# THE OUTENIQUA RAILWAY SOCIETY **JOURNAL** No.78. June -2012 P.O.Box: 4241. George East. 6539. South Africa. Tel: [044] 871-1592. Cell: 083-381-5993. E-mail: kenbetty@telkomsa.net **ON THE RIGHT TRACKS**

Class 24 North British goods train crossing the Kaaimans River Bridge heading from Wilderness to George bringing in the morning freight from Knysna, circa 1994:

<u>Contents</u>: Editorial: Members Birthdays: Diary 2012: Sponsors: Contributions: Whimsical thoughts: SAR History Class 16DA: Station names by Arthur Louw: The origins of narrow gauge steam railways: Gov't Gazette 6784A/45297BZ/al-'Pipes': Modelling: What visitors come to see: Letter from Britain – Amusements: Along the Indian Ocean: Pioneers in America: "It looks real": "It'll look good when it's finished: In search of the Inca's Cuzco Machu Picchu: France.

Scale Model Shop' is still trading, but now as an 'on-line order' firm – Call: Francois: 082-490-8503 He has set up his workshop and will also accept orders for the maintenance of 'N' and 'HO' stock.

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**Editorial:** Now is the time to encourage new membership to the Society among your friends and relations. On the  $1^{st}$  July membership fees are reduced by 50% - Single. R55 and Family only R65 until 31.12.2012.

#### **Members Birthdays:**

June: We start with Colin Kerr and James Hodgson: 2<sup>nd</sup>, Ian Sutherland: 11<sup>th</sup>, Chris Meyer:16<sup>th</sup> Rod' Glaysher: 23<sup>rd</sup>, Hans Wolff: 25<sup>th</sup>, Rob' Sinclair-Black: 27<sup>th</sup>, and Vivian Ladbrooke: on 29<sup>th</sup>. July: We continue with Colin Welch: 1<sup>st</sup>, Rita Sinclair-Black: 13<sup>th</sup> and finally Nicolette Adams on 24<sup>th</sup>. We raise our glasses to each of you : "Happy Birthday – Scholl". Birthdays are good for you. The more you have, the longer you live. A brilliant guide to longevity – wait for it – Just keep breathing!

**Sponsors:** 

WE ARE MOST GRATEFUL TO OUR	PRESENT JOURNAL SPONSORS.
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I am still seeking new sponsors who would like to join the above list and contribute to the copying costs which rose again in Jan, in producing the journal bi-monthly, for the benefit of those without a computer so that we can become self-sufficient?

**Seriously**, we really need more sponsors, because without adequate funding there would be no Journal! Sponsor fees: R100 for 12 issues, R50 for 6 issues. That's still just R9 a copy. [Price increase-2012!!!] *If you have a computer it would be cheaper to the Society if you would please receive the journal by e-mail.* 

#### **Diary - 2012**

Tuesday: 5<sup>th</sup> June: 18,00 Committee Meeting - Boardroom Museum. Saturday: 9<sup>th</sup> June: 10.00. General Meet. Geoff Sturges – 'Leonardo Di Vinci'. Tuesday: 3<sup>rd</sup> July: 18.00. Committee Meeting – Boardroom Museum. Saturday: 7<sup>th</sup> July: 10.00 General Meet: Brenda Moses – 'George Airport'. Tuesday: 7<sup>th</sup> August: 18.00. Committee Meeting – Boardroom Museum. Saturday: 11<sup>th</sup> August: 10.00 General Meet – Joe Magill – 'S.S.Great Britain'. Tuesday: 4th September: 18.00. Committee Meet: - Boardroom Museum. Saturday: 8<sup>th</sup> September: 10.00 General Meet: Casey Nootenboom – 'Spitsbergen'. Tuesday: 9<sup>th</sup> October: 18.00 Committee Meet: Boardroom Museum. Saturday: 9<sup>th</sup> October: 18.00 Committee Meet: Boardroom Museum. Saturday: 13<sup>th</sup> October: 18.00 Committee Meet: Boardroom Museum. Saturday: 13<sup>th</sup> October: 18.00. Committee Meet: Boardroom Museum. Saturday: 13<sup>th</sup> November: 18.00. Committee Meet: Boardroom Museum. Saturday: 13<sup>th</sup> December 10.00. General Meet – Herbert Pienaar – 'Rocks'. Tuesday: 6<sup>th</sup> November: 18.00. Committee Meet: Boardroom Museum. Saturday: 10<sup>th</sup> November 10.00. General Meet; Joe Magill – 'Isambard Kingdom Brunel'. Saturday: 1<sup>st</sup> December 12 for 12.30 Xmas Lunch – The Rose Restaurant, George. Tuesday: 4<sup>th</sup> December 18.00. Committee Meet – Boardroom Museum.

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#### **Contributions:**

#### Whimsical thoughts by Diana Lester [ORS.15]

I have been in many places, but I've never been in Cahoots. Apparently, you cannot go there alone. You have to be in Cahoots with someone. I've also never been in Cognito. I hear no one recognises you there. I have, however, been in Sane. They don't have an airport; you have to be driven there. I have made several trips there, thanks to my friends, family and work. I live close, so it is just a short drive. I would like to go to Conclusions, but you have to jump and I'm not too much on physical activity anymore. I have also been in Doubt. That is a sad place to go, and I try not to visit there too often. I've been in Flexible, but only when it is important to stands firm. Sometimes I'm in Capable, and I go there more often as I'm getting older. One of my favourite places to be is in Suspense! It really gets the adrenaline flowing and pumps up the old heart. At my age I need all the stimuli I can get! And sometimes, I think I am in Vincible, but life shows me I am not. People keep telling me I'm in Denial, but I'm positive I've never been there before! I have been in Deepdoodoo many times; the older I get, the easier it is to get there. I actually kind of enjoy it there. So far, I haven't been in Continent, but my doctor says I may be going soon.

#### SAR HISTORY



**Class 16DA:** 4-6-2. Makers. Henschel & Sohn: Locomotives with wide fireplaces. Purchase price £7.445.0.0d R14,000] Statistics: working pressure 195psi [1.524kPa] Driving wheel dia:5'0". Cylinders: [2]23"x26". Tractive effort @ 75% of working pressure 33,530 lb. Valve gear: Walschaerts. [Engine originally fitted with Caprotti]. Coal capacity 14tons. Water capacity 6,000 gallons. Length over couplers 8'4.1/16". Mass: 160tons12cwt. In service during 1930.

In 1929 when Mr A.J.Watson became C.M.E of the SAR one of his earliest tasks was to provide additional motive power for express passenger traffic on the section Beaufort West-Kimberley-Johannesburg. He decided to take an existing design as the basis for a new locomotive. The Pacific, or 4-0-2 type was, at that stage, was still r4egarded as a suitable type for fast passenger working over the easier graded sections. Thus the existing class 16DA served as the basis for the design of the new locomotives. The major modification to the original design was the provision of a wide firebox having a grate area of 60 sq.ft, as opposed to the 45 sq.ft of the original type. Apart from the wide fireboxes, the new locomotives [of which six were supplied in 1930 by Henschel] were so similar to the original 16DA's that they were also classified 16DA, and numbered 874-879. Misinformed people have stated that these six engines had their fireboxes rebuilt to the larger size, but this was not the case. Engines 874 -879 were originally built with wide fireboxes. Five of these new 16DA's were provided with Walschaerts valve motion, but the sixth engine [879] was fitted with Caprotti valve gear, and ran with this until 1940, when she was converted at the Bloemfontein mechanical workshops to Walschaerts motion.

The 'wide box' 16DA's all entered traffic with five foot coupled wheels and a boiler pressure of 195psi. However, four of the six engines [No's 874,875,878 and 879] subsequently had their coupled wheels in creased in size to five feet three inches. The boiler pressures of these locomotives were also increased to 205psi which resulted in a tractive effort to 33,570 lb at5 75% boiler pressure. Engines No's 876 & 877 remained as originally built.

Initially, these locomotives were stationed in Kimberley and worked fast passenger trains like 'The Union Limited' between Beaufort West, Kimberley and Johannesburg. Together with the earlier 16DA's and the later 16E's, the wide firebox 16DA's remained on the work already detailed until the arrival of air-conditioned stock for the 'Union Limited' in 1939. Together with their sister Pacifics, these engines were transferred to Bloemfontein to work passenger traffic in the Orange Free State, and up until 1953 they worked passenger trains through to Johannesburg. The 'wide-ox' DA's also worked the Orange Express for quite a few years, particularly between Bloemfontein and Kimberly.

However, the 'Pacific type locomotive lost favour on the SAR, as it could not be regarded as a general mixed traffic type with the accent on goods working. Being more of a passenger locomotive, the Class 16DA 'wide-box' was nonetheless ultimately relegated to lesser and lesser duties such as 'pick-up' goods work.

Fitting wide fire-boxes to these engines was obviously a very satisfactory venture by Mr Watson as literally 100's of later main line locomotives of various classes had fire-boxes incorporated in their designs.

Three of the wide-box 16DA's have been preserved, while of the narrow fire-box variety, two are preserved and a few have been sold. The sum up the 16DA wide fire-box 'Pacific' is another fine passenger type locomotive which will be fondly remembered by enthusiasts and older foot- plate men alike.

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#### S.A.RAIL: THE ORIGINS OF NARROW GAUGE STEAM RAILWAYS

#### BY A.E.Durant

The author has seen in writing a claim that the Ffestiniog Railway in Wales was the first public railway of "narrow" (i.e. less than "standard" 4'8 1/2") gauge to use steam power. This is clearly not the case as will be seen, but then what was the first? Large and imposing "firsts" always receive adequate publicity, but the small and ordinary often creep in with a minimum of fanfare. This short article is thus mainly a question. The author will detail three steam railways which preceded the Ffestiniog, without making any extravagant claims, and invites readers with further knowledge to amplify by submitting further information in the hope of identifying the beginning of what is now a worldwide phenomenon.

The earliest traced by the writer was a line for the "Akademie Bau" in Wiener Neustadt, built to a gauge of three Austrian Feet. Evidently Austrians had bigger feet than English, as this gauge metricates to 948mm! The author has been unable to discover that exact purpose of this railway, but it had three 2-4-2T built by Wiener Neustadt, works numbers 126-27/1854 and 144/1855. A diagram of these is appended as copied from "Die Lokomotive", 1933, page 168. A fairly comprehensive dimension list is included in the article, of which cylinders were 316 x 421 (12" x 16") and wheels 948 (36" Austrian). A curious anomaly is that the wheelbase clearly adds up to 4958 mm but is quoted as 5057 mm.

Arising from this, "Die Entwicklung" (see bibliography) on page 274 shows the same diagram but captions it as a locomotive by Günther (ie W.N.) built for the Oberschlesischen Smalspurbahnen of gauge 785 mm (2 1/2 Prussian feet) in 1855-57. Possibly the variant wheelbase refers to one or other version, which seem otherwise dimensionally similar.

The third railway considered is the Linz-Budweiser Pferdbahn (horse railway) of gauge 1106 mm (3 1/2 Austrian feet - the forerunner of railways in southern Africa and elsewhere!), opened in 1836. Of the same gauge was the Lambach-Gmundener Bahn which had ten 4-4-0T by Günther in 1855 and four 2-6-2T from the same builder in 1856. Diagrams of these are also shown to complete the trio of 1850s narrow gauge designs, plus a photograph of one of the 4-4-0T as preserved in the Wien transport museum.

Further details of these early railways and locomotive will be much welcomed, together with details of any earlier railways and steam locomotives of less than standard gauge.

As an amusing aside, it seems that the metric equivalents to the various feet mentioned are:

English loot	SUS IIIII
Prussian foot	314 mm
Austrian foot	316 mm
Does anybody ki	now of other "foot" measurements?

Interestingly, the old traditional piston stroke of two Austrian feet (632 mm) was retained for new construction in Austria until the mid 1920s and for Czechoslovakia until about 1939-40, long after dimensions were otherwise metricated.

Bibliography.

Die Lokomotive, published Berlin & Wien, September 1933, p. 168. Die Entwicklung der Lokomotive 1880-1920. Muchen & Berlin, 1937. pages 274, 363 & 364.

All diagrams "Die Lokomotive", 1933 page 168.



Lambach-Gmunden 4-4-0T No.4 GMUNDEN, as preserved in the Vienna Transport Museum for many years. The full significance of this locomotive has probably never been realised. photo: AE Durrant



This diagram of a 2-4-2T attributed to the Oberschlesischen Schmalspurbahnen (Upper Silesian narrow gauge railways) of 2 1/2 Prussian feet gauge, was also used to illustrate the 1854 vintage locos for the Acadamie Building line in Vienna, gauge 3 Austrian feet. Perhaps the earliest narrow gauge steam locomotives?

# A college class were told they had to write a short story in a few words as possible. The story must contain the following three components. <u>*Religion, Sexuality and Mystery*</u>. There was only one paper returned of any value and it received an A+ from the entire class. This is the A+ story:

#### "Good God. I'm pregnant! I wonder who did it?"

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Directive 1.02.1964: Definition for Pipes as amended per Gov't Gazette 6784A/45297/BZ/al.

- 1. All pipes are to be made of a long hole, surrounded by metal, copper or plastic, centred around the hole.
- 2. All pipes are to be hollow throughout the entire length do not use holes of different length than the pipe.
- 3. The ID [inside diameter] of all pipes must not exceed their OD [outside diameter] otherwise the hole will be on the outside.
- 4. The pipe is supplied with nothing in the hole, so that water, steam or other stuff can be put inside at a later date.
- 5. All pipes are to be supplied without rust, this can be more readily applied at the job site. Note: Some vendors are now able to supply pre-rusted pipes. If it is available in your area, this product is recommended, as it will save a great deal of time at the job site.
- 6. All pipe over 150m in length should have the words 'Long Pipe' clearly painted on each side and end, so the contractor will know it's a long pipe.
- 7. Pipe over 3000m in length must also have the words 'Long Pipe' painted in the middle so that the contractor will not have to walk the entire length of the pipe to determine whether it is a long or short pipe.
- 8. All pipes over 1.8m in diameter must have the words 'Large Pipe' painted, so the contractor won't mistake it for a small pipe.
- 9. Flanges can be used on pipes. Flanges must have holes for bolts, quite separate from the big hole in the middle.
- 10. When ordering 90 or 30 degree elbows, be sure to specify 'left hand' or 'right hand', otherwise you will end up going the wrong way.
- 11. Be sure to specify to your vendor whether you want level, uphill or downhill pipe. If you use downhill pipe for going uphill the water will flow the wrong way.
- 12. All couplings should have either right hand or left hand threads, but do not mix the threads, otherwise, as the coupling is being screwed on to a pipe, it is being unscrewed from the other.
- 13. All pipes shorter than 3mm are very uneconomical in use, requiring many joints. They are generally known as 'washers'.
- 14. Joints in pipes for water must be watertight. Those pipes for compressed air, however, need only be airtight.
- 15. Lengths of pipe may be welded or soldered together. This method is not recommended for concrete or earthenware pipes.
- Other commodities are often confused with pipes. These include; conduit, tube, tunnel and drain. Use only genuine pipes.

   [Geoff Sturges]

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CLOVELLY: Cape Town to Simonstown: This suburb was named after a Devon, UK, village

by an English visitor. The original name was Klein Tuin [small garden].

The farm was owned by Jacobus Arnoldus Hurter in 1827.

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RAILWAY MODELLING:

#### TRAINS OF THOUGHT <u>'WHAT VISITORS COME TO SEE'</u> BY Tony Koester.

In the March 2009 *Model Railroader*, I wrote about the etiquette that we should observe when visiting a layout. On this occasion, I'd like to look at the other side of the coin: visitor expectations. To wit, when do we deem our layouts ready for visitors – not the local work group but perhaps total strangers, a local club, or a N.M.R.A division or special interest group?

To my surprise more than one layout builder participating in an on-line chat group said he would be mortally embarrassed if a casual visitor saw his layout before it was finished, right down to the scenery and structures. A club member told me that his club thinks their layout 'has to be finished in record time, since we have visitors dropping by at regular intervals.'

If the reason we open the doors to visitors is a public show, perhaps during NMR month, then I fully understand this quest to put our best foot forward. Mom, Pop and Junior may not be impressed with an expanse of open bench-work. And some of us are more theatre majors than engineers. To students of the theatre, building a model railroad is more like staging a play than recreating the business of workaday railroading. Visitors, like an audience, view the work rather than participate in the production.

But for fellow model railroaders, I believe the sooner we open the doors to let them share our 'a-building pride and joy', the sooner we all benefit. They'll get to see what we're doing, and we will gain from their observations. I've found that modellers are as interested in the underpinnings of my layout as they are in the finished product. I get countless enquiries about the multi-deck bench-work, lighting, wiring, and so on, all of which is easier to see at an early stage.

I also think that our first goal, long before much finished scenery is in place – should be to get the railroad operating reliably and realistically. No matter how many test runs we make, it is only when the gang shows up to put the railroad through its paces that the more serious deficiencies [and potentially,,even their fixes] will make themselves known.

Over the years a number of suggestions have pointed me towards improvements. Some suggested solutions were utterly impractical, but they still let me know that a problem existed. It's hard to admit that someone could walk into my basement, spend maybe 30 minutes looking at a railroad that has been front and centre in my life for almost a decade, and spot something I'd missed. It's a humbling experience.

Either way, as an operator or a viewer – the visitor's experience will, in my view, be enhanced if he can see the entire production progress from the beginning to end. To be sure, I'm not going to deliberately leave part of my layout unfinished as a Construction exhibit 'A', but I should be eager to share the layout with visitors sooner rather than later.

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#### BELLVILLE: Salt River to Bellville: The name was derived from Charles Bell – Survey General from 1848 -1872.

LETTERS FROM BRITAIN - 1995:

#### **AMUSEMENTS**

### By Nick Whittaker who takes a glance over his shoulder at the novelty machines with which the 1960s train-spotter used to while away the time between 'cops'.

Let's face it, half the fun of train-spotting was nothing at all to do with collecting train numbers. It was all to do with hanging around stations and generally being mischievous. A good 50% of train-spotting time was spent thinking up ways to fill in the gaps between the trains. Thinking back over 30 years of spotting, I estimate that, all things totted up, months if not years were spent staring into space or messing about.

Yet there seemed to be plenty of diversions on the railway stations of the 1950s and 60s. The 'furniture' of stations has changed drastically over the years but back then, with the stations still an integral part of the community and day-to-day life, adults and children could find some eccentric amusements to while away the time between trains. There were all kinds of weird and wonderful machines and 'facilities' many of which have been almost forgotten. This is a tribute to some of them.

Remember the shoe-shining machines with their eccentrically whirling dusters? Not that any of my friends had much use for such a machine [they had mums to shine shoes for them, didn't they?] but we all know that young males have a rogue gene which compels them to investigate anyway. It was worth a shilling just to do a test run on the thing, ignoring all the warnings, timidly pointing a school shoe at the machinery. Your mates watched with a mixture of admiration and superstition: they'd heard stories about these machines. What if your laces got caught, wound in like spaghetti, mangling your foot beyond repair? You'd spent the rest of your train-spotting days hobbling about the station on your crutches. It would be a sad figure and a warning to all reckless train-spotters. But nothing like that happened: you just ended up with one shoe brown and the other black and wondering how you were going to explain it when you got home!

Oddest of all was the foot-vibrating machine [and please, readers, write in if you remember them for no one else quite believes me!] Intended for heavily laden shoppers with tired feet, these machines looked very similar to the weighing scales once found outside most chemist shops. But there was a nasty shock in store for any Colonel Blimp character that made the mistake. You stood on the platform, put a shilling in the slot – and the machine vibrated your feet back to life. There was a delicious but alarming loss of control. Or the sense of it at least, you felt as if your feet had been turned to a kind of goo and your legs were sliding away from under you, rather like that watch in Salvador Dali's painting. How this druggy kind of experience was meant to refresh the nation's shoppers I can't imagine but perhaps it's one reason why such machines disappeared into the oblivion of history.

My favourite and especially attractive for would-be pop stars [and which of us weren't?] were the booths, no bigger than a telephone box, in which you could cut your own record. On one occasion when I went to London with my mum during the summer holidays of 1967 I made her take me to Waterloo to see if I could get a few more 'Bulleid' 'cops' before they were all carted off to the scrap-yards. We would squash ourselves into one of these booths for an impromptu recording session. I wanted to do '*Have you seen your Mother baby standing in the shadows*', but my mum wanted to do Ken Dodds 'Tears' – and since she was paying, I had to give way. But while she sang, I spoiled it all by sniggering and making the kind of dinosaur roars that were all the rage in the film '*One Million Years BC*.' To my eternal shame that record still exists – a minute's worth of pure nostalgia – made at the height of London's 'flower power' summer – and if we'd left the door open we'd have had a background of station announcements and Bulleid 'Pacifics' to make the picture complete!

At Crewe [among other places] there was a primitive precursor of the 'Dymo' label-maker. Made of cast-iron and brass, standing on four stumpy legs like a constipated toad, it cost a penny and you could make your own metal name tags with it. Back in those last years of the steam age, mini locomotive nameplates were a popular choice. It was a laborious process, since you had to select each letter individually and then stamp it out using the heavy lever. Spiteful pals were always slipping in a letter when you weren't looking – hence curiosities like 'Britannias' *Iron Duck, Penus* and *Robert Burnt*, and 'Jubilees' *Fijit* and *Hardon*. One enterprising friend, despite the hoots of derision, decided to make *The Territorial Army 1908 – 1958*. It took three separate goes to make it up. Back at school he glued the plates to his maths book and we had to admit that it looked mighty impressive. The maths teacher was totally baffled. He was cheesed off with exercise books bearing tributes to 'The Small Faces', 'The Kinks' and 'Manfred Mann', but he couldn't understand why a long-haired lad wanted to pay tribute to the Army.

How much train-spotting time was spent stuffing our faces? Though we always bought our own food and sweets elsewhere if possible, there were always emergency situations. Stations offered various drinks and confectionary machines, which either never worked at all [though gracefully accepting your money] or delivered items of mind-boggling awfulness. It's a truism that all drinks from machines are foul, but I must confess, I was rather partial to the 'chicken soap' [and I use to quote marks to avoid confusing it with the more acceptable and creamier stuff some spotters took in their flasks]. The machine version looked like steaming urine with bits of green tinsel floating in it. My friends groaned whenever they glimpsed a cup – but I'd been weaned on 'Oxo' drinks made with the mineral-rich water from boiled potatoes, so I loved it.

Thank heavens though for all those reliable stand-bys: Cadbury's chocolate, of course – but especially 'Paynes Toffets'. How many boxfuls of those must we have chewed through the 1960s? I well remember to this day the box that contained one solitary rattling 'Toffet'. The look on my face had my friends rolling round on the platform with laughter. Though they'd been hoping to share the aforementioned sweets, this was well worth the loss. Ho-ho-ho!

There wasn't much you could get for free, even in those less-commercialised days. But our Victorian forefathers in all their paternal benevolence had decreed that weary travellers should at least be able to grab a gulp of water. On my home station at Burton there was just such a fountain, dated 1883 and complete with a cup on a chain. Schoolboys are remarkable for their unquenchable thirsts, but we drew the line at that saliva-slimed cup, brass yet scratched by decades of teeth. The water was drinkable, provided you could get it into your mouth without any other physical contact. As for the tap and the cup on a chain, these were accessories from medieval times and certainly tainted by the Black Death!

Many stations had a model in a glass case. Various ships and locomotives, some of which put on a splendid display of 'on-the-spot' speed in return for a penny [proceeds usually going to some obscure orphanage or rest home]. My favourite was *Evening Star* at Bristol Temple Meads, though I have hazy memories of a model *Rocket* somewhere which jerked into action in return for a penny, and a staffed dog which fortunately didn't do anything except stare with glass eyes [though today they'd certainly have it fitted with a microchip and a speaker so it could deliver a bark or

two.] However much the railways and stations have improved over the years [and that's a debatable point] they're certainly much less fascinating than they used to be, devoid of those out of the way corners where bored spotters could always find something to amuse themselves.

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I stayed up all night to see where the sun went. Then it dawned on me. When chemists die, they barium. How does Moses make his tea,? Hebrews it. Jokes about German sausage are the wurst.

S.A.RAIL STORIES:

#### **OUTENIQUA RAILWAY PASS**

S.A.RAIL Vol. 49 No.1 [2011] - Researched & compiled by Allen Duff [ORS 82]

Trains first arrived in the Southern Cape in the first decade of the 20<sup>th</sup> century. Ladies fashion in Europe had made ostrich feathers all the rage. Transportation by ox-wagon and horse cart was slow and arduous. The Cape Government in 1897 legislated for the construction of a railway line from Klipplaat [on the Port Elizabeth-Graaff Reinet line] to Oudtshoorn. The railway's progress was delayed by the Boer War [when the army commandeered equipment and materials to keep the main lines operational] and this branch line was not completed until 1904.

In the last decade of the 19<sup>th</sup> century the New Cape Government Railway [NCGR] had steadily pushed its railway from Worcester [on the Cape Town-Kimberley line] eastwards, close to the Langeberg Mountains. By 1899 this line had reached Swellendam. The Boer War slowed further eastwards expansion though, but by the war's end in 1902 Heidelberg had been reached and Riversdale a year later. Concurrent with the NCGR's extension, the Cape Government Railway [CGR] had started construction on a railway from Mossel Bay to George. By 1907 the NCGR had reached Mossel Bay and the CGR's Mossel Bay line had got to George. The latter line was operated by the NCGR for the CGR as a through route from George to Worcester.

In 1910 [at the formation of the Union of South Africa], all the railways of the country amalgamated as the South African Railways [SAR]. The NCGR was an exception – it continued as an independent company until it became part of the SAR in 1925]

The construction of the railway between George and Oudtshoorn was started at George on 01.12.1908 with the labour provided by 300 convicts. By June 1909 their number was 700. The financial state of the Cape Colony restricted the use of paid labour. After the SAR took over the construction, additional paid labour [known then as free labour] was employed and sections were put out to contract. Heavy rains and continual mists delayed work considerably. Frequently the convicts had to stop work and return to their station [as it was known] owing to the risk of an escape in the mist! Xhosa labourers were imported, but they too were averse to the weather and deserted in large numbers.

The George-Oudtshoorn railway line's construction presented numerous engineering difficulties in surmounting the Outeniqua Mountains. The route necessitated seven tunnels [total length 905m]. In crossing the range an elevation of 704m above sea level is attained in the summit tunnel. [George station is at 222m]. At the time the work was the heaviest railway construction yet undertaken in South Africa.

The railway, which follows the curvature of the mountains, has sharp curves [5 chains radius: 1 chain = 20m] with compensated 1in36 gradients on the south side and 1in40 on the northern slopes.

The numerous cuttings, embankments and stream diversions involved moving 1.415.000 cubic yards. There was only one bridge as the embankments are of rock and any water finds its way through without settlement.

The 25km southern ascent starts northwards, but soon turns eastwards, until at the Swart River Valley [8km from George], it turns back on itself and proceeds westwards. After the first tunnel [11km] the crossing loop at Power [15km] is reached. [This is close by the high mast clearly visible on the mountain]. During the construction a road was built to Power, for the conveyance of construction equipment and materials. Five boilers and three compressors were erected at Power, to work the large rock drills. From Power the compressed air [80psi] was conveyed in pipes to the next five tunnel sites [the furthest 7.6km away]. Also at Power was a quarry [on the curve approaching the southern entrance of Tunnel 2], with large stone crushers used for crushing rock for ballast and concrete. [Trains working down the mountain had a compulsory 10 minute stop at Power, to cool the brake-shoes of the rolling stock].

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I got a job at a bakery because I needed the dough. I'm reading a book about anti-gravity. I just can't put it down. I did a theatrical performance about puns. It was a play on words. I didn't like my beard at first. Then it grew on me. Broken pencils are pointless. I tried to catch some fog, but I mist. Velcro – what a rip off.

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#### S.A.RAIL STORIES – 1978:

#### ALONG THE INDIAN OCEAN By C.P.Lewis & A.A.Jorgensen. The South Coast Line.

Eighty years ago the South Coast of Natal could have been called the Coast of Railway Sleepers. Shipwrecks have been common on this coast ever since the first recorded disaster in 1552, and in the early 1900s ships with cargoes of railway sleepers from Java were lost here. They left the coastline awash with flotsam which was eventually declared a menace to shipping. It must have bee frustrating for the builders of the South Coast line. – opened to Park Rynie in 1897 and to Port Shepstone in 1907 – to see sleepers lying useless on the nearby shore.

A railway parallel and very near the coast in such a lovely setting was an incentive to development. Holiday bungalows, the hotels and finally towns sprang up along the length of the railway and today this is one of South Africa's premier resorts areas. The influx of so many people endangers the character of the area, but fortunately the sub-tropical foliage camouflages the worst aspects of man's intrusion.

But one kind of visual pollution very difficult to conceal is caused by the electrification of the railway. The tall poles and high wires of 'progress' reached Kelso in 1968, and Port Shepstone in 1970. No longer do passengers view the endless beaches and thick undergrowth from behind a steam locomotive: all-steel, sliding-door electric suburban stock, complete with vinyl seats has replaced the quaint wooden coaches with swing doors.

Locomotives used on the South Coast during the last few years of steam were 15CA and 15CB Mountains and Class 16 Pacifics on the fast trains, and small-wheeled Class 14R Mountains on the stopping trains. After the electrification to Kelso, the Pacifics were transferred to the Port Elizabeth area, and the 15CAs, which could not run beyond Kelso anyway, went to the North Coast. Only the 14Rs remained to hold the fort.

In the early days the nine major river crossings were over rickety old iron and steel structures, placed well inland. Trains had to slow down for a sharp curve inland and again for the screw-piled deckspans before continuing on their way on the opposite bank. Only the lightest engines could be used and for years these were tank engines of A and G Classes until SARs second Garratt design, the GB, was introduced in 1921. For many years afterwards this was entirely Garratt country with GCs and GCAs as the standard power, until a bridge replacement programme started in the 1950s allowed heavier locomotives to be used.

Durban and the Natal Main Line.

"How a railway is to drag itself up and round all these thousand- and-one spurs running into one another, with no distinct valley or flat between, is best known to the engineers and surveyors who have declared it practicable." Lady Barker, 1875.

The sceptics were amazed when the railway from Durban to Pietermaritzburg reached its destination in 1880, for building a line through such hilly countryside was a formidable undertaking.

The first 30 mile to Botha's Hill was laid on an almost continuous grade of 1:30 uncompensated, with only one tunnel as the line wound up the hills, occasionally finding itself high up on the edge of some deep chasm which had to be bridged. The Inchanga was the longest [567 feet] and the highest [90 feet] of the viaducts, a spidery structure said to sway on windy days.

When the first passenger trains began running in December 1880, the scheduled time was 6 hours 14 minutes for the 71 miles. The annual footrace between these towns, the Comrades Marathon, has been run in 5 hours and 42 minutes – in the uphill direction – but then the road distance is only 55 miles!

The Transvaal gold rush in the 1880s spurred on railway construction, and the line pushed rapidly inland from Pietermaritzburg: up the Town Hill to Hilton Road, on to the highest point at Dell [5,035 feet], before dropping steeply to Estcourt, then on across the high undulating grasslands to Colenso, Ladysmith and Newcastle and the final upward push [via reverses] to Lang's Nek [5,339 feet] and Charleston. Over the 340 mile distance the total vertical climb was 12,600 feet.

For 13 years after it was completed in 1891 the entire line was operated by tank locomotives,

4-8-2Ts and 4-10-2Ts, sometimes three to a train! In 1904 the arrival of the first tender engines, the Hendrie B 4-8-0s [later SAR Class 1] revolutionised workings and from that time locomotive development was rapid. First came the Hendrie 4-8-2s [SAR Class 3] and American Mallets for banking, in 1909-10. Then in 1914 the 'ultimate' Natal Main Line locomotive, the Class 14 'Mountain' 4-8-2, was introduced. This was to remain the resident main-line engines type, with the notable exception of the six GL Garratts and a few other experimental types, until electrification, started in 1924, was complete in 1939.

From 1916, major deviations and alternative main-line routes were introduced, making the task easier for steam and for the 'box-cabs' which followed. But the original Natal Main Line to Pietermaritzburg via Pinetown was only electrified in1959, and by that time some of the 14s had done 45 years' hard labour on the line for which they were designed – SARs most difficult main line.

#### By rail to Zululand.

The road to Zululand has been shrouded in mystery and intrigue ever since the first traders tramped this way from Durban in the 19<sup>th</sup> century. They were followed by missionaries, emissaries of colonial governments, settlers and a host of unsavoury opportunists bent on personal gain. At this time the Zulu empire was expanding and consolidating in power and for three-quarters of a century conditions were quite unstable.

Nevertheless, the construction of Natal's first railway at Durban in 1860 led the schemes for additional lines. The first portion of the future North Coast Railway was opened to Umgeni in 1867, was built to a gauge of 4'8<sup>1</sup>/<sub>2</sub>", and the story of its conversion to 3'6" was similar to that of the Cape Main Line. 'Broad gauge' was fine at the coast, but when the route inland was planned the narrow gauge was chosen for economic reasons, and the existing wide gauge followed suit. The opening of the extension to Verulam in 1879 coincided with the narrowing of the rails and South Africa's 'standard gauge' was a *fait accompli*.

Verulam remained the terminus for 18 years, until coal deposits deep in Zululand at Somkele [near present-day Mtubatuba] provided the motive for extending the railway northwards and parallel to the coast. The Tugela extension was opened in 1897 under the auspices of the Zululand Railway Company, and soon afterwards a 1,330 foot bridge was built over the river by the Government railways that completed construction to Somkele in 1903.

The coal at Somkele proved to be of mediocre quality, but the mines remained in operation until the mid 1920s when the line was extended from Mtubatuba up the coast but well inland, reaching the Swaziland border at Golela in 1927. Today there is a flurry of activity as work proceeds on am extension into Swaziland and the link up with the Swaziland Railway. In theory at least, it will be possible to travel by rail from Durban to Maputo [Lourenço Marques], roughly following the route taken by survivors of many shipwrecks recorded in the early history of Natal.

#### Up to Eshowe.

On the road map of Zululand the main road from Gingindlovu to Eshowe runs in an almost straight line, and the railway [not shown on all maps] wriggles only slightly. What the road map doesn't show is that both road and rail climb an escarpment, gaining over 1,500 feet in the process! From the timetable which gives station altitudes, it can be calculated that in the first eight miles the line gains 279 feet, while in the last 12 the climb is 1,229 feet. A profile diagram from the Civil Engineer's office adds the final pieces of information: the ruling grade is 1:40, and there are 108 curves in all.

We first investigated this interesting route early in 1968. After driving overnight from Johannesburg, we turned off onto the narrow track following the railway to Dikinjyana. It was already light on a thickly overcast morning. A GE Garratt was struggling on an uphill train round a tight curve, flanges squealing, wheels slipping. The engine soon stalled, and was dragged back several feet by the weight of its own train. Straining to regain uphill momentum, it spun its wheels time and again.

By now the fireman was running ahead of the locomotive sanding the rails by hand as he went. The driver was leaning out of the cab as far as he could, holding the throttle with one hand and resting the other on the window elbow-rest. He took slack once again and after some smart work with the regulator the train took hold on the sanded rail. Soon it was moving, but very slowly, and the fireman clambered back into the cab as the train gradually gathered speed up the hill. We stood in the morning drizzle completely absorbed by this tussle between man, machine and environment.

#### 1970s Coal Line.

Railways are alive and well and still expanding in South Africa. Two of the biggest projects in recent years were the Saldanha Bay iron-ore line and the Richards Bay coal line. Between tHem, they have added 735 route miles to SARs domain but they leave steam enthusiasts' cold – diesel traction was used at first, and now electric locomotives pull the unit-loads on these heavy duty lines. Steam was used during the construction of the Richards Bay line, and water facilities were even installed en route! Ballast and construction trains ran the length of the new line, and for a short time it was possible to photograph steam on what is now a non-steam railway.

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**Strand:** [Beach] Originally an Afrikaans name. Strand was a traditional resort for Stellenbosch area **Firgrove:** In the 19<sup>th</sup> century, the name Firgrove was very common. Onwards from 1720 foreign pine species were planted in great numbers and by the 1860s, groves of 'fir trees' were everywhere

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So I went to the dentist. He said, "Say Aaah". I said, "Why?" He said, "My dog's just died."

Apparently, 1 in 5 people in the world are Chinese, and there are five people in my family, so it must be one of them. It's either my Mom or my Dad, or my older brother Colin, or my younger brother Ho-Cha-Chu. But I think it's Colin!

#### RAILWAY HISTORY:

#### PIONEERS IN AMERICA

As early as 1764 there was a cable-operated tramway of grooved logs in operation in the United States at Lewiston, New York, where it hauled supplies from a military camp. Other similar tramways followed, including in 1826, the horse-hauled Granite Railway in Quincey, Massachusetts. The wooden track of this railway was iron-faced. Some people claim that this should be considered the 'first railroad in the United States'.

While Richard Trevithick was demonstrating his first locomotive in Europe, inventors were also at work in America. Oliver Evans, a Philadelphia blacksmith, was commissioned to build a dredge plus wheels and a propeller – the first steam-powered amphibious craft – which he called his *Orukter Amphibolos*. Unfortunately, when it set out on the cobbled streets of Philadelphia the axles and the wheels collapsed.

The first steam locomotive to run on tracks in the United States was built by Colonel John Stevens, a farsighted advocate of railways who, in 1812, published a paper entitled *Documents relating to the superior advantage of Railways over Canal Navigation*. In 1825 he built a circular track with a racked rail on his estate at Hoboken, New Jersey. On this track his locomotive reached a speed of 12mph carrying six passengers.

Although Stevens, by this time 76, made no further active contribution to American railroad history, his demonstrations stimulated the interest of others. Among them was John Jervis, chief engineer of the Delaware&Hudson Canal Company. In 1828 his company built a nine-mile stretch of horse operated track between their mines and the end of the canal at Honesdale, Pennsylvania. The same year Jervis sent his assistant, Horatio B.Allen, to England, where he was a witness of the Rainhill Trials. Allen was commissioned to purchase locomotives for the company.

One of them, the *Stourbridge Lion*, arrived in New York in May 1829 and was tried out at Honesdale on 8.08.1829 with Allen at the controls. A festive crowd turned up for the occasion and a cannon was fired for the official start [overcharged, it tore the arm off of the man who discharged it]. The locomotive, with a red and gold lion's head on the front of the boiler, weighed nearly eight tons – five tons more than had been thought at the time of the purchase.

Three hundred yards from the start the track crossed a rickety trestle bridge 30 feet above Lackawaxen Creek. Allen took it at full speed, 20mph and reached the other side. Three miles further on he reversed and came back to the start. The *Lion* had proved itself, but it was immediately decided that it was too heavy for the track and its active life was brought to a rapid close. The following year a one-horse-power engine called *Tom Thumb*, was tried out on the Baltimore&Ohio Railroad and hauled a car-load of 36 people at a maximum speed of 18mph.

British engineers had advised that the curves of the Baltimore&Ohio track, which included one on a 150ft radius, made it impossible to use steam power on the railroad. Shareholders began to withdraw. Peter Cooper, a man who had bought land along the track, was worried about his own investment. As he told it later in the *Boston Herald*, the directors of the railroad 'had a fit of the blues. I had naturally a knack of contriving, and I told the directors I believed I could knock together a locomotive that would get around that curve... So I came to New York and got a bit of an engine, about one horse-power [three and one half cylinder and 14" stroke], and carried it back to Baltimore.'

Cooper added a boiler and set his engine up on wheels – and it worked. The trial, on 28.08.1830 attracted little attention in the press, but it perturbed the local stagecoach operators. The largest firm challenged Cooper to a race. On a double track their finest grey was set against the *Tom Thumb*. The horse soon had the lead, but the locomotive built up power and overtook the horse. It was well ahead when the belt which operated the fan for the fire slipped its pulley. As the steam pressure fell the speed of the locomotive dropped and the horse came galloping past to win, to the delight of the supporters of the horse-drawn train. But their jubilation did not prevent the Baltimore&Ohio directors from deciding to adopt steam power. As far as they were concerned the little *Tom Thumb* had amply proved itself.

Like the Liverpool&Manchester Railway in Britain the company announced a competition for a steam engine, which was won in 1831 by the *Atlantic*, the first 'grasshopper'-type locomotive, built at York, Pennsylvania, by Phineas Davis.

Late in 1829, Horatio Allen, driver of the *Lion*, took charge of the building of a railroad for the South Carolina Canal&Railroad Company. The seaport of Charleston saw how the Baltimore&Ohio line would increase Baltimore's trade at their expense, and so planned a railroad of its own.

Allen ordered two locomotives to be built by the West Point Foundry in New York City, and the railroad can claim to be the first in the United States built expressly for steam locomotion. The first locomotive, named *The Best Friend of Charleston*, arrived by sea in October and, after undergoing trials, drew the first train out of Charleston on Christmas Day 1830. Behind the locomotive was a flat wagon with a detachment of artillerymen and the canon used to signal the opening; then came two covered coaches full of celebrities and dignitaries. Great crowds came to watch and there were bands and fireworks.

The locomotive gave excellent service for six months, then one day her fireman shut off the safety valve and the boiler exploded, making an end of him and of his *Best Friend*. To dispel the fears this incident put in passengers heads the line thereafter placed a flat car piled with bales of cotton immediately behind the locomotive. The cotton was to shield the passengers should a similar accident occur.

The makers of *The Best Friend* supplied the locomotive, the *De Witt Clinton*, for the Mohawk&Hudson Railroad. A charter for the railroad had been given in 1826, but various delays prevented the completion of the 17 mile track until 1831.

On the inauguratory trip the passengers came under a rain of smoke, sparks and cinders from the chimney stack. Those in the open carriages protected themselves with their umbrellas – only to find that the umbrella covers disappeared in flames. Soon the passengers found their clothes were on fire and most of them spent the journey trying to put each other out! However, not one person who had set out failed to complete both the outward and the return journeys.

Within ten years of the opening of these first American railroads there were nearly 3,000 miles of track in operation in the United States, and by the outbreak of the Civil War the total had increased tenfold. Unfortunately, these lines were not to a statutory gauge, which made through traffic impossible.

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#### RAILWAY MODELLING:

#### **IT LOOKS REAL**

A recently completed model stood on the table when I received a surprise visit from my neighbour and his young son. Innocent eyes clapped themselves on my latest effort. "Cor, it looks real" cried the fervent young voice. "It's supposed to", replied the father rather sheepishly, as if embarrassed at his son's gaffe and coming close to apologising. An apology! That was the very last thing I needed as basking in self-esteem I pointed out the finer details of the model and explained construction, the reason for the visit being long delayed.

Later that evening I took the model upstairs and put it with the rest on the layout, still glowing with pride. After all I had taken more care over this model than any other and already considered it my best, before it made me the young lad's hero. But, oh, how that glow of pride evaporated as I looked at my layout. The reason? Simple – it just did not look real. It was not just a matter of more advanced skill or any other factor I could name. It simply looked like a model – it did not look real.

So, had this young lad opened my eyes to the real aim of the scenic model? Is not the aim to create a landscape in miniature, a three dimensional picture of the real thing? Was not convincing reality what I was trying to achieve? Deciding that such was the case, the phrase 'It looks real' took on a new meaning. Instead of being the supreme accolade it became the supreme test. I decided that from now on I must look at every completed model and try to make my eyes and mind as innocent as possible. I must look at it and ask the question, 'Does it look real?' And only if the answer is a firm yea, must it be acceptable.

The trouble is that the eyes of a modeller are rarely that innocent. Having spent so much time building the model it is hard to look at it freshly. Perhaps the answer is to leave the period of

time between completion and judging. As modellers, we have a very good idea of what a model looks like, the magazines and exhibitions fix a kind of standard appearance in out minds. Usually it is a very good standard, but is it a model standard based on such matters as scale accuracy and fidelity to prototype. Now the young lad next door had no idea of scale or period, but to him it looked real. To how many of the models on the layouts those modellers admire would he pass the same remark?

Of course there is no way of knowing, but there does seem to be a case for the modeller viewing his work objectively and asking, almost if he were another person, "Does this look real or not?" If this were done I am sure there would be a higher number of convincing models around. As to my own layout, well it will probably have to be rebuilt now that this lad has spoilt my opinion of it, except for that last model. After all, that one received the accolade - that one 'looks real'.

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#### RAILWAY MODELLING:

#### IT'LL LOOK GREAT WHEN IT'S FINISHED

Right, hands up all of you who, when sorting your model collection, have to plough through half-built models that, one day, you intend finishing. As I suspected, there is a fair percentage of you – or should I say us.

On past occasions, watching my substantially complete Ivatt Atlantic struggle somewhat unsuccessfully to haul my rake of almost finished Gresley teaks around the Club layout, I reflected that I probably had one of the largest collections of unfinished models in the country. Conversations with other modellers at exhibitions, etc, proved my beliefs unfounded. Why, the competition is enormous! It would seem that most of us have these unhappy collections to a greater or lesser extent.

The question is: why? Well, a number of our unfinished projects are abandoned in all but name; we just cannot bring ourselves to throw them away. But many more have simply lost out to a newer model which, because it is new, demands to be built right away. And of course there is always a newer one. The problem really becomes critical when we are attracted to new models faster than we can complete *any* of the older ones.

Various reasons present themselves for this industrious yet unproductive state of affairs. Firstly, it is common practice to be building more than one model at a time. This allows for a variety of work, and when one model needs to be left to dry, you have another to turn to. The same applies when you hit an almighty problem that needs time to be thought about. And there you are, two years later and still undecided as to whether you should glue on the handrail or risk soldering it.

In the meantime, your second model was left to dry [or whatever], so you begin a third one, only to discover you had not got all the information you needed. So you shelved it until the information arrived. Which took some time! By then you had started model no.4. Having got going with no.4, numbers one and three are quietly forgotten: and having made the same part three times – unsuccessfully – for no.2, interest in *that* model is waning. Does the pattern strike a chord in the recesses of your mind? Basically, we are short of will-power – the will to complete the job!

A lot of models probably remain unfinished because they have reached a workable condition. Given bogies, your coaches run, and they do not really need a fully detailed underframe to do that. Your loco may be unlettered, but most modellers will recognise the class, or at least the railway, and the motor turns over happily without any paint on the engine at all [probably better if you are a bit careless where the paint gets to]. So your row of houses does not have chimneys Surely there were smokeless zones in 1923? Mind you, we tell ourselves, all this is just temporary....

Many modellers tasks, being repetitive, encourage mass production. This has much to recommend it, provided we do not get over ambitious. Just imagine that train of LMS six-wheeled all 3rds – a showpiece for the club exhibition. The trouble is that after drilling the umpteenth hole for the umpteenth door handle, and filling it with the umpteenth product from your slick door handle jig [fabricating a complete handle in 10 minutes flat] you're beginning to *welcome* the idea of mowing the lawn or something.

Over-estimating your working speed [and endurance] probably killed more models than bad workmanship; you despair of ever completing the job. I panelled a rake of five coaches at the rate

of five hours per *side*. When I reached the sixth coach, I could not face it. Two years later, I finally got round to it – only to discover that the first five were incorrect.... Fortunately, my workmanship had improved so much in the meantime that I was already contemplating renewal.

Here lies another reason for temporary or permanent abandonment of a project: the rapid improvement of technique, causing early stages of a model to compare badly with later ones. I've got a locomotive rather like 'Paddy's bicycle' – I can practically build a second engine from rejected parts which originally were acceptable. How you deal with this problem depends on the particular model. Starting again might be easier and quicker that trying to titivate poor workmanship. One must not become too much of a perfectionist, however, or a model will never be finished.

I could go on, but I think I have made my point. Most of us have found reason to stop work on a model – and many of us never went back. Now and then you have seen some forlorn items and thought, "I really must get round to finishing that; it'll look great behind m 2-10-4 'Little Willie'. Chances are, if you are anything like me your 2-10-4 is also in the uncompleted models box – unless it's got 'Triang', 'Hornby' or 'Wrenn' stamped on it.

There is a perfectly simple answer to all this, it just demands will-power. Drag those old plans out, resuscitate your neglected projects, and *finish* them. Think of all that work which has already gone into them and which is now utterly worthless unless you finish the job you started. How you go about this is of course a personal thing; my own inclination is to head for the simpler items that require relatively little work to complete them. A rapidly growing body of completed models will be a considerable incentive to finish off still more. Alternatively, you could finish the models you *need* rather than those you prefer to build. If, say, you hate building wagons and some of these are incomplete – then get on with them! Martyr yourself! Better that [and the relief of seeing them on the road at last] than thinking how the time might have been better spent in the first place. Having placed the models in front of you and grudgingly started work again on that 'old rubbish', you will be surprised to discover how rapidly your interest picks up again.

Having written this, I naturally have an obligation to practice what I preach. What I have done is to declare an 'Old Crocks Month'. No new work will be commenced during this period, and I intend to demolish at least part of the backlog I've accumulated. I actually began [unofficially] before I started to write this. Some time ago, I built a double slip, then in moving home I snapped a sleeper. It remained in that condition for 12 months, tucked away out of sight. Now it's perfect again, and it took just ten minutes to put right. For all that, I've got plenty more to do, so excuse me if I don't illustrate my work, but it will look great *when* it's finished.

#### GREAT RAILWAY JOURNEYS:

#### IN SEARCH OF THE INCAS CUZCO – MACHU PICCHU

# The Santa Ana line from Cuzco runs through misty valleys made dark by towering cliffs. At the end of the line locked within the stronghold of the mountains are the spectacular terraces of Machu Picchu – lost city of the Incas.

Cuzco, once the capital of the Inca Empire, lies high in the Andes at 11,400ft [3475m]. Its rail service to Machu Picchu is one of the best in Peru, for the simple reason that it is the only way to get there unless you backpack. Discovered in 1911 by the American explorer Hiram Bingham, Machu Picchu was the final retreat of the Incas when Cuzco fell to the Spanish invaders in the 16<sup>th</sup> century.

The Inca dynasty rose to power in the  $11^{th}$  century. Conquering enormous tracts of land – roughly equivalent in size to France, Belgium, Holland, Luxembourg, Italy and Switzerland – they imposed central government and a common language, Quechua, on the Andean Indians. Sun worship, already prevalent, became the collective religion.

One of their finest legacies is the remarkable stonework which has survived in the living cities and preserved ruins that entice more visitors to Peru than to any other South American country.

The easiest and safest way to reach the Inca shrine of Cuzco is by air shuttle from Lima. A long and arduous rail journey across the Andies on the nationalised Ferrocarril del Sur [FCS] is now barred by the notorious activities of the Sendero Luminoso [Shining Path] guerrillas. But you can travel by train to Cuzco via the Peruvian port of Mollendo on the Pacific coast, riding the tracks of the FCS 500 miles [800km]

towards the shores of Lake Titicaca at Juliaca and then over the long branch to Cuzco's standard gauge terminus.



One of the modern railcars seen here as it waits to leave Cuzco for Machu Picchu. Dizzy heights

It is vital that visitors respect the high altitude of Cuzco. You need at least two to three hours' rest on arrival to acclimatise, and as Cuzco has much that is worth seeing, you should allow yourself a couple of days here before taking the trip to Machu Picchu. Many of the streets of modern buildings contain relics of Inca walls and arches, and the circular stonework which can be seen in the Temple of the Sun is quite magnificent. The churches too, dating from the Spanish occupation, are superb.

Trains for the 3<sup>1</sup>/<sub>2</sub> hour trip to Machu Picchu leave from the narrow gauge San Pedro station in the town centre. Tourists bring an air of prosperity to what would otherwise have been another backwoods railway had not Machu Picchu been discovered. The Ferrocarril Santa Ana – now a branch of Enafer Peru, the national railway company – is probably the most prosperous in this poor country, receiving an amount of state aid only dreamed of by the other lines, despite never having reached Santa Ana.

The diesels in their yellow livery are now over 10 years old, having been imported from northern Peru when the Chiclayo system was washed away. But the train makes a fine sight, somehow fitting in totally with its surroundings. There is no steam today – the last two 2-8-2 Henschels hovered until very recently in the shed at Cuzco, kept in reserve for any chartered specials over part or all of the line. Steam lasted well into the 1980s on the Indian trains and freights, but as soon as it became possible to use diesel in the rare air over 10,000ft [3048m], the change to total internal combustion engine running was inevitable. As with people, diesels cannot breathe properly at very great heights and standard products have needed considerable refinement – quite the opposite to steam which improves in efficiency as altitude increases.

Today there are four trains scheduled including the 07.00 tourist train – a comfortable railcar with its seats taken up by package tours. The slower Indian trains stop at most stations, the first one leaving at 06.00 hours. Cuzco's many churches provide an early morning call for Indians and tourists alike as a multitude of tolling bells call the faithful to five o'clock mass.

Seats can be reserved on the tourist railcar, and in first class on the Indian trains. If you travel second class you will have to fight for your seat whether it's the 06.00 or the 12.30. The front coach of the local train where meals are served is usually special class and all seats are numbered. You must book these seats one day in advance.

Thieves abound, particularly around the station, and, if you are in second class, on the switchbacks out of the town, [the first class coaches have their doors locked] – so watch your pockets and wallet. If you are on the Indian train, buy some bananas from the hawkers outside the station but don't accept and eat anything offered by the locals on the train if you want to escape Montezuma's revenge!

The train escapes from Cuzco by means of two double switchbacks running through the shanty-town where the inhabitants tend to take advantage of the short quick reverses to jump on and off the coaches. For the best view on the outward journey, try to sit on the left-hand side facing the engine [going forwards on the

railcars]. You can look down on the pink tiles roofs of Cuzco and the view across the valley is magnificent.



#### Steam graveyard

Those with an eye for the past will become nostalgic as the train passes Poroy, a few miles out of Cuzco and high above it. Here lie the redundant steam engines which were active only 30 years ago on the freights and on the shuttle service between that standard gauge Southern of Peru station on the town's outskirts and San Pedro. Gone now is the time when the throttle of the Henschell was opened wide and the lever pushed forward on Baldwins to storm the switchbacks, the fireman thanking his stars for oil burning. Instead the diesel growls or the railcar mutters.

Once the train has struggled up to the Santa Valley at El Arco, 12,200ft [3719m] above sea level, the journey is downhill all the way to Macu Picchu and Puente Ruinas station6,000ft [1829m] below. The train descends from the tree- region of the puma, down to the softer and lusher water meadows where cattle graze sedately. Soon the mountain valleys loom up, closed in and precipitous. Looking up, one can see the sun glistening on their heights. At the foot of a steep wall of rock the track runs within sight of Ollantaytambo where the train stops for those wishing to visit the majestic megalithic ruins of Inca lineage.

#### **Boundless beauty**

As one sets off down the Urubamba River valley it is easy to see why this is the only route to the ruins. Dramatic hills rise up along the river as the train rattles its way alongside huge boulders in the water. Exotic yellow broom abounds, linking with the thick jungle-like tree cover. Creepers drape themselves across the branches as the eastern forest approaches beyond Torontoy. Butterflies are everywhere, while cacti, looking like twisted asparagus, grow huge and succulent. Other spiky cacti grow on the slopes as though they, too, are a mane of creepers falling down the mountainsides. It is all incredibly beautiful.

For the rail enthusiast, there are the third and fourth switchbacks to be experienced in the Anta and Urubamba canyons. Close to the ruins of Machu Picchu, the railway follows the path of the river in a wide U turn. **The Lost City** 

At Puenta Ruinas station there is a free for all. Buses take passengers up the zigzag dirt road to the top [the locals, used to the rare air, can beat them by running] and theoretically there are enough seats for all. If you are considering walking up, you should certainly think again; it takes a good 1-2 hours! Those who have single tickets and hotel bookings can take it easy, but if you are on a day trip let the crowd go into the hotel for an early lunch and view the city almost alone. It is wondrous and, because it was never found by the Spaniards, virtually complete.

Remember to take things slowly; you are a good 8-9,000ft [2500-2750m] up. This is one place in Peru that you can feel safe, as the ruins are well policed and no one but ticket holders can get in. So relax and let the beauty of it all sink in. Craggy mountains and the huge green dome of Huyana Picchu rise on all sides, and looking down, you can see the railway station far below and the train threading its way toy-like round the rocky outcrops. Terraced slopes fall away to the Urubamba River winding its way through the jungle.



The Inca staircase, terraces, temples, palaces, towers and fountains of Machu Picchu are all in a magnificent state of preservation, though of course, the buildings are roofless. **Bingham** must have marvelled as he stumbled across all this, hidden in the mountain jungle.

Try to avoid Mondays and Fridays, and stay overnight at the ruins hotel. Even though this is supposed to be booked up weeks in advance, there are often cancellations which can be checked with the tourist office in Cuzco. This way you can ride the local train with all its stops and colour; it only takes around half an hour longer, though do remember that this is a Peruvian half hour. The stay at the ruins hotel is not exotic luxury but there is hot water 24 hours a day, and the feeling of having Machu Picchu to yourself before the day-trippers arrive is indescribable.

Without any doubt the journey, together with the prize at its end, is one of the wonders of South America. If you go during Peru's winter there in an additional evening train out of Cuzco leaving at 22.15 when one can see the mountains and valleys in moon and starlight – a unique experience though even more care needs to be taken with your belongings.

**Travel Facts**.Line length: 93 miles [150mkm]. Frequency: Four return train a day plus one night train in winter. Duration: About 3 - 3.5 hours. Reservations: available in first class only.

Health & Safety: take a packed meal on the train.

To counteract altitude sickness take packets of glucose sweets and walk slowly.

#### FOREIGN RAILWAYS

#### FRANCE

### France was the pioneer of the high-speed line in Europe, but the country also has an extensive network of quiet rural railways winding through, memorable mountain scenery.

The French government encouraged the development of a wider rail network by granting longer concessions and financial aid, and dozens of small companies were created to build and operate isolated lines. It was in 1827, three years after the first public rail service in Britain, that the first railway opened in France, from St-Étienne to Andrézieux. This and other lines built to Lyon and Roanne by 1836 were designed to transport coal to the Loire and Rhône rivers. Carrying passengers, who were initially accommodated in coal wagons, was a mere by-product. By 1837 the first Parisian suburban railways had opened, to be followed in 1841 by the Strasbourg to Basel line. This was not only the first French long-distance line, but also the first international railway in Europe. Today's national railway museum, the Musée Français du Chemin de Fer, at Mulhouse is situated on this historic route. large networks dominated the scene – the Nord, Est,Paris-Lyon,Méditerranée [PLM], Paris-Orléans [PO], Ouest, Midi and the state-run État. This was the situation that applied until the network was nationalised on 1<sup>st</sup> January 1938, when the Société Nationale de Chemins de Fer Français [SNCF] was formed.

While today's rail network was largely complete by 1870, the government of 1879 agreed on the construction of numerous minor lines, often built to metre gauge, with little or no justification. These limped on with massive state aid until the formation of the SNCF, after which a closure programme took the network back to something like that of 1870. Traces of these narrow gauge railways remain all over France, mainly in the form of preserved lines. Many railways running along borders, especially the German border, were built for strategic reasons; the lines in Alsace-Lorraine ended up in German territory after the Franco-Prussian War in 1871. Railway buildings here are very Germanic – the station at Metz is a superb example – and operating practices are different from those in the rest of France. Trains still run on the right instead of the left, so there are flyovers near the old border to allow trains to change sides.

#### **Reconstruction and speed.**

After W.W.11, massive reconstruction of the railways was necessary, and SNCF embarked on a programme of mainline electrification. Around 85 % of all traffic today is electric, the main exceptions being on cross-country routes, especially in the Massif Central. Then, from the early 1950s, came the quest for speed. While trains struggled to maintain speeds of 120km/h [75mph], new electric locomotives were gradually taken beyond 200km/h [124mph] and in an astonishing week in March 1955, two locomotives reached 331km/h [206mph] in the Landes region south of Bordeaux. The trials nearly ended in disaster as track started to deteriorate, but the record still stands today.

Trials gradually translated into higher service speeds – 160km/h [100mph] became the norm in the 1960s, while expresses to Bordeaux and Toulouse were cranked up to 200km/h [124mph] by the end of that decade. During the 1970s, SNCF realised that the only way to go even faster, and beat increasing air competition, was with purpose-built, high-speed lines: the Train à Grand Vitesse [TGV] was born. The first high-speed line, from Paris to Lyon, opened in 1981, with trains running at 270km/h [168mph], halving the 4 hour journey time. The network is still expanding and over three-quarters of SNCF's long distance passengers now travel by TGV.

#### Scenic lines.

While travelling at 300km/h [186mph] is now a French passion, the country still has many slower, scenic lines with time to enjoy superb views of mountains, river, forest, plain or coast. Any line through the Massif Central, the Pyrenees, the Alps or the Jura turns up beautiful vistas

Apart from the TGV, there is a great deal of investment in new trains, mostly with air-conditioning, much-improved comfort, and more frequent services.

The wave of rail privatisation throughout Europe has not yet reached France and is not seen as necessary. However, some may see the need for a little more entrepreneurship. Visitors may be surprised to find that many lines have long periods without trains [if you miss your service the next one may not be for hours] and many long-distance have no catering of any sort [take sandwiches]. On the other hand, trains are very punctual and connecting services are usually held when a train is a few minutes late. Cancellations are almost unheard of, except in the Paris suburbs where trains are, anyway, very frequent. Strikes [grèves] are frequent but often at a local level only.

We've reached the end of the line.! I trust you enjoyed the journey. Your's aye, Ken.