

FIG. 63.
SKETS. 63.

WALSCHAERTS VALVE GEAR.
WALSCHAERTS - KLEPWERK.

Die skër is in die tekening gearseer (shaded).

BYVOEGSEL BETREFFENDE DIE “SCHAARBEWEGING”

Kyk die bygaande konstruksietekening van lokomotiefonderdele

Die “schaarbeweging” is my verduidelik deur Mnr. R. Searle te Irene, lid van die Bewaringsgroep van die Suid-Afrikaanse Spoorwegvereniging. Hy het ook die bygaande konstruksietekening verskaf. Daarop is die bedoelde “schaar” aangedui as “skêr”, Engels “expansion link”, gearseer (shaded). Deur die vertikale “verstelskakel” omhoog te trek word via die onderste wielstand - die dryfstang - die wielbeweging ’n voorwaartse. Deur die verstelskakel omlaag te druk word die wielbeweging ’n agterwaartse, d.w.s. die lokomotief (“lok”) ry agteruit.

Die skêr of klepwerktuig is uitgevind deur die Belg Walschaert en sedert die jare 1890 op die Europese vasteland toegepas, onder meer op die NZASM-loks. Die Britse spoorweë, waaronder ook die spoorweë in die Kaapkolonie, Natal en die Oranje-Vrystaat, het die Stephenson-klepwerktuig toegepas. Die Suid-Afrikaanse Spoorweë wat in 1910 uit die provinsiale spoorweë ontstaan het, het ook die Walschaertskêr toegepas.

Tydens die terugtog van die republikeinse strydkragte in 1900 het die NZASM-personeel gewoonlik die loks en spoorwaens nie almal verniel nie, maar die loks onbruikbaar gemaak deur ’n paar onderdele weg te neem en na die hoofkantoor in Pretoria te stuur of weg te steek. Ir. Th. Steinmetz en Ir. M. Middellberg van die NZASM vermeld in hul verslae oor die oorlogstyd die verwydering van die “schaarbeweging”. Slegs by die ontruiming van Komatipoort in September 1900, die grensstasie, aan die einde van die gereëde oorlog, het grootskaalse, hoewel onvolledige, vernieling van loks en spoorwaens deur NZASM-personeel en kommando’s plaasgevind.

Die *Report of the Transvaal Concessions Commission deeds*, 19 April 1901, presented to both Houses of Parliament of His Majesty, June 1901, verwys op p. 49, 52 en 53 na die verwydering en wegsteek van die skêr van NZASM-loks. Op p. 49 sê getuie Charles H. toe Water dat hy volgens opdrag in Johannesburg in Mei 1900 van twee NZASM-loks onderdele weggeneem het om weg te stuur en dat hy beslis weier om te sê waarheen. Die skêr is waarskynlik onder die verwyderde onderdele wat op p. 53 deur NZASM-werknemer Jacob ’t Hart aangedui is as “two kleppen, rare injektors, two stoomraalten (?), 2 excentriek stangen, two slingerstangen”. In die spelling van hierdie benamings is ongetwyfeld foute.

Tydens of na die oorlog het die Britte die NZASM-loks weer op gang gebring deur die ontbrekende onderdele, onder meer die skêr, te vervang, (A) deur die opgespoorde onderdele weer in te sit, of (B) hulle na te maak, of (C) hulle van lokfabrieke in Duitsland, waar hulle vervaardig was, te verkry.

Die skêrbeweging het nog ’n tweede belangrike funksie wat Mnr. R. Searle my verduidelik het. Dit is die reëling van die stoomtoevoer na die suiersilinders. Wanneer die lok vinnig beweeg, is veel minder stoom nodig om die suiers aan te dryf as by stadige spoed aan die lok. Met die skêrbeweging kan dus baie stoom en brandstof bespaar word. Meer besonderhede word hier weggelaat om te veel tegniese uitvoerigheid te vermy.

C. de Jong

SOUTHERN AFRICA

Trunk Railways in the 1890's

Cape Government Railway Systems

Eastern: East London to Bethulie 314 Miles
 Midland: Port Elizabeth to De Aar 339 Miles
 Western: Cape Town to Vryburg 774 Miles

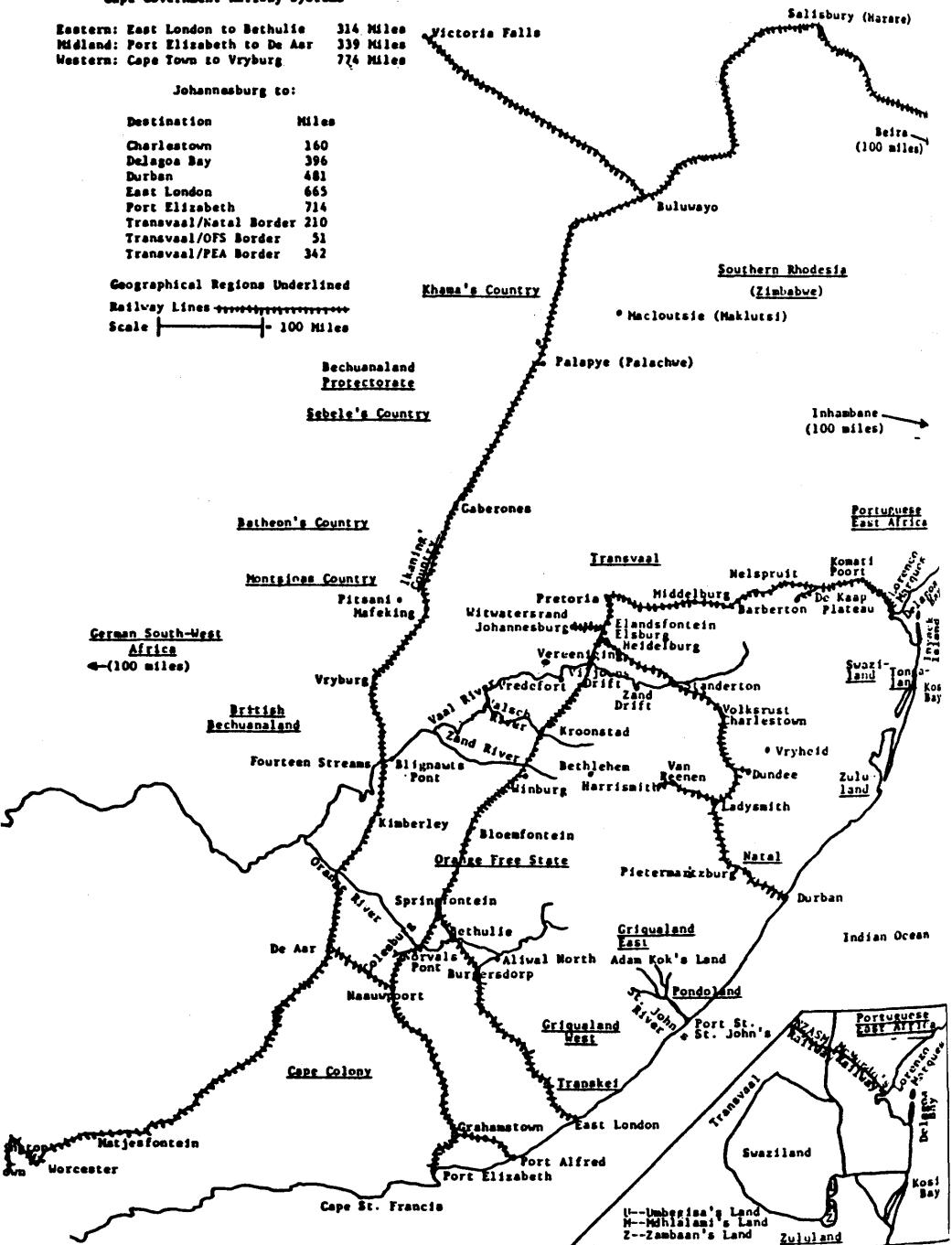
Johannesburg to:

Destination	Miles
Charlestown	160
Delagoa Bay	396
Durban	481
East London	665
Port Elizabeth	714
Transvaal/Natal Border	210
Transvaal/OFS Border	51
Transvaal/FEA Border	342

Geographical Regions Underlined

Railway Lines 100 Miles

Scale 100 Miles



U--Umberisa's Land
 M--Mhisiyani's Land
 Z--Zambana's Land

**Cecil Rhodes, James Sivewright, and Paul Kruger:
The Nature of Railway Diplomacy in South Africa, 1890-1892**

by

**Dr. Kenneth E. Wilburn
East Carolina University
Greenville, North Carolina, U.S.A.**

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Throughout most of the nineteenth century British imperial power in South Africa increased. One effect of this growing influence was political and economic alienation between Boer and Briton. At first British control through Anglo/Boer conventions appeared quite adequate to thwart impoverished, fundamentalist pastoralists seeking independence. Then quite suddenly gold was discovered in 1886 on the Witwatersrand. Since the effects of gold mining soon began transferring economic and political power to republican Pretoria at the expense of colonial Cape Town, British imperialists took notice of the Transvaal's startling transformation. Foiling the Boer quest for independence now needed more substance than weak, unclear convention clauses. Some Cape colonials believed railways provided the imperial means to thwart that Transvaal goal. Ironically, some Transvaal republicans believed railways would free them from British imperialism. Railway diplomacy, which is defined as using railway construction, ownership, and operation as factors in conducting relations between Great Britain and South African colonies and republics on the one hand, and between South African colonies and republics on the otherhand, quite clearly was seen by Boer and Briton alike as a potent force in the struggle for supremacy in late nineteenth century South Africa.

Cecil Rhodes of the Cape Colony. The nature of Rhodes' motives in supporting the extension of British imperialism in southern Africa remains a matter of controversy. Whether Rhodes promoted British expansion for selfish, altruistic, or a combination of such reasons, he was certainly a commercial imperialist par excellence for Whitehall. During Rhodes' premiership, Great Britain received empire on the cheap in South Africa. Connecting Cape railways with Johannesburg was a critical tactic within Rhodes' imperial strategy.

What an able opponent Rhodes had in Transvaal President Paul Kruger. The old, formally uneducated Voortrekker, initially incensed with the influx of gold-seeking foreigners into the agrarian Transvaal, soon cleverly grasped his opportunity. Like an alchemist in reverse, Kruger began converting the curse of gold into the blessing of independence. The livelihood of taxing the economic life of the mining community created an expanded powerbase for Kruger. The irony of Kruger's growing economic and political might, which he hoped to use to achieve Boer independence, was that it was partly fed by British capital. If Kruger could connect a Transvaal railway to a port outside British control, such as Lourenço Marques in Portuguese East Africa, he would be able to loosen the tightening British noose around his Republic.

Once Whitehall and Rhodes began to appreciate the consequences of the vast gold reserves of Kruger's Witwatersrand, the struggle between British imperialism and Boer republicanism began in earnest. It was an important struggle in

the life of the British Empire. Any alternative to British rule in South Africa would dash British prestige around the globe. Certainly the independent-minded, pastoral Transvaal would be no match for the powerful British Empire. One important imperial tactic to maintain British rule in South Africa, very useful since force was absent, was railway diplomacy carried out through the impetus of Rhodes. Yet it was a tactic which would prove no surprise to Kruger. From the beginning both leaders understood the potential of railway diplomacy in their struggle for control of South Africa.

One effective measurement of that potential can be seen in comparing railway statistics with other sectors of revenue in South Africa. By comparing railway capital with mining capital, with colonial and republican debt, and with colonial and republican revenue, three revealing statistical models can be created and analyzed.

In the first informative model mining and railway capitalization statistics are compared. In 1891 the accumulated total capital in large mines (small ones were of little importance) was £14,192,186.¹ Railway capital expenditure in South Africa in that year had reached £16,686,731 in the Cape, £4,528,242 in Natal, and £2,068,583 in the Transvaal totalling £23,283,556.² Until 1896 Orange Free State railways were capitalized, constructed, and run through concessions given to the governments of the Cape and Natal. One can see then that on the eve of the Sivewright Agreement in late 1891 railway investment in South Africa was 60,95% greater than mining.

Another statistical model which reveals the significance of railways in South Africa is the comparison of railway capital invested with colonial and republican debt. In 1891 Cape railway capital invested totalling £16,686,731 was 67,2% of the Cape's total debt of £24,839,167. Natal's £4,528,242 in railway capital invested was 63,2% of her colonial debt of £7,170,354.³ The Transvaal's ratio was similar. Her railway capital in 1891 reached £2,068,583 and was 68,9% of her republican debt of about £3,000,000.⁴ Until 1896 when the Orange Free State began buying the railway concessions she had permitted the Cape and Natal to run, railway capital invested was not a significant part of that republic's debt. The considerable economic importance of South African railways is again clearly visible.

The third statistical perspective showing the importance of railway economics is the comparison of colonial and republican revenue of 1891 with total railway capital invested. In 1891 the Cape's total railway capital invested of £16,686,731 was 406% greater than her revenue of £4,112,042 (30 June 1890 - 30 June 1891).⁵ Natal's total railway capital invested of £4,528,242 was 344% more than her revenue of £1,318,769 (30 June 1890 - 30 June 1891).⁶ The railway capital of the Transvaal, £2,068,583, was 214% greater than that republic's income of £967,191.⁷ After excluding the statistically insignificant Orange Free State, whose 1890-1891 revenue was £378,000 in the absence of railway expenditure,⁸ one can see that South African railway capital expenditure of £23,283,556 was 364% of South Africa's income of £6,398,002 in 1891. Seen collectively, these three statistical models - railway capital/mining capital, railway capital/colonial and republican debt, and railway capital/annual colonial and republican revenue - illustrate the enormous economic investment in rail-

ways in South Africa, and the absolute necessity of making them profitable. Since profits were so important, it is easy to understand why railways became common means to promote local ends and tools to achieve imperial aims.

A critical feature of railways in South Africa, which contributed to their paramount importance, was their interdependent relationship with mining. As Witwatersrand gold became increasingly encased in pyrite and plunged ever deeper into the earth, it became quite obvious that heavy mining equipment, which only railways could transport, was urgently needed. Trunk railway lines would also bring in complementary supplies and foodstuffs for the rapidly increasing Witwatersrand population much more quickly than the conveyer.* Just as the prosperity of the mining community required trunk railway connexion, so the heavily capitalized colonial and republican railways needed the Johannesburg terminus in order to turn a profit. It was hoped by colonial and republican officials that revenue collected from transit rates and customs duties on trunk lines to the Witwatersrand would subsidize the construction and running of rural local lines which primarily served agriculture.

The bond between South African mines and railways grew stronger as the end of 1891 approached. Whoever mastered that bond stood to gain economic and political control of South Africa. Both Kruger and Rhodes knew this, and both formulated an intricate strategy of railway diplomacy. If Rhodes could control the ports of southern Africa, he would control the transit trade to the Transvaal. If Kruger could gain access to the Portuguese port of Lourenço Marques, he would break the growing grip the imperial factor had on his Republic. Alternatively, there were some South African statesmen, especially in the Cape and Orange Free State, who hoped this struggle would give way to a South African federation created by South Africans. Few occurrences in late nineteenth century South Africa held any promise for colonial and republican union. Given the antagonistic ambitions of both the Boers and the British, this is not surprising.

As the 1890's began, each competing group hoped the accelerating change brought about by the mining and transportation revolutions would serve its goals. As the Anglo-Boer rivalry intensified during the 1890's, the identity of the victor hung in the balance. Colonial and republican jealousies, separate ethnic destinies and greed had already destroyed earlier attempts, all born of economic hardship, to create South African union. What would prove to be the last substantive chance to promote peaceful union was also produced by economic duress; this time the nature of South African railways was at stake as 1890 broke. What was considered nigh impossible seemed at hand - a colonial Cape/republican Transvaal railway agreement which could easily include Natal and the Orange Free State. While admitting that the journey would be precarious, would South African politicians ride the iron horse to union? It is this opportunity, created by political and economic forces inside and outside South Africa, and its fruition, through raising the funds in either London or South Africa, which are the subjects of this investigation. Whether eventually promo-

*conveyer (transport driver)

ting union or separation, the Sivewright Agreement would prove to be a major turning point.

From 1882-1886 South Africa experienced an economic depression. During this period of financial deterioration, the Transvaal's economy became weaker. Revenue declined 6,9% from £174,000 in 1880 to £162,000 in 1884-1885.⁹ The more solvent Cape suffered a worse recession. Cape revenue in 1882 was £3,525,472; but by 1886 it had slipped 12.2% to £3,095,842.¹⁰ The Cape's larger capital base, Afrikaner population and British support convinced Kruger to send feelers on three separate occasions to establish Cape/Transvaal trading links. In 1884 contact with the Cape was made through Transvaal allies to establish free trade in South African produce, but it came to nothing.¹¹ In 1885 Sammy Marks, a Lithuanian immigrant and friend of Kruger's, negotiated unofficially for the Transvaal with the Cape. This attempt also met with failure.¹² Finally, about nine months before gold discoveries altered the character of Kruger's republic, the Chief Justice of the Transvaal, Johannes Kotzé, conducted negotiations with the Cape cabinet minister, John Gordon Sprigg, regarding a customs union, free trade in South African produce, and railway extension from Kimberley to Pretoria.¹³ This Transvaal effort met the same rebuff from the Cape as the earlier two. Kruger never forgot the treatment his beleaguered Boer Republic received at the hands of the British colony.

Natal and the Orange Free State fared little better during the depression. In 1882 Natal's revenue had reached £657,738, but by 1886 it had shrunk 8,75% to £600,178.¹⁴ In 1882-1883 the revenue of the Orange Free State was approximately £212,000.¹⁵ Since Bloemfontein depended on colonial and Transvaal trade for much of her revenue, she proved no exception to the South African recession of 1882-1886. Due to geographical, economic, and political circumstances, neither Natal nor the Orange Free State could provide the financial assistance the Transvaal needed; thus, Kruger's aid in South Africa had to come from Cape Town.

After the discovery of gold, and the new income from taxing it began to fill Pretoria's coffers, previously meagre, Kruger's tactics to achieve independence gathered substance. As deep level gold proved itself and new extraction processes were created during the 1890's, Kruger increasingly absorbed the political and economic power from the once mighty Cape. To secure this new strength, Kruger began in earnest to fulfill the decades-old Boer dream of a railway and seaport free from British influence. Prior to the discovery of gold, efforts of Transvaal officials searching for assistance in Europe had met with little success. After 1886 European investors were more willing to risk their capital in the railway development of the Transvaal. Continental investors were particularly sought by Kruger to counterbalance British capital on the Witwatersrand. Completing the Johannesburg/Pretoria/Lourenço Marques line and securing the lease or ownership of Johannesburg's natural seaport and trunk railway terminus, Lourenço Marques, were Kruger's tactics to independence. To help satisfy his goals the Transvaal Volksraad awarded the concession to construct railways in the Transvaal to the Nederlandsche Zuid-Afrikaansche Spoorweg-Maatschappij (NZASM) in August 1884.¹⁶ The predomi-

nately Dutch company, which also had Transvaal and German directors on its board, but no Britons, was finally floated in June 1887.¹⁷ The Witwatersrand gold rush had subsequently added profit potential to political sentiment.

One of the first tasks of the NZASM was to negotiate a through-rates agreement with the concessionaire of the fifty-four mile Lourenço Marques/Transvaal frontier section of the trunk line. During lengthy, curious negotiations between the NZASM and the American, Edward McMurdo, no through-rates agreement connecting their respective sections of the trunk line was ever reached. Instead, two secret agreements between Portuguese and Transvaal officials in May 1884 and July 1886 undermined the McMurdo Concession and contributed to the failure of through-rates negotiations.¹⁸ McMurdo's untimely death in May 1889 was followed in June by the Portuguese expropriation of the concession. Litigation pursued by McMurdo's heiress and British investors was finally resolved in 1900 by the Swiss Tribunal which ruled against Lisbon.¹⁹

In early September 1889 the NZASM and the Portuguese came to a through-rates and customs tariff agreement. Now that Pretoria and the NZASM no longer had to fear excessive railway and customs rates on the Portuguese section of the trunk line, railway construction by the NZASM on the Transvaal section of the line could at last begin in earnest. Much work needed to be done. The Johannesburg/Pretoria/Portuguese East Africa frontier line, being constructed by the NZASM, was almost non-existent as late as the end of 1891. From the frontier it was only operating 21,7 miles into the Transvaal, leaving 320 miles still to be constructed. Yet, including the short coal line, the Rand Tram, the capital of the NZASM had reached £2,068,585 by 31 December 1891.²⁰ No line had been laid towards Pretoria from Johannesburg nor from Pretoria towards Delagoa Bay. In contrast, the Lourenço Marques/Transvaal frontier line of the former McMurdo Concession, while needing some improvements, had been constructed.

During Kruger's search for European investors to finance his trunk line east, he opposed the extension of railways from the Cape and Natal into the Transvaal. He did not want colonial lines to preempt the lion's share of the Transvaal transit trade. As a result, railway construction on provincial lines to the South had stalled. The Cape line, which from East London would stretch 665 miles to Johannesburg, had reached 412 miles to Bloemfontein in December 1890 and had not moved forward for a year. The Cape's railway capital was almost £25 million in June 1891.²¹ The projected trunk line of Natal, the other competing colonial line vying for the goldfields, had just reached Charlestown from Durban in October 1891 and had 160 miles of construction left before arriving at Johannesburg. Like the Cape line, it could progress no further without Paul Kruger's assent. Natal's railway capital was £3,650,591 at the end of 1891.²² Except for the former McMurdo Concession's line, now Lisbon's section of the Johannesburg/Lourenço Marques trunk line, all had much construction left; the NZASM had barely broken ground.

By the end of 1890 the initial prosperity created by the gold rush had ended. The Transvaal Government reached a cash-flow crisis. This was partly due to the Republic's guaranteed dividend payments of at least £45,000 per

annum²³ on its section of the Delagoa Bay line for which it and the NZASM had borrowed. The Transvaal Government not only paid interest on a state debt of about £3 million, it also disbursed fixed charges and salaries which had increased 327.5% from £99,084 in 1887 to £324,520 in 1890.²⁴ The high cost of living in Johannesburg, the depression in the Transvaal, political grievances of foreigners and burgher opposition to alleged NZASM corruption all put pressure on Kruger to quickly connect the ports and mining center with a railway.²⁵

Yet from whence was the money to come? The Transvaal's economic and political problems did not encourage European investors to support the NZASM or Kruger's Transvaal. The rapidly growing Transvaal deficit for the first 6 months of 1891 was £182,000²⁶ following the £182,394 deficit for all of 1890.²⁷ Investors believed that the NZASM would not be profitable because of transshipments, an unhealthy climate at Lourenço Marques, Portuguese inefficiency, lack of direct steamer connexion with Europe, the high construction cost of £9,600 per mile, and the insufficiently recovered European money and share markets previously beset by the November 1890 Baring Crisis.²⁸ England and the Continent were unlikely sources. Kruger's options were narrowing.

By mid-1891 the Transvaal's financial position had deteriorated so far that rumours of imminent bankruptcy of the dependent NZASM were rife. Before the Transvaal and European monetary crises had occurred, the NZASM had offered to issue debentures for the total sum required to complete construction at £90 with 4% interest. Kruger chose instead to raise funds as each section was completed in order to keep better control over expenditure. Much of the NZASM's financial problems stemmed from this decision.²⁹

The liquidity crisis of the Transvaal and the NZASM was temporarily relieved in June 1891. A group of Continental capitalists granted a one-year £600,350 loan bearing 6% interest with a 1% commission added for each 6 month renewal. Known as the Advance Syndicate, many of its members held founders shares in the NZASM.³⁰ Secured on the loan was £1 million in NZASM £100 debentures, Transvaal Government guaranteed, bearing 5% interest.³¹ The members of the Advance Syndicate were Dutch, German, and Transvaal capitalists contributing 50%, 47% and 3% of the loan respectively.³²

Although the Advance Syndicate flotation, underwritten by Labouchère, Oyens and Company, did not return European investor confidence in the Transvaal, it seemed to give Kruger some time to secure the larger sum necessary to complete his trunk line east. At the end of July 1891 the Volksraad approved the floating of a loan of £1.3 million at 4½%³³ Kruger appointed Baron Eugène Oppenheim, Transvaal Consul General in France, as the Transvaal agent to raise a French-based loan. Reputed to be influential in French money circles, Oppenheim assured Kruger that a French loan, probably raised by The Banque de France,³⁴ was a foregone conclusion. French capital appealed to Kruger as a way to counterbalance Dutch, German, and English investment already in the Transvaal.³⁵

Kruger's appointment of Oppenheim ran into immediate opposition from the Transvaal's recently created National Bank. Its concession had previously

granted it the privilege of raising all Transvaal loans.³⁶ The members of the National Bank's Board of Directors acted to protect their business interests and the credit of the Republic by protesting Kruger's action. During the negotiations between the Board and Kruger, the representative of Hermann Eckstein and Company on the Board, James B. Taylor, shared much of his information regarding the Transvaal's financial status with the Cape Prime Minister, Cecil Rhodes. Alfred Beit, the long-time friend and business associate of Rhodes, ran the London-based Wernher, Beit and Company to which Hermann Eckstein and Company was attached as its Johannesburg agency. It was through Eckstein's involvement with the National Bank that excellent, analytic records were kept of the financial negotiations between Kruger and capitalists from South Africa and Europe to raise funds for the Johannesburg/Pretoria/Transvaal frontier railway line.

As the bickering continued in Pretoria and the Oppenheim negotiations in France began to falter, an interested observer down South was waiting to move. Rhodes had previously informed the National Bank that it could place the loan with the Cape, should Oppenheim fail.³⁷ In June 1891 Rhodes had unsuccessfully attempted to bring the Eckstein mining house and Rothschild financial house together to raise the necessary funds to construct Kruger's "little hobby".³⁸ It is quite clear that in the last months leading up to the Sivewright Agreement Rhodes was using Kruger's loan predicament as a lever to promote railway connexion with the Cape.

By early October 1891 Oppenheim's financial mission in France had failed. Wernher, Beit and Company argued that European capitalists considered Oppenheim's methods farcical, international money markets presently took up only first rate securities, the Transvaal had little security as its customs revenue was already pledged to the NZASM, financiers wanted Transvaal-NZASM affairs separated. The Transvaal had to be persuaded to connect with colonial railways since the cost of the Delagoa Bay line was too expensive to pay, few wanted to support Kruger's "arbitrary and corrupt" rule and the German competitors of the NZASM's German supporters at home did not want to relieve pressure.³⁹

It was obvious by early October that a £1 million loan to repay the Advance Syndicate and construct public works was necessary.⁴⁰ To avoid a gold tax Wernher, Beit and Company suggested that Eckstein and Company investigate the possibility of helping the Transvaal raise £1-3 million for railway construction and NZASM expropriation, but not to assist the Transvaal in its quest to purchase Delagoa Bay from the Portuguese.⁴¹ This was in line with Rhodes' views who was himself negotiating towards a British purchase in an imperial effort to encircle Kruger's Republic. In November 1891 Wernher met with the financial house of Labouchère, strong supporters of the NZASM, and with Schroeder's financial house on the Continent, but nothing could be done. It was obvious from the failure of a Russian issue and the sale of Portuguese, Spanish, Italian, Greek and South American bonds that the European market was glutted.⁴² Further enquiries in late November and early December 1891 by Alfred Beit turned up nothing.⁴³ There were too many sellers in the Euro-