

"SLIM JANNIE" AND THE FORCES OF PRODUCTION:
SOUTH AFRICAN INDUSTRIALIZATION 1915-1925

by

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I. Industrialization

Industrialization refers to economic change brought about by technology - technology powered by inanimate sources and capable of continuous development as a result of applied scientific research.

Stanley Trapido (1)

Nothing new? What a terrible misreading of the [electricity] industry's technological history this is. In the last 60 years alone the industry has gone from Carliss Engines of several hundred horsepower to one-million-horsepower turbines on a single shaft, from steam pressures of several atmospheres to super-critical pressures of 200 and 300 atmospheres, from thermal efficiencies of conversion of 3% to 40%.

Philip Sporn (2)

Every improvement in the efficiency of the production or utilisation of energy has encouraged the substitution of fixed for working capital. In a sense, the story of power is the story of industrialisation ... [The] proliferation and diffusion of electrical equipment, which is far from exhausted, goes back to the decades before the First World War. There was now no activity that could not be mechanised and powered. This was the consummation of the Industrial Revolution.

David S. Landes (3)

Using research and technology, capitalist industrialization transforms the labour process to increase capital accumulation and to maintain political class domination. In the labour process under capitalism, man acts in nature to produce not merely the commodities necessary for his reproduction, but also surplus value to be appropriated as capital. Industrialization involves increasing the technical composition of capital, which is the relation between the mass of means of production and the mass of labour necessary for their employment in the labour process. (4) Surplus value accumulated from past generations is embodied increasingly as constant capital, as means of production, for the labour process of the present generation. In the labour process, if the time taken for the production of the goods and services necessary for

the reproduction of labour is reduced, then more, or relative surplus value, may be appropriated as capital. Industrialization reduces this necessary labour time in a revolutionary way by increasingly using "inanimate" energy sources powering machinery. "The production of absolute surplus value turns exclusively upon the length of the working day; the production of relative surplus value revolutionizes out and out the technical processes of labour, and the composition of society." (5) Rephrased in simple, reductionist, South African terms, "A coal-cutter probably saves forty natives". (6)

A benefit to the capitalist of at least equal importance accompanies this "labour saving". Industrialization brings much greater capitalist control of the labour process. Machines are used to intervene in man-nature relations to ensure that man-man relations are reproduced on terms favourable to capitalism. Man-nature relations may be termed the forces of production, while man-man relations, or property relations, the division of society into owning and working classes (among others), may be termed the relations of production. Forces and relations of production form an exceedingly complex unity (7) within which internally related classes conflict dialectically with one another. (8) Capitalist industrialization introduces machinery into this complex unity of forces and relations of production, as a weapon in class conflict on the side of the owning classes, to maintain political class domination as well as to increase relative surplus value. Above all, political class domination must be maintained at the level of the economic. (9) Capitalists use the disciplines and skills of machines, at this level, as substitutes for the withdrawable skills and calculated indisciplines of their class enemies, the workers. Hobson wrote:

Machinery can also register and regulate the expenditure of human power. Babbage well says 'One of the most singular advantages we derive from machinery is in the check which it affords against the inattention, the idleness or the knavery of human agents.' (10)

In similar vein Braverman writes:

Machinery comes into the world not as the servant of humanity but as the instrument of those to whom accumulation of capital gives the ownership of machines. The capacity of humans to control the labour process through machinery is seized upon by management from the beginning of capitalism as the prime means whereby production may be controlled not by the direct producers but by the owners of capital. (11)

Industrialization totally reorganizes society; it is an ongoing revolution. It involves demographic shifts to towns, and specialization, or division of labour. It creates wholly new mechanized industries, and it mechanizes old ones. Major change occurs in financial institutions and in the circulation of capital. Industrialization involves large-scale concentration of people, materials and institutions. Yet, above all, it involves mechanization using "inanimate" energy, and it occurs to serve capitalists in their struggle. It does not primarily result from "nationalism", nor from the need to provide jobs for the unemployed, although both of these may well be secondary, overdetermining factors. Neither is technology the fundamental cause. "The primary determinant of basic choices with regard to the organization of production has not been technology - exogenous and inexorable - but the exercise of power - endogenous and resistable. The steam mill didn't give us the capitalist, the capitalist gave us the steam mill." (12) Therefore, in South Africa, or in any other capitalist social formation, it is to the exercise by capitalists of domination in the class struggle, and to their desire for increased surplus appropriation, that we must look if we are to find both the local and the imperial origins of industrialization. (13)

While the origins of industrialization are to be found in the class struggle, its indices include statistics on the use of machinery, on time devoted to research and development of technology, and on the use of "inanimate" energy. Knowledge and "inanimate" energy are essential to the mechanization of the labour process. Thus, according to Eugen von Bohm-Bawerk:

In the last resort all our productive efforts amount to shiftings and combinations of matter. We must know how to bring together the right forms of matter at the right moment, in order that from those associated forces the desired result, the product wanted, may follow... There are natural powers which far exceed the possibilities of human power in greatness... If we can succeed in making these factors our allies, in the work of production, the limits of human possibility will be indefinitely extended.(14)

Similarly, Hobson wrote:

For most purposes of organized industry the use of some non-human energy is necessary: civilisation more and more implies the liberation of the muscular and nervous powers of man from heavy routine work, and the substitution of mechanical energy. In large provinces of industry the time has come when the success or failure of a man to establish himself in business, and to make a living wage or profit, depends on the terms on which he can obtain cheap and reliable access to this energy. (15)

To industrialize in the early twentieth century, what sources of inanimate energy could be harnessed? What combinations of matter, what forces of production needed to be researched and assembled? Seriously to increase the technical composition of capital in the early twentieth century, as leaders from Henry Ford to Jan Smuts to Lewin realized, required mobilization of productive forces together with research knowledge in the coal, iron and steel, railway and electric power industries, to which list chemicals and oil were being added. The embodiment of dead labour, as machinery in Department I, as wage goods in Department II, or as luxuries in Department III, required a transport network for assembling the required materials and live labour; it required an increasing variety of materials to represent the dead labour as the substance of the commodity produced; it required an energy source to move the machinery, to keep dead labour spinning in its grave, so that the rate of exploitation of live labour could be increased.

In most social formations in the early twentieth century the transport form was railways, the essential materials were iron and steel, and the inanimate energy sources were water, oil, or coal, with coal as king. Any of these energy sources turned into electricity would be far more useful in most industries. On their own initiative or in the face of the fierce worker resistance and strikes of the early twentieth century, or both, capitalists won the economic class struggle, and hence the overall political class struggle, in many countries - but not in all - by mobilizing research, technology, transport, iron and steel and electricity. Thus were workers disciplined and capital accumulation increased. Monopoly capital reproduced itself using technology which enabled the creation of a new, more favourable universe for capitalists. This was done consciously. Werner Sombart wrote in his book, The Quintessence of Modern Capitalism:

Technical improvements in our day have developed beyond the dreams of man. They have liberated applied science from the organised forces of nature, so that it can now utilize the energy which the sun has stored up deep down in the earth. Applied science no longer looks to men of flesh and blood for its achievements: it relies upon dead matter and mechanical power for its achievement. What is the result? Technical improvements know no bounds; they make possible what was inconceivable before, they create the universe anew. Nor must we forget the many-sidedness of technical knowledge. Every day produces something new and so creates a need for a new form of organisation. That only expands the possibility of the Capitalist spirit. (16)

A long view of the twentieth century demonstrated how the "capitalist spirit" was fostered using technology. Early steps in mechanization led to automation of labour processes, from Tokyo to Birmingham. By the final quarter of the century, "the use of automation and automatic control is increasing at the rate of an exponential development curve. This means that the rate is constantly augmenting". (17) Similarly, early technological research, from Cape Town to San Francisco, developed so that research is now the sine qua non for capitalist enterprise. "The industry which has not learnt to employ scientists to make it new, keep it new, is doomed." (18) Early twentieth century industrialization formed the crucial base for the ongoing technological revolution of later years. It enabled capitalists, with the help of some wars and some advice from Mr Keynes, to discover the joys of industrial planning as a partial control on the anarchy of capitalist competition. Planned industrialization also meant capitalists could pre-empt labour conflicts and problems. Energy supplies became more and more important, so that control of energy flows gave capitalists a feeling of control over the future. Their major ideologist in this field is worth citing at some length:

Beyond the next year or two the most important elements that determine electricity loads are not those that happen, but those that we project, that we invent - in the broad sense of the word invention. You have control over such loads, you invent them and make them come into being, and then you can make plans for the best manner of meeting them. If this kind of thinking is adopted, and then sequentially followed with plans, technologic, economic and commercial, this new load will come into being as a result of planned effort and will be met with in accordance with predetermined design. What can be done technologically is perhaps the most important single element, but not the only element, in determining what can be done to achieve growth. Thus out of the close ties between invention and technology, between technology and expansion in use, there exists a perfectly logical base for the claim that the future can be invented. (19)

So capitalists now attempt to invent the future by planned control of energy flows, by planned industrialization. The tendency to mechanization, Marx's "law of the progressive increase in constant capital in proportion to the variable" (20), is now planned. The whole of the twentieth century, from its earliest decades, has been spent learning the techniques of this planning. Yet the only absolute law (i.e. tendency) of the capitalist mode of production is the production of surplus value. (21) Planned or not, the tendency to mechanization is a relative law, and works itself out in contradiction with another consequence of the absolute law of the (competitive) production of surplus value, which is the law of the uneven development of capitalism (22), also a relative law. Competition to augment individual capitals, by producing surplus value, even under partial planning by monopoly capital, results in competitive, uneven industrialization, in anarchic mechanization. Capitalism's "inherent laws impose themselves only as the mean of apparently lawless irregularities that compensate one another". (23)

Especially at the peripheries of Empire, the law of the increasing technical composition of capital is mediated by the law of the uneven development of capitalism. Imperial monopolies oppose industrialization of the periphery. Yet they compete with themselves; so finance capital might industrialize the periphery in competition with metropolitan producers and merchants, for the law of the progressive increase of constant capital operates in response to resistance offered by workers at the periphery as well as at the centre. In mature empires, with declining metropolitan staple industries and the increasing importance of finance capital (24), peripheral industrialization and capital formation might well thrive. This occurred in the case of Britain and South Africa in the twentieth century, yet to this day they are married by the bonds of finance capital.

II. Smuts and the Crises of the First World War

In the early years South African capitalism and the South African capitalist state were far less certain of their ability to "invent the future" than the ideologists at the forefront of capitalism were in later times. Industrialization implies not only the mechanization of existing production but also the creation of new mechanized industry in places where none existed before. This meets with fierce metropolitan competition when attempted by a colony, or even a dominion. South Africa's role as a producer of the money metal for the Empire, and as a producer of that other mystical store of value, diamonds, did not exempt her from the general duties of peripheral states of the Empire. "When we analyse the prices of what Britain imports from the colonies and what it exports to them, the figures will always show an inequality in the expenditure of labour on the two masses of goods exchanged as equivalents." (25) Before World War I, South Africa exported largely unprocessed raw materials, minerals and agricultural products, in unequal exchange for the machines, manufactured wage goods and luxuries which were imported from the rest of the Empire, mainly from Britain.

Nevertheless, before World War I, there existed a South African capitalism, linked to British finance capital, and there existed a South African capitalist state, already a dominion rather than an underdeveloped colony like the Gold Coast. The South African state was itself a major monopoly capitalist. The state monopoly railway system had a budget equal to the central state budget. Under prompting from the state, in response to the crises of the First World War, to the decline of the staple industries in Britain, and above all to the fierce struggles put up by workers in South Africa, both black and white, South Africa mechanized and industrialized, giving capitalists there a somewhat greater ability to "invent the future". The importance of strikes, and of worker resistance to increasing exploitation, as the central spurs to mechanization and industrialization, is reflected in the ideological patterns at the time of the war. Belinda Bozzoli writes: "Until the war the central economic need for protection had given rise to a particular ideological pattern; now protection began to move into the background, and employer-employee relationships into the foreground." (26)

The proposition that the South African state under Botha and Smuts was opposed to industrialization would be seriously misconceived. They represented capitalists, when capitalists needed to industrialize. Smuts was no career colonial governor, and even colonial governors, like Guggisberg in the Gold Coast, have been known to undertake rudimentary industrialization programmes. Smuts was a dominion prime minister, and together with Lionel Curtis, Phillip Kerr and the Round Table had been responsible for popularizing the term "British Commonwealth of Nations", which was something more than mere rhetoric and reflected the material "strength, independence and nationhood" (27) which states like Canada, Australia and South Africa had attained, by comparison with, for example, the Gold Coast Colony. The war brought few changes to the colonial empire; it brought vast changes to the dominions, which gained new powers.

Like the Australian state in New Guinea, the South African state under Botha and Smuts became a major sub-imperial power in its own right. In a war which depended largely on the South African Railway resources for which he had campaigned so hard at the time of Union, Smuts conquered a territory which was the size of Britain and France taken together. He thereby obtained for South African capital not only rich farming, fishing and base mineral industries and a large labour reserve in Ovamboland, but also the world's richest diamond fields. Allied with Australia in the horse-trading at the Paris Peace Conference, Smuts "flew in the face of the whole civilized world" to hold the territory for South African capital. Smuts invented the mandates system to save Wilson's face from total destruction, and used the weakest "C" class mandate as the front behind which he in fact retained his colony. The agreement reflects the position clearly: it was decided that

a mandate should be conferred upon His Britannic Majesty to be exercised on his behalf by the Government of the Union of South Africa to administer the territory. (28)

The not so "sommnambulent kleptomania of wars" should not be forgotten as a source of capital accumulation, and South African capitalists, linked to their Britannic Majesties' finance capitalists, have profited by their colony ever since. The state made a large amount of money from the sale of seized diamonds in 1917 (29), and, after the war, that most South African of the mining houses, Ernest Oppenheimer's Anglo-American Corporation, monopolized the diamond fields. (30) Sixty years later profits made in the colony make a major contribution to the South African balance of payments. Smuts served South African capitalists as by his conquest, bringing in many new and profitable industries as well as a captive market for South African industrialization.

Smuts and Botha were not only important sub-imperialists. They represented finance and monopoly capital at a time when labour strife and capitalist competition provided major incentives to mechanize, both in mining and in other industries. Simultaneously, the combined production, finance and transport crises of the war removed British industrial and merchant capitalists from the market, thus enabling industrialization. After the war, and despite the depression, the South African state continued to foster industrialization, although under Smuts it would not do so in a way which might seriously harm the interests of the gold mines. The Pact were more prepared to take this risk, but even they, as we shall see, were loth to kill the golden goose.

Smuts and Botha represented South African monopoly mining and agricultural capital, linked to British finance capital. They did not, as we shall see, represent British iron barons. Provided the interests of the gold mines were not seriously affected, British finance capital had little reason to oppose South African industrialization, and indeed profited by it. British industrial capital in the old staple industries of "Victorian" Britain certainly opposed peripheral industrialization. For a host of reasons, the British staple industries were declining, willy-nilly. However, they put up a fight which delayed the creation of a South African steel works by a decade. In respect of this, Kuczynski writes:

The effect of the first world war on conditions in the British Empire was not inconsiderable. Industry in the Dominions strengthened markedly, although it would be wrong to say that the Dominions became industrially independent, as most of the countries in Western Europe were... The small beginnings towards the creation of a heavy industry in the Dominions were largely suppressed after the war. (31)

However, the Imperial state decided in the war that development of the Empire's resources, and peripheral industrialization, were strategically wise. (32) Not all British industrial capitalists opposed industry in the dominions: many stood to gain by it, like large machinery manufacturers who could equip the new factories. Engineering consultants like Merz and McLellan made large fortunes selling British technology throughout the Empire. (33) In sum, British capital was not monolithic, but divided between those who would lose and those who would gain by industrialization of the Empire. Therefore both Smuts and Botha, and on occasion the Imperial state itself, could foster industrialization in South Africa.

III. Railways, Coal and Electricity in South African Industrialization

Smuts and Botha went to the National Convention with elaborate proposals for the creation of a state monopoly railway transport industry, whose specific duty was to be "agricultural and industrial development within the Union, and the promotion by means of cheap transport of the settlement of an agricultural and industrial population in the inland portions of the union", as Section 129 of the resulting Act of Union phrased it. (34) The SAR & H Administration, under Sir William Hoy, took this injunction very seriously. (35) To bless the awkward marriage of South African mining and agriculture, railway rating policies favoured the carriage of raw materials

to the Rand (36), thus ensuring the location of industry on the Rand close to the markets. This policy succeeded: by 1949, just under half of all the large factories of the country were in the Southern Transvaal, despite its relative lack of water. (37) Smuts and Botha's policies favoured the concentration of people and goods which is so essential to industrialization, and in doing so they created the only monopoly in the country capable of matching the mining industry in scope.

Prompted by the special circumstances of a fragment of mining capital (38) and by the enormous advantages in efficiency promised by railway electrification (39), Hoy's railways went further to industrialize South Africa. If Transvaal coal was the Cinderella of South African mining, dominated by the three ugly sisters of the SAR, the Victoria Falls and Transvaal Power Company and, above all, the gold mines (40), then Natal coal was the fifth and youngest sister, oppressed even by Cinderella, and with her wares trapped behind the Valley of a Thousand Hills, very expensive railway country. (41) Faced with the alternatives of electrification of railways or doubling the main Natal lines from the coalfields to the coast, Hoy chose the first, and eventually both were achieved. He made his choice not only to mechanize the railways but explicitly to foster other industrialisation (42), and he did it with the active support of Smuts. Hoy's attempts at electrification were stopped in 1914 by the war, but by 1917 he was able to appoint Merz and McLellan of London to investigate the electrification of the SAR. (43) From their reports (44) came not only the electrification of part of the Natal line and the Cape suburban lines by 1925/26, itself a large state industrialization programme with investment on a scale greater than that of any private investment project outside of gold mining (45), but also the creation of another large new industry in the shape of the Electricity Supply Commission. (46) This was set up with the explicit duty of supplying energy at the cheapest possible cost, with the purpose of fostering industrialization. (47) The gold mines already had a huge power supply industry in the VFTPC, whose system in 1917 was one of the four largest in the world. (48) However, at that time, the VFTPC did little to foster other industrialization, although it did supply some Reef towns and some big industrial customers. (49) Hoy and Smuts, together with Sir Robert Kotze, the Government Mining Engineer, put the Electricity Act through Parliament, in 1922, and thereby immeasurably increased the possibilities of industrialization. (50) Smuts had already brought back H. J. van der Bijl, son of an old Transvaal friend, and a successful scientist in America, to fill the post of Scientific and Technical Adviser - itself a post created by the Smuts government to foster industrialization. (51) In 1923 van der Bijl became Chairman of ESCOM, and went on, until his death in 1948, to become South Africa's most successful industrial entrepreneur. (53) The importance of ESCOM's cheap power in the history of South African industrialization cannot be overstressed. If "the story of power is the story of industrialization", if electricity "was the consummation of the Industrial Revolution" (54), then let it be remembered that it was the state under Smuts, not the state under the Pace (55), that created ESCOM, and for good reasons: the goals were increases in the technical composition of capital, and increased discipline of the work force in the labour process, so that increased capital accumulation could take place. Smuts acted for monopoly capital, and therefore the state under his leadership fostered the railway, coal and electricity industries. (56)

Space allows for only one example of the results of the ongoing industrial revolution in the transport industry brought about by electrification devised by the state under Smuts. In 1934 Phillip Olimani, "Secretary of Docks Workers" in Cape Town, wrote to their MP, Walter Bowen:

Since 1925 as Dock Workers there is no more work for us, in connection with the carrying of bags of mealies and working with the coal. Now there is no more mealies going overseas and no more coal for engines, as electric trains are now being used all over the Peninsula. We are now four years out of work, starvation is upon us and we are at the same time ordered to pay under the Pass Law although we are not working. (57)

Bowen eventually received a reply from the Office of the Minister of Railways:

During recent years the demand for native labour at Table Bay Docks has decreased to a considerable extent, this being attributable to the falling off in two particular lines of export business, namely coaling and the handling of bagged export grain ... The coal business is not expected, even with the generally improved conditions, to reach anything like the previous figures, and any alteration in the policy to discourage the conveyance of maize in bags would be to the detriment of the elevator system. (58)

The switch to more efficient oil-fired ships had hit the coal trade as much as the state's electrification of railways. The grain elevator system was also introduced by the state under Smuts, before 1925. Throwing hundreds of dock workers out of work increased the pool of labour on which capitalists throughout the country could draw, thus lowering the bargaining position of all workers in their struggle. It may be argued that pumping coal is so hard and dirty a task that it should be mechanized or avoided, which in a happier society might be true. We must not make the mistakes of Luddism. However, we should remember Sheila Rowbotham's words on unemployment:

It is one of the most bitter and terrible ironies of capitalism that, dreadful and soul-destroying as it is to work, it is even worse to be forcibly prevented from labour. The exploited are the lucky ones. The others are worn out and scrap because they are not even needed to make profits. (59)

The State under Smuts effectively "scrapped" large classes of workers in its industrialization programmes, but thereby it did industrialize. H. J. van der Bijl saw that "two of the most important agents that contribute towards the building up of an industrial structure are transport and electric power". (60) He, and other state functionaries like the Secretary for Mines, H. Worington-Smythe, like Hoy and like Kotze, with the active support of Smuts, dramatically improved both industries in South Africa. Both depended on coal or oil. Coal-fired electric power stations revolutionized the state railway system; oil-fired internal combustion engines simultaneously revolutionized road transport. The mechanization of coal mines continued apace. Partly because of the geological nature of the deposits, but also because of worker struggle and competition from gold mines for labour, South Africa was among the leaders of coal-mine mechanization. In 1913 some 60% of American coal was cut by hand, as was 91½% of British coal. After the war, in 1920, only 20% of South African coal was cut by hand; in 1925 only 12%; by 1930 only 6%. (61) Although some back-breaking tasks in railways, electricity production and coal mining were eliminated by mechanization, the general effect of the industrialization of these three industries was deleterious on the condition of labour in its conflict with capital.

IV. Smuts and Delfos versus the "English Iron Masters" (62)

The "opposition" strenuously opposed the creation of a state-owned iron and steel industry in 1928, perhaps among other reasons because they feared a substantial rise in the price of steel to the gold mines. (63) It cannot be inferred from this that they were opposed to the creation of an iron and steel industry in South Africa, either then or when they were in office before the 1924 elections. (64) Instead, convinced of the potential for a steel industry, Smuts went to great lengths in 1922 to obtain finance in England for the most important of the steel projects, that which was energetically put forward by C. F. Delfos. (65) He failed in his attempt to obtain capital from the British Treasury for the project, but the bounties scheme which he introduced under the Iron and Steel Industry Encouragement Act of 1922 was sufficiently viable for it to be acceptable even to the Pact as late as 1926, who adopted it in that year as a strategy for financing the much-desired industry. (66) Only a year later, when all else had failed, did the conflict over state-ownership

become the key issue. Among the opponents of state-ownership in that year were important sections of South African "national" capital, including not only competitors of Delfos's SAISC Ltd (which became ISCOR) such as the Union Steel Corporation and Dunswarts Iron & Steel, but also Gearing and Laite of the SA Federated Chamber of Industries (67), a group that had been campaigning for South African industrialization for many years, but which now feared State competition to private industry. Earlier, Delfos's SAISC Ltd had even been financed to some extent by the National Industrial Corporation, a subsidiary of the National Bank of South Africa, and by the Central Mining and Investment Corporation and the Anglo-American Corporation. (68) Lionel Phillips of Central Mining had at first been advised against a South African steel industry, then had changed his mind, by which time the English Iron Masters had ensured a total lack of capital for the project. Delfos wrote to Smuts in 1921:

My opinion is that the Central Mining and Investment Corporation cannot possibly raise the capital at present ... It will be necessary to get big financial interests from outside South Africa. It seems hardly possible that we should get very substantial support from Great Britain because in the first place they will require all the money they have available for their own industries, and besides many parties interested in the British Iron and Steel Industry have been opposed to the establishment of such an Industry in South Africa because this would mean that they were going to lose part of their own market. Mr Bury is not of the same opinion because he looks at the question from a broad Imperial point of view and states that whenever such (ore) deposits are within the Empire they should be developed. (69)

This broad Imperial point of view was in the interests of certain sections of British capital, and an institution existed in Britain which arranged Treasury loans for the purchase by Dominions of industrial plants provided they were bought in Britain. (70) The Trade Facilities Board was prepared to arrange a loan to Delfos, the major British beneficiary of which would be Armstrong Whitworths, but some form of backing from the South African state was needed before Treasury approval could be obtained. (71) The State Mining Commission, headed by P. Ross-Frames, a leading mining capitalist, had recommended a Bounties System as early as 1918, to attract capital for iron and steel, based on the precedent set by Canada. (72) In 1922 Smuts adopted the Iron and Steel Encouragement Act, with the approval of the Board of Trade and Industries, and of the Scientific and Technical Adviser, offering bounties in respect of production by any plant with a capacity of over 50,000 tons. (73) By stipulating the large-scale, Smuts was once more fostering South African monopoly capital: the object was to "insure that bounties [would] not be granted to small temporary undertakings". (74) There followed a complicated period of lobbying in London, in which Smuts gave enthusiastic support to Delfos. Smuts telegraphed to the High Commissioner:

I understand Trade Facilities Company [sic] doubt whether to proceed with their offer as industry will compete with British industries. This is mistake as factory will supply only small portion of South African requirements and in any case finished goods will continue to be largely imported. Please give Delfos all support you can in representations. I am anxious that industry should succeed, and Union Government are pledged by law to very large bounties in support of it. You should endeavour to secure support of Mr Churchill. (75)

Delfos won his battle at the Trade Facilities Board concerning the technical possibilities, but other considerations entered into it. Delfos wrote to his Head Office in Pretoria:

Trade Facilities have referred the matter to Cabinet for their decision of whether assistance is justifiable in view of the detrimental effect of the development of South African industry on British exports. I argued that the development of the steel industry means the development of the country and consequently the increase of (British) exports regarding the total amount, although iron and steel products exports will be reduced, but as we produce only 7 $\frac{1}{2}$ % of the total amount of imports of iron and steel goods this should not influence the decision adversely. (76)

With hindsight, the result is more predictable than it was at the time:

The Treasury here turned Delfos down, and privately I have heard that the argument against him ... is that the establishment of Delfos's scheme with money voted for the purpose of lessening unemployment in (Britain) is going to set up a competitor which will cause loss of trade here, and consequently further unemployment. Of course, this latter argument is a very big stick in the hands of the labour agitator and also in the hands of local manufacturers in this country who will raise the bogey of competition, and Churchill and company, I was told, are not prepared to face these gentlemen in Parliament. (77)

Nevertheless, further attempts were made:

There is no question about it - had it not been for the likelihood of getting a loan from the Trade Facilities Board we would never have gone so far with the Bonus legislation and I must say it will be a great disappointment to us all. I hope you will be able to use your influence with the Technical Advisers of the Colonial Office and shew them that we are being rather let down by this eleventh hour retirement. The fact that it is thought that we will compete with the English Iron Masters is quite wrong because after all we are only going to deal with the rough article, much of which comes from Belgium and America, and all finished work will continue as heretofore to be imported. (78)

This was of no avail. "Treasury again refusing Delfos." (79) Thus Smuts and Delfos lost their battle with the "English Iron Masters", not for want of trying, and not especially because of strong opposition from mining capital, which seems to have been divided on the issue at this time. Fear of higher prices to consumers was not necessarily important. The largest consumers of iron and steel were not the mines but the railways (80), and Sir William Hoy of the SAR & H administration was prepared to give great assistance to the campaign for a local steel industry. (81)

In his study of the South African iron and steel industry, C. S. Richards notes that Taussig wrote "iron is the foundation of the material apparatus of civilisation". (82) This may be rephrased: "iron is the foundation of the embodiment of dead labour as constant capital in the labour process; iron has been the material necessary for the increasing technical composition of capital." Therefore it is no surprise that the South African capitalist state energetically attempted to create an iron and steel industry before 1925. It failed, but the research which it initiated, especially the Gutehoffnungshütte Report, commissioned as a result of Smuts's instructions to Karl Spilhaus, Union Trade Commissioner on the continent, was of crucial importance to the establishment of the industry after 1928 (83) - when H. J. van der Bijl became its first Chairman, in addition to his chairmanship of ESCOM. (84)

V. Research

Research is essential for industrialization. (85) As a Dominion, rather than a simple colony, South Africa had centres of research in her higher education institutes. In 1922 the School of Mines and Technology became the University of the Witwatersrand, to be South Africa's most important centre of research, in time. The change in name perhaps represents a material change, as research and teaching moved slowly away from the interests of mining, pure and simple, to the interests of an integrated expanding economy - not that "Wits" ever stopped serving the interests of the mine-owners. More importantly, the state apparatuses themselves researched industrialization from 1915 to 1925. In this period the Advisory Board of Industries and Science, the Research Grant Board, the Board of Trade and Industries, the Scientific and Technical Adviser, the Industries Section of the Department of Mines and Industries, and the South African Journal of Industries were all created to foster South African industrialization by research. Their activities were far-reaching and of great influence, as were those of the research sections of the railways administration and of ESCOM. Lack of space prevents a detailed account here (86), but two points must be made: firstly, their activities are too extensive to be treated as simple "window-dressing" for a government concerned with the interests of mining and mercantile capital which supposedly oppose local industrialization (87), and, secondly, doubt must be cast on the suggestion that the Industries section was understaffed so that industrialization would not be fostered. In an overdetermined system, that may be one explanation among many and need not be primary. Certainly the Industries section could have received greater funds. In moving from the post of Scientific and Technical Adviser to that of Chairman of ESCOM, Dr van der Bijl reported:

the time I have been in charge of the Industries division has been a trying and to me a very disappointing one. I realise that the country has been in a difficult financial position during the past two or three years, but at the same time I feel that the Government should make a special effort ... (88)

In his protracted struggle with the Public Service Commission and the Treasury for staff and money (89) during the post-war slump, van der Bijl was essentially a Keynesian before Keynes. He was struggling with a decayed economic orthodoxy, of which Hobsbawm reminds us:

We tend to forget how small and uninfluential a minority (the Keynesians) were, until after the economic catastrophe had become so overwhelming ... The bankers and the officials who were the guardians of Treasury orthodoxy dreamed of a return to the liberal world of 1913, put their confidence in balanced budgets and the Bank Rate ... The economists, with what can only be described as a quiet heroism worthy of Don Quixote, nailed their flag to the mast of Say's Law which proved that slumps could not actually occur at all. Never did a ship founder with a captain and a crew more ignorant of the reasons for its misfortune or more impotent to do anything about it. (90)

We should not be too surprised if, in the 1922 slump, van der Bijl's heretical, ambitious policies, of greatly increased expenditure and activity by the state, were opposed by Treasury bureaucrats at every opportunity. What is more interesting is that in the upswing of 1923 Smuts gave him ESCOM, and he rapidly achieved an agreement concerning the Witbank power station so that the huge benefits of the economies of scale made possible by the gold mines could be passed on to other industries through the electricity system.

VI. Protection

The accepted orthodoxy is that the Pact gave a great boost to local industry with the 1925 Customs Tariff Act. This orthodoxy contains a kernel of truth, yet perhaps exaggerates the case. Increased protection did assist industrialization, especially in the production of some two dozen selected commodities, yet the degree of protection was generally not very high, and South Africa remained a relatively open economy for a long period after 1925. Other factors, such as cheap unskilled labour and cheap energy, must be given due credit.

Tariff protection predates 1925: the first consolidated Union tariff was introduced in 1914 and increased in 1915, to be altered at intervals thereafter. The Smuts government satisfied protectionists and free-traders (91) with a policy of selective tariffs to protect particular industries. (92) C. S. Richards conceives of "natural" protection, in the form of freight, insurance, landing charges, revenue tariffs and railage, while explicitly protective tariffs are "unnatural". (93) This is less than helpful, because railage, like the other charges, has no Aquinian justa pretium, no "God-given" price determined by an "a-political", "free" market. Railage tariffs were used before Union to protect local industry (94), and, although free-traders attempted to eliminate this, the attempt was not successful. (95) It is likely that for some goods railage was a far more important protection than any 1925 tariff could be. (96) The 1925 Act had a very low incidence on goods destined for agriculture, and was generally low on mining supplies (97) other than blankets (98) and drill equipment. Aside from goods like blankets, almost totally eliminated from the list of imports, the increase in tariff incidence after 1925 was small, as Table One (99) shows.

TABLE ONE

Percentage Ratios of Total Value of Customs Collections
to Total Value of Imports on Commercial Account

1913	12.9%	1925	13.1%	1929	12.7%	1933	17.95%
1922	12.6%	1926	13.6%	1930	13.7%	1934	16.05%
1923	12.4%	1927	13.3%	1931	16.61%		
1924	12.8%	1928	13.1%	1932	25.38%		

The increases due to the 1925 Act were tiny compared to the much greater explicitly revenue tariffs levied to save a near-bankrupt state treasury in the depression, and even the revenue tariffs were not highly protective, as a large revenue duty was levied on petrol, which accounts for much of the increase shown in Table One. (100) Simply, at least until the Second World War, South African tariff protection was at most only "moderate", the word used by HM Trade Commissioners. (101) Protective tariffs as incentives to industrialization in South Africa must be viewed in that light. It is possible that Fabius Cunctator would not be too disappointed at the Pact's attempts to close South Africa to foreign competition: Australia's tariff incidence at the time was of the order of 20% (102), compared to the Pact's 13%.

In sum: the Pact's protective policies were not unimportant in fostering industrialization, but from 1912 to 1925 under Smuts and Botha both customs and railage protection also fostered some selected industries, to a greater or lesser extent. Nevertheless, protection cannot be seen as the single most important factor in South African industrialization, for the tariffs were seldom high enough. Ian Drummond concludes "South African tariffs were low, and ... few were overtly protective". (103)

VII. Conclusion

Lack of space prevented analysis here of the "triumph" achieved by Smuts and the mine-owners in the 1922 strike, when white wages were significantly reduced and white employment dropped. (104) This was also a process of industrialization: it enabled further mechanization and "rationalisation" of the labour process, so that electricity consumed per worker in the mines rose from 3601 kilowatt hours in 1920 to 4522 kilowatt hours per worker in 1924, and tonnes of rock treated per worker rose from 113 tonnes in 1920 to 134.7 tonnes in 1924. (105) In another way, the state under Smuts also industrialized the gold production process with the establishment of the South African Mint. (106)

The state under Smuts and Botha was capitalist, subject to the relative tendency of capitalism to increase the technical composition of capital, thus industrializing. Between 1915 and 1925 serious industrialization attempts were made in the key industries of transport, energy, and iron and steel. By research, and in a number of other ways, industrialization was also fostered by the state in other fields. The implications of this for the question of where "hegemony" lay (107) before and after the 1924 elections (if elections can be seen as transferring "hegemony", which is doubtful) have not been explicitly examined here. Perhaps a clearer answer to this question must await specification, in much greater detail, of the complexities contained within those broad (and perhaps un-Marxian) categories of "mining", "foreign", "agricultural" and "national" capital. Dialectical theory dictates that "mining" and "foreign" capital, indeed all capital, must contain contradictions. Hegemony cannot be useful as a static concept which, by stating that a state will never at the global level do anything which goes against the "interests" of the hegemonic fraction, somehow eliminates the contradictions contained within that hegemonic fraction. As a dynamic, dialectical concept it may well be useful, but its application requires great rigour both at the level of theory and in the thorough illumination of the material social formation, to which this essay has been but a small initial contribution. Yet, in considering "hegemony" and industrialization after 1924, the remarks of Cresswell about his Hertzogite colleagues in the "Pact" should be recalled:

They have very little first-hand knowledge of the facts and the problems of industrial life. (108)

The nature of South African agricultural capital, and its relations with industrialization, have yet to be spelt out for this period.

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Notes

- (1) S. Trapido, "South Africa in a Comparative Study of Industrialization" (ICS, SSA Papers, London 1971), p. 50.
- (2) P. Sporn, Research in Electric Power (Pergamon, Oxford 1966), page XV.
- (3) D. S. Landes, The Unbound Prometheus: Technological Change and Industrial Development in Western Europe from 1750 to the Present (CUP, London 1969), pp. 289 and 293.
- (4) K. Marx, Capital (Volume I, 1867, 1890) (Lawrence and Wishart, London 1974), p. 574; N. Poulantzas, Classes in Contemporary Capitalism (1974) (NLB, London 1975), pp. 63, 135 and 227.
- (5) K. Marx, Capital (Volume I), pp. 476 and 477.
- (6) T. G. Trevor, Pretoria Inspector of Mines, in South Africa, Report of the Government Mining Engineer (GME) for the year ended 31st December 1920 (Government Printer, Pretoria, UG 40/1921), p. 109.

- (7) L. Althusser, Essays in Self-Criticism (1972) (NLB, London, 1976), p. 50: "You have to consider the material basis of the class struggle, that is, the material existence of the class struggle. This, in the last instance, is the unity of relations of production and the productive forces under the relations of production of a given mode of production, in a concrete historical social formation." (Original emphasis)
- (8) On "internal relations", see B. Ollman, Alienation (CUP, London 1975), Chapter Three, and S. Beer, Decision and Control (Wiley, London, 1966), p. 242, citing Hegel: "the relations by which terms are related are an integral part of the terms they relate".
- (9) L. Althusser, Self-Criticism, p. 51: "Thesis: all forms of the class struggle are rooted in the economic class struggle" (original emphasis). On "political class domination", see N. Poulantzas, Political Power and Social Classes (NLB, London, 1973), pp. 53-4, and G. Lamb, "Marxism, Access and the State", Development and Change VI, No. 2, April 1975, p. 124.
- (10) J. A. Hobson, The Evolution of Modern Capitalism (Walter Scott Publishing Co., New York, 1912), pp. 72-73. See also D. S. Landes, The Unbound Prometheus, pp. 1-2, on the substitution of machinery for human skills, and the resulting work discipline.
- (11) H. Braverman, Labour and Monopoly Capital: the Degradation of Work in the Twentieth Century (Monthly Review Press, New York, 1974), p. 193.
- (12) S. A. Marglin. "What do Bosses do?" in A. Gorz, ed., The Division of Labour (Harvester Press, Hassocks, 1976), pp. 47 and 41.
- (13) L. Althusser, Self-Criticism, p. 50: "Thesis: the class struggle is the motor of history" (original emphasis).
- (14) E. von Böhm-Bawerk, The Positive Theory of Capital (Macmillan, London, 1891), pp. 18-19.
- (15) J. A. Hobson, The Crisis of Liberalism (King and Son, London, 1909), p. 101.
- (16) W. Sombart, The Quintessence of Modern Capitalism (Fisher Unwin, London, 1915), p. 322.
- (17) H. N. Broom, Business Policy and Strategic Action (Prentice Hall, Englewood Cliffs, 1969), p. 246.
- (18) D. Sarnoff, Looking Ahead: the papers of General David Sarnoff, 1914-1967 (McGraw Hill, New York, 1968), p. 233.
- (19) P. Sporn, Research in Electric Power, p. 15. The subsequent crisis in energy distribution demonstrated the hubris of Sporn's huge ideological faith, for those who would see, but the ideology of capitalist planning remained largely uncracked.
- (20) K. Marx, Capital (Volume I), p. 583.
- (21) Ibid., p. 580.
- (22) J. Kuczynski, Labour Conditions Under Industrial Capitalism (1942, 1944) (Muller, London, 1972), Part One, p. 98: "Imperialism, finance capitalism, monopoly capitalism, wars and revolutions, decay and parasitism - all these are characteristics of the third period of capitalism which began about the end of the last century and which unfortunately survives in most countries."
- (23) K. Marx, Capital (Volume I), p. 104.
- (24) E. J. Hobsbawm, Industry and Empire (Penguin, Harmondsworth, 1969), pp. 250-51, and p. 207: "The Victorian economy of Britain crashed in ruins between the wars. ... The traditional economy of Britain not only ceased to grow, but contracted."
- (25) E. Preobraghensky, The New Economics (1924, 1926) (OUP, London, 1965), p. 92.
- (26) B. Bozzoli, "The Origins, Development, and Ideology of Local Manufacturing in South Africa", Journal of Southern African Studies, I, No. 2, April 1975, pp. 208-209.
- (27) C. L. Mowat, Britain Between the Wars (Methuen, London, 1955), p. 109.
- (28) League of Nations, Preamble to the South West Africa Mandate (1920), quoted in J. Dugard, The SWA/Namibia Dispute (UCAL Press, Los Angeles, 1973), p. 72.

- (29) SAB: MM 430 File 2352/18, Enclosures to 17/17 Confidential: Government Sale of South West African Diamonds.
- (30) SAB: MM 488 File 2741/19: Anglo-American Corporation Amalgamation of SWA Diamonds and Consolidated Diamonds of SA Ltd.
- (31) J. Kuczynski, Labour Conditions, Part Two, pp. 13-14.
- (32) See, for example, United Kingdom Report of the Departmental Committee on Electrical Trades [Cd 9072] (HMSO, London, 1918), p. 11, on the need to develop energy resources of "India and the self-governing Dominions".
- (33) SAB: SAS 1430 P12/131/43, Electrification Agreement with Mertz & McLellan, Memorandum for General Manager, 29th January 1926.
- (34) L. Thompson, The Unification of South Africa, 1902-1910 (OUP, London, 1960), pp. 284-290.
- (35) United Kingdom, Dominions Royal Commission: Minutes of Evidence taken in the Union of South Africa in 1914, Part One [Cd 7706] (HMSO, London, 1914), pp. 114-115, evidence of W. W. Hoy, questions 2439 and 2440.
- (36) South Africa, Board of Trade and Industries, Report 285: an Analysis of the Railway Rating Principles and the Effect of Transport Costs on Industrial Development in the Union (Government Printer, Cape Town, 1946), p. 29: "the rating policy of the railways has undoubtedly contributed to the growing tendency of industry to concentrate in the Southern Transvaal"; p. 18: "Railway rates have been used extensively to foster local industries and to protect them against foreign imports. It is indeed an obligation imposed upon the Railway Administration by the Act of Union to promote agricultural and industrial development, especially in the inland provinces of the Union."
- (37) F. F. Winkle, "The Distribution of Secondary Industry in South Africa", Commerce and Industry, May 1954, Volume XII, Number 9, p. 449, Table V.
- (38) Mining capital was by no means a monolith: coal mining had two uneasy cartels, one in the Transvaal and one in Natal. Smuts' Coal Act of 1922 went a considerable way towards "rationalizing" the Natal industry, and he entered lengthy negotiations to keep potential mavericks inside the Transvaal cartel. However, the plight of Natal coalfields was not easily solved, although they complained often and vociferously. See, e.g., SAB: MM 204 File 3350/13; MM 255 File 3164/14; MM 259 File 3550/14; MM 389 File 2273/17; MM 389 File 2332/17; MM 535 File 2825/20; PML/1/330 File 200/42/1912; PML/3/161 File 46/4/A/1922-3.
- (39) See, e.g., SAB: SAS 1427 P12/131/35a: "Railway Electrification in South Africa", article for Railway Gazette by W. W. Hoy.
- (40) South Africa, Report of the Commission of Enquiry into the Local Resources of the Republic of South Africa (Government Printer, Pretoria, RP63/1975), p. 2.
- (41) The gradients and curves were the worst in South Africa, and coal is exceedingly heavy. See Hoy to Dominions Royal Commission [Cd 7706], 1914, p. 108.
- (42) Hoy to Captain Brebner, Private Secretary to the Prime Minister, 16th June 1920: SAB: SAS 805 P4/14: Electricity Supply in South Africa, Part 1: "Power, and especially cheap power, is important to the exploitation of industry, and if we take advantages of present opportunities and get a lead in power production it will give us a big pull when it comes to a question of competition with overseas industries. Power developed cheaply under modern conditions and better distributed than at present will also help the coal mining industry, the production of low grade minerals generally and possibly the farmer."
- (43) W. Hoy, "Memorandum on the History of the Introduction of Electric Traction on the SAR, 3rd February 1926", SAB: SAS 3 FS 14651/10, Electrification Glencoe-Maritzburg: Excess Cost 1925-6.
- (44) Merz and McLellan, SAR: Report on the Introduction of Electric Traction (London, 1919); SAB: PML/1/556, Annexure D. South African Railways, Report on the Electrification of the Natal Main Line, together with Report by Mr F. Lydall representing Merz and McLellan (SAR, Johannesburg, 1921), SAB: PML/1/420 File 340/20.

- (45) The total cost of Merz and McLellan's recommendations in 1919 came to over fifteen million pounds; the eventual cost of electrifying the Maritzburg-Glencoe section alone was just short of five million pounds, spent between 1923 and 1925. This latter sum is approximately equal to the total value placed on all machinery, plant and tools in all private industries in Natal outside of mining. See W. Hoy, "Memorandum ... 1926", and South Africa, Tenth Annual Census of Factories and Productive Industries (Government Printer, Pretoria, UG 41/1927), p. 1.
- (46) Merz and McLellan, SAR ... Electric Traction, 1919, p. 25. ESCOM, 25 Years: a Record (ESCOM, Johannesburg, 1948), p. 6.
- (47) South Africa. Report of the Select Committee on the Electricity Bill (Government Printer, Cape Town, SG7/1922), p. 84, evidence of H. J. van der Bijl.
- (48) United Kingdom, Ministry of Reconstruction Coal Conservation Sub-Committee, Interim Report on Electric Power Supply in Great Britain [Cd 8880] (HMSO, London, 1917), p. 4, paragraph 6.
- (49) Bernard Price, "Electrical System of the Rand Power Companies" (Address to a meeting of the South African Institute of Electrical Engineers, 16 November 1916), p. 6. (Bernard Price Private Papers, in custody of his son, Roger Price, Johannesburg.)
- (50) Act No. 42 of 1922. See also ESCOM, Escom's Role in Industry (ESCOM, Johannesburg, 1948).
- (51) W. J. de Kock and D. W. Krüger, Dictionary of South African Biography, Volume II (HSRC and Tafelberg Uitgewers, Johannesburg, 1972), p. 767.
- (52) SAB: MM 640 File 3023/23, "Electricity Control Board Recommends Appointment of Escom", ESCOM, Annual Report 1924 (ESCOM, Johannesburg, 1925), especially pp. 11-21, and ESCOM's Golden Jubilee (ESCOM, Johannesburg, 1973), pp. 12-13. The economies of scale in electricity production are such that, under van der Bijl, ESCOM soon had a joint agreement with the VFTPC in regard to the new Witbank power station, using the enormous base-load of the mines effectively to cheapen production for other industries and railways. Electricity production technology favours monopoly capital, or vice versa.
- (53) H. J. van der Bijl said: "Here in South Africa you can never plan too big." (Natal Mercury, 1st September 1947) D. F. Malan eulogized: "Not only was Dr van der Bijl the power behind the success of our great Iron and Steel Corporation, but he was also the pivot round which so many of our country's other industries revolved." (Daily Dispatch, 3rd December 1948)
- (54) D. S. Landes, The Unbound Prometheus, pp. 289 and 293.
- (55) On industrialization policies under Smuts and under the Pact, see the following recent works:
- B. Bozzoli: "Local Manufacturing in South Africa"
- D. Innes: "The Mining Industry in the context of South Africa's Economic Development", SSA Collected Seminar Papers, ICS, London, 1977.
- D. E. Kaplan: "The Politics of Industrial Protection in South Africa 1910-1939", JSAS III, No. 2, October 1976.
- D. E. Kaplan: "An Analysis of the South African State in the Fusion Period, 1932-39", SSA Collected Seminar Papers, ICS, London, 1977, especially p. 157, note 3.
- M. Kooy and H. M. Robertson: "The South African Board of Trade and Industries; the South African Customs Tariff and the Development of South African Industries", SAJE 34, No. 3, 1966.
- A. J. Norval: A Quarter of a Century of Industrial Progress in South Africa, (Juta, Johannesburg, 1960).
- E. Phillips: "State Regulation and Economic Initiative: the South African Case to 1960", I J. African Historical Studies, VII, No. 2, 1974.
- (56) Between 1915 and 1925, coal consumption rose from 5,893,000 tonnes to 9,287,000 tonnes (a); Electricity production rose from 941 geggawatt hours in 1917 to 1581 geggawatt hours in 1925 (b); Railway revenue-earning traffic grew from 10,922,000 tonnes in 1915 to 17,047,000 tonnes in 1925 (c).
- (a) W. C. J. van Reusburg et al., South Africa's Coal Resources (Coal Advisory Board, Pretoria, 1969), p. 24, Table 10.
- (b) South Africa, Union Statistics for Fifty Years (Bureau of Statistics, Pretoria, 1960).
- (c) Ibid.

- (57) UCT, Molteno Papers, BC579 B21.123: Livani to Bowen, 12th January 1934.
- (58) UCT, Molteno Papers, BC579 B21.127: Heckroad to Bowen, 26th July 1934. For a further survey of the case of dockworkers, see D. Budlender, "A History of the Stevedores in Cape Town Docks" (BA[Honours][Economics] unpublished dissertation, UCT, 1976).
- (59) S. Rowbotham, Hidden from History, 2nd edition (Pluto Press, London, 1974), pp. 133-4.
- (60) H. J. van der Bijl, "Presidential Address", trans. SAIEE, XVIII, Part 2, 1927 (reprint, ESCOM, J , no date), p. 2.
- (61) H. J. Habbakule, American and British Technology in the Nineteenth Century: the search for labour saving inventions (CUP, London, 1967), p. 200.
P. N. Lategan, "Organisation of the Production, Processing, and Distribution of Coal and Coal Products", Third World Power Conference, Volume 3 (United States Government Printing Office, Washington DC, 1938), p. 62: "mechanisation has reduced the amount of native labour required for a given output [of coal]."
- (62) This is not the place for a detailed history of steel in South Africa. Much has been written already, but there remains a need for a work which does not devote itself to special pleading concerning the "oppression" of the interests of the gold-mines by ISCOR, or to eulogizing the foresight of the state steel industry's founders, but which rather examines at length the conditions of labour in the industry. See, inter alia, H. J. van der Bijl, "The Manufacture of Iron and Steel at ISCOR works, Pretoria", JSAIE, June 1938; ISCOR, Steel in South Africa (Pretoria, 1953); F. Meyer, "The Development of the Iron and Steel Industry in SA", SAJE, XX, No. 2, June 1952; C. S. Richards, The Iron and Steel Industry in South Africa (WUP, Johannesburg, 1940); P. Scott, "The Iron and Steel Industry in South Africa", Geography, 36, 1951; South Africa, Report of the Senate Select Committee on the Iron and Steel Industry Bill (Government Printer, Cape Town, Senate SCL/1927/8); South Africa, Board of Trade and Industries Report 286: Investigation into the Iron, Steel, Engineering and Metallurgical Industries of the Union of South Africa (Government Printer, Cape Town, 1946). One short initial survey of the labour process in ISCOR has been published: D. Kaplan and M. Morris, "Labour Policy in a State Corporation: a Case Study of the South African Iron and Steel Corporation", SALB, II, No. 6, January 1976.
- (63) After two rejections by the Senate, a Joint Sitting of both Houses was necessary to pass the bill in 1928. Fears of resulting price rises may well have been justified: see C. S. Richards, Iron and Steel, passim, and D. Kaplan, "Industrial Protection", p. 90.
- (64) In 1928: "It is in the best interest of the Union that an industry for the production of iron and steel from the raw materials of the country should be fostered and developed. The State is justified in giving financial assistance to such an industry. There is no justification for the change to the policy of State control." F. S. Malan, Senate SCL/1927/8, p. xi.
In 1922: "This was essentially a key industry.... Some assistance from the State was necessary.... One suggestion was that the Government should find the money. That could not be done, because complications would arise as to whom it should be given. If they gave it to 'A' it would be asked, why not give it to 'B'. Secondly, having advanced the money the State would become a partner in the industry.... The Government found that that idea was out of the question.... That was the main reason they had decided on the bounty system." F. S. Malan, House of Assembly (Cape Times, 15 July 1922).
- (65) JSCOR, Steel in South Africa, pp. 15-17.
- (66) South Africa, SCL/1927/8, p. vii, paragraph 16.
- (67) Ibid., p. viii, paragraph 23.
- (68) Ibid., p. 50, evidence of J. R. Leisk of Barclay's Dominion Colonial and Overseas Bank.
- (69) SAB: PML/2/162 File 46/5/1/A, SA Iron and Steel Industry 1921; Delfos to Smuts, 20 May 1921.
- (70) C. S. Richards, Iron and Steel, pp. 75-6.

- (71) SAB: PML/2/161 File 46/5, SA Iron and Steel Industry, 1922, J. Leisk, National Bank of South Africa to E. Lane, Prime Minister's Secretary, 16 May 1922. The Smuts government had asked the Trade Facilities Board to waive their demand for state guarantees. Leisk bluntly called this "naive" and lobbied for "some definite and tangible expression of the Union Government's determination to assist in the establishment of an iron and steel industry". His bluntness succeeded: the Bounties Act was passed a few months later.
- (72) South Africa, Report of the State Mining Commission 1916-1918 (Government Printer, Cape Town, UEL/1918), p. 25, paragraph 3.
- (73) SAB: PML/2/161 File 46/5/1922, "Board of Trade and Industries, Report No. 7, Bounties for the Iron and Steel Industry, 23rd June 1922", and H. J. van der Bijl, "Comments by the Scientific and Technical Adviser on the Bill for Payment of Bounties ...", 28th June 1922.
- (74) H. J. van der Bijl, "Comments", 28th June 1922, p. 1.
- (75) SAB PML/2/161, File 46/5/1922, Prime Minister to High Commissioner, 31st August 1922. This telegram was the result of further lobbying by Leisk: see Leisk to Lane, 24th August 1922.
- (76) SAB PML/2/161, File 46/5/1922, Delfos to Romyn, 26th August 1922.
- (77) SAB PML/2/161, File 46/5/1922, Blandenbergh, London, to Lane, 14th September.
- (78) SAB PML/2/161, File 46/5/1922, Lane to Blankenberg, 10th October 1922.
- (79) SAB PML/2/161, File 45/5/1955, Telegram, High Commissioner to Prime Minister, 20th October 1922.
- (80) "BTI Report No. 7 ...", p. 4.
- (81) Ibid., p. 10.
- (82) C. S. Richards, Iron and Steel, p. 1.
- (83) ISCOR, Steel in South Africa, pp. 16-17 and 20.
- (84) Ibid., p. 20. The English Iron Masters were, in the long run, quite correct in their fear of South African competition. In 1977 Britain imposed a very high anti-dumping duty on imports of South African steel reinforcing bars, as ISCOR struggled to earn foreign exchange in the slump following the Angolan invasion and the Soweto killings.
- (85) H. J. van der Bijl, "Scientific Research and Industrial Development", SA Journal of Industries, January 1921, p. 32: "We have reached a stage where it will soon be impossible for any country to maintain its own on industrial grounds unless it is in a position to carry out the research necessary for the development of its own industries."
- (86) See note 55 above, and the following: South Africa, Annual Abridged Departmental Reports, "Report of the Advisory Board of Industries and Science 1916-1923" (Government Printer, Pretoria, UG9/1924); South Africa, Department of Mines and Industries, Industrial Development in South Africa (Government Printer, Pretoria, 1924) (219 pp); South Africa, Report of the Industrial Legislation Commission (GP, Pretoria, UG37/1935); South Africa, Report of the Research Grant Board, 1918-1935 (GP, Pretoria, UG13/1936); South Africa, Board of Trade and Industries Report No. 282: Investigation into the Manufacturing Industries of the Union of South Africa (GP, Cape Town, 1945); South Africa, Board of Trade and Industries Report No. 285: An Analysis of Railway Rating Principles and the Effect of Transport Costs on the Industrial Development of the Union (GP, Cape Town, 1946). Files of the Minister of Mines in the Central Archives Bureau, too numerous to be cited here, contain extensive evidence of the research activities of the state.
- (87) D. Kaplan, "Industrial Protection", p. 75.
- (88) SAB PML/2/162, File 46/6, Reports on Industries Division of Department of Mines and Industries, van der Bijl to F. S. Malan, 2nd March 1923, p. 1.
- (89) See, for example, SAB: MM 460 File 1344/19, Emoluments of Scientific Officers; SAB: MM 483 File 2335/19, Cost of the Journal of Industries; SAB: MM 486 File 2584/19, Cost of the Advisory Board of Industries and Science; SAB: MM 576 File 1926/21, Journal of Industries; SAB: MM 592 File 3014/21, Dr H. J. van der Bijl re Scholarships and Loans; SAB: MM 634 File 293/22, Abolition of Advisory Board of Industries and Science; SAB: MM 636 File 2948/22, Amalgamation of Journal

of Industries and Agricultural Journal; SAB: MM 637 File 2950/22, Reorganisation of the Department of Mines and Industries.

- (90) E. Hobsbawm, Industry and Empire, p. 212. He is writing of the great depression but the analysis applies equally to the 1922 slump.
- (91) D. Kaplan, "Industrial Protection", p. 76, quoting Smuts: "Freetraders and Protectionists forgather in our camp."
- (92) United Kingdom, Department of Overseas Trade, Report on the Economic Conditions in South Africa for the period ending July 1923 (HMSO, London, 1923), p. 37. "... the Government has pledged, while not undertaking wholesale tariff revision, to select each session ten or a dozen industries for assistance. Those selected for this year were: Carbide; confectionery, jams, jellies and honey; Grain milling; Condensed Milk; Wrapping Paper; Boots and Shoes; Plywood; Asbestos Cement Products; Metal Sheets, lithographed, printed or embossed; Paints and colours; Detonators; Acetylene Lamps. (The eleven Reports issued by the Department of Overseas Trade covering the period from 1921 to 1954 are a sadly neglected source in South African economic history.)
- (93) C. S. Richards, Iron and Steel, Appendix 6.
- (94) Hoy to Dominions Royal Commission, p. 114, questions 2425 to 2431; question 2426: "the number of classes that benefit from preferential rates has been reduced from 150 to 26." (1914)
- (95) South Africa, BTI No. 285: Railway Rating, p. 21: "Others have, however, been added from time to time and there are today still about 80 preferential rates in operation." (1946)
- (96) SAB, PML/2/161 File 46/5/1922, "BTI Report No. 7, Bounties for the Iron and Steel Industry", p. 3: "It remains true that the important inland market is strongly entrenched behind our railway rates." (1922)
- (97) South Africa, Report of the Low Grade Ore Commission 1930 (GP, Pretoria, UEL6/1932), pp. 61-62. Percentage of customs duty on mining imports was 5.3%, compared to a general incidence of 13% on imports as a whole. The duty on petrol will account for part of the difference.
- (98) South Africa, Board of Trade and Industries, Report 290: the SA Blanket Manufacturing Industry (GP, Pretoria, 1947), p. 2: "Tariff from 1925 amounted to practically 100% on cost of Manchester blankets and 75% on kaffir sheeting." This report clearly shows the numerous pitfalls in the road to industrialization via protection.
- (99) Figures from United Kingdom, Department of Overseas Trade, Reports on ... South Africa, 1931, pp. 40 and 41; 1936, p. 56.
- (100) Ibid., 1936, p. 56.
- (101) Ibid., 1945, p. 6.
- (102) South Africa, Low Grade Ore Commission, p. 62.
- (103) I. M. Drummond, Imperial Economic Policy 1917-1939 (Unwin, London, 1975), p. 245.
- (104) South Africa, Low Grade Ore Commission, p. 19. See also SAB: PML/1/422 File 3/22 (Fifteen Volumes), The 1922 Strike. It is very far from inconceivable that the strike was forced by the Chamber of Mines and the VFTPC.
- (105) Ratios calculated from figures in Transvaal Chamber of Mines Annual Reports 1920-1925 and GME Annual Reports 1920-1925.
- (106) See the extensive debates on gold sales and the SA Mint in SAB MM573 File 1732/21. The SA Mint, the Exchange Problem and the Price of Gold.
- (107) D. Innes, "The Mining Industry", op. cit., passim; D. Kaplan, "The South African State in the Fusion Period", op. cit., p. 157, note 3; N. Poulantzas, Political Power and Social Classes, passim; N. Poulantzas, Classes in Contemporary Capitalism, p. 97: "On a terrain of political domination occupied by several classes and class fractions and divided by internal contradictions, the capitalist state, while predominantly representing the interests of the hegemonic class or fraction (itself variable) enjoys a relative autonomy with respect to that class and fraction as well as to the other classes and fractions of the power bloc. One reason for this is that its task is to ensure the

general political interest of the power bloc as a whole, organizing the 'unstable equilibrium of compromise' (Gramsci) among its components under the leadership of the hegemonic class or fraction."

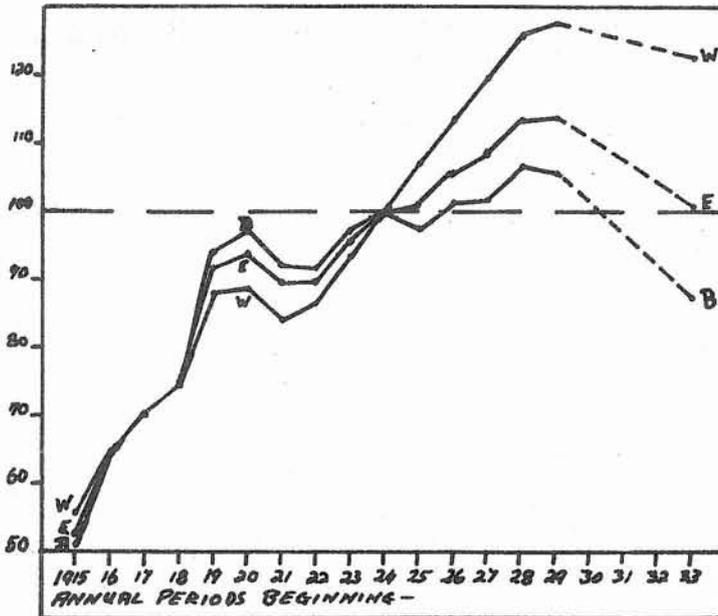
- (108) "Memorandum by Colonel Cresswell", 1924, in D. W. Krüger, South African Parties and Policies 1910-1960 (Bowes and Bowes, London, 1960), p. 76.

Abbreviations:

SAB	Central Archive Bureau, Pretoria.
MM	Archive of the Secretary to the Minister of Mines
PM	Archive of the Secretary to the Prime Minister
GP	Government Printer
GME	Government Mining Engineer
UCT	University of Cape Town
WITS	University of the Witwatersrand, Johannesburg.
WUP	Witwatersrand University Press
SAISC	South African Iron and Steel Corporation Limited
SAS	Archive of the Secretary to the Ministry of Railways and Harbours
JSAIE	Journal of the South African Institute of Engineers.

S.A. INDUSTRIALISATION

EXCLUDING MINING AND AGRICULTURAL INDUSTRIES.



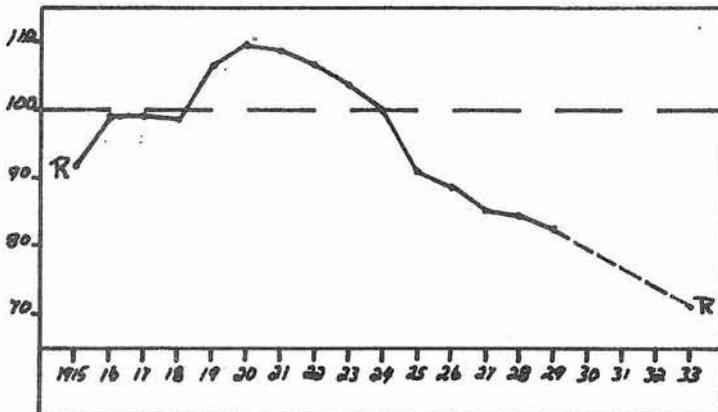
EE = INDEX OF INDUSTRIAL EMPLOYMENT

WW = INDEX OF WHITE INDUSTRIAL EMPLOYMENT

BB = INDEX OF BLACK INDUSTRIAL EMPLOYMENT

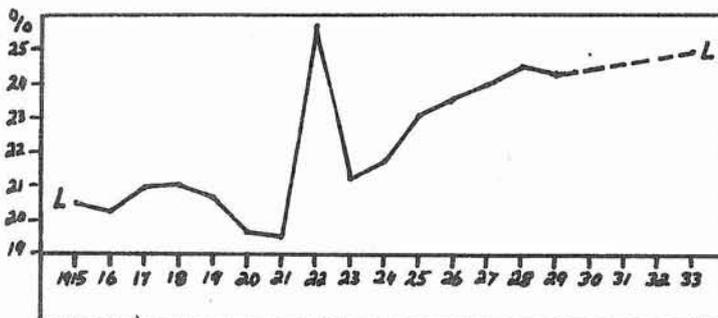
1924/5 = 100

NO CENSUS 1930-32



RR = INDEX OF THE RATIO OF BLACK TO WHITE INDUSTRIAL EMPLOYMENT

1924/5 = 100



LL = AVERAGE BLACK EARNINGS AS A PERCENTAGE OF AVERAGE WHITE EARNINGS, BOTH AT CURRENT PRICES.

NOTE: BECAUSE OF THE STRIKE, 1922 GIVES A FALSE IMPRESSION OF RELATIVE WAGE RATES IN THAT YEAR.

source: FIGURES CALCULATED FROM SOUTH AFRICA, REPORT OF THE INDUSTRIAL LEGISLATION COMMISSION 4637/1935: PAGE 12: "COMPARATIVE STATEMENT OF INDUSTRIALISATION 1915-1930"