

tells the story of NZASM Court, its restoration and its opening or rather rehabilitation on 6 November 1981. (See photo on page 7).

## 9. GRAVES

A few NZASM employees are buried in Pretoria's Old Cemetery, but most of them were lain to rest in a special cemetery not far from the Salvokop township. The most important grave in the Old Cemetery is that of C.W. Verloop.

For the first few years the NZASM had, besides its head-office, only a Construction Department (Afdeling Aanleg), led by a Chief Engineer. By 1890, however, it was not only the Delagoa Bay Railway which was under construction, but also the Rand Tram between Krugersdorp and Springs, and the Southern Line between Vereeniging and Pretoria. It became necessary to create a new Department, solely charged with the operation of the completed railway

The NZASM was very fortunate to find Cornelis Willem Verloop to fill the newly created post of Chief Traffic Manager (Chef der Exploitatie). Verloop had been Traffic Manager of the former Nederlandsche Rhijnspoorweg-Maatschappij for 25 years. He and his family moved to Pretoria at the end of 1890.

Verloop was only for a period of three years the NZASM's Chief Traffic Manager. On 12 October 1893 he died in Pretoria. During his short term of office Verloop had proved his worth, and helped the NZASM through very difficult years of development and expansion.

A large gravestone marks Verloop's last place of rest, bearing the following inscription: "Hier rust / Cornelis Willem Verloop / in leven / Chef der Exploitatie der / Nederlandsche Zuid-Afrikaansche / Spoorweg-Maatschappij / geb. 4 april 1844 te Utrecht / overl. 12 oktober 1893 te Pretoria".

Another important grave, though not of a NZASM employee, is that of J.S. Smit and his wife.

The Transvaal Government created the post of "Regeerings-Commissaris voor Spoorwegen" soon after the NZASM was founded. This official represented the Government on the NZASM's managing board in Pretoria. The first Commissioner was dr. W.J. Leyds. He was succeeded in 1892 by Jacobus Stephanus Smit, born in Pietermaritzburg on 5 September 1845.

During his term of office Smit proved to be a staunch supporter of the NZASM, protecting the company against unfair competition or criticism whenever he could. Smit died at Pretoria on 3 April 1904. His wife Maria Christina Francina Smit née Meyer (3.7.1856 - 9.6.11918) lies buried beside him.

# THE STORY OF 'ROOS'

by R. Searle

## 1. A PLACE IN HISTORY

On the 16th of February 1971 the South African Railways (SAR) acquired a venerable steam locomotive for its museum, having exchanged it for a larger and more modern machine. The SAR had good reason for this apparently one-sided exchange. This locomotive was 'Roos', the first of a series of 175 locomotives acquired by the NZASM to operate on the Pretoria - Delagoa Bay line. 'Roos' is the subject of this story and the narrative is linked closely to the persistent striving of the Zuid-Afrikaansche Republiek and her state president Paul Kruger to establish a railway line from the landlocked Transvaal to the Portuguese-controlled Delagoa Bay on the eastern seaboard of South Africa. President Kruger was of the firm opinion that political independence for the Transvaal would be assured only if the Republic became independent of the rail transport and harbour facilities of her two neighbouring British Colonies, i.e. Natal and the Cape of Good Hope. As Britain's empire building presented a threat on her very doorstep, the Republic attached great significance to the establishment of the Pretoria - Delagoa Bay railway line. Discovery of an immensely rich gold reef on the Ridge of the white waters gave added momentum to the rapid development of the rail network.

## 2. THE WAY TO THE SEA

2.1 Efforts on the part of president T.F. Burgers to establish a railway - 1872 to 1883, Annexation time and aftermath.

### 2.1.1 Destitute republic - Discovery of gold in 1870

The ZAR was close to destitution until the discovery in 1870 of alluvial gold at Mac-Mac and Pilgrim's Rest. The close proximity of these gold fields to Lourenço Marques, situated in Delagoa Bay, underlined the growing importance of this harbour to the Transvaal.

### 2.1.2 Granting of the first railway concession - 1872 to 1873

In 1872 one George Moodie submitted his plan for a rail link between Transvaal and Lourenço Marques to state president Thomas F. Burgers of the Transvaal. The Volksraad (Parliament) of the ZAR approved the plan in 1873 and granted Moodie a concession to construct a railway line.

### 2.1.3 No progress - 1874 to 1877

Due to a dispute between Great Britain and Portugal as to who owned Delagoa Bay, and Moodie's inability to obtain the necessary capital funds, the concession was allowed to lapse.

Exploitation of alluvial gold had relieved the worst indigence of the Transvalers but war against Sekhukhune, chief of the Pedi, intervened in the attempts of president Burgers to establish a state railway.

Although this had proved a failure in the case of Moodie, concession granting was to form the basis for railway development in the ZAR.

#### 2.1.4 Annexion of the Transvaal and the British occupation 1877 to 1881

The arbitrator in the Delagoa Bay dispute, Mac Mahon, gave judgement in favour of Portugal in 1875. Great Britain wished to prevent the Transvaal from obtaining an outlet to the sea and annexed the ZAR in 1877.

Railway development in the Transvaal was discontinued during the British occupation until civil government was restored to the ZAR. The British Colonies, the Cape of Good Hope and Natal, on the other hand, developed their railway systems far into the interior during his time.

#### 2.1.5 Consideration of railway concessions - 1882 to 1883

The Volksraad of the Transvaal had received a number of applications from prospective railway concessionaries and appointed a Railway Commission in 1882 to investigate the feasibility of a railway to Delagoa Bay. No progress was made and the commission was dissolved in 1883.

### 2.2 Railway policy of the ZAR and of state president Paul Kruger - 1883 to 1899

#### 2.2.1 Surveying a route - 1883

The Portuguese were very interested in the Delagoa Bay railway and co-operated with the Transvaal Government. Machado, a Portuguese military officer, was commissioned in 1883 to establish and survey a route for the proposed line. He acquitted himself extremely well and mapped out the route the railway line would eventually follow. The Portuguese Government granted the concession for the building of this railway from Lourenço Marques to the Transvaal border to one McMurdo.

### 2.2.2 Granting of the railway concession - 1883 to 1884

The ZAR sent a deputation to England in 1883, the major purpose of which was to effect changes in the terms of the Convention of Pretoria, (the peace treaty that ended the British annexation). Delegates also succeeded in generating a certain amount of interest in the Netherlands for the construction of a railway line to Delagoa Bay. A group of Netherlands entrepreneurs accepted the project and were granted a concession by the Transvaal Volksraad in 1884 to construct and operate a railway from Pretoria to Mozambique.

### 2.2.3 A long road to the establishment of the NZASM - 1884 to 1887

Three years were to elapse before the group of Netherlands entrepreneurs to whom the concession was granted were able to establish the Nederlandsche Zuid-Afrikaansche Spoorweg-Maatschappij on June 21, 1887.

During this period president Kruger came under pressure to establish railway facilities in the Transvaal. The requirements of the rapidly developing gold fields in the Eastern Transvaal had become a matter of urgency and the need for transport intensified after the world's richest goldfield was discovered on the Witwatersrand in 1886. The Government of the Cape of Good Hope, and to a lesser degree that of Natal, did their utmost to persuade president Kruger to abandon his plans for a railway line to Delagoa Bay and to link up with their network instead. President Kruger, however, remained firmly committed to his point of view, namely that a neutral outlet to the sea was essential to political independence for landlocked Transvaal. He therefore continued to fight resolutely for the construction of the Delagoa Bay railway.

### 2.2.4 Further delays before construction is commenced - 1887 to 1889

Discovery of the Witwatersrand gold reef resulted in major economic and social changes in the Transvaal and South Africa in general. Johannesburg, at that stage a mere shanty town, suddenly became the focal point of the South African economy. Government-controlled railways of the Cape and of Natal were in open competition during the scramble to provide transport facilities for the Reef. Even the Republic of the Orange Free State eventually became involved in the contest. President Kruger, still, remained committed to his preference for an independent outlet to the sea.

The railway line from Delagoa Bay to the Transvaal border was completed by 1887, but the Portuguese concessionary, McMurdo, began exerting pressure from that end by demanding excessive throughfare rates based on various unscrupulous schemes. The NZASM could not afford these rates and construction on the Transvaal side of the line was delayed as it would have been uneconomical for the NZASM to transport material over McMurdo's line. The Portuguese Government became impatient with the concessionary, confiscated the line on June 26, 1889, and negotiated acceptable tariffs for through traffic on this section of the railway. In November 1889, the NZASM was able at last to start with the construction of the Transvaal's independent outlet to the sea.

#### 2.2.5 The Rand Tram - 1888 to 1890

The transport riders and their oxwagons were unable to cope with the demands of the booming Reef mining area. President Kruger realised that railway links had become an urgent matter and in 1888 persuaded the Volksraad to sanction construction of a railway line between Johannesburg and nearby Boksburg, where coal deposits had been found.

The NZASM, who had been waiting in vain since 1887 to start with the construction of the Delagoa Bay railway line, was fortunate to obtain the concession to build the Johannesburg - Boksburg line, eventually known as the Rand Tram. (This name indicates Dutch influence in the Transvaal railway development as local railway lines in Holland are generally known as tramways). The line from Johannesburg to Boksburg, and subsequent extensions from Boksburg to Springs and from Johannesburg to Krugersdorp, a line 82 km in length, was completed and became fully operational by June, 1890.

#### 2.2.6 The Pretoria - Vereeniging railway line - 1890 to 1892

Soon after construction of the Rand Tram line had started, developers of the gold mining industry stepped up their pressure on the Transvaal Government and increased their demands for a rail link between the Reef and the Cape Colony. By 1890 president Kruger had made certain that construction on the Delagoa Bay line was progressing rapidly, and only then did he consent to the consideration of a rail link between the Transvaal and the Cape. After intensive negotiations, agreement was reached with the governments of the Cape of Good Hope and of the Orange Free State to the effect that the CGR would build a railway line from

Colesberg, through Bloemfontein, to the Transvaal border at Vereeniging, and would then operate the line as far as Johannesburg.

In 1890 the Transvaal Government granted the NZASM two concessions, the first to construct a railway line from Elandsfontein (now Germiston) that would link up with the CGR line at Vereeniging, the second for a line from Elandsfontein to Pretoria. Construction proceeded rapidly and during the first half of 1892 rail traffic started flowing between Johannesburg and the Cape harbours. The Pretoria - Elandsfontein line was completed towards the end of 1892, connecting by rail the somewhat rural and conservative capital of the Transvaal to what was to become the great Golden City of Johannesburg.

### 2.2.7 The "way to the sea" completed - 1894

The line from Pretoria to Delagoa Bay was eventually completed in 1894, and was the crowning achievement of president Kruger's struggle for independence. The inauguration of rail traffic between the Transvaal and a non-British port on January 1, 1895 was a personal triumph for the president of the Transvaal.

## 3. ZASM LOCOMOTIVES (i)

### 3.1 A modest beginning

By 1892 the NZASM was operating a rail network of about 207 km that consisted of the lines between Pretoria and Vereeniging, and Springs and Krugersdorp. Four different classes of locomotives were used on these lines, namely five locomotives (Nos. 1 - 5) (ii) known as the 14-tonner class, three locomotives (Nos. 6 - 8) known as the tramway class and twenty four locomotives (Nos. 15 - 38) known as the 19-tonner class. (Records of locomotives Nos. 39 and 40 cannot be traced).

In order to cope with the increased demand for transport facilities and due to the limited power and insufficient water and coal capacity of the existing 38 locomotives, twenty larger locomotives (Nos. 41 - 60), known as the 40-tonner class, were placed in service during 1892 and 1893.

- (i) See glossary/bibliography for information about the use of the word Zasm.
- (ii) See glossary/bibliography for further information about locomotive No. 1.

### 3.2 The ZASM 32-tonner class rack locomotives

The 7,2 km line between Waterval Onder and Waterval Boven included a 3,3 km rack section built to the Riggerbach design (i). Four rack locomotives (Nos. 991 - 994), known as the 32-tonner class, were used for banking or braking purposes on this section of the line, which had a severe gradient of 1 in 20 over the rack section.

### 3.3 The ZASM 46-tonner class locomotives

#### 3.3.1 Standard main line locomotives of the NZASM

When the Delagoa Bay railway approached completion, the NZASM decided to improve on the design of the 40-tonner class locomotive by replacing the fixed rearwheel arrangement with a four-wheeled bogie.

This modification increased the weight of the redesigned locomotive, and they became known as the 46-tonner class. During 1893 and 1894 a total of 35 of these locomotives (Nos. 61 - 95) were ordered and they were placed in service on the Pretoria – Delagoa Bay main line when it was opened on January 1, 1895.

From 1895 to 1898 a further 140 (Nos. 96 - 235) similar locomotives were placed in service. The 175 locomotives mentioned were built by Emil Kessler, while a further 20 (Nos. 236 - 255) (ii) were ordered from the Nederlandsche Fabriek van werktuigen en spoorwegmaterieel “Werkspoor”, in 1899. Only two of the latter (Nos. 236 - 237) were placed in service by the NZASM as the rest were delivered after hostilities had broken out during the Anglo-Boer War. These 18 locomotives were assembled in East London and placed in service by the Imperial Military Railways (IMR) during 1899 to 1900.

#### 3.3.2 Interesting properties

ZASM Locomotives of the 32-tonner, the 40-tonner and the

- ( i ) See glossary/bibliography for more information about Riggerbach.
- ( ii ) Locomotive No. 242 is a National monument and is mounted at Pretoria Railway Station.

46-tonner classes, together with six locomotives of the Pretoria – Pietersburg Railway (i), share the distinction of being the first locomotive classes in South Africa to be fitted with Walschaert (ii) valve gear. These ZASM locomotive classes, together with a locomotive of the erstwhile Metropolitan and Suburban Railway Company (iii) as well as ‘La Moye’ (iv) are the only South African locomotives of the Cape gauge (v) which had frames on the outside of the driving wheels.

The coal bunkers of the 40-tonner class locomotives, as well as Nos. 61 - 95 of the 46-tonner class, were designed in such a way that coal had to be shovelled into the bunker through the cab. The coal bunkers of this series of 46-tonner class locomotives were modified in due course to resemble those built subsequent to 1895 whereby coal could be taken on through the back of the bunker.

Locomotives used in the Transvaal had certain Continental-European characteristics that distinguished them from their British counterparts used on the CGR and NGR lines. The ZASM locomotives had a large steam-operated bell mounted on top of the smokebox, and three small brass headlamps on the front of the smokebox instead of the customary large single headlamp mounted on top of the smokebox. Each locomotive was eventually stripped of its bell and a large single headlamp replaced the multiple headlamp arrangement. (One such bell was used as a train departure bell at Heidelberg Station which was built by the NZASM until the station fell into disuse in 1969 due to the electrification of the line. The old station building was taken over by the Rembrandt Foundation and has been converted into an excellent transport museum).

The ZASM locomotives were distinguished by a very soft exhaust beat, which is a characteristic of the Adams vortex type blast pipe fitted to these machines. The safety valve is located inside the cab and the roof of the cab is of corrugated iron.

- ( i ) See glossary/bibliography about the Pretoria- Pietersburg railway line.
- ( ii ) See glossary/bibliography about Walschaert valve gear.
- ( iii ) See glossary/bibliography about the Metropolitan and Suburban Railway Company.
- ( iv ) See glossary/bibliography about ‘La Moye’.
- ( v ) See glossary/bibliography about the Cape gauge.

The locomotives were normally worked at full capacity, and as a result the D-type slide valves wore out rapidly. This valve design was systematically replaced by an improved balanced valve according to the Richardson design and also incorporated an improved steam inlet by way of a cross port in the valve housing according to the Trick design.

Due to the unusual 0-6-4 wheel arrangement, the 46-tonner class locomotives were inclined to shake excessively and engine drivers generally preferred to run them in reverse, thereby utilising the rear bogie as leading bogie, which resulted in a much smoother ride.

As a part of the line between Waterval Onder and Waterval Boven included an elevated centre rack rail, the centre part of the cow-catcher of each locomotive was recessed.

Each 46-tonner class locomotive was numbered as well as named.

### 3.3.3 Good properties

The locomotives were generally reliable, maintenance costs were low, and they steamed exceptionally well.

### 3.3.4 Poor properties

The firebox frame rivets were inclined to foul the wheels of the bogie. This fault was rectified in due course by recessing the rivets. The safety valve, situated in the cab, was noisy when steam was blowing off.

The axle journals tended to shear at the wheel face, and crank pins were inclined to shear at the crank face. (It should be noted that a locomotive with an outside frame, which is driven by way of an outside crank, has a short extension of the axle at the outside of the driving wheel. This extension forms the axle journal to which the crank is fixed).

The blowdown hand valve is situated beneath the ash pan, which makes it difficult to reach and operate properly.

## SUCCESSORS TO THE NZASM

### 4. SUCCESSORS TO THE NZASM

When the Anglo-Boer War broke out in 1899, the NZASM owned and operated 1 200 km of railway lines, i.e. the Pretoria - Komatipoort,

Pretoria - Vereeniging, Elsburg - Volksrust and Springs - Klerksdorp lines.

After the Transvaal Government had been defeated by Britain, the IMR assumed control of the NZASM. Locomotive maintenance was almost non-existent during the war and some machines had been damaged badly in the course of hostilities. When the Transvaal and Orange Free State surrendered and the peace treaty had been signed in 1902, the NZASM was taken over by the Central South African Railways (CSAR). The 46-tonner class locomotives were reclassified as class B. All irreparable units were scrapped, and at least 45 were sold to mining concerns that kept some locomotives working right until the end of the 1970's.

The SAR took 44 of the CSAR class B locomotives into service and numbered them 1 - 55. (The numbering discrepancy came about when certain locomotives that had been numbered were scrapped before being placed in service). The SAR used these locomotives on shunting duties in the Transvaal, the Free State and the Cape. One class B locomotive worked the regular passenger train from Monument station to the docks in Cape Town until the late 1920's. Another shunted regularly at stations between Germiston and Denver during the 1920's. A number were sold to the Mozambique Railways and were in service until the 1970's.

## 5. 'ROOS'

### 5.1 The NZASM - Original owner of 'Roos' - 1893 to 1900

Number 61 in the 46-tonner class of the NZASM, named 'Roos', was built by Emil Kessler of Esslingen, Germany, in 1893. She was assembled in East London and was worked over the CGR lines to the Transvaal. The date of her being placed in service is uncertain but it seems likely that she was used on the Pretoria - Johannesburg line during 1894.

There is a possibility that she was allocated to the Pretoria - Delagoa Bay line from January 1, 1895 as the 46-tonner class locomotives had been ordered for this line. She was probably worked there until the Anglo-Boer War broke out in 1899.

### 5.2 Taken over by the IMR and the CSAR - 1900 to 1910

The NZASM continued to operate during the Anglo-Boer War, until its properties were put under the control of the IMR. 'Roos' is likely to have remained undamaged during hostilities. Although the CSAR assumed control of the Transvaal railways after the war, the NZASM