that developmental debate. One observation is that the topic on arms production or military technology, is a topic that has suffered from African historians' neglect. This is so mainly because of the Cold War connotations of the debate and the arms race which has tended to focus attention on the period after the Second World War.

Another observation is that, so far, the few commentators on the arms industry in South Africa start with the state corporation, Armscor, which only started operations in 1964. This is despite the fact that Armscor never reached the production levels achieved by the Union of South Africa during the Second World War. Undoubtedly the main reason for the focus on Armscor is its role in the militarisation of South African white society during the apartheid era. Also important however, is the Cold War role of Armscor as an anti-Communist front. In contrast, this thesis has sought to include the Second World War in the discussion of the arms industries of Southern Africa.
in view of the significant credit ascribed to the war for the secondary industrialisation of the region.

In essence, Zimbabwe’s story is similar to that of South Africa but on a much smaller scale. Even though the sole properly-constituted arms factories the country has ever had existed only during the Second World War, historians have tended to emphasise the haphazard improvisations of the post-war Rhodesian regimes. There has been much discussion around the post-war Import Substitution Industrialisation programme which, in the arms industry, has emphasised what some admirers have called the Rhodesian “engineering genius”, and of the 1965-1980 sanctions busting methods which some historians have called a “blessing in disguise” for Rhodesian industry.\(^1\) All of this tends to obscure the older role and experience of Zimbabwe’s war effort and its effect on the economy of the country during and after the Second World War. Without trying to praise the regional effort, this thesis has attempted to include the Second World War in regional discussion of arms industries by focusing on the problems that South Africa and Zimbabwe experienced in their respective yet linked industrial war effort during the war.

Chapter 1 also seeks to provide a brief review of selected literature on the region’s war effort. It appears as if for both South Africa and Zimbabwe, much of the literature written during the war itself was more analytical and probing than the “war heroes” attitude of post-war official rhetoric. An important observation is that recent studies of the effect of the Second World War on Africa do not include a chapter or even a distinct section on the
industrial war effort of Southern Africa. In an attempt to move away from the
narrative type regimental histories of African units which took part in the
war, more recent emphasis has been on the political, social and economic
aspects of the African contribution. The technological aspects of Africa's
industrial war effort are totally ignored, and yet as this thesis has shown, this
is the area where the region faced its biggest war effort problems.

The chapter also tried to grapple with the difficult problem of a theoretical
framework in a work that ranges from military technology to economic policy,
from racial discrimination to Commonwealth co-operation, and from
secondary industrialisation to agricultural forced labour. Although a three
pronged thematic approach is discernible throughout the thesis, the result is
really a multilateral work which has attempted to answer questions from the
military, technological, economic and socio-political domains. As such, even
the preferred materialist interpretation of history cannot easily be isolated in
the thesis because it is inextricably intertwined with other methods of inquiry.
In regional historiography, the problem of methodology was recognised in
1947 by H.M Robertson in the region's first attempt to write a civil history of
the Second World War. My criticism of Robertson is that in an attempt to be
objective, he deliberately chose to ignore the racial aspects of the war effort
for political expediency. For a region whose very existence was based on
state-sanctioned racial division in every aspect of life, I think it is not possible
to ignore politics even when discussing such mechanical issues as military
technology.
The final observation in Chapter 1 is the continuing limitations of official and especially military records. The secrecy accorded to military operations is such that the bulk of the relevant documents are classified and as such they are not available to the public for a lengthy period. In the case of South Africa and Zimbabwe, war-related documents were made available only to official historians who used them to write official regimental histories.\textsuperscript{2} For South Africa, an alarming observation is that tonnes of documents were destroyed even before the official historians had had a chance to look at them. This destruction of sources did not end with documents, for it also included the purging of distinguished combat personnel and the disintegration of some combat regiments whose continued existence could have provoked an alternative history to the official post-1945 nationalist rhetoric of the time.

Chapter 2 has analysed the war potential of South Africa during the years immediately before the outbreak of the Second World War by looking at the industrial, material, military, political will and human resources available for the country. The first observation is that there was no arms industry in South Africa before the war for various reasons. First, up to 1933, the manufacturing sector of South African industry was still too small to support an arms production factory. The available firms could be described as “vast repair shops” mainly to serve the mines of the Transvaal with very little manufacturing. Therefore, besides some gunwheels made out of timber which were made locally, South Africa imported all its arms and ammunition. The
various Union Artillery Workshops in the country were still concerned only with gun inspection, maintenance and repair.

Another crucial factor contributing to the lack of an arms industry in South Africa was the fact that it was not Union Defence policy to manufacture arms. In fact, between 1920 and 1933, South Africa’s defence policy was greatly influenced by the League of Nations which in this period was more interested in disarmament than in any new arms production programmes. For that matter, South Africa’s participation at the Disarmament Conference of the League of Nations was more like that of an observer than a participant because the issues that were being decided upon at the Conference were far beyond the scope of the South African defence system. Although Smuts negotiated for South Africa to be exempted from the binding conditions of the Disarmament Agreement because of what he called the “special conditions” in which the country found itself, there was not even an arms procurement programme for the Union of South Africa up to 1933.

A turning point in South Africa’s preparedness for war was perhaps Oswald Pirow’s 1933 “Five Year Defence Plan”. Although it was never implemented, the important thing was that at least a plan did exist on paper. It dealt mainly with the reorganisation and training of the defence manpower establishment, but most importantly, it tried to address some technological aspects of defence as well. For the first time in the history of South Africa’s defence planning, there was an official plan to establish a small arms
ammunition plant in the country. Unfortunately, efforts by private and international industrialists to establish arms production firms in the country did not receive a favourable response from the state. Even the haphazard experiments by the state War Supplies Board did not yield any positive results. Thus, when war broke out in 1939, the only arms factory that South Africa possessed was an extension of the South African Mint which had started producing small arms ammunition in 1937.

Another problem affecting the war potential of South Africa before the Second World War was the lack of adequate manpower in the defence forces. The main observation is that South Africa's human resource problem was self-made and was mainly a result of the country's "job colour bar" and the ruling whites' racist attitudes against the black majority. Even in 1934, the Minister of Defence, Oswald Pirow, was still quoting a 1912 Defence Act which excluded Africans and coloureds from wartime service in a combatant role and from the peacetime training and financial contributions expected of their white counterparts. White racism against black people in the defence forces was fuelled by a deeply ingrained white fear that the blacks might one day turn their guns against the whiteman.

If racial segregation was a limiting liability to the war potential of South Africa before 1939, this did not mean that the white races were themselves united in facing the impending European war. The Prime Minister, General Hertzog, and the Minister of Defence Oswald Pirow, were instinctively pro-German in
their approach. On the other hand, Smuts was obviously pro-empire and therefore pro-British. This nationalist-empire dichotomy played at the centre of the political division between Afrikaners and English speaking white South Africans which poisoned white politics in South Africa. The result was an irreconcilable split of the white political leadership in the debate over whether or not South Africa should join the war. That split was well captured by the cartoonist Bob Connolly in his famous cartoon entitled, "The Fork in the Road".³

Chapter 3 has highlighted the technological problems that South Africa faced in its industrial war effort, starting with the formation of the Director-General of War Supplies with its various committees. Yet, war-time munitions production figures presented by the DGWS at the end of the war are impressive. These include nearly 6 000 armoured cars, 12 million rounds of small arms ammunition, 5 million grenades, 13 000 Allied ships repaired, more than 30 000 tonnes of tinned vegetables, and various other war equipment. An important observation is that South Africa's arms production and war effort in general was much smaller than that of other Commonwealth countries of her stature like Australia, New Zealand, and India. However, this thesis has focused more on South Africa's problems and less on the comparison between her and other Dominions.

An analysis of the machine tools available in the country for manufacturing in general and for arms production in particular has shown that these were
lacking, and this retarded progress in the newly erected arms production factories. The tools problem also highlighted the need for properly constituted tool-rooms and also required "the psychological readjustment" of workers in matters of fine precision which was a new concept to most South African technicians. The result was an intense competition for tools between the arms factories and civil industry, a competition which severely hurt the gold mining industry.

The most celebrated South African munitions programme was the manufacture of 3.7" howitzers. Even though 23 local firms in addition to Cofac and the South African Railways and Harbours were involved in the howitzer programme, they could not surmount the technological and financial problems involved. In sum, South African factories were not able to deliver any howitzers for use during the war, and the continued existence of the programme after 1943 was really only for propaganda purposes.

Allied ship repair was one of South Africa's important contributions to the war effort especially between 1941 and 1943 when the Mediterranean was closed to Allied shipping and all traffic to and from the East had to go round the Cape. The biggest problem here was the lack of artisans specialised in ship repair, and the shortage of graving docks. The construction of a number of graving docks was started at various South African ports, but unfortunately none of these new docks was completed in time for use during the war.
However, pressure on South African ship repair facilities was relieved when the Mediterranean was reopened to Allied shipping in 1943.

The manufacture of war gases was a secret programme in South Africa and as such, the two factories concerned were not placed under the DGWS and the operation was run by a secret Board of Directors. This chemical programme was South Africa's most sensitive and hazardous task during the war and it is suspected that some workers could have been poisoned or killed during that production, although confidential records of staff disposition at the two factories have not been found. Fortunately, the Allies did not have to use any gases during the Second World War. In some respects, the real challenge to the South African authorities was with the disposal of the chemicals after the war, the decontamination of the gas factories and their conversion to civilian use, including the production of DDT.

The manufacture of small arms ammunition at the South African Mint was probably the most successful of South Africa's munitions production programmes. Despite the obvious problems of inadequate technical personnel and shortage of machine tools, the Mint acquitted itself well in the production of small arms ammunition, and it received well-deserved praise. The administrative problems uncovered by the "Day Committee" of 1942 were reduced after the DGWS assumed control of the Mint's ammunition plants. However, in March 1945, the Pretoria Mint experienced South Africa's worst recorded war-time accident on the home front when an explosion killed 26 people and injured 289 others. The dangerous working environment that
caused the accident had been noted by the "Day Committee", but the authorities were slow to rectify it. The accident might therefore have been avoided with more responsive management action.

South Africa's most 'sensational' war-time technical achievement was the national independent development of a local radar system. The programme went on to be hailed as an example of the Union's incredible feats of sophisticated engineering. Its one grey area is that the programme was so secret that it did not benefit from the expertise of some of South Africa's best engineers who were left out in the cold even though a number of them had been working on radar systems before the outbreak of the war. The case of Pieter Justinus de Wet from the University of Cape Town appears to support this hypothesis although the balance is not conclusive. In any event, the scale of the South African radar programme remained small and its capacity low and it could not even match the standards of the New Zealand initiative which started its own local radar programme at roughly the same time.

Elaborate as it may seem by previous South African standards, the country's arms production programme did not survive long after the war. All the war-time factories except the DDT factory and the small arms ammunition plants of the South African Mint were closed down. The only real debate after 1945 was what to do with the workers who had been demobilised from all the arms factories and their annexes, but that is the subject of another study. The real survivor of South Africa's arms production programme was the man who
had started it all, H.J. van der Bijl, about whom some observers have said that, "he was South Africa's war effort".

Chapter 4 has looked at some socio-politico-economic problems in South Africa's war effort. In particular, this section has analysed how the war was financed, the labour situation in the war industries, and South Africa's relations with Britain and the United States of America during the war. On the question of finance, the South African Government wanted to maintain a cautious "business as usual" attitude, which some observers called, "a grave source of weakness to the South African war effort". When the War Expenses Account was closed in March 1947, the total sum spent by South Africa on war expenses and militarisation was close to £700 000 000, of which more than half was from loans, quite contrary to Government financial wishes.

In the 1940s South Africa's labour situation in general was negatively affected by racial discrimination. In the munitions factories in particular, the job colour bar and the civilised labour policy were liabilities to the war effort. South Africa's small white population monopolised all the skilled and semi-skilled jobs both in the civil and military sectors of the economy. When the same white population was required to sign up for combat duty because of the South African Government's fear to arm black Africans for combat, the white skills base was stretched too thin, resulting in an acute shortage of skilled manpower. This became so acute that the controls on labour which were started by the 1940 Labour Committee and continued by the 1941 Controller
of Industrial Manpower, did not manage to resolve the artificially-created labour shortages of wartime South Africa.

When “dilution of labour” was mooted as the solution to South Africa’s labour problems, the initial preference was that white women and secondly coloured men and women should take over semi-skilled jobs from white men. “Native” men were initially only employed as unskilled labourers especially in munitions factories, and only on work needing strength and endurance. “Native” women were not even considered, and they were totally left out of the picture. However, when continued labour shortages made it necessary to use “natives” in semi-skilled jobs, two munitions factories reported that “natives” were not only more efficient than the white women, but that they were also more cost effective.

The relationship between South Africa and the United Kingdom during the war was cordial on the technical co-operation side, but the relationship was strained on the financial side. British companies such as Imperial Chemical Industries and African Explosives and Industries Limited, erected munitions production factories in South Africa, and provided much needed skilled personnel and machinery. The height of that co-operation was the 1940 Principal Munitions Agreement in which British companies were given the monopoly for the installation and establishment of all munitions plants in South Africa.
On the financial side, despite the fact that the United Kingdom had agreed to meet South Africa’s munitions production expenses on a “50/50 basis”, the South African Government still tried to avoid payment of its 50 percent share of the expenses. An embarrassing situation was exposed in 1943 when South Africa’s Minister of Finance failed to balance the country’s budget because he had assumed that the United Kingdom would pay for South Africa’s Eastern Group Supply Council programme. It was only in January 1947 that South African authorities agreed to pay half of the £9 million which had been calculated as the capital expenditure on South Africa’s arms production programme during the war.

The relationship between South Africa and the United States of America during the war was not of the best either. At the core of the two countries’ running disagreement was South Africa’s emphasis on the continuing importance of its gold mining industry. On the other hand, the United States of America did not consider gold mining to be essential for the war effort and did not want South Africa to use American Lend-Lease equipment to maintain high levels of gold mining. The height of friction between the two countries’ came at the end of the war when South Africa refused to pay an $895 million Lend-Lease bill presented by the Americans and instead, made its own “contemptible” offer of $40 million. The dispute raged until November 1946 when the United States Administration decided to enlist South Africa as a potential anti-Communist ally in Africa. As a political reward, South Africa was
then asked to pay only $100 million, in full and final settlement of all Lend-Lease debts owed to the United States Government.

Zimbabwe did not and could not establish any arms factories before the Second World War mainly because the country did not possess the industrial capacity to do so. Also, as a British colony the dependent country was still basking in Whitehall's favour after having been granted responsible government in 1923. Between 1920 and 1936, Southern Rhodesia received all required arms and ammunition from the United Kingdom, and its only defence problems concerned matters of the reorganisation of the personnel establishment. So, when Colonel Ralston's 1936 observations that Southern Rhodesia lacked appropriate defence equipment were followed by General Giffard's order for the local manufacture of munitions, this constituted something of a military "revolution" for local defence planning.

When war broke out, the blind enthusiasm with which most white Rhodesian individuals and companies joined the fray of improvisation to produce arms and ammunition was aptly described as, "rushing in where angels fear to tread". Eneitively, spirits were dampened when it was soon discovered that there were no firms in the country capable of the mass production of arms or ammunition. Nor were there any adaptable technicians who were trained for the precision work required in the arms industry. There were no tools to set up any special factories outside the workshops of the Rhodesia Railways and the country's Electricity Supply Commission. This meant that the two arms
“factories” that were set up in Southern Rhodesia during the war were in effect simply extensions of the Rhodesia Railways workshop in Bulawayo and of the Electricity Supply Commissions workshop in Salisbury, with land, buildings, tools and personnel being loaned from the two organisations.

On the organisational side, the many changes of control from the War Supplies Committee to the Munitions Production Board, to the Department of Supply and the Industrial Development Commission, robbed Southern Rhodesia of the special concentrated focus and systemic organisation required in arms production. Also, the financial challenges involved were daunting so that the arms factories could not financially support themselves and had to rely on Government subsidies. Accordingly, by the end of the war, the dreams of Air Vice-Marshal C.W. Meredith, of stimulating local secondary industrialisation through the country's industrial war effort remained as such, just dreams.

The link often alluded to between Zimbabwe's war effort and the secondary industrialisation of the country is hard to connect in the arguments of this thesis. Arms industries the world over feed on and in turn stimulate metal based manufacturing industries. In Zimbabwe, although there was a notable increase in industrial production during the war, that increase was more closely associated with agriculturally-based industries than with metal-based industries. In fact, the Rhodesian Government was not even focused on the development of metal based manufacturing during the war, for it was focused
much more on improving the agricultural base of the country. This was so much so that, Southern Rhodesia’s agricultural war effort received more Government assistance than did arms production. One of the most important ways in which Government assisted agriculture was by passing the infamous 1942 Compulsory Native Labour Act which legalised the forced labour of Africans on white-owned farms. The efforts of T.C. Lloyd and his Industrial Development Advisory Committee to make non-agricultural manufacturing competitive during the war and to make arms production a viable business were mostly in vain. Their main projects which included the production of power alcohol, industrial oils and the setting up of industrial laboratories, remained in the experimental stages because of lack of funding.

The Government of Southern Rhodesia aimed to keep its war expenses low and to pay all of them through revenue funds rather than through loans. Compared to other Commonwealth countries, Southern Rhodesia’s war expenses were really small at £29 562 139, but, contrary to the administration’s wishes, £12 million of that was from loans. The various war funds and war taxes could not raise sufficient money to bail the Government out. The most expensive item on Southern Rhodesia’s war effort was the Rhodesia Air Training Group at £11 215 522 for operations between 1940 and 1942. That bill was fortunately paid for by the United Kingdom Government.
Concluding Remarks

This thesis has tried to highlight Southern Africa's industrial war effort during the Second World War by focusing not least on the technological challenges that South Africa and Zimbabwe faced in that effort. The hope has been to make a small contribution to the growing literature on the effect of the war on Africa as a whole and on Southern Africa in particular. A few new areas of emphasis have been highlighted, to add to the growing literature on Southern Africa's civil history of the Second World War. The first emphasis is on the whole subject of military technology which is not normally associated with African historical narratives. Of particular interest must be Southern Rhodesia's attempts to set up arms production factories during the war considering the country's small economy, thin industrial base, and lack of skilled personnel. On the question of South Africa, what is new are merely additions to a relatively well documented (though biased) story. Of particular note here is the effect of South Africa's participation on the Disarmament Conference of the League of Nations, which has not been adequately highlighted before. Also, South Africa's war-time chemical production programme has hitherto escaped the secondary literature, as has aspects of the pre-war radar pioneering story.

However, the Second World War was not an African war, as for Southern Africa it was basically a European war. Africans especially south of the Sahara were viewed not as belligerents but as supporters and allies. It would be absurd therefore to try to make Southern Africa a centre of action rather than
a peripheral contributor to a European activity. The fact that Africans of European descent are central to all the discussions in this thesis is not a coincidence, they are the ones who felt most directly connected to events that were happening in Europe.

In the final analysis the question can be asked, did the war effort accelerate the secondary industrialisation of South Africa and Zimbabwe? The answer appears to be no. What is noticeable from the material in this thesis is the fact that arms factories actually took up raw materials, tools, finances and technical personnel from civil industry, thereby disturbing the would be normal growth of secondary industries. For South Africa, GFD Palmer has argued that while the pre-war years saw substantial progress in manufacturing for export, with the outbreak of the war in 1939, that phase of the Union's industrial growth came to an end because of the need to mobilise the productive resources of the country for war purposes. Although secondary industries continued to grow in importance, the net investment in plant, machinery, and tools during the war recorded a paltry annual increase of £5.7 million in contrast to an average of £20.1 million per year between 1945 and 1950. Palmer concluded that, "War conditions therefore effectively prevented any general emergence of excess capacity in industry which might otherwise have become apparent".
For Zimbabwe, Ian Phimister has pointed out that the real take-off of the Zimbabwean economy took place in the decade after the Second World War. In his view:

Between 1945 and 1954 Southern Rhodesia (Zimbabwe) and South Africa experienced a decade of rapid industrial growth. It was the moment when Southern Rhodesia’s economy ‘took off’ and the core period of South Africa’s ‘Industrial revolution’, when ‘manufacturing output grew especially rapidly’.  

The reasons for that spectacular post-war industrial growth are located not particularly in any "spin offs" from war-time activity, but from the affirmative action and industrial protection policies of the region’s post-war minority governments. For Southern Africa of the Second World War, it appears as if there is every reason to accept Frank Blackaby’s recent conclusion that:

The main economic point to make about military expenditure is a very simple one: it uses up resources which might alternatively be employed to provide consumer satisfactions - either in the provision of private or of collective goods and services. In particular, if the skill and ingenuity devoted to weapons development were diverted to civil objectives, the process of technological advance in the civil field could be appreciably accelerated.  

A bigger question is, did the Second World War speed up the democratisation of Southern Africa? Again the answer is obviously no. Because of their contribution to the Allied war effort, the settler colonialists continued to receive support from some West European countries and from the United States of America, even when it was clear that the settlers were bent on enforcing and perpetuating racial segregation in the region. The excuse given was that these racial-supremacy states would stop a communist advance in Southern Africa. What peripheral industrialisation that took place in South
Africa and Zimbabwe after the war was to be sustained mainly by the super-exploitation of the majority African people by the minority white settlers, and not as the result of any positive effects of the region's small industrial war effort for the British Commonwealth. Most of all, Southern Africa has to be seen as a case of Commonwealth war 'exceptionalism', whose production and supply efforts never attained the level of cohesion and output achieved by the Antipodean Dominions or Canada. In terms of their inward structure and lack of common purpose, too much was running against the Union of South Africa and colonial Rhodesia.


3. See Chapter Two, 92.


6. Ibid., 152-153.


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3097  478/1/23: War Time Controls; Union Production of Munitions and Aircraft Spares, 1944 - 1945.
3128  479/1: S.A. War Effort; Historical Advisory Committee 1 Meetings, 1950 - 1958.

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AO 6/47/129: Munitions Production; Price of Supplies Manufactured for the United Kingdom Government, 1945-47.


162    AO 6/47/223: War Supplies - Munitions Production; Transvaal Chamber of Mines Gold Mining Company's Workshops, 1940 - 43.

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998 1-7/2355: Johannesburg Munitions Factory, 1940 - 1948.
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   A 6: Industrial and Agricultural Requirements Commission, Memos, Correspondence, Newscippings, 1940 - 1941.
   A 7: Board of Trade and Industries, 1942.
   A 9: Race Relations, 1938 - 1944.
   A10: Director General of War Supplies, 1940 - 1948.
   A11: Controller of Industrial Manpower, 1939 - 1948.
   A13: Strikes, 1941 - 1946.
   A15: War Committee Minutes and Correspondence, 1940 - 1944.
   A16: Reports, 1936 - 1944.
   A17: General Newscippings and Notes, 1941 - 1945.

Section B: Minutes, Correspondence, Reports etc of the Union War Histories Department.
   B1: Correspondence and Minutes, 1947 - 1958.
   B2: Professor Robertson's Correspondence, 1942 - 1959.
   B3: Aims, Projections, Progress, etc, 1948 - 1952.
   B4: Correspondence and Lists Concerning Destruction of War - Time Documents, 1949.

Section C: Narratives and Notes.
   C1: Narratives on Control of Various Industries.
   C2: Trade, Procurement and Economic Problems and Controls.
   C3: Finance.
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<table>
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<td>Mamdani, M.</td>
<td>Citizen and Subject: Contemporary Africa and the Legacy of Late Colonialism, David Phillip, Cape Town, 1996.</td>
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### South Africa's Munitions Production Summary

####附录 1

<table>
<thead>
<tr>
<th>项目</th>
<th>1939年到1940年</th>
<th>1940年</th>
<th>1941年</th>
<th>1942年到1943年</th>
<th>1944年到1945年到9/45年</th>
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<td>229,234</td>
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<td>1,520</td>
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<td>96,483</td>
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<td>768,542</td>
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### ARMY FOOD PRODUCTION, 1940-1945

- Canned Vegetables ........................................ 36,000 tons
- Canned Fruit .................................................. 28,000 tons
- Jam (including Marmalade) ................................ 30,000 tons
- Golden Syrup .................................................. 3,000 tons
- Condensed Milk ............................................... 3,000 tons
- Canned Fish .................................................... 1,500 tons
- M. & V. Ration ................................................ 19,000 tons

Total ..................................................................... 120,000 tons

Purchases of fresh produce for camps in the Union from 1940 to 1945 amounted to £20,000,000.

### PERSONNEL EQUIPMENT

Production co-ordinated by the Director of War Supplies (Commercial) from 1940 to 1945 was as follows:

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<tr>
<th>Item</th>
<th>Quantity</th>
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<tbody>
<tr>
<td>Leather boots and shoes</td>
<td>10,116,000 pairs</td>
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<tr>
<td>Canvas Shoes</td>
<td>2,263,000 pairs</td>
</tr>
<tr>
<td>Gum Boots</td>
<td>86,000 pairs</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>12,465,000 pairs</strong></td>
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#### Textiles

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<tr>
<td>Shirts, R. &amp; F.</td>
<td>4,000,000</td>
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<tr>
<td>Bush Shirts</td>
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<td>Shorts</td>
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<td>Tank Suits and Overalls</td>
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<tr>
<td>Trousers</td>
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<td>Battledress Suits</td>
<td>750,000</td>
</tr>
<tr>
<td>Headgear</td>
<td>2,500,000</td>
</tr>
<tr>
<td>Tents</td>
<td>100,000</td>
</tr>
<tr>
<td>Pullovers and Cardigans</td>
<td>1,000,000</td>
</tr>
<tr>
<td>Ankleis</td>
<td>1,000,000</td>
</tr>
<tr>
<td>Greatcoats</td>
<td>500,000</td>
</tr>
<tr>
<td>Underwear</td>
<td>3,000,000</td>
</tr>
<tr>
<td>Socks</td>
<td>2,000,000</td>
</tr>
<tr>
<td>Badges</td>
<td>2,000,000</td>
</tr>
<tr>
<td>Bandoliers</td>
<td>1,000,000</td>
</tr>
<tr>
<td>Palliasse Cases</td>
<td>500,000</td>
</tr>
<tr>
<td>Holdalls and KItbags</td>
<td>1,000,000</td>
</tr>
</tbody>
</table>

Total of items of personal equipment produced ........................................ 34,250,000

### MILITARY BOOTS AND SHOES—1940-1945

<table>
<thead>
<tr>
<th>Year</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1940</td>
<td>530,000</td>
</tr>
<tr>
<td>1941</td>
<td>1,200,000</td>
</tr>
<tr>
<td>1942</td>
<td>2,330,000</td>
</tr>
<tr>
<td>1943</td>
<td>1,935,000</td>
</tr>
<tr>
<td>1944</td>
<td>1,942,000</td>
</tr>
<tr>
<td>1945</td>
<td>2,179,000</td>
</tr>
</tbody>
</table>

Canvas Shoes (rubber soles) ........................................ 10,116,000
Gumboots .................................................................. 2,263,000

Total ..................................................................... 12,465,000

Schedule showing break-down of Main Items of Army Footwear produced 1940-1945

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity Required</th>
<th>Quantity Delivered</th>
<th>Average Monthly Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Boots, Black, Export</td>
<td>6,332,000</td>
<td>6,332,000</td>
<td>127,000 pairs</td>
</tr>
<tr>
<td>2. Boots, Brown, S.A. Army</td>
<td>2,350,000</td>
<td>2,350,000</td>
<td>40,500 pairs</td>
</tr>
<tr>
<td>3. Shoes, Black, R.A.F.</td>
<td>384,000</td>
<td>384,000</td>
<td>9,000 pairs</td>
</tr>
<tr>
<td>4. Boots, Black, P.O.W.</td>
<td>314,000</td>
<td>314,000</td>
<td>6,000 pairs</td>
</tr>
<tr>
<td>5. Boots and Shoes, H.M. Navy</td>
<td>214,000</td>
<td>214,000</td>
<td>5,000 pairs</td>
</tr>
</tbody>
</table>

### ARMY FOOD SUPPLIES EXPORTED TO EAST AFRICA AND THE MIDDLE EAST FOR CONSUMPTION BY ALLIED FORCES

Delivery for Period 1939-1945

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bacon and Ham</td>
<td>12 Tons</td>
</tr>
<tr>
<td>Butter</td>
<td>102</td>
</tr>
<tr>
<td>Beans in Tomato Sauce</td>
<td>1,132</td>
</tr>
<tr>
<td>Fish, Tinned</td>
<td>1,500</td>
</tr>
<tr>
<td>Fish Paste</td>
<td>30</td>
</tr>
<tr>
<td>Cheese, Tinned</td>
<td>342</td>
</tr>
<tr>
<td>Fruit, Canned</td>
<td>28,017</td>
</tr>
<tr>
<td>Syrup</td>
<td>5,150</td>
</tr>
<tr>
<td>Jam</td>
<td>25,000</td>
</tr>
<tr>
<td>M. and V.</td>
<td>19,500</td>
</tr>
<tr>
<td>Marmalade</td>
<td>5,000</td>
</tr>
<tr>
<td>Commodity</td>
<td>Quantity</td>
</tr>
<tr>
<td>------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>Milk Powder</td>
<td>52 Tons</td>
</tr>
<tr>
<td>Milk, Tinned</td>
<td>3,000 &quot;</td>
</tr>
<tr>
<td>Potatoes, Tinned</td>
<td>640 &quot;</td>
</tr>
<tr>
<td>Sausages</td>
<td>1,269 &quot;</td>
</tr>
<tr>
<td>Vegetables, Tinned</td>
<td>30,242 &quot;</td>
</tr>
<tr>
<td>Tomatoes</td>
<td>378 &quot;</td>
</tr>
<tr>
<td>Grape Fruit</td>
<td>350 &quot;</td>
</tr>
<tr>
<td>Preserved Meat</td>
<td>1,658 &quot;</td>
</tr>
<tr>
<td>Lard</td>
<td>77 &quot;</td>
</tr>
<tr>
<td>Biscuits, Assorted</td>
<td>75 &quot;</td>
</tr>
<tr>
<td>Biscuits, Army</td>
<td>1,617 &quot;</td>
</tr>
<tr>
<td>Baking Powder</td>
<td>70 &quot;</td>
</tr>
<tr>
<td>Curry Powder</td>
<td>377 &quot;</td>
</tr>
<tr>
<td>Cocoa Powder</td>
<td>1,720 &quot;</td>
</tr>
<tr>
<td>Custard Powder</td>
<td>783 &quot;</td>
</tr>
<tr>
<td>Chocolates</td>
<td>450 &quot;</td>
</tr>
<tr>
<td>Yeast</td>
<td>188 &quot;</td>
</tr>
<tr>
<td>Jelly Crystals</td>
<td>70 &quot;</td>
</tr>
<tr>
<td>Dried Fruit</td>
<td>5,000 &quot;</td>
</tr>
<tr>
<td>Maltos</td>
<td>17 &quot;</td>
</tr>
<tr>
<td>Cornflour</td>
<td>66 &quot;</td>
</tr>
<tr>
<td>Pepper</td>
<td>12 &quot;</td>
</tr>
<tr>
<td>Pastine</td>
<td>151 &quot;</td>
</tr>
<tr>
<td>Coffee</td>
<td>244 &quot;</td>
</tr>
<tr>
<td>Egg Powder</td>
<td>124 &quot;</td>
</tr>
<tr>
<td>Cigarettes</td>
<td>2,435,120,000 Pieces</td>
</tr>
<tr>
<td>Confectionery</td>
<td>350 &quot;</td>
</tr>
<tr>
<td>Matches</td>
<td>784,584 Gross</td>
</tr>
<tr>
<td>Hops</td>
<td>1 Ton</td>
</tr>
<tr>
<td>Macaroni</td>
<td>113 Tons</td>
</tr>
<tr>
<td>Lemon Cure</td>
<td>26 &quot;</td>
</tr>
<tr>
<td>Oats</td>
<td>36 &quot;</td>
</tr>
<tr>
<td>Lemon Crystals</td>
<td>30 &quot;</td>
</tr>
<tr>
<td>Pickles</td>
<td>75 &quot;</td>
</tr>
<tr>
<td>Worcester Sauce</td>
<td>56 &quot;</td>
</tr>
<tr>
<td>Chutney</td>
<td>39 &quot;</td>
</tr>
<tr>
<td>Beans, Dried</td>
<td>247 &quot;</td>
</tr>
<tr>
<td>Peas</td>
<td>314 &quot;</td>
</tr>
<tr>
<td>Pigeon Food</td>
<td>352 &quot;</td>
</tr>
<tr>
<td>Sugar</td>
<td>924 &quot;</td>
</tr>
<tr>
<td>Malt</td>
<td>330 &quot;</td>
</tr>
<tr>
<td>Salt</td>
<td>550 &quot;</td>
</tr>
<tr>
<td>Seeds</td>
<td>14 &quot;</td>
</tr>
<tr>
<td>Mealie Meal</td>
<td>27,627 &quot;</td>
</tr>
<tr>
<td>Oatmeal</td>
<td>158 &quot;</td>
</tr>
<tr>
<td>Mustard</td>
<td>8 Tons</td>
</tr>
<tr>
<td>Barley</td>
<td>36 &quot;</td>
</tr>
<tr>
<td>Potatoes, Fresh</td>
<td>5,127 &quot;</td>
</tr>
<tr>
<td>Cheese, Fresh</td>
<td>163 &quot;</td>
</tr>
<tr>
<td>Oranges, Fresh</td>
<td>12,996 &quot;</td>
</tr>
<tr>
<td>Dehydrated Vegetables</td>
<td>1,685 &quot;</td>
</tr>
<tr>
<td>Spices</td>
<td>4 &quot;</td>
</tr>
<tr>
<td>Fruit Juice</td>
<td>32 &quot;</td>
</tr>
<tr>
<td>Candied Peel</td>
<td>5 &quot;</td>
</tr>
<tr>
<td>Christmas Puddings</td>
<td>38 &quot;</td>
</tr>
<tr>
<td>Pudding Powder</td>
<td>10 &quot;</td>
</tr>
<tr>
<td>Mustard</td>
<td>8 &quot;</td>
</tr>
<tr>
<td>Fruit Juices</td>
<td>91,147 Gallons</td>
</tr>
<tr>
<td>Stout</td>
<td>7,535 &quot;</td>
</tr>
<tr>
<td>Ale</td>
<td>7,830 &quot;</td>
</tr>
<tr>
<td>Wine</td>
<td>216,458 &quot;</td>
</tr>
<tr>
<td>Liqueur</td>
<td>74,343 &quot;</td>
</tr>
<tr>
<td>Brandy</td>
<td>193,207 &quot;</td>
</tr>
<tr>
<td>Gin</td>
<td>76,327 &quot;</td>
</tr>
<tr>
<td>Passover Wine</td>
<td>1,150 &quot;</td>
</tr>
<tr>
<td>Vinegar</td>
<td>5,000 &quot;</td>
</tr>
<tr>
<td>Rum</td>
<td>135,820 &quot;</td>
</tr>
<tr>
<td>Edible Oils</td>
<td>150,000 &quot;</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Expenditure</th>
<th>£</th>
<th>s. d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aerodromes</td>
<td>239,104</td>
<td>13 6</td>
</tr>
<tr>
<td>Aircraft and Accessories</td>
<td>465,339</td>
<td>12 5</td>
</tr>
<tr>
<td>Arms, Ammunition, Equipment and Stores</td>
<td>660,111</td>
<td>12 5</td>
</tr>
<tr>
<td>Buildings, etc.</td>
<td>125,483</td>
<td>13 4</td>
</tr>
<tr>
<td>Factories and Plant</td>
<td>81,650</td>
<td>16 7</td>
</tr>
<tr>
<td>General Stores, including Clothing, Pay and Allowances, Active Citizen Force and Cadets</td>
<td>341,663</td>
<td>16 11</td>
</tr>
<tr>
<td>Protective Measures</td>
<td>257,613</td>
<td>17 5</td>
</tr>
<tr>
<td>Rations, Forage, Fuel, Light, etc.</td>
<td>24,710</td>
<td>4 7</td>
</tr>
<tr>
<td>Salaries, Wages and Allowances</td>
<td>155,661</td>
<td>15 4</td>
</tr>
<tr>
<td>Seaward Defence, including Stores</td>
<td>322,664</td>
<td>17 6</td>
</tr>
<tr>
<td>Special Service Brigade</td>
<td>49,277</td>
<td>16 6</td>
</tr>
<tr>
<td>Subsidies Light Planes Clubs</td>
<td>68,279</td>
<td>10 1</td>
</tr>
<tr>
<td>Subsistence and Transport</td>
<td>92,478</td>
<td>6 10</td>
</tr>
<tr>
<td>Transport—Purchases of</td>
<td>152,393</td>
<td>5 4</td>
</tr>
<tr>
<td>Training Camps</td>
<td>483,993</td>
<td>7 6</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>85,108</td>
<td>3 10</td>
</tr>
<tr>
<td><strong>Total Expenditure</strong></td>
<td><strong>£54,183,660</strong></td>
<td><strong>2 10</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Receipts</th>
<th>£</th>
<th>s. d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surplus Revenue, 1939–39</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In terms of Section 1, Finance Act</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Act No. 39 of 1939)</td>
<td>1,999,264</td>
<td>9 6</td>
</tr>
<tr>
<td>Contributions from</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vote No. 21, Defence</td>
<td>1,060,000</td>
<td>0 0</td>
</tr>
<tr>
<td>Loan Vote O, Defence</td>
<td>800,000</td>
<td>0 0</td>
</tr>
<tr>
<td><strong>Balance, being Excess of Expenditure over Receipts, to be met from War Expenses Account in 1940–41, in terms of Section 1 (4), Finance Act, No. 27 of 1940.</strong></td>
<td><strong>£23,849,954</strong></td>
<td><strong>9 6</strong></td>
</tr>
</tbody>
</table>

Department of Defence, Pretoria, 19th December, 1941.

G. H. Blaine, Secretary for Defence.

### Statement B.—War Expenses Account, 1940–41.

<table>
<thead>
<tr>
<th>Expenditure</th>
<th>£</th>
<th>s. d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaries, Pay and Allowances</td>
<td>16,614,985</td>
<td>10 7</td>
</tr>
<tr>
<td>Subsistence and Transport</td>
<td>877,888</td>
<td>5 11</td>
</tr>
<tr>
<td>Clothing</td>
<td>2,549,030</td>
<td>9 5</td>
</tr>
<tr>
<td>Fuel, Light and Power</td>
<td>3,182,628</td>
<td>2 10</td>
</tr>
<tr>
<td>Warlike Stores and Equipment, including Seaward Defence Forces and Air Forces</td>
<td>12,678,393</td>
<td>18 9</td>
</tr>
<tr>
<td>Mechanical and Animal Transport</td>
<td>5,108,303</td>
<td>14 7</td>
</tr>
<tr>
<td>Fuel and Fodder</td>
<td>563,980</td>
<td>8 7</td>
</tr>
<tr>
<td>Land, Works, Buildings and Plant, including Fortifications</td>
<td>7,033,853</td>
<td>8 8</td>
</tr>
<tr>
<td>Technical Training</td>
<td>650,494</td>
<td>13 5</td>
</tr>
<tr>
<td>Auxiliary Units</td>
<td>707,079</td>
<td>10 5</td>
</tr>
<tr>
<td><strong>Miscellaneous</strong></td>
<td><strong>£112,774</strong></td>
<td><strong>1 6</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Receipts</th>
<th>£</th>
<th>s. d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue Vote 8—Defence</td>
<td>20,000,000</td>
<td>0 0</td>
</tr>
<tr>
<td>Loan Vote Y—Defence</td>
<td>39,500,000</td>
<td>0 0</td>
</tr>
<tr>
<td>Amount transferred from the Standard Stock Account in terms of Section 5 of Act No. 43 of 1941</td>
<td>1,455,379</td>
<td>10 1</td>
</tr>
<tr>
<td>Contribution by South African Railways and Harbours Administration towards cost of Essential Services Protection Corps</td>
<td>250,000</td>
<td>0 0</td>
</tr>
</tbody>
</table>

Department of Defence, Pretoria, 19th December, 1941.

G. H. Blaine, Secretary for Defence.
<table>
<thead>
<tr>
<th>Text</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STATEMENTS</strong></td>
</tr>
<tr>
<td><strong>STATE A.—OORLOGSKOSTEREKENING, 1941-42.—STATION A.—WAR EXPENSES ACCOUNT, 1941-42.</strong></td>
</tr>
<tr>
<td><strong>UITSATEN.—EXPENDITURE.</strong></td>
</tr>
<tr>
<td><strong>£</strong></td>
</tr>
<tr>
<td>Salaries, Wages and Allowances</td>
</tr>
<tr>
<td>Rent and Service Fees—Subsistence and Transport</td>
</tr>
<tr>
<td>Kleding, Dienstkleeding en Uitrusting—Clothing</td>
</tr>
<tr>
<td>Service Lamps and Outfit Allocations</td>
</tr>
<tr>
<td>Rations, horizons en Carbohydrates</td>
</tr>
<tr>
<td>Oorlogsvoorziening en Uitrusting, incl. die van Kost</td>
</tr>
<tr>
<td>Verwond voor uitrusting</td>
</tr>
<tr>
<td>Medische uitgaven en hospitalitatie—Medical Expenses and Hospital Equipment</td>
</tr>
<tr>
<td>Terrein, werken, gebouwen en uitrusting</td>
</tr>
<tr>
<td>Tracties ophaling—Technical Training</td>
</tr>
<tr>
<td>Hilfswerk—Auxiliary Units</td>
</tr>
<tr>
<td>Divers—Miscellaneous</td>
</tr>
<tr>
<td>Rand van Oorlogshoofd—War Supplies</td>
</tr>
<tr>
<td>Directie</td>
</tr>
<tr>
<td>Americaanse Aanvoerkommissie—American Purchasing Mission</td>
</tr>
<tr>
<td>Hoofdelijke en gevolgsleer—Voor een kaart en telefoonbiuro, telefoonbiuro, telefoonbiuro</td>
</tr>
<tr>
<td>Hoofdelijke en gevolgsleer—Voor een kaart en telefoonbiuro</td>
</tr>
<tr>
<td>TOTALE UITSATEN.—TOTAL EXPENDITURE.</td>
</tr>
<tr>
<td>Saldo oorlovs- en oorlogskostekoste artikel 1 en 5 van Wet No. 27</td>
</tr>
<tr>
<td>van 1940—Salaries carried forward in terms of Section 1 (5)</td>
</tr>
<tr>
<td>of Act No. 27 of 1940.</td>
</tr>
<tr>
<td>841,808,785</td>
</tr>
</tbody>
</table>

---

**Budgetary Notes:**

1. Lease of the Union Stock Exchange to other Governments are not included in the item but appear under the relative Heads—Clothing, Rations, Stores, etc.

2. Costs for stores and equipment taken into Union Stock and subsequently issued to other Governments are not included in this item but appear under the relative Heads—Clothing, Rations, Stores, etc.

3. All receipts and expenses are recorded in the Union currency, as of 31 October 1942.

C. H. BLAINE,
Secretary of Defence, Accounting Officer.
### War Expenses Account, 1942-43

#### STATEMENTS

<table>
<thead>
<tr>
<th>EXPENDITURE—UITGAWEN</th>
<th>£</th>
<th>a. d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaries, Wages, Pay and Allowances—Salaries, loons en toeslagen...</td>
<td>48,578,373</td>
<td>5 9</td>
</tr>
<tr>
<td>Subsistence and Transport—Eten en verbruikstoestuiven...</td>
<td>1,468,791</td>
<td>11 8</td>
</tr>
<tr>
<td>Clothing, Service Items and Duty Allowances—Kleding, dienstuitrustingen en diensthoudingstoestuiven...</td>
<td>3,713,592</td>
<td>5 6</td>
</tr>
<tr>
<td>Radios, Fuel and Petrol, Paint and Oil—Radios, brandstof, verf en olie...</td>
<td>8,028,573</td>
<td>9 6</td>
</tr>
<tr>
<td>Warheads Stores and Equipment, including South Africa Naval Force and Air Force Stores and Equipment—Oorlogsvoorraden en uitrusting, inbegrepen dié van Zuid-Afrikaanse Zeemag en Luchtvaart...</td>
<td>20,700,822</td>
<td>5 11</td>
</tr>
<tr>
<td>Mechanical and Animal Transport—Vervoer door middel van motorvoertuigen en diervervoer...</td>
<td>2,341,458</td>
<td>19 0</td>
</tr>
<tr>
<td>Medical Services, including Hospital Equipment—Medische diensten, inbegrepen ziekenhuisapparatuur...</td>
<td>977,577</td>
<td>17 10</td>
</tr>
<tr>
<td>Land, Works, Buildings and Plant, and Coastal Defence—Vooroorlog, werken, bouwwerken en kuuroord...</td>
<td>11,322,284</td>
<td>4 6</td>
</tr>
<tr>
<td>Technical Training—Technische training...</td>
<td>122,307</td>
<td>2 0</td>
</tr>
<tr>
<td>Auxiliary Units—Voorwaarnemende...</td>
<td>8,276,318</td>
<td>10 2</td>
</tr>
<tr>
<td>Miscellaneous—Diverse...</td>
<td>466,846</td>
<td>2 8</td>
</tr>
<tr>
<td>War Supplies Directorate—Raad van Oorlogsvoorraden...</td>
<td>1,213,224</td>
<td>12 8</td>
</tr>
</tbody>
</table>

**Total Expenditure—Totaal uitgawen...** £116,196,229 18 9

<table>
<thead>
<tr>
<th>RECEIPTS—ONTvangsten</th>
<th>£</th>
<th>a. d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balance brought forward in terms of Section 1 (5) of Act No. 27 of 1940—Galdo overgebracht vanvóórkomstig artikel 1 (5) van Wet No. 27 van 1940...</td>
<td>8,614,170</td>
<td>0 9</td>
</tr>
<tr>
<td>Revenue Vote—Jaarvoorwaarden...</td>
<td>£</td>
<td>a. d.</td>
</tr>
<tr>
<td>Long Vote—Lange...</td>
<td>42,500,000</td>
<td>0 0</td>
</tr>
<tr>
<td>Long Vote—Lange...</td>
<td>55,000,000</td>
<td>0 0</td>
</tr>
<tr>
<td>Contributions by South Africa Railway and Harbours Administration towards cost of Essential Services Protection Corps—Contribution van Zuid-Afrikaanse Spoorweg- en Havenbestuur naar die koste van die Kragter Bestuur van Nuttevaart...</td>
<td>250,000</td>
<td>0 0</td>
</tr>
</tbody>
</table>

**Total Receipts—Totaal ontvangsten...** £114,240,051 12 1

*Direct Disbursements on behalf of Other Governments Directe uitgawen namens onder Regeeringen... 12,816,363 3 5

**Total Expenditure—Totaal uitgawen...** £116,196,229 18 9

*Charges for Stores and Equipment taken into Union Stock and subsequently loaned to other Governments are not included in this item but appear under the relative Heads—Onder, Radios, Stores, etc., as the case may be.

---

**Department of Defence, Pretoria.**

**C. H. BLAINE,**

Secretary for Defence, Accounting Officer.

**Department of Verdediging, Pretoria.**

**C. H. BLAINE,**

Secretaris van Verdediging, Rekenpligtige (Accountant-General).
### STATEMENTS

#### OORLOGSKOSTEREKENING, 1943-44

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaries, leave, soldiery and subsistence—Salaries, Wages, Pay and Allowances</td>
<td>£ 47,703,928 10 9</td>
</tr>
<tr>
<td>Dividend on Post Offices and Armoured Cars</td>
<td>£ 1,500,008 14 2</td>
</tr>
<tr>
<td>Canteens, Mess, and Service and Miscellaneous</td>
<td>£ 3,025,830 8 4</td>
</tr>
<tr>
<td>Service and Welfare Allowances</td>
<td>£ 8,593,843 7 3</td>
</tr>
<tr>
<td>Radio, telephone, and other communications</td>
<td>£ 1,950,780 3 11</td>
</tr>
<tr>
<td>Vessels for the transportation of goods</td>
<td>£ 1,320,040 6 11</td>
</tr>
<tr>
<td>Medical services and supplies for hospitals</td>
<td>£ 6,140,704 10 7</td>
</tr>
<tr>
<td>Telephone, telegraph, and reproduction equipment</td>
<td>£ 8,362,772 9 10</td>
</tr>
<tr>
<td>Travelling expenses and miscellaneous</td>
<td>£ 11,323 8 11</td>
</tr>
<tr>
<td>Railway and inland transport services</td>
<td>£ 2,022,172 10 7</td>
</tr>
<tr>
<td>U.V.M. crew, maintenance, and miscellaneous</td>
<td>£ 18,500,000 0 0</td>
</tr>
</tbody>
</table>

#### OORLOGSKOSTEREKENING, 1943-44

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
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</thead>
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<td>£ 18,500,000 0 0</td>
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</tbody>
</table>

#### WAR EXPENSES ACCOUNT, 1943-44

<table>
<thead>
<tr>
<th>Description</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Salaries, leave, soldiery and subsistence—Salaries, Wages, Pay and Allowances</td>
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#### OORLOGSKOSTEREKENING, 1943-44

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<td>£ 2,022,172 10 7</td>
</tr>
<tr>
<td>U.V.M. crew, maintenance, and miscellaneous</td>
<td>£ 18,500,000 0 0</td>
</tr>
</tbody>
</table>
### WAR EXPENSES ACCOUNT, 1944-45.—OORLOGSKOSTEREKENING, 1944-45.

#### STATEMENTS—STATE.

**STATEMENT A:** WAR EXPENSES ACCOUNT, 1944-45—STAAT A: OORLOGSKOSTEREKENING, 1944-45.

<table>
<thead>
<tr>
<th>EXPENDITURE—UITGAVES.</th>
<th>£</th>
<th>a. d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaries, Wages, Pay and Allowances—Salarissen, lonen, soldy en toesoele</td>
<td>55,580,026</td>
<td>13 9</td>
</tr>
<tr>
<td>Subsistence and Transport—Rais en verskynskoste</td>
<td>4,444,064</td>
<td>17 2</td>
</tr>
<tr>
<td>Clothing, Purchases, and Outfit and Refit Allowances—Kleding, aankope, en uitreiking- en heruitreikingstoesoele</td>
<td>2,230,692</td>
<td>12 2</td>
</tr>
<tr>
<td>Rations, Fuel and Light, Petrol and Oil (other than Cash Allowances)—Rantoesoe, brandstof en olie (ander dan kontant toesoele)</td>
<td>7,112,024</td>
<td>8 7</td>
</tr>
<tr>
<td>Warlike Stores and Equipment, including South African Naval Forces and Air Force Stores and Equipment—Oorlogsvoorraad en -uitrusting, instiluite deel van die Suid-Afrikaanse Seemag en Lugmag</td>
<td>14,265,207</td>
<td>12 2</td>
</tr>
<tr>
<td>Mechanical and Animal Transport—Vervoer deur middel van motorvoertuie en diere</td>
<td>674,437</td>
<td>8 1</td>
</tr>
<tr>
<td>Medical Services, including Hospital Equipment—Mediese dienste, insluitende hospitaaluitrusting</td>
<td>328,553</td>
<td>6 10</td>
</tr>
<tr>
<td>Land, Works, Buildings and Plant, and Coastal Defences—Terrein, werke, geboue en uitrustings</td>
<td>3,331,297</td>
<td>16 8</td>
</tr>
<tr>
<td>Technical Training—Tegnieke opleiding</td>
<td>109,111</td>
<td>17 0</td>
</tr>
<tr>
<td>Auxiliary Units—Hulp eenhede</td>
<td>694,677</td>
<td>16 10</td>
</tr>
<tr>
<td>U.D.F. Fighting Forces: Arrr Contributions and Air and Technical Equipment Purchases—Stridsmag van die U.V.M.: Agterstelingsbydrae en aankope van lug- en tegnieke uitrustings</td>
<td>20,000,000</td>
<td>0 0</td>
</tr>
<tr>
<td>U.D.F. Fighting Forces: Contributions—Stridsmag van die U.V.M.: Bydrae</td>
<td>12,000,000</td>
<td>0 0</td>
</tr>
<tr>
<td>Miscellaneous—Gevolmekaarde</td>
<td>£</td>
<td>a. d.</td>
</tr>
<tr>
<td>War Supplies Directorate—Direkte van Oorlogsvoorraad</td>
<td>903,670</td>
<td>13 3</td>
</tr>
</tbody>
</table>

**TOTAL EXPENDITURE—TOTAAL UITGAVES.**

<table>
<thead>
<tr>
<th>£</th>
<th>a. d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>6,484,879</td>
<td>19 2</td>
</tr>
</tbody>
</table>

*Direct Disbursements on behalf of Other Governments—Direkte uitgawes namens ander regeringe.*

**Total Disbursements—Totaal uitgawes.**

<table>
<thead>
<tr>
<th>£</th>
<th>a. d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>6,507,698</td>
<td>8 8</td>
</tr>
</tbody>
</table>

*Charges for Stores and Equipment taken into Union Stock and subsequently issued to Other Governments are not included in this item but appear under the relative Heads: Clothing, Rations, Stores, etc., as the case may be.*

**Balance carried forward in terms of section 1 (5) of Act No. 27 of 1940—Saldo ooreengekomen in termie van artikel 1 (5) van Wet No. 27 van 1940.**

<table>
<thead>
<tr>
<th>£</th>
<th>a. d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3,004,470</td>
<td>17 9</td>
</tr>
</tbody>
</table>

**Receipts—ONTVANGSTE.**

<table>
<thead>
<tr>
<th>£</th>
<th>a. d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>8,545,302</td>
<td>0 8</td>
</tr>
</tbody>
</table>

**Balance brought forward in terms of section 1 (5) of Act No. 27 of 1940—Saldo oogereken in ooreengekomen Artikel 1 (5) van Wet No. 27 van 1940.**

<table>
<thead>
<tr>
<th>£</th>
<th>a. d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>51,250,000</td>
<td>0 0</td>
</tr>
</tbody>
</table>

**Revenue Vote 6: Defence—Inkomenspost 6: Verdediging.**

<table>
<thead>
<tr>
<th>£</th>
<th>a. d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>50,000,000</td>
<td>0 0</td>
</tr>
</tbody>
</table>

**Contribution by South African Railways and Harbours Administration towards cost of Essential Services Protection Corps—Bydrae van Suid-Afrikaanse Spoorweg- en Haweadministrasie tot die koste van die Kops ter Beheer van Noordsakkie Dienste.**

<table>
<thead>
<tr>
<th>£</th>
<th>a. d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>280,000</td>
<td>0 0</td>
</tr>
</tbody>
</table>

**Contribution by the Department of Commerce and Industries to reimburse the War Expenses Account in respect of Staff and Administrative Expenditure of the Director-General of Supplies, incurred on such of his functions as fall outside the scope of that Department—Bydrae van die departement van Handel en Nyeheid ter vergoeding van die Oorlogskosterekening ten opsigte van personeel- en administrasiekoste van die Direkteur-generaal van Voorraad gemaak in verband met die van sy funksies wat buiten die bestek van daardie departement val.**

<table>
<thead>
<tr>
<th>£</th>
<th>a. d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>200,000</td>
<td>0 0</td>
</tr>
</tbody>
</table>

**War Expenses Recovery Account—Oorlogskosterekeningvorderingsrekening.**

<table>
<thead>
<tr>
<th>£</th>
<th>a. d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>40,304,394</td>
<td>2 0</td>
</tr>
</tbody>
</table>

**Total Disbursements—Totaal uitgawes.**

<table>
<thead>
<tr>
<th>£</th>
<th>a. d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>142,034,394</td>
<td>2 0</td>
</tr>
</tbody>
</table>

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C. H. BLAINE,  
Secretary for Defence,  
Accounting Officer.  
Department of Defence,  
Pretoria,  
12th October, 1945.

---

C. H. BLAINE,  
Secretaris van Verdediging,  
Rekenpligtige Amptenaar.  
Departement van Verdediging,  
Pretoria,  
18 Oktober 1945.
### OORLOGSKOSTEREKENING, 1945-46.—WAR EXPENSES ACCOUNT, 1945-46.

**STATE A: OORLOGSKOSTEREKENING, 1945-46.—STATEMENT A: WAR EXPENSES ACCOUNT, 1945-46.**

#### UITGAVES.—EXPENDITURE.

<table>
<thead>
<tr>
<th>Description</th>
<th>£</th>
<th>s. d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaries, lcone, soldy and toeslae—Salaries, Wages, Pay and Allowances</td>
<td>57,363,207</td>
<td>7 9</td>
</tr>
<tr>
<td>Reis- en verfbykostes—Subsistence and Transport</td>
<td>4,086,531</td>
<td>6 5</td>
</tr>
<tr>
<td>Kleding, aankope en uitweekings—costs of clothing, Purchases and Outfit and Rents</td>
<td>2,151,645</td>
<td>5 5</td>
</tr>
<tr>
<td>Ranteste, brandstof en lig, petrol en olie (ander dan kontante toeslae)—Rations, Fuel and Light, Petrol and Oil (other than Cash Allowances)</td>
<td>4,146,517</td>
<td>4 11</td>
</tr>
<tr>
<td>Oorlogsvoorraad en uitrusting, inaluiting toe van die Suid-Afrikansese Seemag en Logmag—Warlike Stores and Equipment, including South African Naval Force and Air Force Stores and Equipment</td>
<td>9,285,816</td>
<td>2 10</td>
</tr>
<tr>
<td>Voorsorg deur middel van meervouer en diere—Mechanical and Animal Transport</td>
<td>129,013</td>
<td>6 8</td>
</tr>
<tr>
<td>Mediese diens, inaluiting hospitaalsverzorging—Medical Services, including Hospital Equipment</td>
<td>372,425</td>
<td>14 6</td>
</tr>
<tr>
<td>Terrein, werke, geboue en uitrusting en kusvervoer—Land, Works, Buildings and Plant, and Coastal Defences</td>
<td>2,614,886</td>
<td>5 0</td>
</tr>
<tr>
<td>Hal停工boede—Auxiliary Units</td>
<td>331,440</td>
<td>7 8</td>
</tr>
<tr>
<td>Strydmagte van die U.V.M.: Bydrage—U.D.F. Fighting Forces: Contributions</td>
<td>6,300,000</td>
<td>0 0</td>
</tr>
<tr>
<td>Hoewaar en meer diers, Uiters-Uiters Service, Union—Cairo</td>
<td>798,282</td>
<td>16 3</td>
</tr>
<tr>
<td>Demobilisieringsvoorregte—Demobilisation Privileges</td>
<td>3,077,267</td>
<td>3 10</td>
</tr>
<tr>
<td><strong>Diverse—Miscellaneous</strong></td>
<td><strong>1,317,646</strong></td>
<td><strong>11 8</strong></td>
</tr>
</tbody>
</table>

**Direkte uitgawes naamens ander regerings**—Direct Disbursements on behalf of Other Governments

<table>
<thead>
<tr>
<th>Description</th>
<th>£</th>
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</tr>
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<tbody>
<tr>
<td><strong>1,293,057</strong></td>
<td><strong>11 1</strong></td>
<td></td>
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</tbody>
</table>

*Saldo openhoring ooreenkomstig artikel 1 (5) van Wet No. 27 van 1940—Balance carried forward in terms of Section 1 (5) of Act No. 27 of 1940.*

#### ONTVANGST.—RECEIPTS.

<table>
<thead>
<tr>
<th>Description</th>
<th>£</th>
<th>s. d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inkomsetospos 5: Verdediging—Revenue Vote 5: Defence</td>
<td>45,775,000</td>
<td>0 0</td>
</tr>
<tr>
<td>Leningspos M: Verdediging—Loan Vote M: Defence</td>
<td>37,000,000</td>
<td>0 0</td>
</tr>
<tr>
<td>Bydrae van die Departement van Handel en Nywerheid tervergoeding van die Oorlogsvoorraad: Bydrae van die Departement van Handel en Nywerheid tervergoeding van die Oorlogsvoorraad</td>
<td>200,000</td>
<td>0 0</td>
</tr>
<tr>
<td>Bydrae van Suid-Afrikansese Spoorweg- en Havensadministrasie tot die koste van die Kappe ter Beheer van Noodmaaklike Dienste</td>
<td>110,146</td>
<td>16 8</td>
</tr>
<tr>
<td>Oorlogskosteregisteringsregeling—War Expenses Recoveries Account</td>
<td>31,602,616</td>
<td>12 3</td>
</tr>
</tbody>
</table>

**Oorlogskosteregisteringsregeling—War Expenses Recoveries Account**

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<thead>
<tr>
<th>Description</th>
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<tr>
<td><strong>114,047,761</strong></td>
<td><strong>8 11</strong></td>
<td></td>
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---

**Department of Verdediging, Pretoria, 31 Oktober 1946.**

**H. F. CUFF,**

Sekretaris van Verdediging, Rekenpligte Amptenaar.

---

**Department of Defence, Pretoria, 31st October, 1946.**

**H. F. CUFF,**

Secretary for Defence, Accounting Officer.
<table>
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<th>Description</th>
<th>£</th>
<th>s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaries, Wages and Allowances (including Demobilisation Benefits)</td>
<td>20,133</td>
<td>877</td>
</tr>
<tr>
<td>Pay and Allowances: Citizens' Training - Solely to include: Burger's</td>
<td>25,222</td>
<td>80</td>
</tr>
<tr>
<td>Transport of Stores: Vervoer van voorraad</td>
<td>2,465</td>
<td>038</td>
</tr>
<tr>
<td>Clothing Purchases, Outfit and Refit Allowances - Aankoop van kleren,</td>
<td>620,997</td>
<td>12</td>
</tr>
<tr>
<td>Rations, Forage, Fuel and Light - Rantsoene, voer, brandstof en lig</td>
<td>898,590</td>
<td>11</td>
</tr>
<tr>
<td>&quot; Q &quot; Stores and Equipment, including Minor Works and Repairs - K &quot;behoeftes</td>
<td>1,214</td>
<td>364</td>
</tr>
<tr>
<td>Camps and Field Manoeuvres - Kampe en veldmanoeuvers</td>
<td>3,607</td>
<td>358</td>
</tr>
<tr>
<td>Aircraft and Aircraft Stores and Equipment, Aviation Petrol, Oil,</td>
<td>145,783</td>
<td>52</td>
</tr>
<tr>
<td>Medical Services (including Hospital and Veterinary Equipment)</td>
<td>1,891</td>
<td>480</td>
</tr>
<tr>
<td>Naval Stores and Equipment - Seedien voorraad</td>
<td>328,319</td>
<td>18</td>
</tr>
<tr>
<td>Ranges and Bases - Skeerplaas en skietwesderyde</td>
<td>76,410</td>
<td>16</td>
</tr>
<tr>
<td>Domestic Services, Rentals, etc. - Huishoudelijke dienste, huurgoed</td>
<td>70,632</td>
<td>11</td>
</tr>
<tr>
<td>Miscellaneous and Incidental Expenses - Diverse en losse uitgawes</td>
<td>323,437</td>
<td>14</td>
</tr>
<tr>
<td>Telegraphs, Telephone, etc. - Telegramme, telephone</td>
<td>1,182,960</td>
<td>10</td>
</tr>
<tr>
<td>Printing and Stationary Services - Druk- en skrifdiensten</td>
<td>159,430</td>
<td>11</td>
</tr>
<tr>
<td>Essential Services Protection Corps - Korps ter beveiliging van noodzaaklike dienste</td>
<td>140,090</td>
<td>7</td>
</tr>
<tr>
<td>B.O.A.C Subsidy - B.O.A.C. &quot;subsidie&quot;</td>
<td>28,000</td>
<td>0</td>
</tr>
<tr>
<td>Lease-Lease (U.S.A.) Settlement Account - Bruikleen-verteffenskrediet (V.S.A.)</td>
<td>15,843</td>
<td>060</td>
</tr>
<tr>
<td>£52,733,733</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Total Expenditure—Totale uitgawes**

| £54,506,431 | 0  |

| £58,997,832 | 5  |

| Balance carried forward - Saldo oorheffing | £ | s |

| £18,961,847 | 11 |

| Revenue Vote 5: Defence - Inkomstekop 5: Verdediging | £ | s |

| £18,375,000 | 0  |

| Contribution by South African Railways and Harbours Administration towards cost of Essential Services Protection Corps - Bydrae van Suid-Afrikaanse Spoorweg- en Havensadministrasie tot die koste van die Korps ter Beveiliging van Noodsaaklike Dienste | £ | s |

| £12,350 | 0  |

| War Expenses Recoveries Account - Oorlogskosteterugvorderingsrekening | £ | s |

| £21,648,634 | 14 |

| £40,035,984 | 14 |

---

* Direct Disbursements on behalf of Other Governments — Direkte uitgawes nameens ander regerings.

**Out of the balance of £4,491,400 19s. 9d. the sum of £1,500,000 remains to be transferred to the "War Liabilities Reserve Account" in terms of Section 2 of the Finance Act, 1947 (Act No. 48 of 1947).**

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H. F. CUFF, Secretary for Defence, Accounting Officer.

Department of Defence, Pretoria, 10 December, 1947.

---

H. F. CUFF, Sekretaris van Verdediging, Rekenpligtige Amptenaar.

Department van Verdediging, Pretoria, 10 Desember 1947.
GROSS VALUE OF PRODUCTION IN THE AGRICULTURAL, MINING AND SECONDARY INDUSTRIES OF THE COLONY DURING THE YEARS 1938 TO 1944

<table>
<thead>
<tr>
<th>YEAR</th>
<th>AGRICULTURE (European)</th>
<th>MINING</th>
<th>SECONDARY INDUSTRIES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Value</td>
<td>Index 1938 = 100</td>
<td>Value</td>
</tr>
<tr>
<td></td>
<td>£</td>
<td></td>
<td>£</td>
</tr>
<tr>
<td>1938</td>
<td>3,800,000</td>
<td>100</td>
<td>7,696,000</td>
</tr>
<tr>
<td>1939</td>
<td>3,700,000</td>
<td>97</td>
<td>8,138,000</td>
</tr>
<tr>
<td>1940</td>
<td>5,000,000</td>
<td>132</td>
<td>9,166,000</td>
</tr>
<tr>
<td>1941</td>
<td>5,400,000</td>
<td>142</td>
<td>8,899,000</td>
</tr>
<tr>
<td>1942</td>
<td>6,400,000</td>
<td>168</td>
<td>9,377,000</td>
</tr>
<tr>
<td>1943</td>
<td>6,700,000</td>
<td>176</td>
<td>8,864,000</td>
</tr>
<tr>
<td>1944</td>
<td>8,000,000</td>
<td>211</td>
<td>8,422,000</td>
</tr>
</tbody>
</table>

Source: Margolis Report, Nov 1946, Annexure H.
DUTIES OPERATIVE ON SELECTED COMMODITIES DURING THE WAR

Duty columns "A", "B" and "C" set forth the rates of duty leviable in Southern Rhodesia as follows:

"A" - General

"B" - Applicable to British Dominions, India, and territories administered by His Majesty's Government in the Dominions under Mandate or otherwise.

"C" - Applicable to the United Kingdom of Great Britain and Northern Ireland; the British Colonies; Burma; the British Protectorates and protected states and the Mandated territories of Tanganyika, the Cameroons under British Mandate, and Togoland under British Mandate.

Union - Applicable to goods originating in the Union of South Africa.

<table>
<thead>
<tr>
<th>Tariff Number</th>
<th>Article</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>Union</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Biscuits</td>
<td>25%</td>
<td>15%</td>
<td>10%</td>
<td>&quot;C&quot; less 20%</td>
</tr>
<tr>
<td>14</td>
<td>Confectionery</td>
<td>30% or 4 ½ per lb.</td>
<td>20% or 3d. per lb.</td>
<td>10% or 3d. per lb.</td>
<td>&quot;C&quot; less 20%</td>
</tr>
<tr>
<td>15</td>
<td>(d) Rice</td>
<td>1/- per 100 lbs.</td>
<td>1/- per 100 lbs.</td>
<td>1/- per 100 lbs.</td>
<td>1/- per 100 lbs.</td>
</tr>
<tr>
<td>21</td>
<td>Cereal foods, including Breakfast Foods</td>
<td>20%</td>
<td>15%</td>
<td>10%</td>
<td>&quot;C&quot; less 20%</td>
</tr>
<tr>
<td>Item Description</td>
<td>Column 1</td>
<td>Column 2</td>
<td>Column 3</td>
<td>Column 4</td>
<td>Notes</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
<td>-------------</td>
</tr>
<tr>
<td>(b) Fruits: tinned</td>
<td>2 ¼ Per lb.</td>
<td>2 ¼ Per lb.</td>
<td>2d. per lb.</td>
<td>&quot;C&quot; less 50%</td>
<td></td>
</tr>
<tr>
<td>Jams and Jellies</td>
<td>3 ½ Per lb. or 25%</td>
<td>3d. per lb.</td>
<td>3d. per lb.</td>
<td>&quot;C&quot; less 50%</td>
<td></td>
</tr>
<tr>
<td>Macaroni</td>
<td>20%</td>
<td>10%</td>
<td>10%</td>
<td>&quot;C&quot; less 20%</td>
<td></td>
</tr>
<tr>
<td>Meats: tinned</td>
<td>1¼ per lb.</td>
<td>1¼ per lb.</td>
<td>ld. per lb.</td>
<td>Free</td>
<td></td>
</tr>
<tr>
<td>Meat Pastes, potted or tinned</td>
<td>1¼ per lb.</td>
<td>1¼ per lb.</td>
<td>ld. per lb.</td>
<td>&quot;C&quot; less 20%</td>
<td></td>
</tr>
<tr>
<td>Vegetables, tinned</td>
<td>20%</td>
<td>10%</td>
<td>10%</td>
<td>&quot;C&quot; less 20%</td>
<td></td>
</tr>
<tr>
<td>Blankets and Rugs</td>
<td>15%</td>
<td>10%</td>
<td>5%</td>
<td>&quot;C&quot; less 20%</td>
<td></td>
</tr>
<tr>
<td>Piece Goods: cotton</td>
<td>25% or 3d. per yd.</td>
<td>20%</td>
<td>5%</td>
<td>&quot;C&quot; less 20%</td>
<td></td>
</tr>
<tr>
<td>Cotton Yarn</td>
<td>40%</td>
<td>15%</td>
<td>10%</td>
<td>&quot;C&quot; less 20%</td>
<td></td>
</tr>
<tr>
<td>Wire Nails</td>
<td>5%</td>
<td>Free</td>
<td>Free</td>
<td>Free</td>
<td></td>
</tr>
<tr>
<td>Enamelware and Holloware</td>
<td>30%</td>
<td>15%</td>
<td>5%</td>
<td>&quot;C&quot; less 20%</td>
<td></td>
</tr>
<tr>
<td>Ploughs and Parts</td>
<td>15%</td>
<td>Free</td>
<td>Free</td>
<td>Free</td>
<td></td>
</tr>
<tr>
<td>(b) Corrugated Iron Sheets</td>
<td>5%</td>
<td>Free</td>
<td>Free</td>
<td>Free</td>
<td></td>
</tr>
<tr>
<td>(c) Iron &amp; Steel, angles, bars, channels etc.</td>
<td>10%</td>
<td>Free</td>
<td>Free</td>
<td>Free</td>
<td></td>
</tr>
<tr>
<td>(g) Windows &amp; Doors; metal</td>
<td>20%</td>
<td>15%</td>
<td>10%</td>
<td>&quot;C&quot; less 20%</td>
<td></td>
</tr>
<tr>
<td>Asphalt and Bitumen</td>
<td>Free</td>
<td>Free</td>
<td>Free</td>
<td>Free</td>
<td></td>
</tr>
<tr>
<td>Glass bottles and Jars</td>
<td>5%</td>
<td>Free</td>
<td>Free</td>
<td>Free</td>
<td></td>
</tr>
<tr>
<td>Chinaware, Porcelain- ware etc.</td>
<td>40%</td>
<td>10%</td>
<td>5%</td>
<td>&quot;C&quot; less 20%</td>
<td></td>
</tr>
<tr>
<td>(b) Oils: ground nut</td>
<td>20%</td>
<td>10%</td>
<td>10%</td>
<td>&quot;C&quot; less 20%</td>
<td></td>
</tr>
<tr>
<td>(a) Paints, ready mixed</td>
<td>20%</td>
<td>15%</td>
<td>10%</td>
<td>&quot;C&quot; less 20%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Product Description</td>
<td>50% or 8/4d per 100 lbs</td>
<td>20% or 4/2d per 100 lbs</td>
<td>20% or 4/2d per 100 lbs</td>
<td>&quot;C&quot; less 20%</td>
</tr>
<tr>
<td>---</td>
<td>-----------------------------</td>
<td>--------------------------</td>
<td>-------------------------</td>
<td>-------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>206</td>
<td>Soap</td>
<td>Free</td>
<td>Free</td>
<td>Free</td>
<td>Free</td>
</tr>
<tr>
<td>227</td>
<td>Superphosphate</td>
<td>Free</td>
<td>Free</td>
<td>Free</td>
<td>Free</td>
</tr>
<tr>
<td>251</td>
<td>Boots and Shoes:</td>
<td>10% + 1/- per pair</td>
<td>10%</td>
<td>10%</td>
<td>&quot;C&quot; less 33 1/3 %</td>
</tr>
<tr>
<td></td>
<td>Wholly or partly of rubber</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>All other</td>
<td>25%</td>
<td>10%</td>
<td>5%</td>
<td>&quot;C&quot; less 33 1/3 %</td>
</tr>
<tr>
<td>256</td>
<td>Leather in the Piece</td>
<td>20%</td>
<td>10%</td>
<td>10%</td>
<td>&quot;C&quot; less 33 1/3 %</td>
</tr>
<tr>
<td>124</td>
<td>(b) Containers: of tin</td>
<td>5%</td>
<td>Free</td>
<td>Free</td>
<td>Free</td>
</tr>
<tr>
<td></td>
<td>Of cardboard</td>
<td>40%</td>
<td>25%</td>
<td>10%</td>
<td>&quot;C&quot; less 20%</td>
</tr>
</tbody>
</table>

*NOTE:* In the case of Cotton Piece Goods of foreign origin where the alternative duty of 3d. per yard is quoted it is understood that a yard shall mean 36 inches by 30 inches in width and if the width shall exceed 30 inches then the duty shall be calculated proportionately to the width.

Where the alternative rates of duty are quoted, whichever duty shall be the greater shall be applied.

MATERIALS USED IN FACTORY AND WORKSHOP INDUSTRIES DURING THE YEAR 1944, DISTINGUISHING BETWEEN SOUTHERN RHODESIA AND IMPORTED MATERIALS.

<table>
<thead>
<tr>
<th>Group of Industry</th>
<th>Southern Rhodesia Material Used</th>
<th>Imported Material Used</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Value</td>
<td>Percentage of Total</td>
<td>Value</td>
</tr>
<tr>
<td>Factory and Workshop Industries:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Food, Drink and Tobacco.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a) Sugar, baking, confectionary, fruit and vegetable products</td>
<td>366,731</td>
<td>44.2</td>
<td>463,204</td>
</tr>
<tr>
<td>(b) Grain Milling</td>
<td>590,410</td>
<td>58.3</td>
<td>422,647</td>
</tr>
<tr>
<td>(c) Bacon curing, meat freezing and preserving</td>
<td>727,382</td>
<td>93.3</td>
<td>52,234</td>
</tr>
<tr>
<td>(d) Butter, cheese and ice</td>
<td>104,896</td>
<td>94.5</td>
<td>6,105</td>
</tr>
<tr>
<td>(e) Brewing, malting, wholesale bottling, mineral water and allied industries</td>
<td>36,361</td>
<td>9.7</td>
<td>338,491</td>
</tr>
<tr>
<td>(f) Tobacco and tobacco packing</td>
<td>149,049</td>
<td>62.7</td>
<td>88,669</td>
</tr>
<tr>
<td>2. Chemicals, Fertilisers, Soap and Allied Industries</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a) Chemicals, fertilisers, paints and explosives</td>
<td>18,627</td>
<td>8.1</td>
<td>211,261</td>
</tr>
<tr>
<td>(b) Oils, seed crushing, soap, perfume, candles, polishes and allied industries</td>
<td>202,115</td>
<td>52.1</td>
<td>185,822</td>
</tr>
<tr>
<td>3. Leather and Clothing and Textiles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a) Clothing and Textiles</td>
<td>43,556</td>
<td>11.9</td>
<td>322,028</td>
</tr>
<tr>
<td>(b) Fellmongery, boot and shoe and leather goods</td>
<td>110,926</td>
<td>58.2</td>
<td>79,669</td>
</tr>
<tr>
<td>4. Metal and Engineering Trades</td>
<td>192,517</td>
<td>35.6</td>
<td>347,529</td>
</tr>
<tr>
<td>5. Wood and Furniture</td>
<td>28,370</td>
<td>25.2</td>
<td>84,208</td>
</tr>
<tr>
<td>6. Building Materials</td>
<td>43,807</td>
<td>54.7</td>
<td>36,279</td>
</tr>
<tr>
<td>7. Paper, Printing, Bookbinding and Stationery</td>
<td>218</td>
<td>0.2</td>
<td>108,963</td>
</tr>
<tr>
<td>8. Miscellaneous</td>
<td>25,320</td>
<td>18.2</td>
<td>113,802</td>
</tr>
<tr>
<td>TOTAL FACTORY AND WORKSHOP INDUSTRIES</td>
<td>2,640,285</td>
<td>48.0</td>
<td>2,860,911</td>
</tr>
</tbody>
</table>

Source: Margolis Report, Nov 1946, 81.
Appendix 6

NUMBER OF EUROPEANS AND NON-EUROPEANS EMPLOYED IN AGRICULTURE, MINING AND SECONDARY INDUSTRIES DURING 1938 TO 1944

<table>
<thead>
<tr>
<th>YEAR</th>
<th>EUROPEAN AGRICULTURE</th>
<th>MINING</th>
<th>SECONDARY INDUSTRIES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Europeans</td>
<td>Non-European</td>
<td>Percentage of Europeans to Non-Europeans</td>
</tr>
<tr>
<td></td>
<td>No.</td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>1938</td>
<td>4.633</td>
<td>92.051</td>
<td>5.0</td>
</tr>
<tr>
<td>1939</td>
<td>4.711</td>
<td>93.636</td>
<td>5.0</td>
</tr>
<tr>
<td>1940</td>
<td>4.401</td>
<td>96.195</td>
<td>4.6</td>
</tr>
<tr>
<td>1941</td>
<td>4.075</td>
<td>101.600</td>
<td>4.0</td>
</tr>
<tr>
<td>1942</td>
<td>4.138</td>
<td>110.492</td>
<td>3.7</td>
</tr>
<tr>
<td>1943</td>
<td>4.243</td>
<td>114.380</td>
<td>3.7</td>
</tr>
<tr>
<td>1944</td>
<td>4.448</td>
<td>123.701</td>
<td>3.6</td>
</tr>
</tbody>
</table>

Source: Margolis Report, Nov 1946, Annexure D.