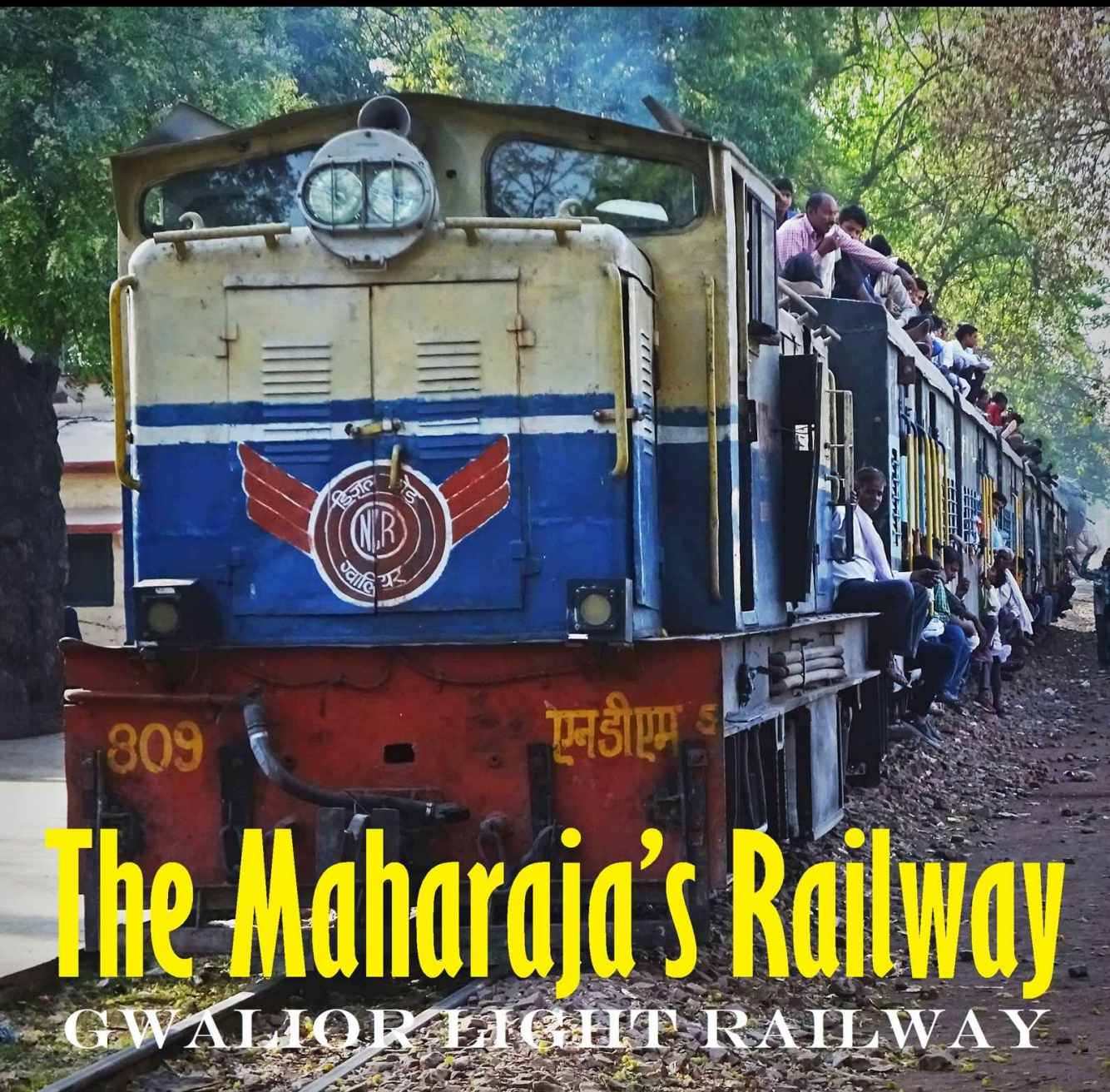
RAIL CANVAZ

A TrainTrackers' Initiative

June 2022



The Maharaja's Railway

GWALIOR LIGHT RAILWAY

EDITORS' DESK

Ever wondered about treating your distinguished guests to some delectable cuisines served by a miniature train on the dining table! Ever thought of entertaining your friends to a drink session where spirits are offered and served by a model train. These might sound bizarre and surreal but once you step inside the Jai Vilas Palace of the Scindia Royal Family at Gwalior, all these ideas meet reality.

Our cover story *Maharaja's Railway* sets off from here. Madhav Rao Scindia, the scion of the Royal Family had a special liking and fondness for trains. His predilection for trains led him to introduce a silver toy train over a grand dining table which would serve the purpose of a table trolley for serving food to the guests seated around the table. His passion did not remain confined to the dining table only. It spread beyond the precincts of his palace to give rise to the Gwalior Light Railway that spanned a good 400 Km around his territory connecting Sheopur Kalan-the summer capital, Bhind and Shivpuri with a 2 ft narrow gauge railway system. Better known as the Gwalior State Railway, the NG system, only limited to the services between Gwalior and Sheopur in its final years, survived under the umbrella of Indian Railways until 2020 - a good 73 years after the country got independence, before being shut down to match the ever-advancing steps of the Project Unigauge.

Gwalior State Railway brings with it a heritage spanning over a hundred years which saw its transition from steam hauled trains to diesel powered services but the primitiveness and the primeval nature of the system had remained unchanged. We track this change of traction from steams to diesels in our *Workhorses of GLR* article which is complete with intricate details of locomotives that worked GLR over the years. While **Mick Pope** focuses on the steam era of the GLR through *Gwalior Diaries* with an unmatched collection of photos dating back to the 1980s, we have **Jakob Stilling** telling tales about his more recent visit to India in 2019 when he planned to track the train all along in his article *Gwalior Narrow Gauge*. We also have **Aishik Chanda** portraying GLR through an array of photos in his Photo-Story *The Royal NG saga of Gwalior*. While all our protagonists marvel about the glory and the technicalities that went into operating GLR for all these years, but what about preserving the heritage of GLR. Here we have **TR Raghunandan** pulling out all the stops to save a crumbling steam loco hailing from the fleet of the GLR steams lying in utter neglect at the Indira Gandhi Park at Bengaluru. Read his intriguing story *Bangalore's Gwalior Connection* about the efforts he put in to identify the locomotive, never mind the struggle he is still going through to preserve the locomotive and return it to a state where it can showcase the glory of GLR.

Moving away from the NG flavour, we have something to offer from the Meter Gauge tracks as well. The quintessential **Apurva Bahadur** unfolds his scheme of things as he writes home about his *Visit to the Dhulghat Spiral* in Legends Speaks section. **JL Singh** pens an Exclusive story on his *Visiting Vietnam* and the meter gauge railways in that nation. We round off our Meter Gauge stories with the concluding part of *Through the Heartlands of Uttar Pradesh*.

Trams from the City of Joy have always featured in our issues and this time it's no different too. Two accounts on the eco-friendly mode of transport adorn our instant issue. While

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Tramjatra 2001 by **Roberto D'Andrea** talks about the build-up to the gala event, *Howrah Trams* by **Dr. Debasish Bhattacharyya** takes us back to the heydays of tram services in the twin cities of Kolkata and Howrah.

Getting back to trains, we have **Soumyajyoti Dey** scripting about a very unique subject - *Evolution of Headlamps* in locomotives of IR over the years in Technical Insight section. **PK Mishra** once again enlightens us with his elaborate catalogue - *EIR History/Part-IV*. We conclude with a report on the *Golden Jubilee Celebration of Bombay Rajdhani Express* which unravels the sequence of events on the momentous day along with an exclusive Photo Story of the same event by **Somanko Tiru.**

While our regular section on Railway Sketches is once again portrayed by **Dr. Sudakshina Kundu Mookerjee** and **Sambit Chatterjee**, the Photo Junction is a beautiful collage created from some of the astounding photos of rail enthusiasts across the nation and the News Station focusses on some of the noteworthy happenings around IR.

As we dedicate this issue to the Gwalior State Railway, its fall marks the breach of one of the last bastions of the Princely State Railway, in its original form, in our country. The closure of GLR signifies the end of an era of rail travel distinct with the glorious factors of uncertainty and uniqueness that knit the people of over two hundred villages in one strong bond where they could exchange their thoughts and emotions. GLR is on the cusp of history as the little blue boxes of the miniature train has made their last journey through the ages of time. With all hopes of its revival locked and buried under the stratagem of gauge conversion, this issue is our tribute to the royal railway which had caught the imagination of ferroequinologists across the globe.

We sign off on high hopes of standing by the expectations of our readers who motivate us to keep going. We look forward to your elite company on our journey ahead. Until our next issue, here is our team wishing everyone Happy Railfanning!!!

Somsubhra Das
Sourav Dutta
Subhadyouti Bose

Image courtesy: Subhadyouti Bose

RAIL CANVAZ
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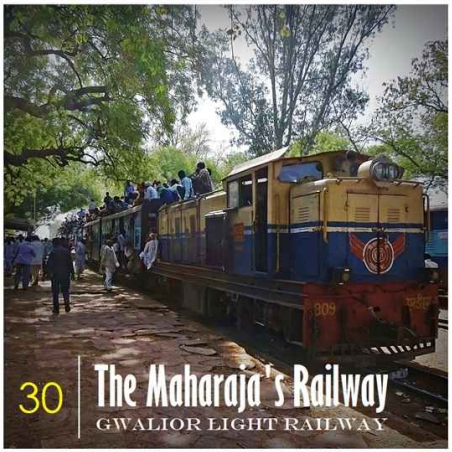
June 2022

inside stories

Legend Speaks

Cover Story



Somsubhra Das rides through the pages of history of the Gwalior Light Railway as he explores life on the smallest of the smaller gauges in our Cover Story which is a 'tell-all' tale about the journey of the Royal Railway since its inception in the 1890s until its final days. The saga of the survival of the GLR upto 73 years after the nation got freedom from the clutches of the British Raj is traced through facts and figures which is interlaced with author's own journey on the century old train service.

Exclusive

Visiting Vietnam

JL Singh writes home about the journey of the YDM4s to Vietnam and the challenges that lay in his stride while operationalizing the machines and imparting training for maintenance to the staffs over there 35 years ago.

The Story of 812

T R Raghunadan uncovers the true identity of a rusting steam locomotive at a park in Bangalore only to discover its roots to the GLR. It is a story about his dedication and will to restore the locomotive to its original glory.

Cover Features

Gwalior Diaries

Mick Pope takes us back to the steam days of GLR with a bunch of exclusive photographs from 1982 which will surely transport the readers back to the era of the bygone days.

Workhorses of GLR

An account by **Sourav Dutta** about the motive powers of GLR that kept the system going. The author tracks down the transition from steams to diesels with special emphasis on steam locomotives in an interesting story.

Gwalior NG Through My Eyes

Jakob Stilling presents his account on a more contemporary exploration of the GLR, 2019 to be exact, as he chases down history and the historical train in a bizarre journey through the heart of Madhya Pradesh.

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inside stories

Photo Story

The Royal NG Saga of GLR

Aishik Chanda brings out his collection on GLR in a well-documented Photo Story.

Exclusive Series

EIR Early Days : 1847-48 (Part-IV)

PK Mishra, the AGM of South Western Railway presents the fourth chapter on the illustrious journey of EIR with interesting facts and figures.

Features

Tramjatra 2001

The Prelude

Roberto D'Andrea, the chief protagonist of the Calbourne (Kolkata-Melbourne) Tramjatra puts down the series of events that ultimately culminated in the gala event of 2001.

Howrah Trams

Nothing has been Forgotten

The twin cities of Kolkata & Howrah had trams in common between them. **Dr. Debasish Bhattacharyya** takes us to those days when trams not only used to be just another mode of transport but also the identity of Howrah.

Through The Heartlands of UP (Part - IV)

Somsubhra Das presents the concluding part of his journey on the Meter Gauges of Uttar Pradesh from Bahraich to Nepalganj Road in freezing January temperatures.

Technical Insight

Evolution of Headlamps

Soumyajyoti Dey's article throws light on the variety of headlamps and their transformation over time to more advanced ones in IR. The writer's painstaking attention to details makes it a must read.

Miscellaneous

Golden Jubilee of Mumbai Rajdhani by Sourav Dutta

50 years of Mumbai Rajdhani by Somanko Tiru

SAVE TRAMS

TRAMS ARE ECONOMIC AND SAFE

URGING ALL READERS OF RAIL CANVAZ TO JOIN HANDS WITH THE CALCUTTA TRAM USERS ASSOCIATION (CTUA) TO PRESSURIZE WEST BENGAL GOVT. FOR RESTORATION OF CENTURY OLD TRAMWAY SYSTEM IN KOLKATA...

TRAMS ARE ECO FRIENDLY

AIR POLLUTION KILLS MORE THAN COVID-19

CTUA
Calcutta Tram Users Association

A Visit to Dhulghat Spiral

Apurva Bahadur

Introduction to the DGT Spiral

The Dhulghat spiral is a unique piece of track geometry on the Indian Railways.

At many places in India, a track jumps over another by the use of a long ramp and a viaduct. However, on a non-mountainous main line, I can think of only one location where the track loops a full circle with the pure purpose of matching the differences in altitudes between the two ends. There is no involvement of any other track – only at Dhulghat.

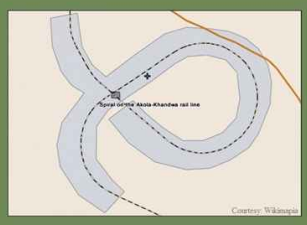
I am aware that spirals exist on the Darjeeling section including a one that loops not once but twice, but that is not a main line, so in my list Dhulghat is pretty unique. Typically, at Dhulghat, a northbound train arrives at a higher level from Akola, makes a right angle turn towards east and finds itself in the 'Spirral' area. This is what the Hindi sign says – on both sides! The English sign is spelt correctly.

The most visible part of the Spiral is a 193-meter-long steel box viaduct across a shallow valley. The viaduct leads the track to a circular path around a hill to the south. After circumnavigating the hill, the track arrives facing north, nearly parallel to the approach from Akola, but at a significantly lower altitude. This low-level track passes below the first of the sixteen bridge girders towards Dhulghat station and Khandwa.

On the opposite run, the train from Khandwa passes below the first span, goes around the hill to gain height, crosses the valley over the viaduct and twists south to face Akola.

A picture of the works plate on one of the steel spans mentions the manufacturer as Jessop, Kolkata and the date is 1959. The Khandwa – Hingoli section was opened only in 1960 so this date is correct.

Here is a view of the Dhulghat spiral – note the viaduct running east-west with the east end curving to the spiral, leading to the lower-level track and the left end connecting to the track towards Akola.



The location of the spiral is around 2 kms south of Dhulghat station which itself is located 90 kms north of Akola or 84 kms south of Khandwa. This section is the meter gauge track run by the SCR's Nanded division. Until then, the section saw four northbound and four southbound passenger trains daily and as on MG tracks elsewhere, freight traffic does not run any more.

This spiral had to be documented urgently – the shadow of the gauge conversion loomed very close. The tracks from Purna to Akola are already BG. The section from Akola to Khandwa was next, and there were rumors that the BG alignment would take a different path, thus bypassing the spiral altogether. The next two years from my visit could have been the last chance for anyone to watch the Dhulghat spiral in action.

In its heydays, this track laid a grand diagonal across India, joining places in Rajasthan to the southern tip of Tamil Nadu. The legendary Meenakshi Express used to run for 1482 kms between Jaipur and Secunderabad on these tracks. During my visit, the rapidly expanding gauge conversion program has truncated the MG network only between Ratlam in the north-west to Akola in the middle of the country.

Planning for the trip:

During the end of June 2008, a few of us did the Pune – Akola – Indore – Vadodara – Pune trip, purely behind exotic diesel power I should to add....

The idea for the Dhulghat visit was hatched on the 458B Akola – Ratlam passenger, as it passed through this section on its northward run. I would desist from labeling this idea as 'crazy' as we are yet to run out of imagination! With the super success of this trip, we are actually encouraged to do even wilder things, which would be truly worthy of being called as crazy. Many thanks to all our friends, who were all charged to do this trip. Their contribution and enthusiastic response made this outing a grand success. Based on our earlier experience, we knew that the officials in smaller places react badly to visitors. Accordingly, we had applied for permission for the visit/photography/videography from the authorities in SCR. A Senior Railways Officer from Mumbai and of course, our buddies in Hyderabad were of great help in getting this permission. The valuable piece of paper arrived only on the morning of our departure & it helped a lot to spread calm during minor ripples at location. Lesson learnt = apply for the permission whenever you can – it is usually granted.

The Journey to DGT:

The trip for the Pune gang (Lalam, Satish [Gune] and Apurva) started on the evening of Friday 29th August 2008 in the S4 sleeper of the 2129 Azad Hind Express. The Mumbai and Nasik gang (Raghavendra, "Old Man" Vivek and Sachin) entrained the S4 sleeper at Manmad. The last team members to join the S4 brigade were the two Venkats at Bhusawal ('Poochi' Venkat from Chennai and Venkatgiri from Bhusawal).

The 2129 dropped us off at Shegaon around 0530 hours and we left the south side exit to find the pre-arranged Sumo taxi waiting for us. The vehicle was to take us to the location over rough, rural road and through two wildlife reserves. As the dawn broke, we were at a roadside dhaba with the first chai of the day for both the customers and the dhaba wallahs. But wait, the tethered cow had to milked first, the dung patties had to be lit next and only then could the 'chai gilas' be offered. As is the custom in parts of India, the 'slightly meetha' drink would be nearly saturated sweet. We had three crates of water with us, which translated into 36 liters of the precious liquid – even on a temperate day like the 30th August, we could finish 2 crates easily between the eight of us.

We drove through Hivarkhed into Akot/Wan wildlife reserve – a system of gates and an entry tax enforces the rules here – we were warned to return by 1800 hrs if the gates were to be opened to let us out. After this point, the roads were largely dirt tracks. The first of the railway level crossings lay ahead which was joyously experienced by the IRFCA gang.

Asking for directions on the unmarked road junctions, we came across a local person who was coincidentally going to our destination. He boarded our Sumo and guided us through the bewildering twists and turns inside the forest.

Getting to Dhulghat meant going through country road including fording of two shallow rivers and slithering through sections of deeply rutted mud fields. Soon, we went through another forest area gate and the second of the level crossing. We crossed streams and rivers on causeways and low bridges without retaining walls. All this time, the railway line ran close to the road, lifting our spirits.

Our guide from the village pointed to the long bridge on the left of the road and said that this was part of the 'Char Ka Akda' (Devnagari figure of the number four). Local people from Akola to Indore (earlier trip), all refer to the spiral by exactly that name.

Near Char ka akda

The imposing structure of Dhulghat Spiral

Dhulghat Station, warming up to the spiral:

The motorable road ended suddenly at a Dargah, we had arrived! Our first task before starting the session was to meet the Station Master of Dhulghat and hand over a copy of the permission from the SCR HQ. The only way to reach Dhulghat station is by walking on the 91-meter-long bridge on Kokari river – unless you like wading through the knee - deep water below. The Dhulghat village is on the west of the river and a portion of the road runs below the bridge's span.

All of us walked across the river bridge over foot-wide steel sheets, mostly tacked to the sleepers in the middle of the MG tracks. Some places, the tacking was off and the sheets lifted and groaned under the weight of those who are built generously.... I am never comfortable about walking on bridges/viaducts, specially when using the steel strip laid between the tracks and this was no exception. There are lovely viaducts with a neat pathway along the side, but this was not one of them. I am too old, too heavy and too unbalanced to be walking on raw bridges on a regular basis.

However, one had to cross this bridge or be content to remain on this side of the river – so here goes. As an afterthought, this river bridge walking was a good thing as one got used to walking on unsupported heights using a narrow walkway without giving in to panic or vertigo. Mercifully, I did not have to walk on bridges with only sleepers across – that for me would have been very difficult to do. Dhulghat station is around 800 meters from the river bridge. As we walked to the station, the khalasi was putting out the kerosene powered lamp that lit the shunt signals during the dark hours.

On reaching the Dhulghat station, we handed over the visit/photo/video permission to the station master's office. We were informed that the first train, the southbound Ratlam – Akola 457 passenger was expected very soon and the track was blocked for that movement.

At the Spiral:

We rushed back to cross the river bridge once again, a little more confidently this time. We boarded the Sumo and retraced our path till the 'char ka akda' was visible on our side. The road is nearest to the spiral at the north east corner of the tracks.

Soon we were all over the tracks and moving fast to cross the long viaduct towards the west end. The 457 passenger from north was expected soon and the lower level rails are at that end. The workmen's gang doing maintenance work on the viaduct told us that this was not the place we were looking for, and that the spiral was elsewhere! This added some doubt in one's mind till the Hindi 'Spirral' sign confirmed that we had arrived at the correct place.

We positioned ourselves at different locations and waited for the train to arrive from Dhulghat. On this day, we were to spot 4 trains before the light faded.

Lalam and I were at the ground level below the spiral's viaduct. And soon enough we could hear the horn and the burbling sounds of the YDM4 hauling the train through the lower level. After going below the viaduct, the train looped the spiral and crossed the viaduct at the higher level following the permanent speed limit of 10 kmph.

Once the train passed, the valley returned to the natural pastoral sights and sounds of the area – clang of the cowbells, chirping of birds, whooshing of the mild wind, buzz

Ratlam-Akola 457 Up Passsenger

457 Passenger passing over the viaduct

of flies, gurgling of the water, clouds of floating yellow butterflies, the aimless determination of dragonflies... As the day climbed on, heat began to turn up a little but not too much.

For the next train, Lalam and I climbed onto a small hillock that gave us a wide view of the entire viaduct. 'Old Man' Vivek climbed on the adjacent hillock. While our hillock had a small hut and a space in which we could sit, Vivek was totally exposed. He had no shelter from the sun and stood amongst sharp, long bladed grass accompanied by armies of biting ants which put his railfanning resolve to a test – passing with flying colors! We could see Poochi on one of the escape platforms of the viaduct and Sachin in a similar position on another location, all waiting in the hot sun for the train to arrive.

None of us had eaten any breakfast and that added to the discomfort. Lalam and I could share a packet of dates that were in my bag. Dates are invaluable to stave off hunger pangs (or boredom!) and a few packets of this stuff should be in the railfan's sack at all times. As we waited, a friendly local person (the ex-Sarpanch of this area) came on the hillock to give us some coconut pieces. This was the 'Prasad' of the

458B Passenger over the viaduct

458B Passenger appears after negotiating the spiral

deity from a temple in the surrounding fields. He told us about derailments near the viaduct a few years back. It was very difficult to clear the mess due to the remoteness of the site for the rescue equipment. He looked somewhat alarmed when we told him that the line could close soon due to gauge conversion and the BG could take a different alignment.

After a long wait, the northbound 458B passenger arrived in front of us. Lalam and I had the ringside seat to the action from some altitude as the train passed from right to left. As soon as the last coach clattered across the spans, we picked up our stuff and just ran through the fields to the railway line. We barely positioned ourselves as the 458B passenger arrived at the lower level and moved towards Dhulghat station.

Food Break and the Post Lunch Walk:

There was a considerable gap between these two trains and the next lot of movements, so a food break it was. We left the viaduct to sit under a shady tree near the Sumo and dig into the sandwich, thepla, roti, pickles, jam that we had got with us from home. This was a nice brunch with loud railfan talk with great company. The large sized black ants were everywhere and anywhere we sat, we were apparently in their marching path. Poochi points to a particularly giant specimen crawling on my neck and then asks me not to move as he wants others to see the insect in the attacking position - thanks a lot! Poochi discovered that his camera's battery needed charging and drove back to the village with Lalam to find a friendly electricity point. The remainder engaged in banter and even snoozed a little – crawling ants be damned!

Railfans by their nature are restless lot. Poochi and battery charging team did not return for quite some time while the others decided to walk the spiral tracks. The diameter of the

Hiking over the viaduct...

Long view of the Dhulghat viaduct

circular section is around 1.8 kilometers and we decided to do the full circle. The track curves almost continuously through the dense, beautiful jungle. We walked across a wide stream whose flow is checked by three small bunds of increasing heights. Eventually, we returned under the viaduct and decided to reach the eastern end by walking below the spans. This involved crossing a shallow stream – the faster one walks across, the less do the shoes get soaked! We touched the stone pillars of the viaduct with reverence as they rose some 50 feet in the sky while supporting the delicate red-coloured steel spans. This was the opportunity to put oneself in various situations to imbibe the spirit of the place. We did a similar exercise when we visited the Panval viaduct – have a good time just touching, feeling, stroking and experiencing the structure. Do you understand and appreciate the emotions? Everybody else (non-railfans....) thinks we are crazy anyway.

We had not found Poochi and Lalam since they had gone to the village earlier – but there they were, downstream of the flowing water. This was a good time for Sachin, Venkatagiri and Vivek to strip to their undies and have a bath in the stream. While these guys were horsing around in the water, Lalam and I decided to have another go round the spiral – eventually arriving back at this spot in around 20 minutes.

The view of the spiral from the viaduct

The Two Trains in the Evening:

By then, it was time to take positions for the last two trains of the daylight. Reached the other end below the viaduct spans – and yes, the shoes went in the drink for the third time. The evening sky started filling with signs of rain clouds. It was slightly worrisome as we still had to ford two rivers and slither across the deeply rutted muddy sections on the way back. Having seen the earlier trains from the lower level, this time I positioned myself on the top level at the Akola end of the viaduct.

We could hear the southbound train arrive at Dhulghat station. But this was halted to allow the northbound passenger first. The 470 passenger arrived at the top level from Akola and rolled noisily on the viaduct. We observed that the assistant driver in the loco exchanges a green flag with the guard while on the viaduct. Soon the 470 moved through the loop and went under the viaduct towards Dhulghat.

We now awaited the last train of daylight, the southbound 469 passenger that departed from a distant Ratlam at 0600 hrs. By now, the light was rapidly fading and we could feel the moisture laden air blowing sharply at us. The setting sun highlighted the tall, shapely clouds in magnificent colours...

470 Dn over the viaduct

The last spotting for the day....

I was at the top of the tracks on the viaduct and as the light was low, I captured the 469 on video. The YDM 4 was making the most gorgeous sounds as it attacked the circular climb to the viaduct. The 469 was the first train that I spotted on the majestic viaduct while on the top level and I have some good photographs to remind me of the unforgettable fleeting frozen seconds.

As the train cleared the viaduct, it was sadly the time for us to leave the Dhulghat area. On returning to the Sumo, we discovered that Satish and Lalam had found new spots near the road that showed the last two trains approaching the spiral and over the viaduct in a totally different perspective.

Leaving Dhulghat:

We bundled into the Sumo and reluctantly sped out of the forest area. Fording the rivers and crossing the mud patches was not so much of a hassle – we were delayed at some spots by the hundreds of cattle returning home! At one turn on the forest road, we had to brake sharply as a pair of peacocks was strutting ahead. We often found piles of smelly animal bones on the road – any idea, who left them here?

We were later than 1800 hrs and as expected the gates at the border of the forest area were closed. It took some time to locate the person with the key to let us out. We were informed that the southern portal of tunnel between Wan Road and the Spiral is very near the first gate on the way out – something that needs exploration on a future trip. The rains hit us powerfully as we turned into the highway back to Shegaon. Two hours later, we arrived into Shegaon. We demanded to be led to a hotel with good conveniences and of course, 'wet' facilities – 'good' by the local standards!

Soon a long table saw eight people cheering over bubbly brown liquid and digging into hot food, discussing, what else but railways. After the meal we were back at Shegaon station, waiting on a low platform for our train (2136 Nagpur – Pune superfast) to arrive. The station had no audio announcements for the regular stream of trains in both directions. Every train arriving here was a mix of guesswork and mystery. This may be a busy trunk route but this was still a small wayside station and some of the charm remains.

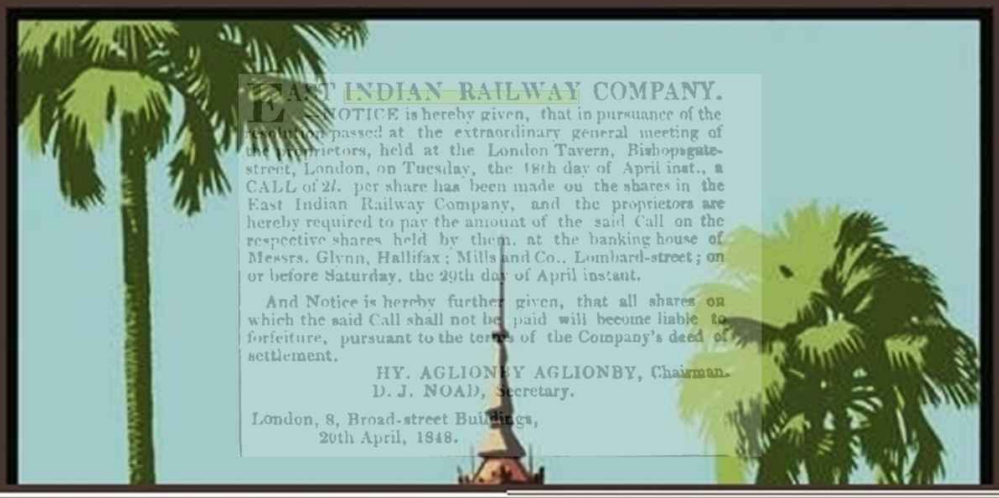
Venkat from BSL left first on the Pune bound Azad Hind Express, it made no sense for him to wait for the 2136. Our train arrived more than 30 minutes late. My reassuring memory through the fatigue of the day was watching the arrival of the eye pleasing shape of a WDG3A howling into the station on the dynamics. We all piled into the S2 sleeper coach. Mumbai/Nasik gang was getting off at Manmad, taking Poochi with them. Pune gang would obviously sleep it through. We said our goodbyes before turning in.

What a fantastic sleep I had - woke up only when we arrived near Ahmednagar. Plenty of high-speed running with rocking motion, cool rainy weather and the loud diesel thrash assured great rest. We arrived at Pune almost to the minute to bring to end an absolutely fabulous trip.

Everything went so well. Of course, it helps to have only loose expectations, so everything would nearly go well. As mentioned earlier, the success of this trip has emboldened us to do even wilder trips. All you need is that roving eye during the railway journey which says 'I want to go there'....

Apurva Bahadur is electronics engineer and is a committed Indian Railways enthusiast. Besides being an ace photographer, he is a train track trekker and a student of the railway history of India. He is also a member of the Indian Railway Fan Club Association (IRFCA) and Rail Enthusiasts' Society (RES).

EAST INDIAN RAILWAY



EIR Early Days : 1847-48

Part - IV

P K Mishra

"No enterprise more momentous than this has ever been undertaken, even by our enterprising nation, and it will be hard if either the Company or the shareholders have reason to regret a work of which the benefits will never cease to be felt either by India or Britain." — Times

East Indian Railway Company, on the 28th July, 1846, had written a letter to the Court of Directors of the East India Company, proposing terms upon which they would be prepared to recommend to their proprietors to carry out the views of the Supreme Government of India, and construct the line of railway selected by their engineers.

East India Company proposed, in January 1847, to sanction the construction of two sections of the Great Trunk line of Railway from Calcutta to Delhi through Mirzapore, one in the lower provinces and one on the upper provinces. Land was to be granted free of all cost for 99 years and interest was to be paid at the rate of 4 per cent per annum for fifteen years on the capital employed on these sections, not exceeding 3,000,000/sterling. Payment of interest was to commence as soon as the contracts were signed and the sum 500,000/paid into the East India Company's treasury.

Directors of Railway Company, in an elaborate letter, under date 3rd February 1847, expressed their willingness to assume the duties of constructing and managing the line selected, and to undertake the execution of two sections of it, assuming that the choice was to be made with their concurrence, but, they did not consider terms favourable enough.

They pointed out that capitalists would be induced to advance the large sum for such an enterprise only when certain moderate returns were guaranteed along with the assistance and cooperation of the Court. The terms and conditions, on which a Railway Company might be justified in undertaking the execution of the whole line from Calcutta to Delhi, would be very different from those on which they could engage to execute an experimental portion only.

The directors considered the rate of guaranteed interest too low, the period too short, and the sum required to be paid down too large. In ordinary times, a guaranteed interest of 4 % without risk would have been sufficient.

The letter containing these observations was transmitted to the Court of Directors on the 3rd of February 1847, and in reply to it the Chairman of the Railway Company received a letter from the Court of Directors, in which, the Secretary stated that the Court was unable to depart from the terms and conditions already specified.

Cover photo courtesy: The Author

Chairman of East Indian Railway Company Sir George Larpent later spoke in shareholders meeting held on 12th April 1847 about the delay of almost six months in receiving terms and conditions from the Court of Directors.

"In July, 1846, your Directors were prepared to recommend to their proprietors to enter into a contract with the Honourable East India Company, for the construction of the whole or such portions of the line as might have been selected; and the operations might, in such case, have been commenced in the month of October, at the beginning of the cold season of 1846; but it was not January, 1847, that a reply was received from the Honourable East India Company, when the terms and conditions upon which support will be extended to the introduction of railways into India were communicated to your Directors" — **Chairman Speech, First General Meeting of Proprietors, 12th April 1847.**

Opposition

The idea of guaranteeing fixed rate of interests to shareholders would come for criticism from various quarters, including members of parliament. In the House of Lords, Lord Ellenborough, deprecated the idea of Government guaranteeing fixed rate of interests to Railway shareholders and wished to know whether Government was acting on the same principle for Indian Railway as they had on recent case of Irish Railways where no guarantee was given.

In Ireland, the land belonged to private individuals, and it had been asserted that an outlay of sixteen million on railways would immediately add not less than twenty-three million to the value of this property to the landlords. In India, where the land belonged to the Government, it was argued that the Government should in like manner assume the responsibilities of promoters.

Railroads in India would in many cases derived their chief importance from their political uses, and, in the absence of all sufficient temptation for individuals to undertake the risk, it might nevertheless for this reason alone be a vital object to the Government to accomplish their construction. – **Allen's Mail 1847.**

"The Earl of Ellenborough gave notice that he intended, on some future day, to move for returns of the sums of money advanced for the formation of railways in India, and for certain documents connected with the proposed plans for encouraging railway communication in that country." **- House of Lords, Monday, Nov 29, 1847, East Indian Railways.**

Refusal of Court of Directors to grant enhanced guarantee created much disappointment in the minds of the Railway Proprietors, but they were determined still to preserve. Chairman of the East Indian Railway Company quoted the examples of Ceylon and Trinidad, where liberal terms had been granted to Railway companies wishing to construct railways.

The chambers of commerce of Manchester and Glasgow represented in strong terms their regret that the introduction of a railway system into India had not met with the encouragement from Government. They requested Court of Directors to encourage the investment of capital in India, so as to develop its resources, and especially to promote the construction of good roads to convey cotton from the interior to ports for shipment.

Newspapers and Journals, both in England and India would urge Government to quickly introduce Railways in India, to conquer time and space in vast Indian empire, to bring the frontier nearer to the three Presidencies, to develop to their fall capability the industrial resources of the central provinces, and to facilitate the cheap transport of their rich productions to the coast for transmission to Europe.

Papers criticised the guarantee of 4 per cent given by the East India Company as comparatively worthless, as it would not have the effect of facilitating the progress of the great work. They found it strange that the East India Company, despite admitting that the proposed railway would be of infinite importance to them, and that its profits would exceed 12 percent., and yet they would have allowed such a scheme to drop to the ground rather than give a greater guarantee than 4 per cent.

"Do they that call mode of proceeding enterprise? The East Indian Company, however, have energy and determination, and the line will therefore be carried out in spite of the ridiculous policy."

Douglas Jerrold's journal wrote:

Under views of military occupation, it will enable us and our descendants to retain those valuable territories acquired by the wisdom and valour of our progenitors. Whenever danger menaces, thither can we transport an army without fatigue or loss of time and life, and with rapidity inconceivable to past generations.

It now required a whole month for an individual to walk from Calcutta to Mirzapore; a large body of troops might take three months to accomplish that distance; by the rail the transit could be accomplished in twelve hours, while heavy goods could be conveyed in thirty-six hours.

Land, now neglected, would be brought into culture, because the rail would enable its produce to be carried to the large cities and the coast as a profit, which is now impossible; and the facilities of introducing into the interior lime, manure, draining tiles, and other materials necessary to the improvement of agriculture, would double or quadruple the fertility of millions of acres, now most rudely tilled. Cotton, so necessary to our manufactures, would be grown abundantly, where not a single pound has yet been raised. -- **Douglas Jerrold's journal, 1847.**

Mr. Sullivan in the quarterly general Court of the East India proprietors, raised the issue of introduction of railways in India and pointed that , no country ever presented such enticing facilities for the formation of lines of railway communication, hundreds of miles of which would long since have been inactive operation but for this nest of Leadenhall sultans; who, as Major Oliphant (himself a Director) stated, "*opposed the introduction of steam navigation as they opposed the establishment of the pressing India, and as they would*

oppose any and every object, however useful, the suggestion of which did not emanate in the first instance from their own Durbar.

Every other Government had offered a premium for the introduction of railways into their dominions, and had mortgaged their revenues to accomplish the object, Jamaica, Trinidad, Ceylon had each railway, and was India still to continue devoid of the great national blessing. He hoped the question would not cease to be agitated in that Court until the object was attained, and India had her railways. -- **Quarterly General Court of the East India Proprietors 1847.**

The Reluctant Consent

In June, 1847, the Court of Directors addressed the Board of Control, submitting that "*India has just reason to expect, that encouragement to the introduction of railways into that country will at least be afforded upon the scale (i.e., 5 percent.) which Her Majesty's Government may have deemed to be necessary in the colonies.*"

The Board reluctantly consented with reference to the then position of the money market, to raise the guaranteed rate of interest from 4 to 5 percent for a period of fifteen years, on the conditions that Government mails were to be conveyed free of cost and their Troops and Stores at the lowest rates chargeable for passengers and goods, in consideration of the guarantee and of the grant of the land by the Indian Government of the land and of any other facilities which the Government might afford. --- **Letter from James C. Melvill East India House, on July 5, 1847 to Sir Geo Larpent, Bart., B. D. Colvin, Esq.**

East India Railway Company directors welcomed the enhanced rate of interest from 4 to 5 percent but, pleaded to prolong the period of guarantee to twenty-five instead of fifteen years, which was also conceded vide letter dated 21st July, 1847.

Melvill, the Secretary of East India Company stated that all the conditions contained in the paper of "Terms and Conditions," furnished to the Chairman of the Railway Company in the month of January last, under which the guarantee of dividend then proposed was to be continued, were to hold good with regard to the longer term of twenty - five years now conceded.

That this concession shall be a final one; that instructions for commencing the preliminary arrangements be despatched by the Railway Company to Bengal at the earliest practicable period; and that the Railway Company pay into the East India Company's Treasury a sum of at least 100,000/-." — **Letter from James C. Melvill to Chairman EIR Sir Geo. Larpent and B. D. Colvin, Esq.**

These letters were understood by the Railway Company to involve a distinct engagement on the part of the Court of Directors, to guarantee to the Railway Proprietors a minimum dividend of 5 percent for twenty - five years, on the capital to be embarked in the undertaking. A meeting of the was held at the London Tavern, on the 12th April,1847, and the terms were unanimously accepted.

Engineer's Report

The Engineer's report was presented by the Chairman, Sir G. Larpent in the first general meeting of the company held on 12th April 1847. Rendel & Beardmore, the Consulting Engineer of East Indian Railway Company, had submitted their technical report on 10th April, 1847 based on documents & report submitted by Stephenson and assistance of surveying engineers in India.

"*The grand feature of your line, and by far the most important in pecuniary point of view is that in opening a railway from Calcutta to Delhi, the direction of the traffic through the great valley Ganges, which must have existed for ages, will be fully preserved. To enlarge upon the additional facilities given to the trade which in spite of great obstacles passes and re-passes the branches of this Great River, and the populous cities on its banks, would be here superfluous.*"

They estimated that total cost of the line might be safely taken at from 15 to 15 & ½ million Sterling. The entire line between Calcutta to Delhi was divided into five sections for estimation purpose, estimates varying from 14000/- per mile to 22000/- per mile, assuming that land would be provided free of all charge, average rate being 17000/- per mile including working stock.

The report stated that out of the 900 miles comprising trunk line, 500 miles might be considered to present as few difficulties; 200 miles might be estimated as involving works of an ordinary class, with a few exceptions, however consisting of extensive bridges. The remaining 200 miles would contain some considerable earthworks and tunnels, the heaviest of which were confined to about 100 miles at the summit.

They highly approved of the proposition to start work from Howrah to Burdwan and from Allahabad to Cawnpore. The execution of these divisions would be within the limits of first portion of proposed expenditure and would involve comparatively fewer works of difficulty, whilst they would serve to educate the employees of the company and afford good experience as to the action of a tropical climate on the Railway works before completion of heavier portion of the line.

Establishment of repair shops was proposed in the neighbourhood of Calcutta and Allahabad or Mirzapore to save expenses in procuring tools and machines from England.

The low cost of native labour would initially be fully balanced by high cost of fuel, but the line when completed would pass near the coal field, which would supply the fuel and probably afford a large traffic for export from Calcutta.

They concluded the report by stating that it would be necessary to immediately consider matters related to the staff to be appointed for the direction and superintendence of

the works as much necessarily depended upon the judgement and practical knowledge of engineers in India. — **Report of Rendel and Beardmore, 8 Great George Street, Westminster, 10th April 1847.**

The Traffic Estimates

Traffic estimates, expected revenues and traffic expenses were presented in the shareholders meeting. It was estimated that Railway would be able to capture 1,500,000 tons out of the existing goods traffic of 2,226,359 tons and 250000 passengers out of 5,70,000 passengers between Calcutta and Mirzapore. Railway was estimated to capture 750,000 tons of goods traffic out of existing traffic of 1,051,881 tons and 20000 passengers out of 4,46,851 passengers estimated to travel between Mirzapore and Delhi. Chairman stated that the traffic had been taken from officially-authenticated Government returns, and the estimates had been made on traffic considerably less than that actually existing.

The estimated revenue on the "through line" from Calcutta to Delhi was, for goods, at the rate of 1 d. per ton per mile, totalling 5,625,000/-; for passengers, at ½ d. per mile each, totalling 468,750/-.

Directors were hopeful that, without an increase of the existing traffic, a large dividend might be expected and a return much more remunerative than had been hitherto obtained upon any project of a similar character. To this traffic there had still to be added the charges for the transport of the Government mails, troops, military stores, which had not been included in the estimates. The practical illustration of a railway, now in profitable operation in Jamaica, removed, in a great measure, any doubts entertained of the injurious effects of a tropical climate.

Sum of 5s. per share was subscribed to meet the expenses necessary to ascertain the practicability of introducing railways into India, and the preliminary expenses did not exceed 2s. 8d. per share. The working expenses were estimated at 3,221,210/-; and the profit at 18-½%. For the portion of the line between Calcutta and Mirzapore the profit was estimated at 12-½%, and for that portion between Mirzapore and Delhi at 11%.

Shareholders were informed that nine hundred miles of country had been surveyed, engineers sent specially to India for the purpose, sections, maps, and plans of the whole line provided, all preliminary legal and other contingent expenses had been defrayed, and the gross sum expended amounts only to 22,424/-.

"It will be the duty of the Directors, in the event of their acceding to the terms and conditions of the Honourable East India Company, to extend the calls that may be required over as large a surface of capital, and as long a period of time, as may be practicable, and to construct, in the first instance, only the two sections of the line, strictly to limiting the outlay to the sum of 3,000,000/-, on which the interest of 4 percent is guaranteed and your Directors think this may be done in such a manner as not to prove onerous to the shareholders." — **Director's Report First Shareholders Meeting, 12th April 1847.**

Amalgamation of the EIR and the Great Western Railway Company

The directors recommended an amalgamation with the Great Western of Bengal Railway Company on equal terms, the relative expenses of the two companies to be equitably adjusted, three directors of the Great Western of Bengal Company to join the consolidated board.

Great Western Company had proposed a line from Calcutta to Rajmahal, to be carried over a portion of the main line of the East Indian Railway Company from Calcutta to Mirzapore, and entering into competition with the branch to Rajmahal, which the East Indian Railway Company had contemplated. As the choice of the sections to be first adopted was to be left with the Government of India, it was considered expedient to amalgamate the interests of the two Companies, so as to give the Indian Government the freest choice in their selection.

The subscribed shares in the Great Western of Bengal Railway Company were to be exchanged for an equal number of shares in the Consolidated Company and the relative expenses of the two Companies, were to be equitably adjusted by mutual arrangement.

Three of the Directors of the Great Western of Bengal Railway Company would join the Consolidated Board and the claims of the officers who might be displaced by the amalgamation be considered by the Consolidated Board.

The above resolution was unanimously accepted in the Shareholders meeting held on 6th August 1847. Chairman also spoke about the amalgamation proposals received from other Railway companies which were under consideration, and hoped that all parties desirous of carrying out railways in India would unite in giving that aid to this Company, upon the success of which the future extension of the system of railway communication in India depended.

"Your directors take this opportunity of stating that they have had other proposals of amalgamation, which, under existing circumstances, they cannot recommend to the proprietors; but, as this under taking is clearly understood to be the first to which the sanction and influence of the Honourable East India Company will be given."

Share Holders Special General Meeting, 6th August 1847

It was unanimously adopted in the shareholders meeting held on April 1847 that the proprietors should proceed at once to constitute the company under the provisions of Act 7 & 8 of Victoria act and complete the registration of the shares under the Act of Victoria. The constitution of the company as per act was completed and 37000 shares out of 66000 first class shares allotted in England could be registered. EIR had issued 66000 shares in England and 14000 in India.

The Chairman informed that with regard to the second class, when they increased the capital of the Company a new issue, of 160,000 shares, was made, and these shares were now advertised to be in course of registration. The period of their registration was to expire on the 1st September,1847.

Directors were also directed to endeavour to obtain from the Honourable East India Company a modification of the terms offered to the Company.

Negotiations of some extent and no little responsibility had been carried on with the East India Company, but the Directors had been met by that company with so much liberality and good feeling.

The Chairman informed that the guarantee of four percent, which in the then state of the money-market was considered inadequate to induce capitalists to embark in the under taking, had been increased to 5 percent, and the period of fifteen years, the time limited for the construction of the works to Mirzapore, had been extended to twenty-five years. The sum required to complete the contract, and to be laid down at once, had been reduced from 300,000/- to 100,000/-, thereby obviating the necessity of the Directors making any very heavy calls upon the proprietors.

Though there was insistence, on the part of the Board of Control, to the period of fifteen years, but the Directors were convinced that the period was too short. Projectors were decidedly of opinion that the works could not be completed under twenty-five years, and upon their representations the Board of Control yielded them that point only a few days before special general meeting in August 1847.

Projectors felt that, having embarked in a distant enterprise, it was absolutely necessary they should have some solid and certain advantages to induce substantial men of property and capital to join in the undertaking, and go on with them to the end. The certainty of always receiving 5 percent was, in the present state of the money market, only a moderate, though a sufficient inducement to prevail upon such parties to connect themselves with this scheme.

Chairman stated that they had to provide for 100,000/-; they had 20,000/- in hand, which had been placed out at beneficial interest for the expenses had hitherto been trifling, as they only embraced the salaries of the parties engaged in their service, and they would not require any large sum of money, in addition to the 100,000/-, to enable them to send out an efficient staff to commence operations at once. If the report met with the full approbation of the shareholders, it was their intention, on the 1st September, to send out a staff, headed by Mr. M. Stephenson.

The cost of working was expected at 50 percent and 10 percent depreciation value was considered for the stock and plant arising out of the peculiar climate of India, and which was quite sufficient for that purpose. The Chairman pointed out that the Peninsular and Oriental Steam-packet Company allowed only 8 percent for marine depreciation, well known to be very heavy.

EIR had proposed to carry goods and passengers at very low rates, one penny per ton per mile for goods, and one-half penny per mile for each passenger, as the country was under developed and its wealth was scattered over a large surface. That was the very lowest calculation adopted by any Railway Company, either in England or in India and expected to draw substantial traffic.

Training

Directors of EIR had planned to educate the natives of India in the business of railway management; Stephenson had already established a school at Calcutta for that purpose, and arrangements had been made to have their pupils brought over to England to be educated at Liverpool in the use and construction of machinery used upon railway. They had, with the assistance of an eminent house at Liverpool, made such arrangements that they would be enabled to instruct the natives with economy, and eventually to avail themselves of their services and knowledge.

Dalhousie - the Governor General Designate

Appointment of Lord Dalhousie as the Governor General of India was greeted by proprietors of East Indian Railway. Dalhousie with his previous association at the Board of trade and considerable experience in railway business in the country was expected to introduce an efficient railway system in India.

If one person more than another could possibly have been selected to aid these great undertakings in India, it was Lord Dalhousie, who would go out to India thoroughly conversant with all that the railway system had produced in this country, and whose knowledge would enable him to see the principles of railway government properly applied to railways in India. –**Chairman speech shareholders meeting, 6th August 1847.**

Chairman said that indeed, he had heard that Lord Dalhousie had made the observation, that in going out to India he wished to distinguish himself, not in war, but in promoting the trade and commerce of the country. Could he more effectually accomplish that object than by assisting in the creation of railways for developing the resources of the country. He reminded shareholders that however anxious they might be to benefit India, they ought not to lose sight of the advantages which this undertaking was likely to yield to themselves; and it was therefore the more gratifying that, whilst administering to the benefit of India, they should be securing to themselves a certain profit in return, with a prospect of receiving a large additional remuneration hereafter.

Visit of Stephenson to India

Pursuant to Court's instructions for commencing the arrangements at the earliest, Mr. Macdonald Stephenson with a Committee of three gentlemen of experience in Railway matters, and a large staff of Engineers, was despatched to India by the steamer in September,1847, in order that the working season of the year might not be lost. It was determined by the Directors in London, that the

steamer in September,1847, in order that the working season of the year might not be lost. It was determined by the Directors in London, that the executive management in India of the affairs of the East Indian Railway Company be vested in a Board consisting of a chairman and two other gentlemen, whose experience in the rail ways of this country had qualified them for such employment.

The members of this Board were Mr. Macdonald Stephenson, the Managing Director of the Company, who was appointed Chairman; Mr. Arthur Adams, and Mr. Alfred Beeston-all of whom proceeded to Calcutta by the steamer of the 20th of September, with the executive engineers and others who were engaged for the Company.

The East Indian Railway Commissioners who went out by the ship "Bentinck", with their staff of engineers, lost no time in commencing their operations, limiting the proceedings to a careful re -examination of the country round and near Calcutta and the opposite side of the Hoogly, with a view of finally deciding upon the relative advantages of making Calcutta, or Howrah, the starting point.

Subdued Money Market

A call was made on the Proprietors, for the purpose of enabling the Board to pay into the Treasury of the Court of Directors the sum of 100,000/-, an earnest money as mark of the Company's sincerity pending the negotiation of a contract between the Railway Company and the Court.

At this period the money market was in an exceedingly depressed state, and the excessive speculation in Railways in the year 1845 had rendered it impossible to proceed with any undertakings of that nature, however, Railway Company was confident of raising 100000/- by call on shares, as prospects of the company had never been speculative.

In the meantime, the Railway Board proceeded with all the preparations to enter into a contract with the Court of Directors, for commencing the work in sections of the Line to be agreed upon. Directors of the EIR requested the East India Company to extend the time for making the deposit due to the severe pressure of the monetary crisis as the call made in the autumn of 1847 was inadequately responded to.

The Directors were unable to make the required deposit by the time originally arranged with the Honourable Company, and representations having been made to the Directors of the East Indian Railway Company of the extreme difficulty of converting other investments, and the consequent loss that would accrue to a large number of the proprietors if the call were enforced at this period, the Directors applied, with success, for an extension of the time for making the deposit, which was granted, until the 31st of March, 1848.

Up to the 23rd of December, 1847, not more than 53,096/-, including the balance of the first deposit, were available with the Company. Notwithstanding, the Directors were hopeful by the prompt payment of the calls in arrear, to affect the deposit of 100,000/- by the date arranged.

In the meantime, the commercial crisis having run its course, and the call on a large number of the shares in the Company being unpaid, the Board convened a public meeting of their proprietary on the 19th February 1848, at which it was resolved to forfeit all shares on which the call was not paid, and to issue the forfeited shares to the public, to pay necessary deposit on the 31st March.

Demand for a Charter

English Railway Companies had constituted a corporation, with liability limited to the amount of their shares, and this provision involved immunity, which was but indispensable as an inducement to capitalists willing to embark money in such undertakings. Promoters of East Indian Railway wanted similar privilege from a charter from her Majesty, or an Act of Parliament.

The Board of Directors would have preferred the former expedient, as in some degree less costly; but the Proprietors had made it a point with their directors, to reduce the nominal amount of the shares in the Company from 50/- to 20/-, and this involved an alteration in the Company's fundamental constitution, which could not be affected without an Act of Parliament.

Under their deed of settlement, the sum taken upon the shares was 50/-, but the Directors had always considered that the 50/- was a great deal more than was necessary, and it was proposed, to reduce their shares, under the authority of an Act of Parliament, from 50/- to 20/-.

Directors were of the opinion that the 50/- shares ought to be reduced to 20/- as it would allow more persons to register for 20/- than were likely to register for 50/- shares. ---

Shareholders meeting August, 1847.

It was also felt necessary that the East India Company, to have accessory powers conferred upon it by the Railway Company's Act, to enter into a contract with the Railway Company, charging the lands and revenues of India in perpetuity, or for a term longer than the duration of their charter, with the sums required to be guaranteed to the Railroad Company, as well as for acquiring lands and for other like purposes.

Draft Act

With this view the draft of an act of Parliament was prepared by the legal advisers of the Company, after communication with the advisers of the East India Company in the autumn of the year 1847, and a copy was officially transmitted to the Court of Directors, on Feb 8, 1848, before its introduction into the House of Commons.

The Solicitors of the East India Railway Company had been in communication with Messrs. Lawford for some months on the subject of the Company's proceedings, and a copy of this Bill was supplied to them on the 27th ultimo.

The Railway Board directed their legal advisers, J. C. & H. Freshfield to place the Bill under the charge of Sir James Hogg, the late chairman of the East India Company to pilot

the bill in the House of Commons.

We have been requested by the Board of Directors of the East Indian Railway Company to hand you the enclosed print of a Bill proposed to be introduced by the Company into Parliament this Session for the incorporation of the East India Railway Company, and to ask your permission to allow your name to be placed on the back of the Bill as one of the members taking charge of it in the House of Commons. **--- Letter from J. C. & H. Freshfield to Sir J. W. HOGG, Bart. M. P, dt. 31st January 1848.**

The Board of Directors of the Railway Company had realised that they could succeed in this important undertaking only with the aid and assistance of the Honourable East India Company. A copy of this letter was transmitted to Sir J. Hobhouse, the Chairman of the Board of Control, on the 8th February 1848; and, the legal advisers of the Company met Mr. Lewis, the secretary to the Board of Control, at whose request the provisions in the Bill applying to the East India Company were struck out as unnecessary.

The Bill was subsequently returned with further alterations suggested by the legal advisers of the East India Company; and subject to these amendments, the Railway Board were justified in believing that the measure had the full concurrence and approbation of the Court of Directors, without which they were unwilling to proceed with it.

Reconstitution of Board

The upheaval in the money market took its toll and Chairman of East India Company; Sir George Larpent lost the Chairmanship of the board. The chair would be filled by Mr. Henry Aglionby, M.P. The acting Chairman B.D. Colvin said, that he need not allude painful cause of Sir George Larpent's to the having retired from the chairman ship of the Board; that was, he presumed, known to them all; but he refrained from expressing his deep sense of the great loss which the Company had sustained by the retirement of that gentleman, whose zeal, talents, and energy had been devoted to its interests, well as all knew, who had any connection with the undertaking well knew. --- **Chairman speech, Shareholders meeting February 1848.**

As decided in last meeting held in August 1847, three of the Directors of the Great Western of Bengal Railway Company, Major-General Duncan McLeod, W. P. Andrew, Esq., and R. H. Kennedy, Esq. were taken into the board of EIR, the number of Directors rising to twenty-one. These directors would face a frosty welcome in the EIR board and would be accused of undermining the interests of the company.

EIR was trying desperately to get it passed by the parliament. Chairman stated that the gallant General was a member of the Board when the Bill was agreed upon, and at the time when the clauses were settled with the Board of Control; and he could not imagine how the gallant General, after the lapse of only a few days, could ask the East India Company to oppose that Bill. -- **EGM East Indian Railway 1848.**

Forged Scrips

The shares of EIR had become an attractive proposition for forgeries and the Chairman reported that several hundred forged scrip receipts, fraudulently intended to represent the scrip receipts of this Company, had been circulated.

The forgery was detected immediately on the presentation of the scrip for registration, and the circumstances were at once made known to the solicitors of the Company, who proceeded to investigate the facts, and traced the offence to certain parties supposed to have fled the country, in consequence of which no further steps could be taken at that time. Later a public notice would be issued by Mr. Noad, Secretary of the company warning the share holders about the presence of forged scrip receipts.

Suggestion of Mr. Bourne

Mr. Bourne, one of the engineers of East Indian Railway, suggested that Railways in India could be constructed cheaply by EIR, if line was laid on existing road without affecting road traffic. EIR board would be urged to seriously consider suggestion of Mr. Bourne in view of inability of board to collect funds. He had found, on his way up to Mirzapore, that the bridges, embankments, and other works of the road, were of so elaborate a description as to be suitable for a railway, and he ascertained that single line of railway could, without inconveniencing the road traffic, be carried along whereby the cost of the railway would be so much further reduced that even less than the three million would suffice to complete it. Mr. Bourne in his pamphlet showed that the goods, now transported on the Ganges, which would probably be secured to the railway, if it were completed to Mirzapore, and if the charges were moderate, would yield an ample return. The main object of his pamphlet was to show that a single line would be sufficient for all the traffic, whilst it would not cost more than half the expense of a double line, and that the present roads and bridges might , to a considerable extent, be made available for a railway.

In order to attract the water traffic to the railway, however, he maintained that the charges must not be higher than the existing rates on the river, and that the railway must, in order to prevent the necessity of trans-shipment, be carried in an unbroken line from Calcutta to Mirzapore. It was stated to be a solution of the difficulty caused by the inadequacy of the guarantee, and Bourne suggested to Mr. Stephenson the expediency of making application to the Government to grant the request.

It was at first proposed that Mr. Stephenson should return to England and set the proposed plan before the shareholders, at the London meeting, in April last. But this being overruled, a Mr. Beeston, who represented the views of Mr. Stephenson's coadjutors, proceeded in company with Mr. Bourne and others to London. Mr. Bourne addressed a long and explicit letter to Mr. Aglionby, the new Chairman of the East Indian Railway Company, of which no notice had ever been taken, and its receipt even had never been acknowledged.

to be cotinued in the next issue.....

Evolution of Headlamps

Soumyajyoti Dey

The role of a locomotive headlamp isn't limited to illumination of the path ahead as one would think at the first place. They also play an important role in rail transportation. Since, it's nearly impossible to stop a moving train instantaneously, the headlights serve as an alert for opposite traffic and people in the vicinity of tracks. Traditional train headlights which use incandescent or halogen bulbs, are bright enough to meet safety regulations but aren't very energy efficient because most of the energy used to power the light is converted into heat rather than visible light.

When railroads were introduced, the need to increase profits came up against one major problem – how to run trains at night. In 1865, Irving Williams introduced a kerosene lamp for use in locomotive headlamps. Although, it wasn't as powerful as a modern-day strong headlamp, still it proved to be very useful. Besides, serving as headlamps in various locomotives these kerosene lamps were also used to light tail or marker lamps for a century. The early 20th Century, saw the introduction of acetylene gas to power headlamps alongside kerosene. With the passage of time, electric lamps came into picture when Charles Francis Brush introduced his arc lamp and Thomas Edison invented his incandescent lamp.

In 1881 the Westinghouse Air Brake Company started replacing oil lamps with the newly invented electric ones. Since, these lamps were powered by dynamo, the biggest drawback was the loss of power supply to the lamps when the train came to a halt at any station. In case of carbon arc lamp, popular for its use as an anti-aircraft lamp, the light was bright enough to temporarily blind the pilots of incoming trains. The only alternative was to turn off the headlamps, while standing at a station. The incandescent lamps had their disadvantages too. Their filament was too delicate to withstand the vibrations of a locomotive. However, the largest breakthrough occurred in 1913 when a new ductile tungsten filament was developed & a new method was adapted to attach the filament to the lead of the wires. The above method made the joint strong enough to resist the vibration of a powerful locomotive. Gradually, stronger filaments and bulbs with greater vacuums to make the filaments burn brighter replaced their weaker predecessors. The new filament lamps mostly battery supplied, fulfilled all the requirements of a modern locomotive headlamp.

However, Indian Railways continued its experiment with headlamps, upgrading to the latest technologies & equipment time to time. From getting powered by kerosene to modern

hi-lumen LEDs, headlamps in IR have come of age. Earlier, I have already discussed a little about kerosene powered headlamps. Now, let's try to understand the transition of headlamps from single beam to modern twin-beam & further to LED.

:: SINGLE BEAM HEADLAMP ::

The single beam headlamps were widely used in Indian Railways till 2002 with very few units surviving till late 2004 on broad gauge. The smaller gauges had used them even longer till early 2010. In the early days of introduction in IR, the head of the bulb inside an electric headlamp pointed inward towards the reflector. The bulb assembly had a hinge like setup with wires running through the lower hinge support all the way to the bulb socket. The headlight, including the reflector and its hole, wasn't accessible from inside of the locomotive due to the presence of a metallic back-cover which was used to set the height of the light beam by adjusting the position of the reflector. Therefore, all the maintenance procedures of a bulb were conducted from outside. This type of lamp assembly was used in all steam loco variants of IR and later, same setup has been used in DC electric locomotives as well.

• Inverted Single Beam Headlamp:

Inverted headlamp fixtures fitted on a steam locomotive

Some attributes of the inverted single beam headlamp fixture are as follows:

Type: Incandescent
Filament used: Tungsten filament, coiled coil.
Operating Voltage: 110V DC
Watt: 250W
Reflector Diameter: 40”
Reflector to filament gap: 10”
Application: Locomotive Headlamp (Single Beam)

Disadvantage: The bulb filament projected a large shadow by virtue of the inverted setup. As a result, the lighting was insufficient due to uneven distribution by the reflector.

In order to overcome the above problem, the headlamp fixtures were modified by shifting the position of the bulb to the base of the reflector. This arrangement proved to be efficient & was implemented in EMUs, MEMUs, Diesel locomotives, & later in AC electric locomotives.

• Modified Single Beam Headlamp:

Single beam headlamp fixture on an NG locomotive

Attributes of this lamp:

Type: Incandescent
Filament Used: Tungsten filament, coiled-coil.
Operating Voltage: 32V DC
Watt: 250W
Code: 250P25
Base: E26
Application: Locomotive primary headlamp.

Twin Lamp Single beam headlamp fixture on a Kolkata Metro Railway Inspection Car

The broad-gauge locomotives/multiple unit motor coaches had an additional headlamp i.e. two lamps were there in a single fixture. The second lamp had a lower rating of 32v 50-100w approx. This additional lamp was fitted in such a way so that the light rays doesn't interfere with the vision of a loco-pilot in the opposite train. The primary bulb was used for bright state & the secondary bulb was used for dim state.

The single beam headlamp had some major disadvantages. In case of failure of the main bulb, there was no alternative to properly light up the track at night. Therefore, the LP either

had to rely on the secondary lamp or inform the station master of the upcoming station about the situation for necessary action.

:: TWIN BEAM HEADLAMPS ::

To achieve higher illumination & eliminate dependency on non-saturated single beam, Indian Railways switched to the concept of **Twin Beam Headlamps.** This concept was first introduced in IR when they imported high-speed three phase locomotives (classified as WAP-5) from ABB, Switzerland in 1995. The lamps used are two single filament PAR56 lamps. The same set of lamps are also used for its 3-Phase cousins WAG-9 & WAP-7.

Later, IR imported EMD locomotives from General Motors, USA which were also equipped with a twin beam PAR56 headlamp setup. However, the bulbs turned out to be slightly different.

The other two remaining types of twin beam headlamp setups currently used by IR are: *Twin Filament Twin Bulb Halogen headlamp* fixture, and modern *LED Twin Beam* fixture. Let's have a look at each type mentioned above:

- **Single Filament Twin PAR56 Halogen Lamp with Stepped Lens Setup**
  (For 3-phase Electric Locomotives: WAG9, WAP7 & WAP5 only)

Headlamp of WAG9 locomotive with Twin single filament PAR56 lamps

PAR - Parabolic Aluminized Reflector: PAR light bulbs come in different sizes for different lamp setups. It is measured by its diameter or the length across the surface of the bulb. When specifying a PAR light bulb size, manufacturers use the acronym "PAR," followed by a number that describes the diameter size. The number corresponds to one-eighth of an inch. For example: The bulb marked as PAR56 measures 56/8 inches i.e. 7 inches in diameter. Due to the presence of only one filament, the near-focus & far-focus switching is not available in PAR headlamps like twin-filament halogen bulbs. These bulbs can be dimmed from the control desk for approaching traffic from opposite direction.

A single unit of PAR56 bulb, especially for G9, P7 & P5 Locomotives

IR generally uses GE (General Electric) manufactured PAR-56 lamps.

The technical specifications are as follows:

Brand: GE
MPN (Part No): 49889
Bulb Shape: PAR56/MFL (Medium flood)
Lens *(Outer Glass)* Type: Stepped Lens
Colour Temperature: 2700K
Life hours: 2,000
Watts: 200W
Volts: 120V
Dimmable: Yes
Filament: CC-13
Base Type: GX16d Mogul End Prong (Plug-In)
Lighting Technology: Incandescent
Length: 5 inches
Diameter: 7 inches

****Exceptional cases**: Recently, a DLS/Vishakapatnam based CLW manufactured WAG9HC locomotive bearing the road number 33367, was fitted with **Clear Lens Type PAR56 lamps instead of stepped ones on both sides**. It looks similar to the PAR56 lamps normally used in HHP Diesel locomotives (discussed later) 3phase electric locomotives: G9, P7 & P5 (discussed above).

VSKP(D) WAG9HC 33367 with clear lens type PAR56 lamps

The technical specifications of the above clean lens type PAR56 lamps are as follows:

Brand: Philips, Osram
MPN (Part No): 229047 (Philips), 14974 (Osram)
Bulb Shape: PAR56/SP
Lens (Outer Glass) Type: Clear Lens
Colour Temperature: 3000K
Life hours: 500
Watts: 350W
Volts: 75V
Dimmable: Yes
Filament: CC-8
Initial Lumen: 6200
Base Type: Screw Terminal (Slip-on and Screw-on)
Lighting Technology: Incandescent
Length: 4.5in
Diameter: 7inch

• Single Filament Twin PAR56 Halogen Lamp (With Clear Lens) Setup

(For 3-phase Diesel Locos: WDG4, WDG4D, WDP4, WDP4B, WDP4D)

Headlamp of WDG4 Locomotive with Two Single Filament PAR56 Clear Glass Bulb

These PAR-56 bulbs are a little bit different from the types of PAR-56 which we have discussed earlier. These units have a setup similar to 3-phase electric locomotive headlight in terms of required voltage, base, and some other perspectives like the outer glass type & lamp size. As mentioned earlier, they are found on all HHP EMD locomotives. However, there are many diesel sheds across IR who have retrofitted their Alco locomotives with these headlamps replacing the twin filament twin beam lamps (discussed in brief later). This particular type of PAR-56 headlamp is supplied to IR by General Electrics (GE) & similar to its other PAR-56 cousins, there is no option to change focus . Loco pilots can only switch the headlamps to dim state when required. The technical aspects are as follows:

Brand: GE
Bulb Shape: PAR56/VNSP
Lens (Outer Glass) Type: Clear Lens
Lumens: 3700
Life hours: 350h
Watts: 200W
Volts: 30V
Amps: 5.67A
Dimmable: Yes
Filament: CC-8
Base Type: 2 Screw Terminal
Lighting Technology: Incandescent
Length: 4.5 inch
Diameter: 7 inch

• Twin Filament Twin Beam Halogen Lamp Setup

(Found in almost all conventional locomotives & Multiple Units)

These types of lamps are still used widely in all types of existing conventional diesel locomotives, conventional electric locomotives and multiple units (EMU, MEMU & DEMU). These Twin-Filament Twin-Beam bulbs eliminated the dependency on non-saturated single beam 32V, 250W incandescent headlight lamps.

Twin-Filament Twin-Beam Halogen Headlamp Setup on a WAP4 class locomotive

This type of headlamp has two separate sets of reflectors along with their respective halogen lamps arranged in one casing. Both lamps are connected in parallel to ensure the independent functioning of one in case of failure of the other. This system uses a 110V DC to 24V DC, 400W, DC-DC converter connected to the loco battery to feed power to the twin beam headlight. This pre-focused twin beam setup comprises of an enclosed construction with reflector, lamp holder terminals, front glass, etc.

The twin beam headlight assembly consists of the following components:

a. Parabolic-shaped fabricated MS casing with toughened glass front cover housing.

b. Reflector with spring-loaded lamp holder and 3-way input terminal having beam alignment facility.

c. Back cover has a locking arrangement, which can be

opened from inside the loco.

Some more technical aspects these twin-filament halogen bulb:

A Single Unit of H4 Twin-Filament Halogen bulb

Brand: Philips / Bosch / Osram / Hella
Bulb type: Halogen H4
Life Hours: 500
Watts: 100w for high beam / 90w for low beam
Volts: 24 V
Dimmable: No
Base Type: P43t – 3spade Prong
Lighting Technology: Incandescent
Size (LxBxH)**: 5cm x 5cm x 8cm**
Weight: 35g

****Exceptional Cases:** Some GMO WAG9 locomotives are fitted with headlamps having *Twin-Filament 24v 100/90w Twin Halogen H4 Bulbs* instead of *Twin 120v 200w PAR56/MFL Single Filament Lamps with a Stepped Lens.*

GMO WAG9 31308 with H4 Halogen lamps

In GMO WAG9 31308, the entire headlamp equipment is same as that of a conventional locomotive. This is the only WAG9 locomotive with such exception.

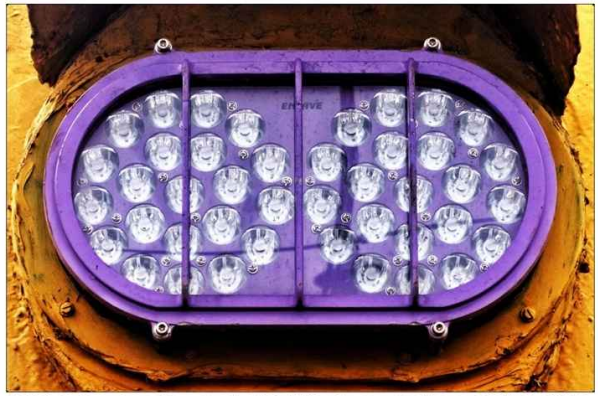
On a different note, the entire batch of first 40-50 WAG 9 locomotives from 31000 to 31045 approximately, were originally fitted with **Twin Filament 100/90w - 24v Twin Beam Halogen Type headlamps inside a PAR56 type casing.** Some locomotives still have the same setup whereas for most of the others, they were replaced by the regular

*GMO WAG9 31022 *NAVYUG* with the H4 Halogen lamps*

120v 200w PAR56/MFL single filament twin headlamps found in 3-phase electric locomotives.

• Twin Beam LED Headlamp Setup

The twin beam LED type is one of the most popular & preferred options across the entire IR network when it comes to selection of headlamp now a days. The leading equipment suppliers & service providers for multiple units i.e., Medha, Bomabardier & BEML have been providing LED headlamps in their EMUs, MEMUS and DEMUs. Infact, Medha & Bombardier propulsion equipped 3-phase EMUs are the first & therefore, the longest users of LED headlamps in IR till date. Seeing the success & usefulness of the LED headlamps, Central Railways soon retrofitted some of their Siemens EMU rake with LED headlamps. Beside multiple units, many locomotive sheds & workshops have already started retrofitting their locomotives with LED headlamps replacing the twin-filament twin beam halogen bulb / twin PAR56 lamp predecessors.



LED Twin Beam Lamp Setup on a Dual Mode Shunter converted from a MEMU by KPAW

Advantages: A LED headlamp setup has inbuilt separate drivers for each segment of LEDs which operates at 110 VDC supply thus, eliminating the requirement of a transformer for voltage changeover. Moreover, the LEDs are connected in such a way that the failure of one LED doesn't affect other

WAG9H # 31628 fitted with LED Twin Beam Setup replacing regular PAR56/MFL lamps

LEDs. The twin beam is mounted on a 3mm thick common mounting plate with a beam adjustment facility & weatherproof sealing gaskets have between the front mounting plate and casing. The illumination by a LED headlamp is better than halogen twin-beam headlamps. Here are some major specifications of these headlamps:

Electrical Specifications:

Input Voltage: 70V – 140V DC (Nominal 110V DC)
Rated Wattage: BRIGHT Mode <100 Watts continuous @ 110V-DC, DIM Mode <16 Watts continuous @ 110V-DC
Ambient Temperature: 0 to 70°C continuous
Power Factor: > 0.95
THD* (A): < 10%
Driver Efficiency: > 85%
Surge Protection (Built-in): 2.5KV
Lumens: Bright – >7500 / Dim – >2500
Short Circuit: Short circuit protected
Reverse Polarity: Reverse polarity protection
Termination: Stud / spring type

Optical Parameters:

CRI: > 80
CCT: 4000k
LED Lifetime: > 50000 Hours
Ingress Protection: IP 66

[*Note: **Total Harmonic Distortion (THD)** is an important aspect of power systems, and it should be kept as low as possible. Lower THD in power systems means higher power factor, lower peak currents, and higher efficiency. THD and PF (power factor = the difference between apparent Power and active power) are closely related. With improvement in quality of the luminaires a PF above 0.9 can be achieved which will further improve THD].

• Twin-Beam LED Headlamp setup for Alstom made WAG12B:

WAG-12B is a 12,000 HP twin section locomotive built in the year 2017 by Alstom in collaboration with RDSO. The WAG-12B class is equipped with twin-beam LED headlamps for better visibility & seamless operation at night. The technical specifications of these LED headlamps are as follows:

Manufacturer: Mafelec
Lighting Technology: LED
Input Voltage: 24v – 110v DC
Watts: 35W (full bright) – 20W (dimmed)
Light Intensity: >3,00,000 cd
Diameter: 7 inch
Mounting type: PAR56
Short Circuit: Short circuit protected
Reverse Polarity: Reverse polarity protection
Ingress Protection: IP65
Operating Temperature: -40°C (-40°F) / +70°C (+158°F)
Connection type: Cable connection
Life Hours: 60,000h
Light Flickering: Yes

Twin-beam LED headlamps with different specifications are also used in WDG4G/WDG6G manufactured by General Electrics.

:: QUAD BEAM HEADLAMPS ::

For better visibility of tracks, especially at hilly terrains with sharp bends & gradients, East Coast Railway (ECoR) has designed, developed, and provided 'Four Beam Headlights' on many of its WAG-5 locomotives. These headlights when introduced, were the first of their kind in Indian Railways. As discussed earlier, conventional locomotives in IR are generally equipped with a set of twin beam twin filament headlamp which focuses in a straight direction. The 'Quad Beam' concept was introduced by Electric Loco Shed Visakhapatnam. In this setup, bulbs are arranged in such a fashion that the top two beams focus in a straight direction (similar to existing twin beam light) and the bottom two are aimed towards both side of the track.

Let's take up a certain scenario for better understanding. When locomotive provided with quad beam headlamps negotiates a curve, the set of lower beams being focused on the tracks in a straight direction provides better vision of the curvature which makes detection of abnormalities like cracks, missing rails due to miscreant activity, sudden movement of stray animals, etc easier. Consequently, the loco pilots of the train will be able to reduce the speed of the train a little bit in advance than normal situation.

All photographs used in this article were provided by the author unless mentioned otherwise. Cover photo courtesy: Somsubhra Das.

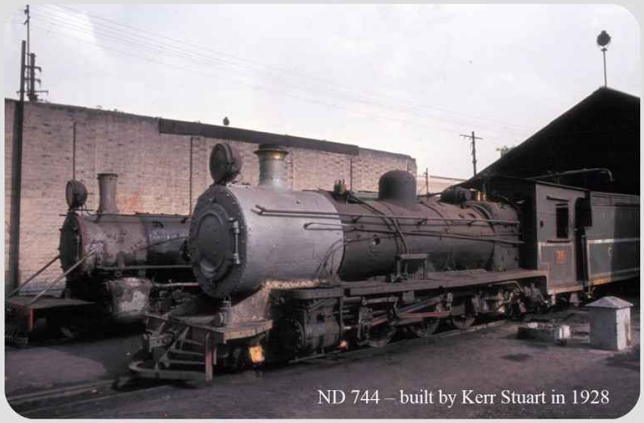
Gwalior Diaries

Revisiting the Golden Era of Steam

Mick Pope

NM 608 being coaled

NH/5 814 and NH/43 752 inside the shed under the overhead coaling crane



ND 744 – built by Kerr Stuart in 1928

General view of Gwalior Loco Shed

NH/4 758 built Baldwin Locomotive Works in 1948


NM 608 – built Bagnall of Stafford UK in 1931. Note drivers seat bolted to the outside of the cab.

ND 745 [Kerr Stuart built 1928] and NM 762 [William Bagnall built in1931] in the shed

NH/2 751 in shed built by Kerr Stuart in 1922

NH/5 812 [built by Nippon of Japan in 1959] inside the loco shed

NM 608 in the Gwalior yard

NM 762 [built by William Bagnall in 1931] on Bhind bound train

761 and 608 steaming up for their respective duties at Gwalior

NM 762 waiting patiently at Gwalior station

NM 608 getting coaled by shed workers


Gwalior station scene

The Maharaja's Railway

GWALIOR LIGHT RAILWAY

Revisiting the Pre-independence Days

Somsubhra Das

India, often referred to as the land of plenty with diverse physiography has seen rulers and invaders from different corners of the globe trying to establish their supremacy and ascendancy. They came, they saw, they conquered but none established and enjoyed the hegemony of sovereignty like the British did. They had the vision of augmenting infrastructural developments to support their mission of absolute puissance over an undivided India. Introducing railways to India was also part of their strategy which truly revolutionized transport system in the country.

During the 18th and 19th centuries, the country witnessed meteoric rise and dominance of many Hindu Maratha dynasties. The Maratha confederacy was at the zenith of its glory under the peshwaship (Prime Ministerial-ship) of Madhav Rao-I who is accredited with the resurrection of Maratha power in Indian history. For efficacious management of the large empire, Madhav Rao-I had awarded semi-autonomy to selected chieftains who ultimately established semi-autonomous Maratha states over a period of time in the form of the Scindias of Gwalior, the Holkars of Indore, The Peshwas of Pune, the Gaekwads of Baroda (now Vadodara), the Bhonsles of Nagpur etc. The British intervention ensured fall of the Maratha power in the third Anglo-Maratha War in 1818 and accession of the better parts of the territory which spanned over the major areas of Indian subcontinent. The Maratha clans were handed internal sovereignty under British paramountcy in the form of Princely States under the colonial British government. Over the period of time, a handful of these princely states envisaged a railway system within the precincts of their own territory to manage and connect the remote areas of their dominion. Thus, different private railway systems came into being not only for facilitating movement of subjects but also for maintaining control over the far-flung regions of 'empire'. The Gaekwads of Baroda were the pioneers in this field. The 2'6" Narrow Gauge alignment from Dabhoi to Miyagam Karjan under the then Baroda State Railway happens to be the first Princely State-owned railway line which was opened

in 1862. Decades later, the Scindias followed suit and the Gwalior Light Railway (GLR) happened. Since 1942, the GLR was under the ambit of the Scindia State Railway which later, in 1950, came under the purview of the Central Railway zone of the Indian Railways. Thus, the saga of GLR embodies a rich dose of history with a century old legacy.

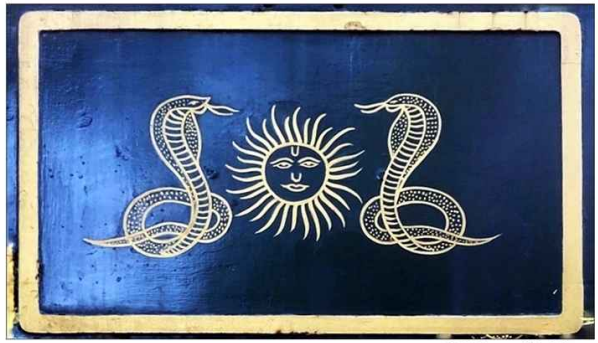
The Formative Years

Once bestowed with the title of the longest operational NG service across the globe, GLR now falls under the jurisdiction of North Central Railway's Jhansi division. Although, classified as Class-III railways with gross annual income of under ₹ 10 lakhs as per parameters set by the then British Government in 1920s, the Gwalior Light Railways has always been a jewel in the crown of the Scindias. Initially, the Maharaja desired to connect the Jai Vilas Palace at Lashkar with the Residency at Morar along with the clubs and other significant places of the city. This alignment around the fort upto Motijheel with stations like Gwalior Customs House, Gwalior Fort and Morar Cotton Mills enroute, not in use lately, actually met with the last active alignment around the other side of the fort via Ghosipura which completed a circle around the city. Perhaps, this route circumnavigating the fort, is also known as the Ring Railway System which was introduced by the then crowned Maharaja.

The GLR narrow gauge [2 ft (610 mm)] has been often referred to as a special gauge as it is narrower than the conventional narrow gauge measuring two and a half foot. GLR wasn't all about a solo route – in fact, it was a network of routes that connected Gwalior with Sipri (Shivpuri), Bhind and Sheopur Kalan. Another isolated wing in the form of the Ujjain-Agar section was built by the Maharaja and was managed under the aegis of GLR.

His Highness, Madho Rao Scindia-II was the chief protagonist under whose regime the construction work of the Gwalior State Railway started in 1895. The Gwalior-Bhind stretch of 83 km and the Gwalior-Shivpuri stretch of 118 km was inaugurated on 2nd December, 1899 by Lord Curzon, the then Viceroy of British India. The Gwalior-Sheopur Kalan line, the longest amongst all the branches of GLR was built in different phases though. Stretching a good 200 km (198.9 km precisely) and dotted with 22 stations, this line connected Gwalior with the summer capital of the Scindias i.e., Sheopur. The 1st phase of 50 km from Gwalior to Jora Alapur was completed by January 1904 while the 2nd phase of 42 km from Jora Alapur to Sabalgarh was done by December 1904. The 3rd phase of 32 km from Sabalgarh to Birpur took nearly four years to complete and was opened to traffic in November 1908. The penultimate or the 4th part was ready by June 1909.

Popularly known as the Maharaja's Railway amongst the locals, the GLR was considered as a living fossil in a nation obsessed with railroads as it boasts of being one of those fewer railway tracks that was constructed without the British assistance in the 19th century. The GLR worked under the



GLR Logo of Raj Era...

agreement made on 11th October, 1900 between the Government of His Highness, the Maharaja of Scindia of Gwalior and the Indian Midland Railway Company which later came to be known as the Great Indian Peninsular Railway (GIPR).

The Motive Powers

Any railway system is incomplete without its motive powers. Likewise, GLR had its own steam locomotives built by M/s. Kerr Stuart & Co. Ltd. of UK. Initially, a steam with 0-4-2T wheel arrangement served GLR which was later augmented with 0-6-4T ones from the same maker. As GLR stepped into the twentieth century, locos with 4-6-0 configuration by the same manufacturer came to the fore. Later, steam locomotives with 2-8-2 wheel arrangement also became popular. Meanwhile, W. G. Bagnall of Stafford, UK stepped in to supply some of the GLR steams within three decades of the new century boasting of a 4-6-2 configuration. Soon, the 2-8-2 configuration also made a comeback to the GLR through the locomotives turned out by the Baldwin Locomotive Works of Philadelphia, USA and Nippon Sharyo, a Japanese firm. Further, information about a ND Class loco working the GLR with a rare 4-6-4 wheel arrangement has been also found. With the tapering of steam traction from the Indian Railway scene, the diesel guzzlers in the form of NDM5s manufactured by Chittaranjan Locomotive Works took over the reigns of GLR from their steam predecessors. Even the NDM5s have also evolved over the years as the Parel Loco Workshop under Central Railway started producing dual cab equipped NDM5s with wider body and spacious cabs to facilitate better driving comfort.

My Journey Through the Pages of History

A journey through the *Hindustan Ka Dil*, as often Madhya Pradesh is referred to, on a vintage poky train moving at snail's pace was all I was looking forward to. With all the flanks of this royal railway in the guise of the Gwalior-Shivpuri and the Gwalior-Bhind sections having already fallen victim to the invasion of broader gauge long ago, with the Ujjain-Agar section no exception either, it was imperative on my part to document the only surviving century-old flank of GLR across the remote and rugged landscape of Chambal heartlands which has witnessed so many ups and downs of

Raj era steam loco plinthed outside Gwalior station

political and social upheavals over time. The prospect of a historical 'toy train' ride before it could possibly vanish from the Indian Railway atlas kept me excited throughout.

The day broke with the usual ongoing arrival-departure announcements across platforms. As I stepped out of the station premises to collect some stuff for subsistence to last the day, my attention was drawn towards the plinthed Steam Locomotive. Until then, I had only read about the GLR steams but witnessing one, albeit a plinthed one, was surely a good start to the day's proceedings! The majestic looking steam built by the Kerr Stuart & Co. Ltd. in 1895 with 4-4-0 wheel arrangement was definitely a head turner. It surely transports one back to those days of grandeur of the Scindia Empire when it was earlier used by the Maharaja of Gwalior and was stationed at the Jai Vilas Palace grounds. The locomotive was later acquired by IR, re-classified as NA 791 and was finally plinthed after retirement. The locomotive reminds us of the golden steam era of Indian Railways. One can visualize the scene back in those days, when steams used to be the principal motive power of GLR.

Travelling Through the Ages of Time

While I was engrossed with the details of the NA 791, a passer-by enquired about the time which shook me up a bit as it was already 6.15 am by the watch! Time was running out, I had to hurried things up to board the train leaving at 6.25 am – the solo service of the day for Sheopur Kalan. My anticipation of a near empty train fell flat on its face as people thronged the platform like anything to get inside the train. For a change, the NG platform had more passengers than its BG counterpart. I had mixed feelings about that scene I witnessed. While it was delightful to find such high patronage for a NG service but at the same time it was agonizing enough to ponder about my prospect of travelling a fair distance by that already overcrowded train.

The puny train had most of its coaches in the standard IR livery but without any destination boards! Instead, the coaches had 'Gwalior-Sabalgarh-Sheopurklan' written on them with white paint. A cute looking little master, NDM5 # 809 from Gwalior DLS was all set to power the 7-coach load & I somehow managed to hang on to a door. Intriguing enough, isn't it!

After a while, the semaphore obliged and the journey began. The train took an immediate right turn along the hillock adorned with bougainvillea blossoms just after leaving the platform. The hillock better known as the Gopachal Parvat bears the Gwalior Fort and the rock cut Jain monuments. I could immediately relate to my family trip down there, over 12 years ago in 2007, when I did not have the time and information to venture into the NG territory. Minutes later, we crossed Tansen Road, a railway station named after the eminent medieval musician Tansen whose roots trace back to this city. Soon we were passing through the corridors, courtyards and kitchens of the settlements that had almost clogged the railway track. Continuous honking and rumbling of wheel sets ensured a brief break from the 'on track' recreational activities of the settlers. As children bid adieu to our train, we opened up on the Fort Road. The tracks went straight along the road reminding me of the alignment of tram tracks across the streets of Kolkata. All of a sudden, the train came to a screeching halt in the middle of the road and we were road-stuck! The Crew along with some passengers alighted amidst auto rickshaws, cars and bullocks which were manoeuvring past the train. We discovered that we were in the middle of a small-scale derailment. The spectacle resembled the scene of a hapless and helpless tram stuck in

Train at Fort Road

Train halted due to a minor derailment at Fort Road

GLR Scene at the far end of Motijheel

Ghosipura station

the middle of a busy road. After considerable shuddering generated from the to and fro movements of the locomotive, we overcame the hiatus of this initial hiccup – the LPs hooted and we were off again....

Clinging On...

We reached Ghosipura and the situation was already precarious. People waiting for the train straightaway climbed their way onto the rooftops with their belongings without even bothering to look for seats inside – I quickly realised what was in store for me. It did not take long before we reached a serene Motijheel – a station abuzz with another good 70-80 passengers waiting for our train – a terrorising and tormenting sight for me. Within the blink of an eye, I saw people clutching on to the windows and doors of the compartments like bees sticking out of their hives. This train serves as a lifeline for the small-time traders who transport goods by this service. The carriage tops had already got jam-packed. It was a quite a spectacle to watch people munching away dry foods while getting ready to travel on rooftops with elan.

The pointsman took a tad too long to settle things. Ultimately the semaphore nodded after half an hour and we moved out.

A breather at Motijheel

Bamour Gaon station arrived

My test of physical endurance had already started as I found no place to cling on to but for the handrails on the side of the locomotive. I gathered courage to perform this 'act of dynamism' with the pursuance of some of my fellow passengers who had climbed to the top of the locomotive and looked quite adept in doing so. Clinging on, I told myself that I could not continue like that anymore as we crossed Milaoli. Soon we were moving parallel with the Gwalior-Agra BG alignment flanked by National Highway # 44. On reaching Bamour Gaon, I realized that I have had enough. I decided to get over my dilemma and approached the LP for accommodating me in the cab.

The Cab Ride

There are days when you get more than you bargained for and that's exactly how things turned out. My request for completing the rest of the journey, rather the major part of it, in the cab was accorded with a warm welcome from the LP and ALP which was not only a huge sigh of relief for me but also helped me realise my long-cherished dream of footplating on a diminutive NDM5. This kind gesture from

NDM5 cabin view

Through the barren rocky stretches...

Quenching the thirst....

the men at the wheel made my day. The LP and ALP were in absolute awe as they got aware about my pursuit and purpose of visit. They had seldom come across such a crazy passion or passenger both !

After the initial greetings, the LP sounded the horn followed by the ALP waving the green flag to get things going again. Moving across the fields, a herd of barking deer made us realise that we were no match of their agility and speed. Our train closed in on Sumaoli after Ambikeshwar where a Gwalior bound service was awaiting our arrival. Sumaoli was a beautiful station then enveloped with lanky trees contributing to a sublime green frame but a closer look into the station purlieus revealed a different setup. A myriad of passengers was found all over the place – some had alighted from the already waiting train while a handful were waiting to board ours. Vendors, labours and locals made up for rest of the commotion.

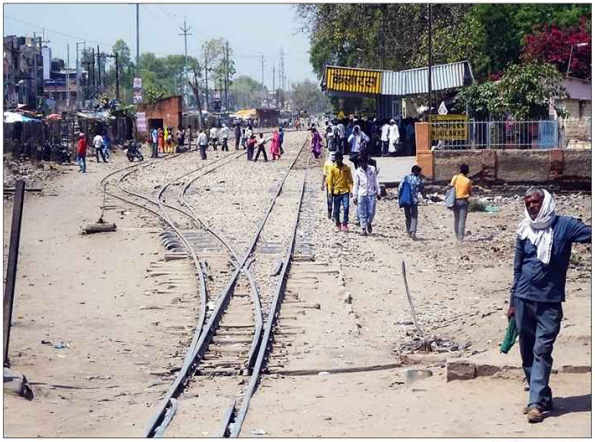
Although a little station, Sumaoli proved to be a place alive with all the hustle and bustle in the station premises. Amidst all the characters that flocked to the place, it was interesting to find some locals with large earthen pitchers offering drinking water to the thirsty – a voluntary social service that broke all social barriers. It truly manifested a humanitarian act of selfless marvel. Even, the LP and ALP didn't think twice before getting their water bottles filled. It was quite tangible to witness how people from smaller towns still holding railwaymen in reverence and high esteem. These scenes portrayed the fact that simplicity can win one a thousand hearts!

The day got tougher as the temperature soared and the mercury was already touching mid-forties! Never mind the heat, the LP and ALP had picked up a nice conversation with me. The space crunch inside the minuscule cab surprisingly did not bother them at all. While I asked them about the challenges of working under such insalubrious conditions, they answered that they were quite used to the situation and impressed upon the fact that they perform both BG and NG duties in rotation. They readily shared some of their experiences along with some eatables and water to keep me hydrated. I popped up the obvious question of rooftop travelling in these parts – the spectacle that certainly reminded us of the pre-independence days. They affirmed

Crossing at Sumaoli....

The customary rooftop travel scene of GLR

Dead straight allignment of GLR



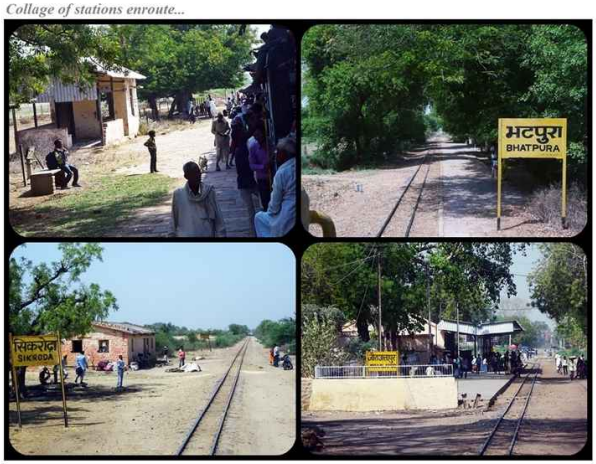
Kailaras station

that people travelled there like that only – thanks to the paucity of trains and other modes of transport which are fewer and dearer. They recalled some incidents of people getting injured or even meeting their fatalities but the practice had not ceased. Life has continued like that only.

While traversing on the route, one can surely notice the dead straight alignment on iron sleepers all through barring the bridges. Conversing away we ticked off Thara, Jora Alapur, Sikroda and Bhatpura – of these, Thara and Sikroda literally had no platforms and only the inconspicuous station boards testified their existence while Bhatpura was more of a cluster of trees standing together and Jora Alapur had a very low-lying platform. Most of these stations lacked any proper station building. Some huts were there serving as ticket vending counters. Moving ahead, Kailaras was the upcoming station which had some settlements and a rural market adjoining to the station. Food stuffs like samosas, salted groundnuts and fried green chillies were on high demand.

Most passengers whether travelling in 'rooftop upper class' or the ones wedged inside the carriages savoured every last bite of these. Meanwhile, I had already made up my mind to limit my journey till Sabalgarh as any further travel would hamper a same day return to Gwalior. After touching Semai and Pipalwali Chowk, our train made its way to Sabalgarh. Pipalwali Chowk derives its name from a local temple surrounded by four Peepal trees – as explained by our LP while Sabalgarh is actually a small city of some historical significance which earned its name from the Sabalgarh Fort – a noteworthy medieval monument. All these places were once the part of Scindia territory.

Collage of stations enroute...



End of a Folklore with a Touch of Hospitality

As we reached Sabalgarh, nearly an hour behind schedule, my eyes lit up and my joy knew no bounds as I got to spot the smallest dual-cab locomotive of IR – the dual cab NDM5 manufactured by the Central Railway based Loco Workshop at Parel. It had a striking resemblance with the only dual cab ZDM-4A # 215 of IR (used in the Pachora-Jamner NG section of Central Railway) back then and those dual cab ZDM-3s hailing from Kalka and Pathankot. I scampered off to frame cute machines as one can seldom find these tiniest dual cabbed species operating elsewhere in IR. The yellow and dark green livery with light green stripe of the NDM5s looked

Dual cab marvel @ Sabalgarh

stunning to say the least. The vibrance and the peppiness of the dual cab livery were strikingly different from the single cabbed NDM5s wearing a cream and blue livery with white line.

Meanwhile, the hospitality by our LP and ALP did not end with the cab ride. Incidentally, having done with their day's duty, they took me to the Running Room where they offered me lunch. Their persuasion and insistence got the better of my repeated denials. I was left wondering about the warmth, care and conviviality from their end meted out to a person they had known for a mere six hours only! They shared the meal they had brought from their place and whatever was available with the canteen. After dabbing into a meal rich with unique flavours of perseverance, love and hospitality, it felt like home far away from home.

The experience could easily be defined as an absolute gastronomic delight. They again ensured that my bottle was full of refrigerated cold water to beat the sweltering heat outside. Having been already aware about my plans of heading back, they did one last favour on their own accord. They advised the LP of the Gwalior bound service to let me travel in the cab for the return journey. What more can one ask for? Never ever can anyone imagine of enjoying such privileges being offered to a stranger miles away from home....

The Return Leg

Sabalgarh lies almost midway between Gwalior and Sheopur Kalan at approximately 93 km. The other half of the route was dotted with another dozen stations namely Rampahari, Bijaipur Road, Kaimara Kalan, Birpur, Sillipur, Ikdori, Tarrakalan, Seroni Road, Khojipura, Duragpuri, Girdharpur and Datarda Kalan. However, it was time to bid goodbye to the generous and chivalrous LP and ALP as my return cruise took off in the dual cabbed NDM5 # 814 heading the Sheopur Kalan-Gwalior service. The heat from the radiator was taking its toll and was just enough to roast a chicken. Salute to the dedication and diligence of the LPs performing under such extreme and trying conditions. Once again,

Gwalior bound service arrives at Sabalgarh with # 814 on the lead

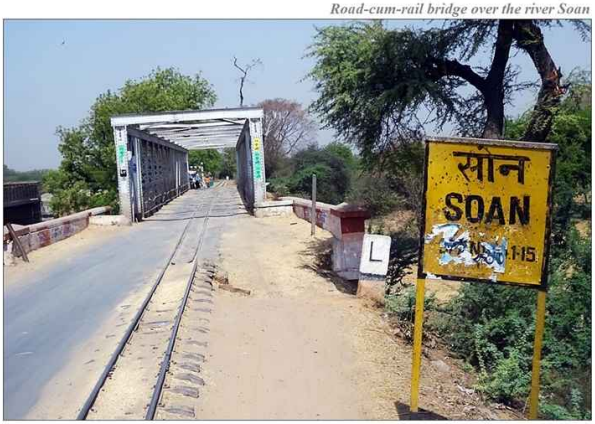
Cabin view of NDM5D # 814

rooftop travel continued despite stencilled warning at either end of each coach about attracting a fine of Rs. 500 or a 3 months' imprisonment.

The train often notched up to 35 kmph speed in various sections contrary to our morning journey which hardly touched 20 kmph. We passed through a rocky terrain with edges jutting out often accompanied by occasional sighting of distant highlands towards the Ranthambhore side indicating the arid nature of the Shivpuri plateau. The barren stretches and ravines of Chambal were once the refuge of notorious outlaws and bandits like Paan Singh Tomar and Phoolan Devi which still brings chill down the spine. The legends about the 'fear factor' have perhaps outlived their existence. The route did not offer much to write home about any significant natural embellishments as agricultural fields and xerophytic vegetation enveloped the better part of the route. Apiculture seemed to be a favoured second choice after agriculture for sustenance as many apiaries were found in action enroute.

A couple of major road cum rail bridges – one between Jora Alapur and Sikroda over Soan river and another before Kailaras over Koari river were something unique. A common

Road-cum-rail bridge over the river Soan



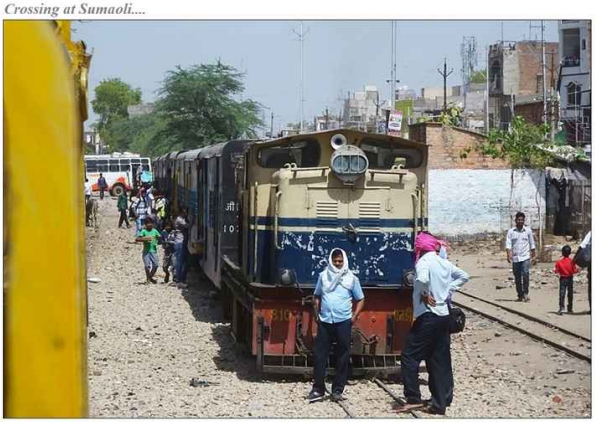
Road-cum-rail bridge over Koari river

Crossing at Motijheel

path was being used by the train and also the other conveyances to ferry across those dried-up rivers and rivulets. A Permanent Speed Restriction of 5 kmph had been invoked on all those bridges to avoid any mishap. Low height of one of these old iron bridges meant rooftop travellers needed to take evasive action – all seemed to be aware of this as they ducked under the iron structure for a safe passage. Dodging the trees without getting gashed and negotiating the curves without falling off – all seemed part and parcel of the rooftop sojourn.

Two crossings with Sabalgarh services happened enroute and all trains had huge patronage highlighting the significance and importance of the route. A freight train comprising 6 wagons loaded with stones was spotted at Bamour Gaon. Our LP informed that it had been lying there for ages. After another 5 and half hours of hard toil through the dusty tracks accentuate with another hour of delay in the oppressing temperatures, the train was finally in the last phase of the journey. The iconic Gwalior Fort gradually rose from the hilly extensions of the Vindhyas. The impeccable sight of the magnificent structure getting kissed by the golden rays of a dying sun and caressed by the tranquil of dusk looked beyond the realm of reality. The day was nearing its end, so was my journey in the blistering heat which wasn't short of any ordeal by any stretch of imagination. Despite all the odds, such journeys are always welcome given the dynamics of time travel involved while moving at snail's pace in this fast-paced world.

Crossing at Sumaoli....



Living on with the Memories

My experiences on this journey made me to accept the fact that despite living in the same planet, we all reside in completely different worlds. On one hand swanky AC Buses and luxurious AC travel in trains often fail to quench the thirst of most city dwellers while on the other hand there are people braving adversities like travelling on the rooftops, risking their lives in scorching heat, drenched monsoons and biting cold or in coaches equipped with hard wooden seats,

The vista of Gwalior Light Railway

no toilets, lights and fans which never seem to dampen their spirits! Perhaps these are the two faces of our nation – India and Bharat.

The Indian government in 2009 had proposed to include the Gwalior Light Railway in the UNESCO's list of world heritage sites but that recognition hasn't seen the light of the day. The pandemic coupled with the rage of epidemic named 'Gauge Conversion' has put paid to the slender hopes of survival of GLR. As the last bastion of the royal railway gets breached, life is not like what it used to be – the unique flavour of humanity and compassion that had interwoven the people of over 250 villages with this tiny train has vanished in thin air. The mellifluous honking of these tiny giants may not be heard again, the children won't be smiling, waving and running with this train and the scene of rooftop travelling on a NG train may not be witnessed anymore. At present, Gwalior Light Railway is all but history while its legacy and heritage continue to survive in the memoirs; it had kept itself immune to the various facets of modernization until its final days.

Never mind the speed, sometimes life in slow motion is like a worthy blissful humane touch which keeps the spirit of the land alive! This unique train was truly an exemplary testimony of a living fossil that had not only served the sons of the soil across generations but also tells tales about the inseparable aura of the royal entity that symbolizes it.

All photographs used in this article are provided & copyrighted by the author.

Acknowledgements :

1. Steam in History by RR Bhandari, Ex-director of the National Railway Museum
2. Administration Report on the Railways in India for the Calendar Year 1902
3. The Locomotive Magazine, 15th September 1905
4. The Great Indian Railway Atlas by Samit Roychoudhury
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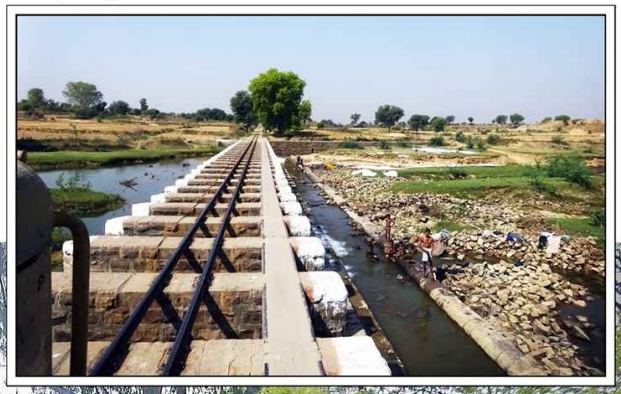


A typical scene of Gwalior Light Railway which is lost forever in the pages of history.....

Workhorses of GLR

Sourav Dutta

Gwalior Light Railway, a living example of how cultures, human values & bold initiatives from Indian minds amalgamated & flourished under the regime of Indian rulers against all the odds of the colonial rule. In most cases, the British administration had decreed the usage of private railway systems for amusement purpose only. For Gwalior Light Railway (GLR) though, enthusiasm had a far greater role to play over amusement. The Maharaja Madho Rao Scindia-II of the princely state of Gwalior must have mulled, "Why should the Englishmen have all the fun!" as his enthusiasm became the principal driving force behind the genesis of this railway system.

Railways of other princely states perhaps did not have a same passionate owner like the GLR. Construction started in as early as 1895 and the tracks used steel rails weighing 13.60 kg laid partly on steel trough sleepers & partly on sal-wood sleepers. The Maharaja had a keen interest in mechanics which had already got translated into an unbinding love for trains that prompted him to establish a system within his own palace. Such was the passion that His Highness often preferred to drive locomotive himself which in a way helped the private railway to spread his arms beyond the confines of the royal palace. Different stories of steam locomotive being 'imported' by Madho Rao to work the GLR still do the rounds.

A locomotive, as the name suggests is responsible for locomotion of trains. Therefore, it's a part & parcel of every railway system. The only difference lies in its form of existence, depending upon the type of train. For self-propelled trains like multiple units or trainsets, the driving factor, i.e., the engine is a part of the train itself where it's generally located in a dedicated compartment whereas for trains which aren't self-propelled, the driving factor lies in separate locomotives. Being a very old railway system, born at the end of 19th century, the GLR has witnessed all – from huffing and puffing of steam workhorses for decades followed by their diesel successors to extensive use of NG Railcar and unique Battery-operated locomotives among special variants. Nevertheless, for most ferroequinologists, separate locomotives are always a welcome sight as they bring with them a variety of nomenclature from the perspective of traction as well as locomotive class & sub-class.

THE STEAM ERA

Before proceeding further with the details of steam locomotives which served GLR, we should first go through a few basic concepts for a better understanding:

- **Whyte Notation:** It is a method to classify steam locomotives, internal combustion locomotives & a few electric locomotives based on their wheel arrangement.

For example: A configuration of **2-8-2** in a steam locomotive will imply two wheels on the axle (considering both sides of the axle) of the leading truck, eight powered & coupled driving wheels on four axles & two wheels on the axle of the rear truck.

- **Tank Engine:** Whenever we think of a steam engine, the usual picture in our mind is of a steam locomotive along with a trailing tender (huge open container like box compartment) for storing coal (fuel) & water. Tank engines are those locomotives which don't have the provision of such tenders. They are equipped with one or more onboard water tanks & bunkers to hold fuel.

There were four locomotive manufacturers which have supplied steam locomotives to the Maharaja's Railway :

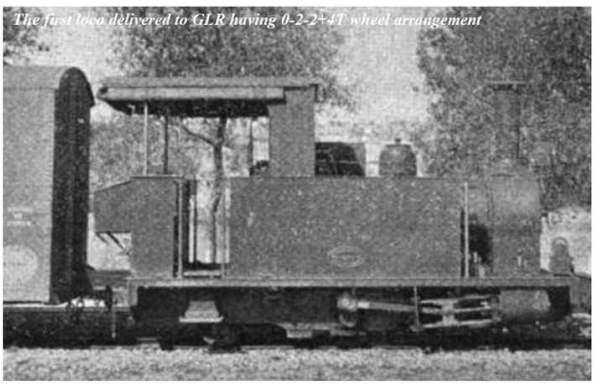
- M/s Kerr, Stuart & Co.
- W.G. Bagnall
- Baldwin Locomotive Works
- Nippon Sharyo

Out of the above four firms, M/s Kerr, Stuart & Co. has served the royal railway system for the longest period of more than 35 years since its inception.

M/s Kerr, Stuart & Co. Locomotives

The first locomotive to serve the Gwalior Light Railway was a small four-coupled (driving wheels) tank engine with Bissel truck manufactured by M/s Kerr, Stuart & Co. of Stoke-On-Trent, England in 1893. Some technical aspects of the locomotive are as follows:

Wheel Arrangement: 0-2-2+4T(tank) as per whyte notation.
Engine Weight: 10.63 tons
Tractive Effort: 1372.12 kgs
Cylinder: 7.125 inches
Stroke: 12 inches
Valve Gear: Stephenson
Driving Wheel Diameter: 2 ft.
Truck Wheel Diameter: 1 ft. 4 inches
Firebox: 18 sq. ft.
Fuel Bunker Capacity (coal): 1.68 tons
Water Tank Capacity: 200 gallons


The first loco delivered to GLR having 0-2-2+4T wheel arrangement


Two six coupled trailing bogie tender locomotive

After the introduction of their first locomotive, two more classes of steam locomotive with their respective configuration were pressed into regular service. The first type had four units numbered from **1 to 4** whereas the numbers **5 to 12** were designated to eight locomotives of the second type.

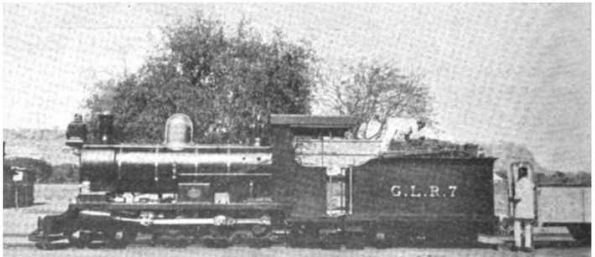
The units belonging to the first type of steam locomotive class with numbers 1 to 4 were equipped with six driving wheels & a rear truck having two axles. Further technical details of these locomotives are as follows:

Wheel Arrangement: 0-6-4
Total Weight: 16.25 tons
Cylinder Diameter: 8.25 inches
Stroke: 15 inches
Tender: 10 tons
Driving Wheel Diameter: 2 ft. 3 inches
Truck / Tender Wheel Diameter: 1 ft. 6 inches
Firebox: 36 sq. ft.

These locomotives painted in black with light purple (mauve) band to highlight the panels were capable of hauling 45 tons on a gradient of 1 in 40 & 105 tons on a gradient of 1 in 100.

Apart from the above four locomotives, M/s Kerr, Stuart & Co. had also built another locomotive for GLR in 1895 which happened to be the only unit with a 4-4-0 wheel arrangement. The locomotive was numbered as 2A as per GLR System and later re-classified as NA-791.

The only 4-4-0 type steam locomotive of GLR pictured outside Gwalior Railway Station



The 2nd type of six coupled loco (road no. 5-12) having 4-6-0 wheel arrangement

The units belonging to the second type with numbers 5 to 12 entered service in the year 1904. They were equipped with six driving wheels & a front truck having two axles.

Wheel Arrangement: 4-6-0
Tractive Effort: 3748.49 kgs
Engine Weight: 17 tons
Cylinder Diameter: 10 inches
Stroke: 15 inches
Tender: 10.08 tons
Driving Wheel Diameter: 2 ft. 3 inches
Truck / Tender Wheel Diameter: 1 ft. 6 inches
Firebox: 35 sq. ft.

These locomotives sported a black body with mauve bands like their elder cousins but with an extra yellow lining inside the mauve bands & a vermilion lining bordering the above bands. They were capable of hauling 88 tons on a gradient of 1 in 40, 130 tons on a gradient of 1 in 60 & 194 tons on a gradient of 1 in 100.

Apart from these eight locomotives, another single unit was supplied by M/s Kerr, Stuart & Co. in the same year. This locomotive painted in green colour was specially reserved for the service of His Highness, the Maharaja who himself drove that out of sheer enthusiasm. The technical details of that locomotive included the following:

Wheel Arrangement: 4-6-0
Tractive Effort: 1828.88 kgs
Engine Weight: 13 tons
Cylinder Diameter: 8 inches
Stroke: 15 inches
Tender: 8.5 tons
Driving Wheel Diameter: 2 ft. 6 inches
Tender Wheel Diameter: 1 ft. 8 inches
Firebox: 29 sq. ft.
Water Capacity of Tender: 500 gallons
Fuel Space in Tender: 1.922 tons

The locomotive was capable of hauling 35 tons on a gradient of 1 in 40, 58 tons on a gradient of 1 in 60 & 94 tons on a gradient of 1 in 100. M/S. Kerr, Stuart & Co. kept supplying similar units for some time till 1915.

Later in the same year, M/s Kerr, Stuart & Co. had also built a smaller locomotive & a luxurious steam motor coach. The locomotive was meant for carrying the palace supplies. Some of the features were a 5 inches cylinder, 9 inches stroke & wheels having a diameter of 20 inches. The luxurious steam motor coach, the only one of its kind to run on any narrow gauge was meant for Maharaja's personal use. The coach measured 7 ft. in width & was 33 ft. 9.5 inches long. The


The luxurious Steam Motor Coach, Image courtesy: Somsubhra Das

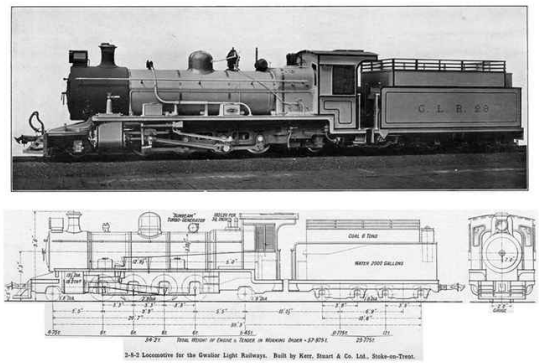
buffers with outer panels were made of sheet steel while the underframe & bogie were of channel steel. Other key features included double roofs with air space between them, telephones & speaking tubes, tinted windows with purple glass, venetian shutters & brocaded green & gold silk curtains, decorated & upholstered interiors, electric bells, two electric fans for ventilation & incandescent electric lamp lighting. The current for the lighting & other electrical equipment was generated by a steam turbine & supplied via accumulators which ensured continuous supply even when the carriage was stationary. The headlights used two acetylene motor lamps.

In 1915 & 1917, two locomotives from M/s Kerr, Stuart & Co. entered service but without road numbers. These were defined as "Machines of remarkable capacity for 24-inch gauge". The plate frames were located outside the wheels to accommodate a larger boiler & grate, Belpaire firebox, piston valves & full cab. The technical aspects of the locomotive rolled out in 1915 are as follows:

Wheel Arrangement: 4-6-0
Tractive Effort: 5450.83 kgs
Engine Weight: 37 tons
Cylinder Diameter: 12 inches
Stroke: 18 inches
Tender: 18 tons
Water Capacity of Tender: 1380 gallons

The other variant rolled out in 1917 had a wheel arrangement of 2-8-2 with the other configurations being similar to its elder cousin with very minor changes. More numbers of the locomotive with 2-8-2 configuration were rolled out & re-classified as NH/2 followed by a number. For example: NH/2 750.

In the year 1928, M/s Kerr, Stuart & Co. delivered the 29th locomotive of Gwalior Light Railway followed by three more units of the same class as part of an order for four steam locomotives with 2-8-2 configuration. These locomotives were numbered from 4400-03 as per builder's nomenclature whereas in GLR system they were renumbered from 29 to 33. Some of the technical aspects of this locomotive class are as follows:



GLR-29, a 2-8-2 locomotive delivered in 1928 by Kerr, Stuart & Co.

Wheel Arrangement: 2-8-2
Engine Weight: 34.2 tons
Cylinder Diameter: 13.5 inches
Stroke: 18 inches
Tender: 23.775 tons
Driving Wheel Diameter: 2 ft. 9 inches
Truck / Tender Wheel Diameter: 1 ft. 8 inches
Water Capacity of Tender: 2000 gallons
Fuel Space in Tender: 6 tons

In the same year, the company also rolled out three locomotives with a configuration of 4-6-4. These were later re-classified with the prefix ND followed by a number like ND-745.

M/s W.G. Bagnall Locomotives

In 1931, W.G. Bagnall (named after its founder William Gordon Bagnall), a locomotive manufacturer from Stafford, England, delivered eight locomotives to the Gwalior Light Railway. These were numbered from 34 to 41 as per the GLR nomenclature & 2453-2460 as per the manufacturer's nomenclature. Although, GLR had already similar locomotives; this batch from W.G. Bagnall were the latest state of the art loco in their times. The leading bogie & trailing truck wheels were fitted with Cortazzi axle boxes along with prominent outside bearings. Four out of these eight locomotives were dedicated to serve the Ujjain – Agar section. Later, two locomotives with road numbers 38 & 41 were returned to England. They were listed as a part of the Vale of Rheidol Railway's Museum collection in the year 2018. The technical aspects of these locomotives are as follows:

Wheel Arrangement: 4-6-2
Tractive Effort: 4580.38 kgs
Cylinder Diameter: 11 inches
Stroke: 18 inches
Valve Gear: Walschaert
Firebox: 62 sq. ft.
Water Capacity of Tender: 1800 gallons
Fuel Space in Tender: 4.40 tons

Later, these locomotives were re-classified with prefix NM before the road numbers like NM-608.

GLR-36 (Builder serial-2453) built by W-G Bagnall in 1931 Source-Flickr

M/s Baldwin Locomotive Works

The NH/4 Class: Fast forward to 1948, steam locomotives of 2-8-2 configuration were delivered by an American locomotive manufacturer based out at Philadelphia, Baldwin Locomotive Works, the largest producer of steam locomotives for few decades till 1951. Four such locomotives were ordered by the then Scindia State Railway. These locomotives were classified as NH/4 & numbered from 42 to 45 as per the GLR system. The technical specifications are as follows:

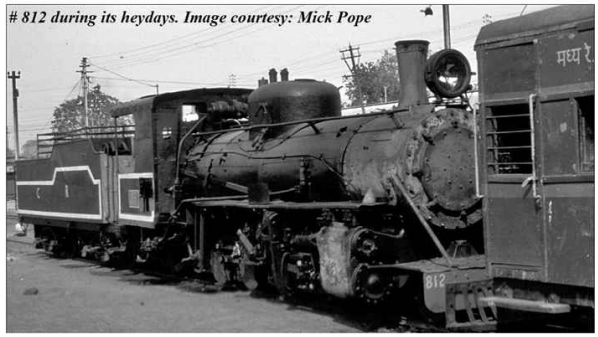
Wheel Arrangement: 2-8-2
Tractive Effort: 6032.77 kgs
Engine Weight: 33.4 tons
Cylinder Diameter: 12 inches
Driving Wheel Diameter: 2 ft. 9 inches
Tender Wheel Diameter: 1 ft. 8 inches
Water Capacity of Tender: 3000 gallons
Fuel Space in Tender: 3 tons
Stroke: 18 inches
Tender: 27.5 tons
Firebox: 60 sq. ft.

Other features included type "A" superheater, screw reverse, cast iron cylinders & steam brakes on all driving & tender wheels. These four locomotives were later re-numbered to 754-757. Later, more locomotives of the NH/4 class were ordered considering their reliability & success rate.

M/s Nippon Sharyo Locomotives

The NH/5 Class: Last but not the least, four locomotives with 2-8-2 configuration classified as NH/5 were delivered in 1959 by Nippon Sharyo, a major rolling stock manufacturer based out at Nagoya, Japan.

 # 812 during its heydays. Image courtesy: Mick Pope



A pair of NDM-5, from L to R – #806 & #807. Photo taken by author.

PASSING THE TORCH TO DIESEL WORKHORSES

Change is the only constant & no entity on this earth can escape from this universal fact. With the passage of time, the steam locomotives plying on the GLR system got reduced in numbers, not only for being overaged but also due to the advent of latest technology as the diesel counterparts took over the reins gradually.

NDM-5: The diesel traction didn't bring many varieties in terms of locomotive class unlike their steam predecessors. In fact, a solo diesel locomotive class has single-handedly carried the GLR system on its shoulders – the 'NDM-5' which can be decoded as Narrow Gauge-Diesel Traction-Mixed Operation-5th Generation. It is actually based on its wider narrow-gauge cousin, i.e., ZDM-5. Few of the technical specifications of the NDM-5 locomotive are as follows:

Year of Manufacture: 1987-89	**Power:** 450 HP
Engine: KCL-KTA 1150L	**Engine Weight:** 22 tonnes
Transmission: Hydraulic (make: Voith)	**Max Speed:** 50 kmph

A total of 14 NDM-5 units were produced with road numbers 801-814. Out of these, the Chittaranjan Locomotive Works (CLW) manufactured 11 units from 801 to 811. The rest 3 units from 812 to 814 manufactured/modified by the Parel Workshop, Central Railways and are equipped with a wider body and dual cabs.

A pair of dual cab, third variety NDM-5 #813 & #814. Photo taken by author.

Diesel Rail Car, NRD # 1001 awaiting an unknown fate. Photo taken by author.

THE SPECIAL FORCE OF GLR

Railbus, Battery operated locomotives, Railcars are some of the entities that always draw special attention irrespective of the gauge they work on. The Gwalior Light Railway did have such special machines plying the network though fewer in count.

NRD: It stands for Narrow Gauge-Railcar-Diesel Traction and is more commonly known as **DRC** or **Diesel Rail Car**. There was a time when these units served the GLR network on a full-fledged basis. Approximately, 7-8 DRCs were manufactured by Ashok Leyland with a rating of 300 HP. These diesel rail cars served the purpose of railbus, inspection car & at times locomotives, as they were fit to haul a maximum of four coaches.

NBM-1: The more intelligible way of describing NBM-1 is it being a Narrow Gauge-Battery Powered-Mixed Traffic-1st Generation locomotive. The purpose behind manufacture of these locomotives is unclear till date. Perhaps, the then Railway Minister since 1980, Madhavrao Scindia (a descendant of the royal Scindia family of Gwalior) saw some advantage in these locomotives. BHEL (Bharat Heavy Electricals Limited) produced three units of this locomotive class in 1987. These locomotives with road number starting from 21950 were rated at 80-HP & mostly performed short haul freight duties. Despite, their fair usage across the GLR

The battery operated NBM-1 locomotive. Image courtesy: Ian Wright

network, these locomotives were prone to frequent failures. Hence, their reign was short-lived.

Once a busy & happening railway system, the Pride of The Scindias has fallen prey to the modern affair of gauge conversion. The Maharaja's Railway being a rich source of history, heritage & culture still had a lot to offer to the present generation of budding historians as well as rail buffs. The major blow came in the form of the Covid-19 pandemic which halted all the train services across the nation. Subsequently, the Uni-gauge scheme & a reluctant government ended the journey of this royal railway system and pushed it to a premature death. As the GLR goes into the sunset, a ray of hope appeared in pandemic year itself in 2020, when the NDM-5 locomotives were being sent to Parel Workshop for periodic overhaul & there were rumours of partially operating the GLR. But all such hopes of resumption were shattered with a recent announcement of permanently closing the railway system in the context of high maintenance costs. However, Jyotiraditya M. Scindia, Minister of Civil Aviation & son of Madhavrao Scindia has appealed to the Indian Government for preservation of this railway system, highlighting its operational, heritage & cultural value as well as the potential to attract tourists from round the globe. As the fate of this royal railway which had also bagged the title of World's Longest 2ft (610mm) Narrow Gauge Railway System, hangs in balance, only time will tell if such proposal of preservation of any portion of the Maharaja's Railway will see light of the day or not. We are keeping our fingers crossed!

All photographs were provided by the author. All images courtesy to original owners.

Acknowledgement: 1. Steam in history by RRBhandari
2. The Locomotive Magazine 15th September, 1905 & 16th October, 1905
3. www.steamlocomotive.com

Gwalior Narrow Gauge
Through My Eyes

Jakob Stilling

"Far too late, far too little!"

That's what can be said about many of my railway ventures.

Sometimes, I rue and tell myself, "Only if had I come earlier and spent another day or two there....". As it is, my only firsthand experience of the Gwalior Narrow Gauge (NG) is about half a day on the 19th of January, 2019. Although, Indian narrow-gauge lines have always lured me, yet I visited India only twice in the nineties, just managing to experience BG steam on Northern Railway and travelling on the Meter Gauges of the Western and North Eastern Railways. On my first trip, I also made sure to travel in the Kalka-Shimla Railway. By the time of my second trip, a year later, the WPs and WGs had disappeared and the Meter Gauge steam around Bareilly, where we had changed trains the previous autumn, was also gone. We pushed east and experienced some very interesting days in Bihar. Unfortunately, when we arrived in Jaynagar we learned that steam had ended on the NG Janakpur Railway a few weeks earlier. But that is another story to tell later.

Twenty-five years later, in January 2019, this time travelling with my wife and another couple, we did a classic north Indian round trip, visiting tourist hotspots in Rajasthan as well as Delhi, Shimla, Haridwar and Agra. When working on the program with the travel agent, I realized that Gwalior was not that far away from our planned route and I decided that we would spend a night in Gwalior on the way from Agra to Ranthambhore, which would make it possible to drop in on two remaining NG lines, the 2' 6"/762 mm line in Dhaulpur and the 2'/610 mm Gwalior – Sheopur Kalan line. Mapping the line on the internet with the IR timetable and a calculation of likely travelling time by road made it clear, that only one option could be explored in the relevant available time frame and that was Gwalior NG. Train 52171, departing Gwalior at 6.30 would be easily chaseable just before noon for about 35 kms along the parallel road in the Kailaras (KQS) – Sabalgarh (SBL) section. In Sabalgarh the westbound train was scheduled to cross 52172, the eastbound working one. West of there, the road and the railway diverged at some distance, making our plan of chasing by car difficult job.

We arrived in Gwalior around noon. Our local tour guide was keen to show us the fort and due to a film crew shooting scenes with lots of people and elephants in front of the fort, our tourist program took a little longer than expected, so it was almost dark by the time we finished our tour. Thus, I missed my only chance of seeing the street running of the NG trains in the streets below.

The early morning service from Gwalior

Capturing the moments at Motijheel

To make up for this, I arranged for an early start the following day and we met our driver and the guide in the hotel lobby just before 6.00 am. We started by going down to the station to see the preparations for the departure of the 06.30 NG train, hauled by NDM5 # 805.

Just before sunrise, the train departed, almost on time, and we followed it by car, eagerly waiting for the sunrise and a bit of light. After a few hundred meters, the train stopped abruptly. A crossing keeper had overslept, and the crossing gates were unmanned. After a good deal of honking, a very drowsy crossing keeper appeared to close the gates, allowing the first train of the day to proceed! In the dark, photos of the street running of the train was not an option, so we overtook the train and waited for the first glimpses of morning light in the suburbs.

At Motijheel, the train stopped for a few minutes. In spite of the morning cold, the first few passengers were climbing the roofs of the carriages. We decided to turn round and go back to the hotel for breakfast and to pick up the ladies, setting out for our day on the road. En route, my plan was to hunt down the train I had already seen. The morning train had by now worked its way out of the city. After leaving the national highway in Morena we took the tarred road through fields of light green and yellow early crops, keeping a look out for the narrow tracks. West of Sikroda, we overtook the train, which was now well filled, passengers riding on the roofs clearly visible over fences and hedges separating the fields. Although there seemed to be plenty of buses running along the highway, the little train was full both inside and on the roofs.

After making sure that we would have sufficient time to cross the fields, we stopped the minibus and ran along a field boundary towards the railway track. Far away the little train was rolling like a boat along the narrow tracks, passengers quickly spotting the four tourists by the line and waving and cheering as they passed us. We ran back to the minibus, starting a chase for the train again. Our driver, who had been a little sceptic about the chase idea, also got excited and started some very spirited driving along the rather busy road. After a few kilometers, we had overtaken the train. After finding a new photo opportunity, we parked and got another set of photos. By now, the line was running very near to the road. Continuing west, we tried to get as many shots of the train as possible.

Moving at snail pace on a section with 5 km speed limit

Spotting the little marvel west of Sikroda

Emerging underneath the green canopy...

Passengers waving at the tourists photographing the train

Customary GLR scene of rooftop travel amongst the thickets...

Passengers also getting into the act by acknowledging us

Passing over the bridge before entering Kailaras...

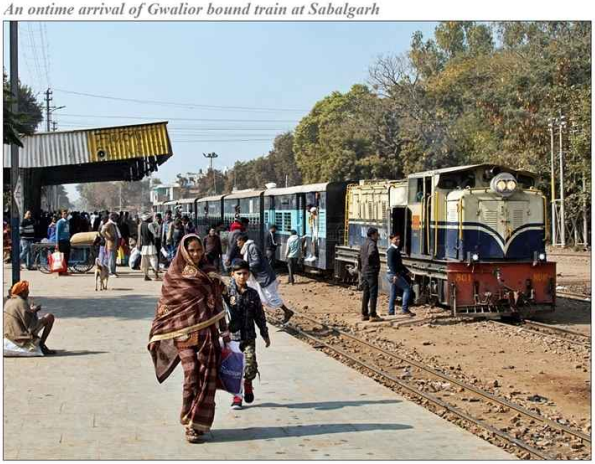
Arrival at Kailaras station

In Kailaras, the busy market was spreading on both sides of the road. Our driver dropped the minibus near an opening in the station fence, between two market stands overflowing with vegetables, leaving us with ample time to find a vantage point for the arriving train. Most of the passengers got down, probably visiting the market and others were waiting to board carrying groceries. Vigour of life and colours were on display - a cow or two wandering the tracks, and the permanent way gang repairing a faulty point.

After a few minutes, the little train continued west. With a few more photos in our kitty, we decided to speed ahead to Sabalgarh to ensure to be in place for the midday crossing of the eastbound and the westbound trains. Sabalgarh was a much bigger station, situated in some distance from the main road through the town.

The eastbound train arrived almost on time, while the train we had been chasing had managed to lose some more time in one of the tiny wayside halts serving villages. While we waited for crossing of the train, there was enough time to soak in the NG ambience. Big bundles were unloaded by hand from the guard's compartment. It was striking how closely integrated the narrow-gauge route was with the day-

An ontime arrival of Gwalior bound train at Sabalgarh



Full occupancy indicates the importance of this NG route

to-day life of the villages and towns along the line. Footpaths crossing the tracks between the different quarters of the town and the markets overflowing from the roadways into the railway land. Passengers and others would of course use the shortest route across the tracks even if it involved crossing platform edges, rails and points at less advantageous angles.

Luggage disposal at Sabalgarh

Sabalgarh station was a scene which to a foreigner epitomizes life in rural India: Stray dogs, goats, pigs and bullocks roaming freely, women on their way to the market, men relaxing in the shade of a tree, cows in the outskirts of the market hoping for a bite from a stall, boys wondering why a tourist with a camera, positions himself outside the platforms, passengers waiting for their train and inside the coaches watching the passing scenery through the bars. And

Few more shots of Sabalgarh

of course, the riders on the roofs, most of them probably not bothering to buy a ticket, travelling a few stops to market or from the nearest town returning from school.

The two trains met and stood side by side for a few minutes, exchanging crews and departed, after which the station area returned to a more tranquil mode. We bought some fruit for lunch from a market stall and settled in for the onward journey in the minibus to Ranthambhore.

That's all I could manage about documenting GLR as in spite of well meaning attempts to preserve this last bit of the Gwalior narrow gauge network, the line was closed in perpetuity for rebuilding it as a Broad-gauge line after about a year of our visit.

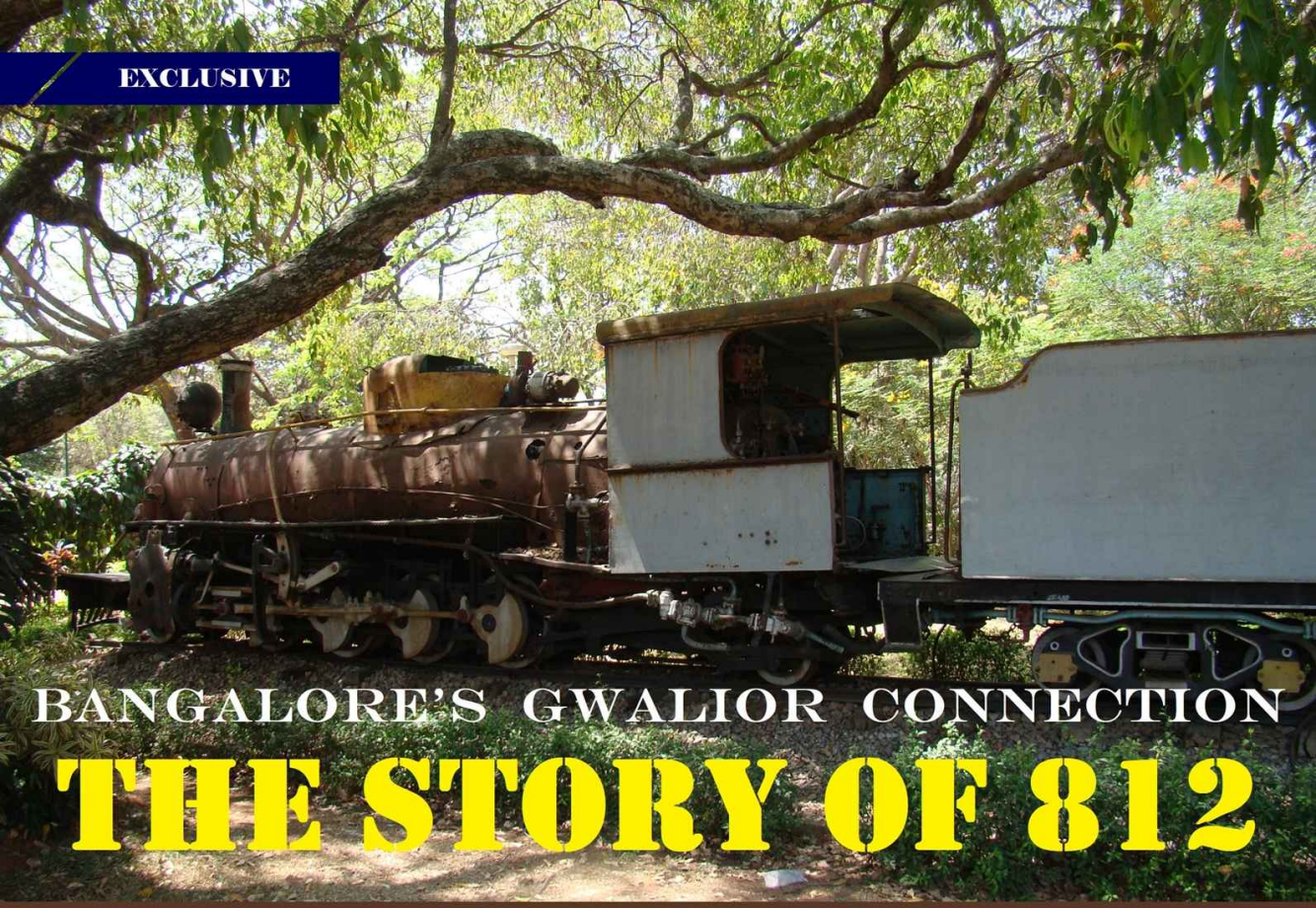
About the author:

Jakob Stilling, born 1961. Lawyer. From Denmark.
Railway photographer since 1975.
First trip to India 1993, revisits 1994, 2016, 2017, 2019.

Train bound to Sheopur Kalan all set to leave Sabalgarh

The much awaited crossing scene at Sabalgarh

EXCLUSIVE



BANGALORE'S GWALIOR CONNECTION

THE STORY OF 812

T. R. Raghunandan

The author is an Amateur Steam Railway and Classic Car Enthusiast, Model maker, Restorer, Industrial Heritage archivist, Raconteur and a former Civil Servant. Read about his strive and efforts to identify a rusting steam locomotive hailing from Gwalior Light Railway but relegated to utter neglect and disdain. His extraordinary penchant of restoring the locomotive to its past glory may become a reality someday.

The locomotive partly visible through the trees in the Indira Gandhi Park in Bangalore, my city, always intrigued me, an amateur steam railway mad enthusiast. I promised myself that someday I would visit it for a closer look, something that got inevitably postponed due to other preoccupations. One day the die was cast, and I strode into that verdant lung of greenery in the city centre.

The locomotive lies in a secluded copse, a good place for young couples to seek some privacy. They looked askance at me as I surveyed the locomotive. My first impression was that it was a pretty loco; long and sleek, with an eight wheeled tender. It was clearly a narrow gauge loco, but from where and how did it get here? That was a mystery to me. The loco at first sight did not bear any markings or builder's plates to enable easy identification.

The first thing to do when attempting to identify a locomotive is to measure the gauge. And when I did that, a vital piece of the jigsaw puzzle clicked into place. It's two feet gauge eliminated an array of 2½ feet narrow gauge lines, and clearly pointed in the direction of just one system; the Gwalior State Railways. There was a plethora of 2 feet narrow gauge lines in pre-independence India, but most were dismantled either before or just after partition; they were no longer economical to run in the face of competition from an expanding road network. What survived for some lengths of time were the Matheran Line, the Darjeeling Himalayan Railway (DHR) and the Gwalior State Railways. While the former two were preserved with the DHR now inscribed in the UNESCO list of World Heritage Railway lines, the latter was dismantled and swallowed into the maw of Project Unigauge.

Unlike the Matheran and DHR, the Gwalior line was a plains railway, running in the hot and arid conditions in that

princely State. This was the longest 2 feet gauge narrow gauge line in India, which extended to over 200 miles of track. It had a long history commencing with its establishment as a private line by the Maharajah of Gwalior in the early 1890s. In 1899, it was expanded to a more extensive public system. In 1900, the line was taken over by the Great Indian Peninsula Railway, which shared the profits from the line with the Gwalior Durbar. From July 1913, the Durbar operated the lines and in 1942 the title was changed to 'Scindia State Railway'. At nationalization, the line became part of the Central Railway Zone.

Once the railway provenance was established, I turned my attention to the locomotive itself. Having just worked on making a large display model of an YG meter gauge locomotive, a Baldwin design, the resemblance with that style was striking. For one thing, this loco has a 2-8-2 wheel arrangement. However, the wheels are inboard of the chassis. I turned my attention to the tender as well, which was a large eight wheeled one. Normally one associates a 2 feet narrow gauge locomotive with a twisty hill climbing line, which necessitates short, stubby locos with saddle tanks and a tiny coal tender, to negotiate the curves. However, the Gwalior locos were miniaturized replicas of locos that ran on broader lines; giving them a certain aura; combining all the majesty of a mainline steam behemoth, with the watch like miniaturization we associate with narrow gauge lines.

How could one identify the locomotive? A close search revealed no builder's plates, so I set upon a thorough search of the front and rear chassis outriggers on which the buffers were mounted, to attempt to discover any running numbers. At first sight, there were none, but some telltale flecks of paint remained as clues. A careful scraping away of dirt and red-oxide slapped onto the loco to preserve it, revealed a number – **812** written in the front cross member of the Chassis, in Devanagari script.

Any number on any locomotive is a precious clue. And armed with the magic '812', I rushed to consult the bible for all Indian steam loco identification fiends; Hugh Hughes' book. It is another matter that the most reliable identification guide on Indian locos is written by an Englishman. But unlike the Great Impressionists that we are, they are precise and leave no room for error. Hughes did not disappoint. I was able to identify our locomotive as a NH/5 Class locomotive built in

1959 by Nippon Sharyo and Company, Japan. Indeed, while it served on the Gwalior lines, it was not ordered by the Company when it was a separate entity, but was commissioned after nationalization and merger of the line with the Central Railways. This makes it one of the last steam locomotives to be delivered in India, most certainly to any narrow-gauge railway.

Now, how did this loco land up in Bangalore, so far away from its home? There lies a story. Sadly, even though the Scion of the Gwalior royal family, Madhav Rao Scindia was a Railway Minister, it is said that he had little interest in preservation of Gwalior steam, seeing them as throwbacks of an earlier era best forgotten. As the line was dieselized, these old steam locos were destined for the scrapyard. However, another Railway Minister, Jaffer Sharief, from Bangalore, thought this loco might be a nice ornament for a new park that was being developed in Bangalore. That led to 812 being bedded on a hastily made plinth in the Indira Gandhi Park, about thirty years ago.

Since then, 812 has stood quietly here in the shade of the spreading trees. It looks like attempts were made to restore it - or what passes for restoration in India – slapping on coats of paint over rusted metal. However, there is no doubt that it lies neglected. The plinth has settled, and the locomotive stands askew on it. An occasional child climbs in with an enthusiastic parent, who explains how things were in the past. But other than that, 812 today serves no greater purpose than screening a lover's lane from the eyes of a prying public. A far cry from the days when it puffed across the rocky crags of Gwalior and its whistle echoed off the fort that loomed over the plains.

All photographs used in this article were provided by the author and are copyrighted by him unless mentioned otherwise.

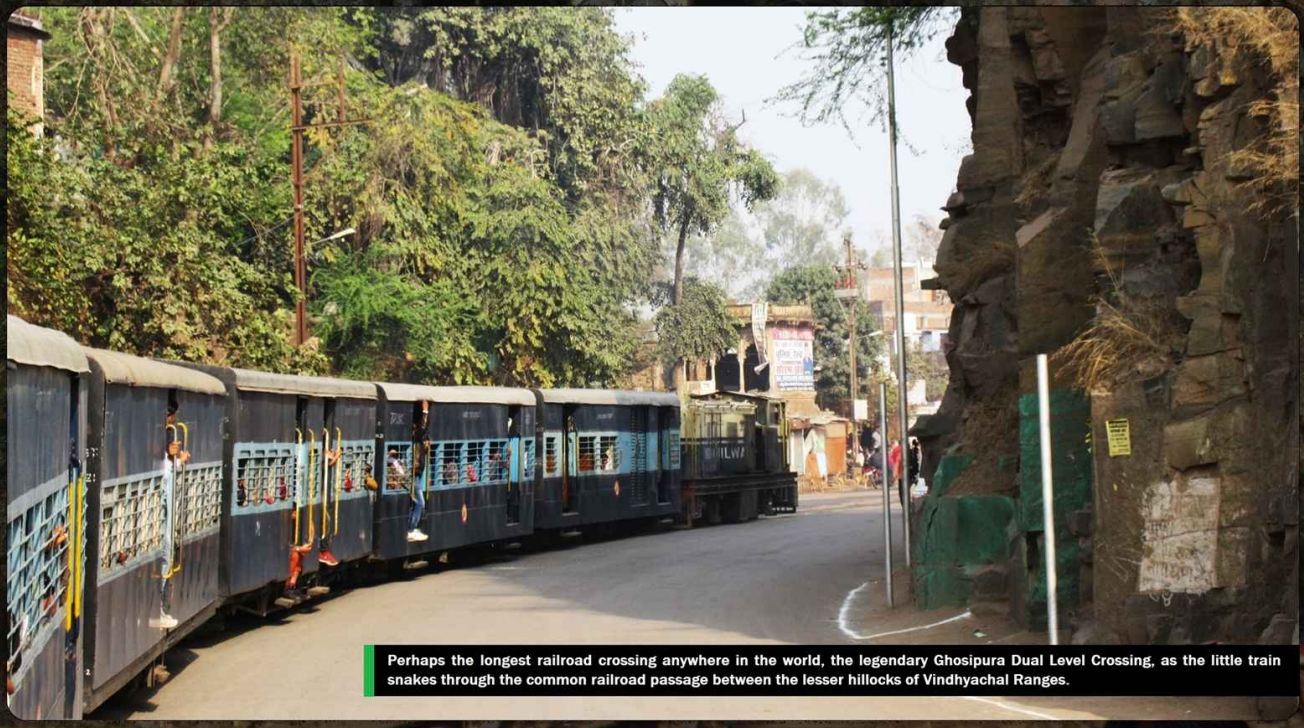
Author with his favourite piece of history. Image Courtesy: thenewsminute.com

PHOTO STORY

a journey by Aishik Chanda

The Royal NG Saga of GLR

The puny nimble beast awaits her clearance to commence her iconic daily sprint through the arid Chambal Heatlands at the NG terminal of Gwalior Junction.

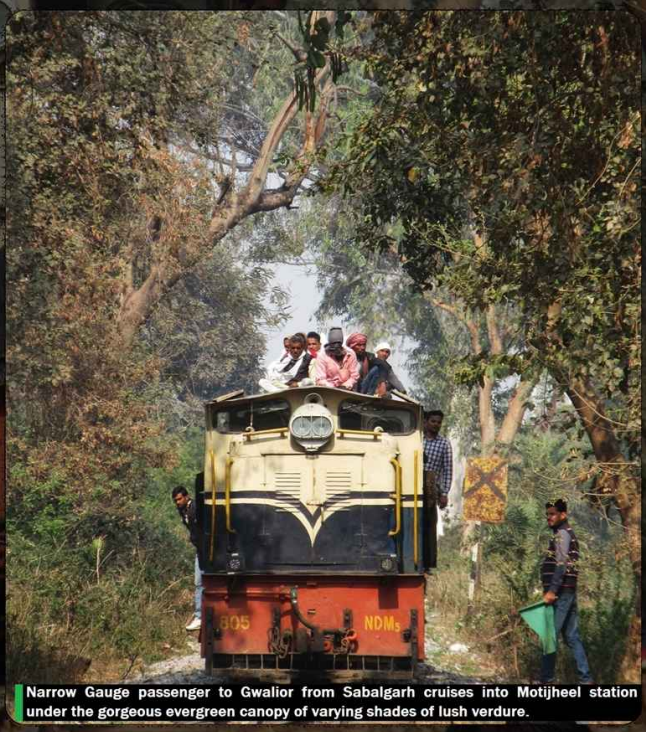


Perhaps the longest railroad crossing anywhere in the world, the legendary Ghosipura Dual Level Crossing, as the little train snakes through the common railroad passage between the lesser hillocks of Vindhyachal Ranges.

The Royal NG Saga of GLR

Beautiful little station of Motijheel sees the first crossing of the day between the counterparts, to and from Sabalgarh, on the century old narrow-gauge line.

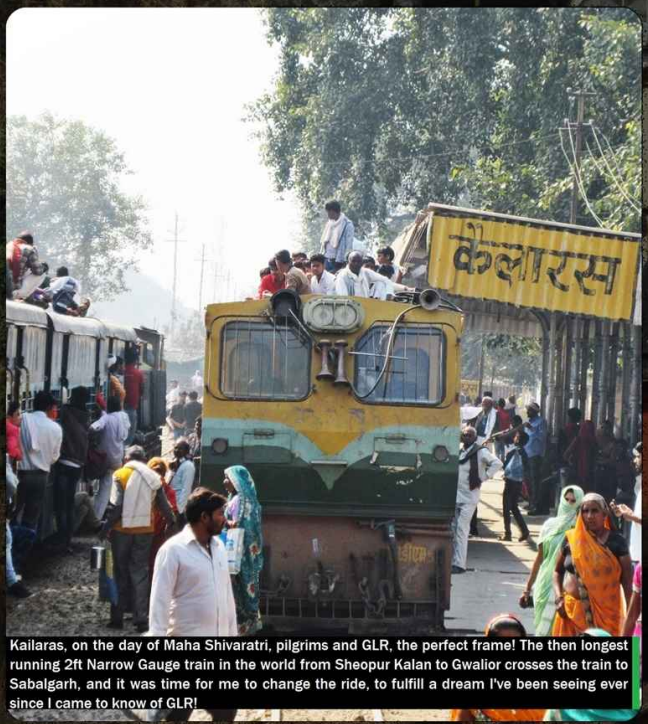
Where words fall short, and overpowering vocabulary seems insufficient, emotions speak out loud... The 2ft NG saga, I hoped I had ample time for another run down these lines, where I don't have to worry about missing college, but well, destiny is cruel, and I wish I didn't have to be heartbroken like this... The saga, that couldn't be continued...



Narrow Gauge passenger to Gwalior from Sabalgarh cruises into Motijheel station under the gorgeous evergreen canopy of varying shades of lush verdure.

The Royal NG Saga of GLR

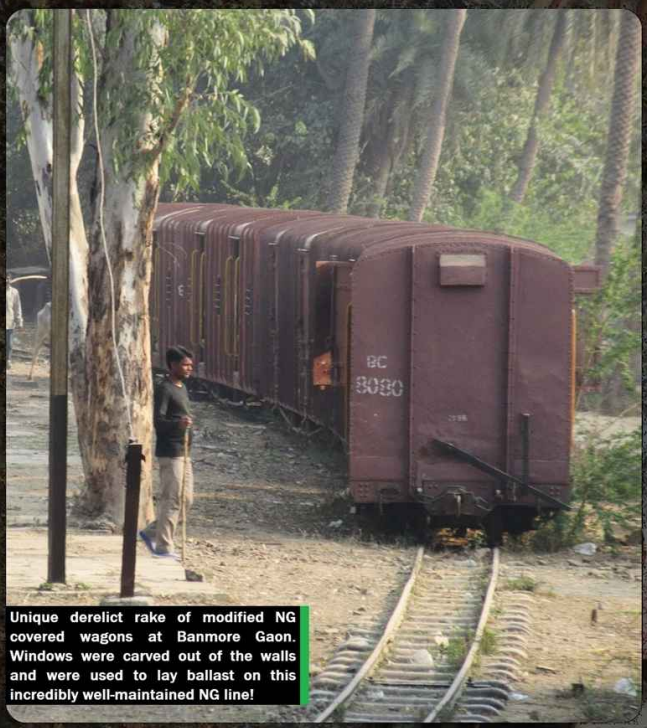
Crossing of trains, not just an occurrence, but a ritual, just like how cultures, religions, castes and creeds amalgamate into the essence of humanity!



Kailaras, on the day of Maha Shivaratri, pilgrims and GLR, the perfect frame! The then longest running 2ft Narrow Gauge train in the world from Sheopur Kalan to Gwalior crosses the train to Sabalgarh, and it was time for me to change the ride, to fulfill a dream I've been seeing ever since I came to know of GLR!

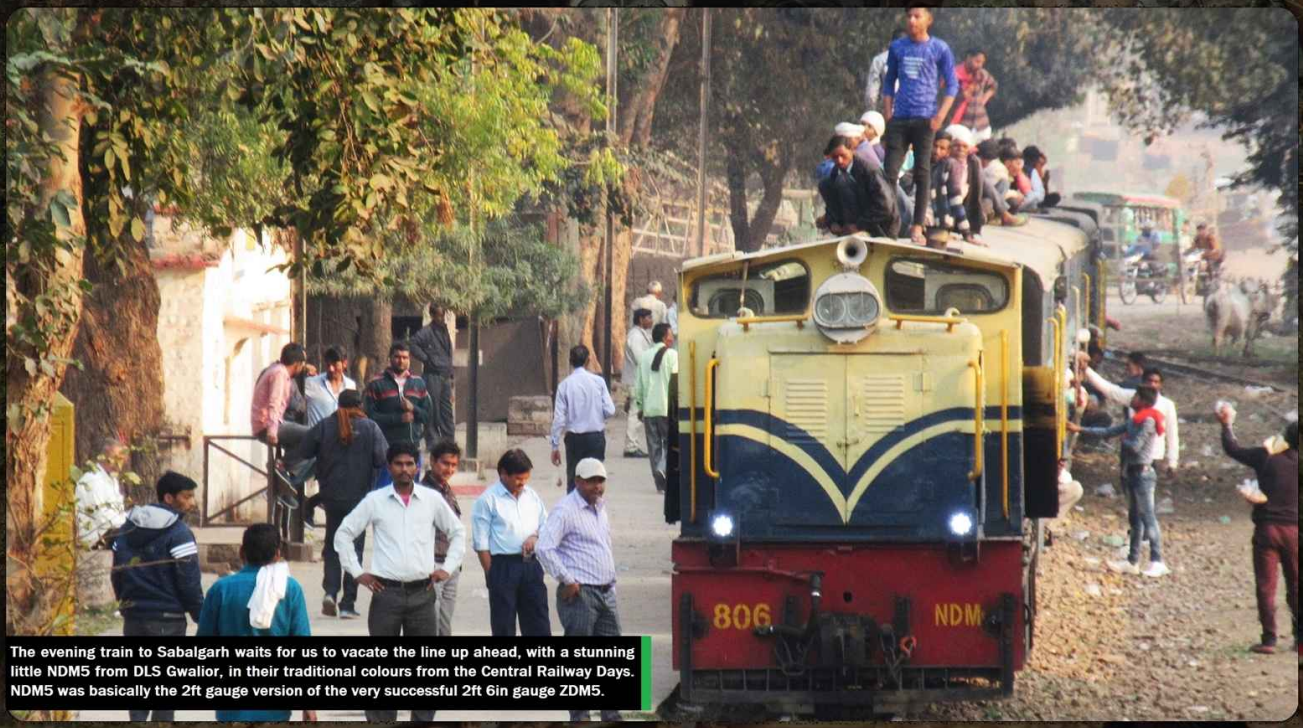
The Flying Carpet of the Chambal Valley, the legendary Gwalior Light Railway.

The Royal NG Saga of GLR



Unique derelict rake of modified NG covered wagons at Banmore Gaon. Windows were carved out of the walls and were used to lay ballast on this incredibly well-maintained NG line!

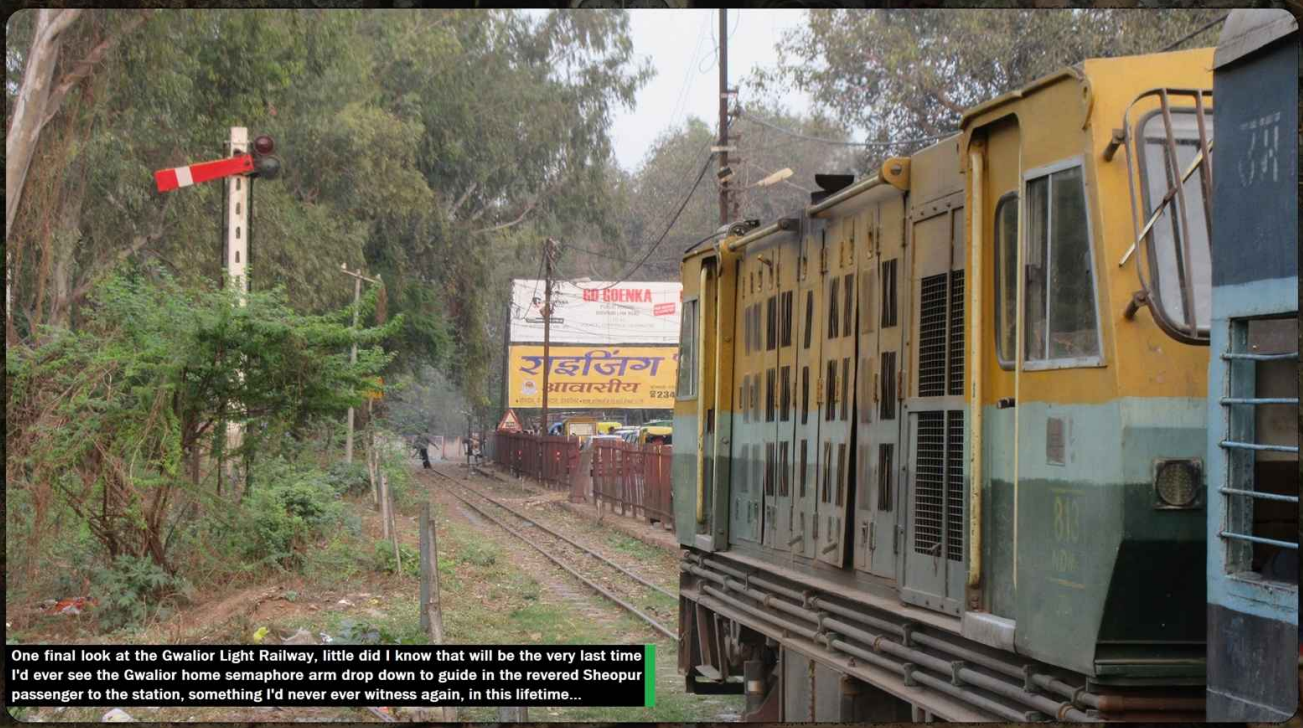
The upcoming crossing, as the flying carpet gets guided by the lower quadrant semaphore arm.



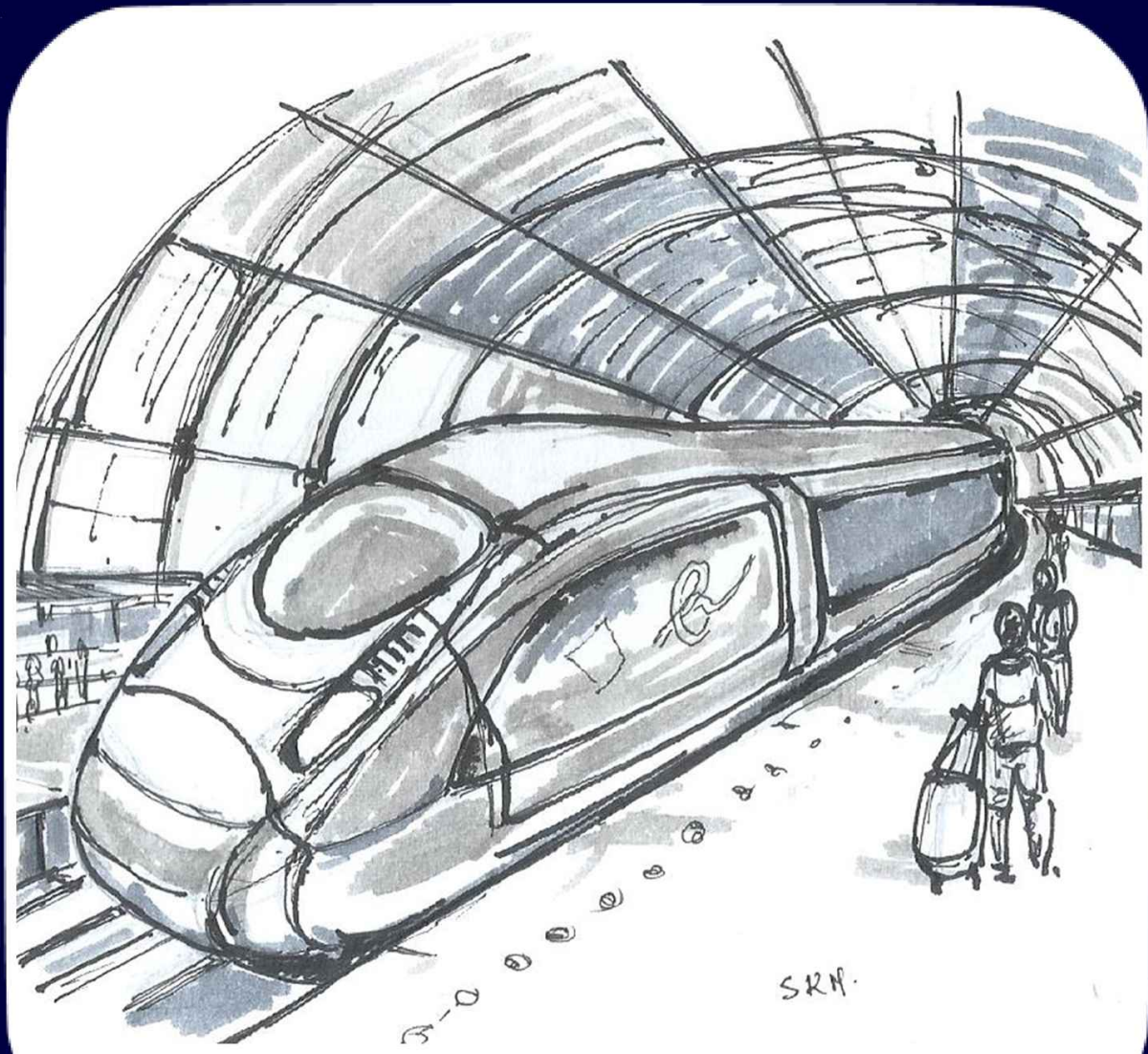
The evening train to Sabalgarh waits for us to vacate the line up ahead, with a stunning little NDM5 from DLS Gwalior, in their traditional colours from the Central Railway Days. NDM5 was basically the 2ft gauge version of the very successful 2ft 6in gauge ZDM5.

The Royal NG Saga of GLR

The customary late afternoon crossing, dual cab NDM5 led passenger from Sheopur crosses the old school NDM5 led passenger to Sabalgarh at Motijheel.

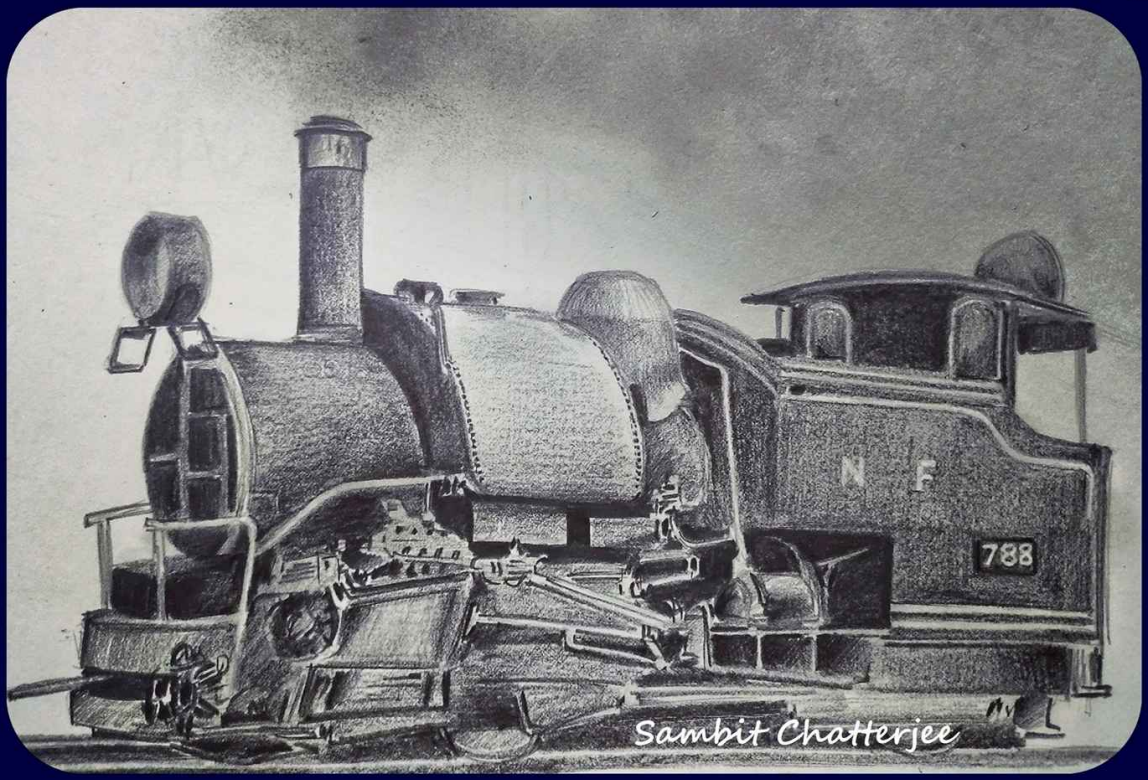


One final look at the Gwalior Light Railway, little did I know that will be the very last time I'd ever see the Gwalior home semaphore arm drop down to guide in the revered Sheopur passenger to the station, something I'd never ever witness again, in this lifetime...



Sudakshina Kundu Mookerjee

Railway Sketches



Sambit Chatterjee

Sudakshina Kundu Mookerjee

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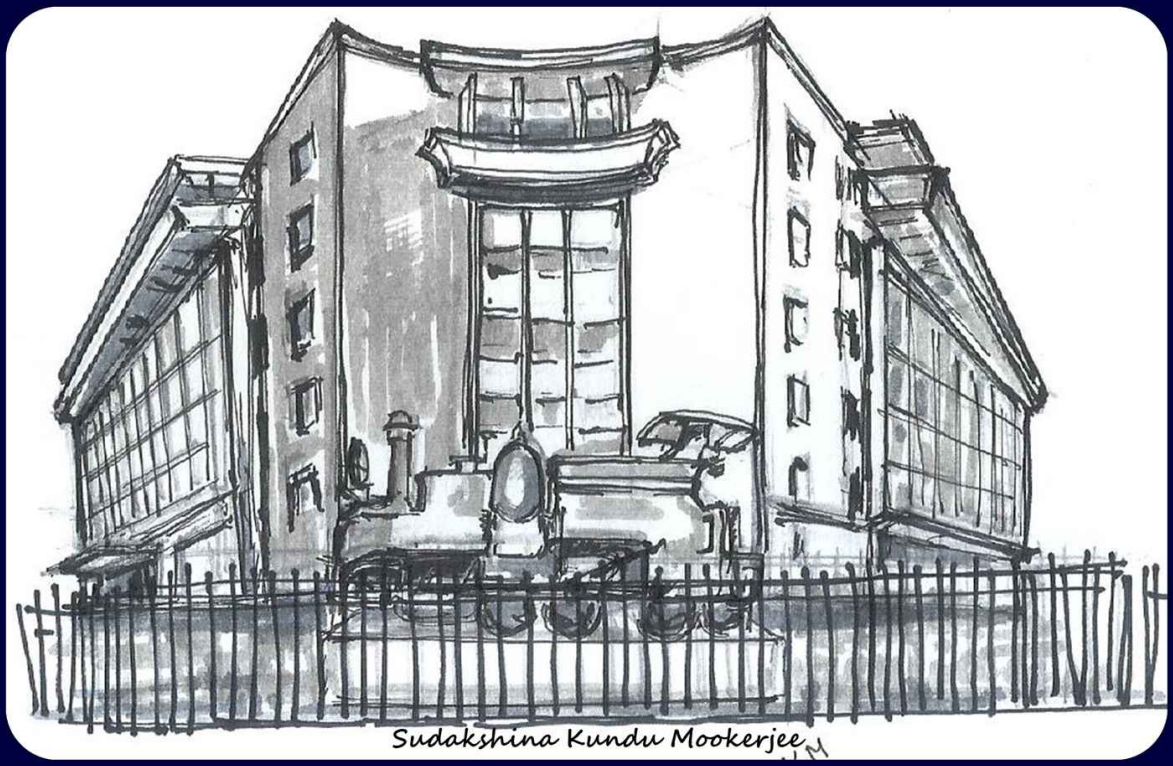
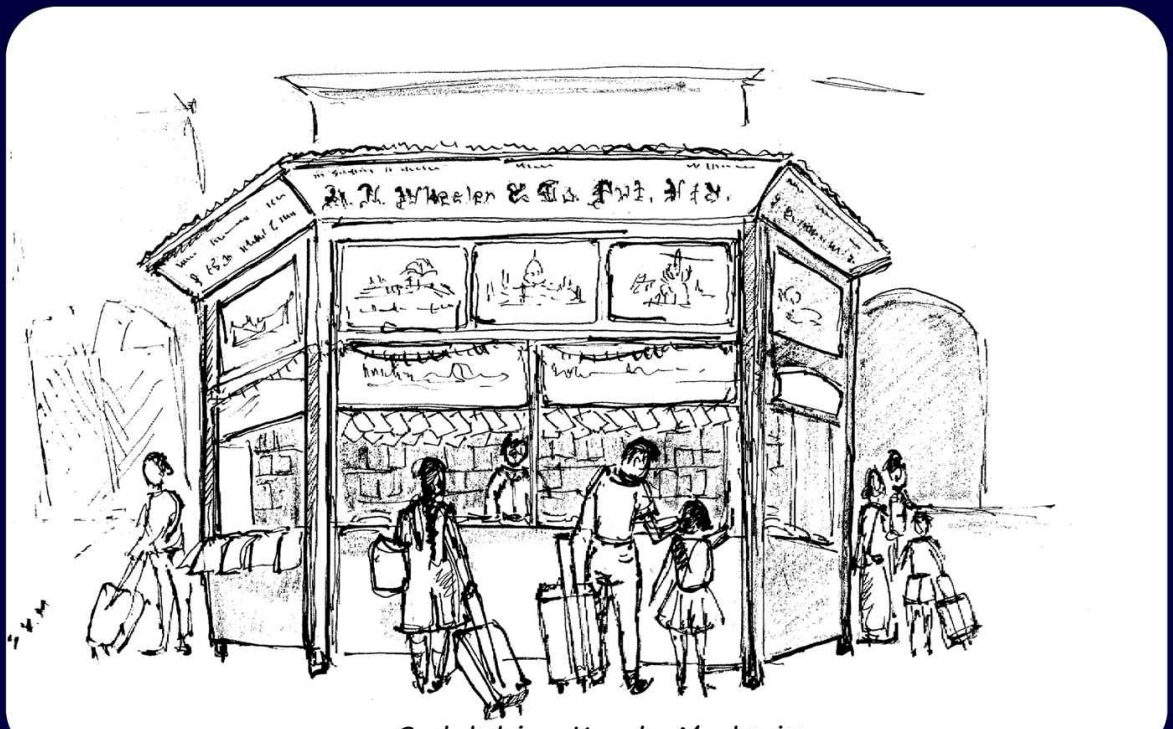


Sudakshina Kundu Mookerjee



Sudakshina Kundu Mookerjee

Visiting Vietnam

J L Singh

Vietnam! Mention the word & the mind conjures images of a war-torn country that kept the might of the United States of America at bay for more than a decade. This was certainly true when I landed at Ho Chi Minh City (former Saigon) in February 1984. The war between the North and the South had ended only 9 years earlier in 1975 and the country was trying very hard to get onto its feet once again. However, if you are to visit Vietnam today, it is an entirely different story. It is now a vibrant developing economy and very close to being a worthy member of the other booming economies of Southeast Asia.

The first thing that struck me when I reached Vietnam more than 35 years back was that they were perhaps better at *jugaad* than we in India are. We are also pretty good, but the Vietnamese beat us by a long margin. I had experience of this on the very first meeting with my Vietnamese counterparts. Those were the days of manual type-writers. I had landed with my team at Vietnam but our equipment, including type-writers, were coming by sea. I, therefore, requested the Vietnamese to loan me a type-writer till ours arrived. They gave me a type-writer but it had no ribbon. When I asked for a ribbon, I was told that ribbons were imported and they were short of foreign exchange.

"How do you type?" I asked.

"We import ribbons, but we have our own carbon paper," I was told. "We use carbon paper – the first page is blank, but we get all the remaining pages!"

I doubt if we would have thought of this *jugaad* in India.

The question you may well ask is what I was doing in Vietnam? The answer is, I was head of a small team of service engineers cum trainers for 15 DLW-built YDM4 locomotives that India had exported to the country. India had been extending lines of credit to Vietnam back then and they used them for purchasing passenger coaches and freight wagons from India. The latest line of credit then had been utilised for purchase of locomotives. Therefore, my team's task was to provide after-sales service and train the Vietnamese in the operation and maintenance of the locomotives. An interesting fact, my back-up and support in India was being provided by my senior colleague and friend, Navneet Singh, who is an active member of the Rail Enthusiasts' Society. Earlier, he had spent time in Vietnam in connection with earlier supplies of rolling stock.

During World War II, the Japanese had overrun the then French-ruled Vietnam. In 1945, when the Japanese surrendered and left the country, the country had no ruling organisation - French, British or American. Their famous leader, Ho Chi Minh, who had been battling the Japanese from the hills of the Northern part of Vietnam, marched into Hanoi and declared unilateral independence. The French did

not like this and sent their army into the country to enforce their rule. An 8-year war ensued with the Vietnamese relying mostly on guerrilla tactics. Finally, in 1953, the French were defeated decisively at Dien Bien Phu. This led to the French realizing that they could not hold Vietnam and started peace talks in Paris. As a result of these talks, the country achieved independence, but was divided into a communist North Vietnam and a democratic South Vietnam.

To cut the long story short, the two Vietnams began fighting each other and South Vietnam sought the help of the USA, dragging the latter into the conflict. The Americans were fully involved in the battle but were held at bay by the North Vietnamese and the South Vietnamese communists called the Viet Cong. Owing to the resilience of the Vietnamese and increasing opposition at home, USA withdrew in April 1975. On 30th April 1975, the North Vietnamese seized Saigon, the capital of the South and re-united the country into one Vietnam. They also renamed Saigon as Ho Chi Minh City. I was located at Ho Chi Minh City but the locomotive shed where I worked was still called Saigon Loco Depot.

We had been informed in India that there was a rail line between the port at Ho Chi Minh City and the loco depot. When I tried to trace the route from the port, I found that the all roads had been re-laid and the line did not exist anymore. Apparently, it was there before the war. Then, how were we to transport the locos from the port to the depot?

One of the Vietnamese came up with a solution. He said that he was aware of some old Army trailers that the Americans had abandoned when they left Vietnam. Since the trailers were used to carry tanks, there's no reason why they could not carry locomotives as well. After going through the city, we were finally able to locate these trailers but found that although they could handle the weight of the loco, they were too short. The Vietnamese penchant for *jugaad* came to our rescue. Within a few days, they had welded channels to the trailer and extended the length enough for accommodating our YDM4s. When the locos did arrive, it was quite a sight with a huge truck carrying a locomotive through the heart of busy crowded city. The picture on this page is of the locomotive mounted on the trailer going past the main market of Ho Chi Minh City. For the record, 'Đoung Sat Vietnam' translates to 'Vietnam Railways'. Our locos were classified as D13E. The 'D' meant that this was a diesel-powered locomotive, while the 'E' showed that it had electric transmission. '13' indicated that this was the 13th series of diesel locos that they had.

Vietnam is a country that is all length and no width; the only countries that beat it on this count are perhaps Chile and Gambia. North-South, the country is about 2000 kms, while East-West, it is around 200 kms or less, except in the extreme North where there are flares to around 300-350 kms. Thus, there is one long 1726 kms MG line from Hanoi, the capital in the North, to Ho Chi Minh City, the commercial hub, in the South. All the other lines can be considered to be branches of this mainline. Interestingly, while most of the lines are MG, there are two Standard Gauge (1435mm) lines from Hanoi going Northwards to connect with lines in China. The map ~~of~~ the rail system gives an idea of the layout of this railway system. All traffic is thus linear from North to South.

During my stay in the country, the rail system was in shambles and the railways were trying hard to put it on its feet again. At the Saigon depot, there were about 45 GE-built diesel locos that had been supplied by the USA. After the end of war, the USA imposed sanctions on the country and the supply of spare parts for these locos dried up. It had become virtually impossible to maintain them. One of the reasons they went in for our locos, apart from the line of credit they got from the Government of India, was that many of our components and systems, especially on the electrical side, matched these GE locomotives. I had a very tough time preventing them from using spare parts that we had supplied for our locos on the GE locos where the spares were common. The brake system also had many common components.

These GE locomotives were built in the 1960s and were classified in the USA as GE's U8B model. When supplied to

One of the locomotives exported to Veitnam being unloaded at Saigon Port.

Another Indian locomotive inside Saigon Locomotive Depot.

what was then South Vietnam, they were designated as the BB907 class. After unification of the two parts of the country in 1975, they were re-classified as D9E. I am told that some of these locos are still working, albeit only around Ho Chi Minh City or in minor shunting services.

It will not be out of place to mention that all rail exports at that time, had to be channelised through the Projects and Equipment Corporation (PEC). PEC was a subsidiary of the State Trading Corporation and had a few other items like textile machinery, which were also channelised through it. Thus, whether the railways exported or a private wagon builder exported, the export had to be through PEC. As a railwayman, I was deputed to the PEC, who then posted me to Vietnam. When Shri Manmohan Singh was Finance Minister in the early 1990s, he ended all such channelisation and any organisation can now do rail exports directly. Thus, when diesel locos were exported to Bangladesh recently, the DLW-built locos were exported through RITES.

As mentioned above, the main line of the Vietnam Railways is the North-South line from Hanoi to Ho Chi Minh City. This is a Meter Gauge single line that carries 85% of the rail network's passenger traffic and 60% of its freight. During my days at Vietnam in the 1980s, there was a passenger train between the two terminals but owing to the devastated condition of the tracks due to the war, the train took as much as 72 hours to traverse the distance. The condition of the roads, especially in what was earlier North Vietnam was even worse than the railway! I had travelled from Ho Chi Minh City to Hanoi by road and found that in most of the Northern part, you could seldom drive at over 40 kmph; such was the condition of the roads there. The roads in the Southern part were much better.

Since the rail line went across the country into what were earlier two countries, the train was referred to as the 'Reunification Express', although this had never been the official name for any of the trains that ran then or those that run now. There are a number of express trains now, the fastest of them being time-tabled to complete the journey in 29 hours. Two other trains take about 32 hours while bulk of the trains take around 40 hours.

The author at the controls. The export of the locos included training of the Vietnamese crew also.

It just happened that I was a fairly good player of field hockey and one of my team members, W A Johnson, was also adept at the game. Field hockey was virtually non-existent in Vietnam. Following my suggestion, PEC gifted hockey sticks, balls, pads for goal-keepers, etc. for two teams and as part of our community service, we coached railwaymen of the diesel shed in hockey. I do not know what the state of the game is in Vietnam today but if the game does pick up, we can take credit for introducing the game in the country.

Teaching the Vietnamese how to play field hockey

India has always been a good friend of Vietnam and we have always supported the country. The result was that we were treated very well whereas personnel of Western countries faced all kinds of difficulties. For example, when we applied for driving licenses, we got our licenses without any difficulty, including 3 members of my team who could hardly drive. The best driver we had was the same W A Johnson who was also a good hockey player. They refused to give a license to him. When asked why, the reply was, "His name Johnson. Johnson very bad President." (The reference was to resident Lyndon Johnson of the USA who had sent ground troops to the country during the war). It took some convincing that this was W A Johnson and not Lyndon Johnson and that he was an Indian. Some under the table exchanges also helped and Johnson was able to get a driving license.

I will end this account with an interesting incident. I had bought a Toyota Corolla motorcar while I was there. When at the market one day, I accidentally locked the keys of the car inside the key; I did not have a spare key. I first contacted all my friends who had Toyota cars to come over and try to open the door. All attempts failed. The shopkeeper in front of whose shop my car was standing then came out and told me that one of his friends was a car thief; should he call him? I was so intrigued that I said yes and about 30 minutes later one swarthy looking puny-sized Vietnamese man turned up. He looked at the car, took out a skeleton key, and in one minute he had the car open. I never parked my car at a public place in Vietnam again.

I have so many stories about Vietnam that I can carry on for ever but let me leave those tales for yet another article....

Cover Photo courtesy : David Gurnett. Rest of the images providedby the author.

through the

Heartlands of Uttar Pradesh

Concluding Part -- Train to Nepal

Somsubhra Das

After travelling through the heartlands of Uttar Pradesh under sultry weather conditions, I decided to taste winters in the northern part of the country. The Nepalganj Road branch line on the Bahraich-Mailani meter-gauge (MG) stretch happened to be my next destination. Winters are usually harsh in these parts and places often remain shrouded with thick blanket of fog resulting in zero visibility which makes train operations under such conditions a challenging prospect. In 2016, I travelled from Shahjahanpur to Bahraich via Pilibhit, Mailani & it took me almost 3 years to come back & pick up from where I had left. Finally, I got the opportunity to fulfill my self-made commitment to cover the left-out Nanpara-Nepalganj fraction in January 2019.

Just like the change in season & time of my visit there was a change in my companion as well. A friend of mine, Prasenjit Biswas, was accompanying me this time in my pursuit. Although, he was not a ferroequinologist to the core, he still had a special place for trains in his heart. Planning a trip for a mere 40 kilometers of meter gauge ride was no less than insane – but that's what drives us. Also, one seldom gets to know beforehand about the sudden closure of MG routes since closure notices get issued within a very short span of time. That's exactly what happened with the Shahjahanpur-Pilibhit-Mailani MG stretch when the axe of gauge conversion fell on it. Luckily, we had already covered that length by then (a journey that has been covered in previous three issues of *Rail Canvaz*). My friend was also super excited for his maiden MG journey. The Shalimar Gorakhpur Express took us to Varanasi Cantonment station. After a brief session of trainspotting, we moved to Varanasi City for our onwards journey to Gonda by the Krishak Express. Never mind the odd hours, we reached Gonda at around two thirty in morning! Adding more to our ordeal, was an unseasonal downpour that started to bother us from Gorakhpur since last night. However, without wasting any time, we checked into our pre-booked Retiring Room and freshened ourselves up for the 5 am DEMU service to Bahraich.

Had it been some years back, the meter gauge service would have been available from Gonda as well but with the passage of time, the MG tracks got bigger and broader and had transformed themselves into BG. With the elements still pouring in, we deposited ourselves in the DEMU; our bleary eyes clearly overruling our enthusiasm. We decided to recharge ourselves for the next two hours of journey through darkness and wilderness. We reached Bahraich at around 6.45 am but to our utter dismay, the Rain Gods were not in

A wet morning scene at Bahraich

Rain drops keep falling...

It was gloomy and hazy out there...

The semaphores were hardly visible

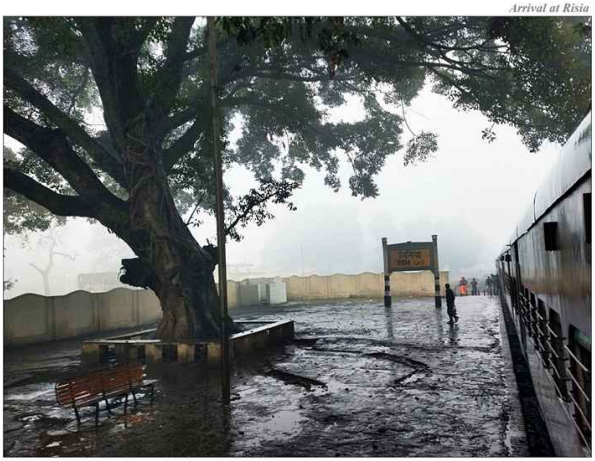
a mood to relent as the murk of the rainy morning spread a sheet of gloom over everything around. Overcast skies with pale natural light coupled with nearly impenetrable visibility dotted by dim station lights drew up the ambience of a lazy and hazy winter morning – something that I had seldom witnessed earlier on any of my smaller gauge sojourns.

Getting down, we discovered that a YDM4 was already moving hither and thither, shunting the rake of our Nepalganj-bound service. The rain was getting harder and spoiling our intent to photograph the precious moments. Online Met services didn't bring the best of news and a chat with some vendors revealed that it had been coming down incessantly since the day before. All these, however, failed to dampen our spirits. As the power of our train got attached, the wonderful setup which included fervent smoke off the loco, the dual beam from the headlamps ripping apart the darkness of a wet morning & the rumble of diesel engine created a superlative aura about it.

The Uttar Pradesh meter gauge network had been always powered by the Izzatnagar (IZN) horses with Chhapra Kachehri and Narkatiaganj locos being frequent visitors during the MG heydays. But with the majority of MG routes closed and converted, its IZN all the way now. Our blue loco with yellow strip and circle on face, bearing road number 6751, was ready to leave braving inclement weather mirroring the reflections of the gloomy hours ahead. The rain-drenched coaches looked clean from the inside as we started with less than ten percent occupancy. The unseasonal rains certainly had a definite role to play behind that poor patronage. As we progressed further, the visibility was dropping in sync with the mercury. The fields were enveloped with mist and fog. Such was the obscurity that even the lower quadrant semaphores were hard to figure out. Although taking proper shots became quite cumbersome under such conditions, we discovered a markedly different Uttar Pradesh where morning haze and winter drizzles coalesced to present a unique canvas. It was like 'UP never before' as our train glanced through apparently haunted landscapes cloaked in fog and untold secrets. Our maiden service to Nepalganj Road made its way through Risia and reached Matera at 8:30 am. We were expecting a crossing anytime from the overnight Mailani - Bahraich passenger

 # 6751 all set to roar the tracks braving the rainy weather

Arrival at Risia



Crossing with Bahraich bound train at Matera

Typical Indian meter-gauge scene at Babaganj Halt

running more than 2.5 hours behind schedule. After about a good ten minutes, a beam of advancing light was spotted dissecting the clag around. Finally, our wait was over, and the train came. We left Matera for the two hour-ride to Nepalganj via Nanpara Junction.

Among the railway routes of our country that touch international boundaries, Nepalganj Road certainly holds a special place, as evident from the name itself. The international border lies a mere 5 km away from the station. Scenes hadn't changed much in Nanpara from what we had witnessed three years back except for the deluge and no appreciable boarding-deboarding. Post Nanpara, we were into the unseen territory stretching a mere 20 km with the solo stop of Babaganj enroute. The jungles had turned green again with continuous showers as our train chugged heavily to proceed. The smoke, the mizzle and the dipping mercury with layers of fog floating freely strummed up a romantic tune orchestrated by the rhythmic clatter of the moving train.

Ground-level platforms and monstrous trees greeted us at Babaganj halt – typical of Indian meter gauge scenes. Another characteristic feature which synchronizes with railways in our country is food. Rarely one would find sections without the essence of local food and this stretch was no exception either. Samosas were there to keep one craving for more while local *chaiwalas* moved around briskly to sell their stuff. A sip of hot tea with a dab into the piquant samosas was all one needed to spur up amidst the freezing January temperatures. The rain had relented a bit by then as we pulled into Nepalganj Road without much fuss.

Nepalganj Road had a solo platform with a couple of loop lines for the loco to reverse back and for stabling any rake. The station, located amidst the fields, was like a place with overgrown trees – all lined up to offer natural shade to the passengers. A BSF camp had been set up just near the tracks to keep vigil on the passersby. A structure of water tank, which was once used to feed steam engines still stood tall. The station was not as quaint as other stations on the route. Air horns from buses and vehicles plying nearby clearly marred the tranquil associated with a verdant station like it. Historically, Nepalganj can boast of possessing one of

Hazy semaphores

Through the thickets

Over the streams

Reached the ultimate destination

Nepalganj Road

Crossing at Risia

the earliest railway lines in UP. This tiny branch route of 34 miles from Bahraich had its roots spread over the former Bengal and North Western Railway Company (BNW) of 1882. The line got functional from 15th December 1886 – years before its contiguous MG routes.

At Nepalganj, we soaked ourselves in the ambience of the station accompanied by a freezing breeze. Soon the engine reversed & re-coupled with the coaches but on the other end, facing the opposite direction for the return journey. The entire process happened in such a way that it looked like the loco was scampering back to the call of duty for finishing the task at hand, notwithstanding the gripping gelidity. The sights and scenes of a wet and cold morning at Nepalganj was surely much different from what I had expected!

Each of us gulped down two cups of hot tea served in earthen pots to beat the winter blues and started our journey back to Bahraich at 10.30 am. At Nanpara Junction, we met the main line again and the solo YDM4 which was in deep slumber hadn't woken up yet. Bidding adieu, we moved on. At Matera, for the second time, we patiently waited for the Mailani-bound passenger. The token exchange along with exchange of some passengers with our train who boarded the east-bound service underlined the significance and importance of these trains in these parts. Gliding past the fields and trees soused with rainwater, we encountered our second crossing, third for the day, at Risia with the second service to Nepalganj. It was heartening to witness the presence of an appreciable number of passengers waiting to utilize the service with the weather having improved a bit by then. We left after a brief hiatus to reach Bahraich which ultimately wound up our meter gauge journey through the heart of UP.

The DEMU was already stabled to carry us back to Gonda. After taking a seat, I realized the warmth of accomplishment touching my heart. But in my blue sky of happiness, some somber clouds depicting the future of meter gauge in my country ailed me.... maybe that was the last time I was seeing them in action, may be that was the last time I had taken ride in those coaches.... maybe the history that adorned the route would soon get buried under the carpet of development.... The Nepalganj meter gauge may not have the charm or thrill of any other operational MGs, the route

Napping YDM4 at Risia

Through the viaducts....

through the Terais of UP might not be embodying any heritage tag with it but what made the journey special was the silhouette shades which looked truly water-coloured, courtesy the winter elements. Be it for the wet, foggy vibes or the crippling cold or the mist-veiled trees pitched against the blanket of white with a tincture of moist grass, I shall remember this journey as my last meter gauge journey before the onslaught of Novel Corona virus which changed our perception about life.

With changing times and dynamics, the primitiveness of this route may cease to exist, the innocence of the place may be lost forever and I may find their remnants only, if I ever return here. This frontier village of Rupaidiha may soon stop seeing MG trains and the roaring YDMs as meter gauge is in the twilight of its existence. With the dual rage of Unigauge and Electrification in force, the meter gauge is set to fade away into the darkness – never to come back again. There will be no rebirth or reincarnation in a nation adopting the so-called 'faster and greener conveyance' and not sparing a thought about revamping and augmenting the already present infrastructure with minimal disruption in daily traffic. Albeit the 'Heritage MG preservation' programme in certain pockets of the country, the meter gauge has been mostly made to bow out of the network of Indian Railways with years of service still left in it....

Bidding adieu....

Howrah Trams

Nothing has been Forgotten.....

Dr. Debasish Bhattacharyya

How Howrah Trams Entered into My Mind in Childhood

An attractive activity of my childhood weekend entertainment was to visit Howrah railway station from Kalighat Depot with my father onboard a tram. Howrah station was a paradise full of all varieties of passenger trains including steam, diesel and electric locomotives. The Buckland Bridge was there connecting the cab way over the railway tracks. What surprised me was that there were occasional movements of some small single coach tram-like vehicles holding trolley poles connected to wire. Since the bridge had iron girders all along, I never had a very clear look at them. Only the roof of the cars and the trolley poles were visible. Upon enquiry, I found that the town of Howrah had a unique tramway system of single coach bidirectional cars. This contrasted with all double coach unidirectional trams in the city of Calcutta where I resided.

However, it raised further questions in my mind. In case single coach trams reversed using its bidirectional facility, how did the trolley poles get proper orientation? Because, on the bridge, I never found any tram plying with a wrongly oriented trolley pole. When I grew up to 11-12 years of age, I used to bunk school and explore Howrah trams all by myself. I discovered a tramway so close to Calcutta yet so different.

Background

Withholding the incidents of short-lived horse drawn and steam powered tramways of Calcutta, the entire stretch of tramways of the city was electrified between 1902 - 1905. Extension of the electric system continued till 1942 in the pre-independence era. Later, further extensions were carried out in the 1980s, but many sections were truncated or discontinued on one pretext or the other. At present, Calcutta Tramways happen to exist mostly on pen & paper. However, this is not my centre of discussion.

Howrah, the twin city of Calcutta, is separated by the river Hooghly. Growth and development of these two cities ran parallel as the Eastern and Western River fronts were shared by Calcutta and Howrah respectively. Despite being much smaller than Calcutta, it had an advantage that the major railway network connecting Calcutta with the rest of India terminated at Howrah because of the absence of railway connectivity over the wide river. That's why, many small to large scale industries were constructed in & around Howrah along the riverbank in North-South direction. However, there was a floating removable wooden bridge which connected

A Howrah based bi-directional tram on Buckland Bridge

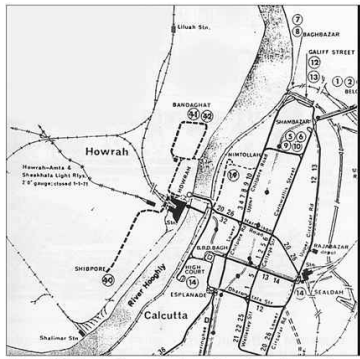
both the cities, but it was very weak and unreliable. The situation changed completely when the iconic & massive road cum tramways Howrah Bridge was commissioned in 1943.

A little-known fact about the town of Howrah, independent electric tramways of Howrah were inaugurated in 1908 i.e. only 3 years after the installation of electric tramways in Calcutta. Unfortunately, without evaluating the benefits of a tramway, Howrah tramway was permanently closed in 1971. At present, Howrah has innumerable memories of its small but excellent tramways including invaluable photographs. Destination boards of buses marked as 'Shibpur Tram Depot' shows the living history. Howrah and Calcutta tramways had identical track gauge, overhead line voltage, rolling stocks and machineries imported from England, dress codes of the running staff, fare structure and rules of conduct. Howrah tramways even used the same CTC (Calcutta Tramways Company) emblem. Despite being a replica of CTC, Howrah tramway system had several unique features that Calcutta never had.

Route Description

Howrah tramways had two sections, Howrah Station – Sibpore *(Rt. No. 40)* and Howrah Station – Bandhaghat *(via G.T. Road - Rt. No. 41 and via Golabari - Rt. No. 42)*. All these sections were double lines. Howrah station had a separate turning loop for Howrah tram cars. Apparently, Shibpur area had no room to create a loop for reversal of the terminating trams. That's why bidirectional single coaches were compulsorily used in Sibpore section. Post arrival at Sibpore terminus, the driver disconnected the power supply of the operating cabin-1, opened the lock of cabin door-1 to enter the passenger circulating area and make his way to the second cabin-2, unlocked cabin door-2, connected the power supply of cabin-2 and drove in the reverse direction along the down line. Calcutta never had bidirectional tramcars except a few watering and rail scrubbing service cars. Similar bidirectional trams of single and double-decker version were common in England at that time.

Earlier, I have read that there was a small extension of single track from Golabari four-way crossing to the river Hooghly.



Map of Calcutta Tram Routes. Courtesy: Runnacles *Ghasbagan Depot Map*

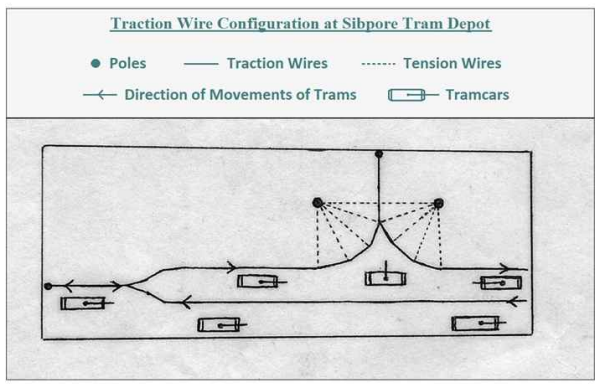
This connection was used to collect water from the river using tankers of watering cars. Its utility remained an elusive mystery as Howrah town had sufficient water supply to feed a few watering cars at that time.

Childhood Questions and Answers

If two drivers from two cabins simultaneously drive a Sibpore tram, will it be fragmented into two pieces? The answer came much later. The fact remained - the power supply that runs the wheels through traction motor flows either through Cabin-1 or -2 regulated by a switch similar to electric or diesel locomotives. Thus, the fragmentation of the trams remained in my imagination only.

Second question was, if the Sibpore cars reversed, the poles should be in their original orientation. But it never happened. How these poles reoriented themselves? I was even more suspicious as there were no rope connecting the top of the pole and the tram body. Usage of such non-conducting ropes of Calcutta trams was a regular feature. They are used even today to fix the trolley pole wheel to the overhead wire in case of loss of contact.

I was most amazed to see the design of a simple but unique traction wire at Sibpore tram depot that mechanically reversed the orientation of the pole. It was a reversible flip-flop mechanism like unfolding of an umbrella in strong wind (see the diagram and the picture). Trams passed this stretch very slowly so that the pole wheels did not suffer from the



Traction Wire Configuration at Sibpore

process. Being a Calcuttan, I was fortunate enough to witness this unique feature of Howrah cars. However, it raised further question that how the trolley wheels of these bidirectional cars were fixed in case of any accident as there was no connecting rope.

Working class people are often more intelligent than they appear. While travelling in Sibpore trams, I noticed that a bamboo of some 12-14 feet length attached to a hook at one end was placed inside every car across the two horizontal rods used for passengers to hold. In cases of disorientation of a pole & subsequently, the trolley wheels, the bamboo was used to fix the pole as bamboo is a nonconductor of electricity. However, the tension of the overhead wires was so meticulously maintained that I never found any case of pole disorientation during my rides.

Provision of the bamboo solved one problem but raised a second. The bamboo was long, linear, strong and non-flexible. It was impossible to put it in through the standard size windows or doors and set it properly as described. Then, how did they place those bamboos? The answer came from a co-passenger who told that the 4 to 6 inches square shaped opening of the iron net fixed at the driver's cabin was used to take out or put in the bamboo. This arrangement is clearly visible in the front of all Howrah trams. We never saw this 'bamboo practice' in Calcutta trams. However, even today, a square or circular hole is made on the iron net of the driver's cab of all Calcutta trams forgetting its origin.

Before exploring Howrah trams, I visited every nook and corner of the Calcutta system. A tram terminated in Calcutta either in an enclosed depot or a terminus that was invariably a loop except Behala which had a 'K' turning. No matter wherever a tram terminated, all passengers vacated the car, driver and conductors left for a short rest. So it was easy to locate the end of the journey. Having this idea, I boarded a tram for the first time from Howrah Station for Bandhaghat, purchased a ticket and proceeded towards the destination. After some 30 minutes, an inspector boarded the tram and

Bandhaghat bound Trams at Howrah station

verified the tickets from passengers. While looking at my ticket, he asked – where do you want to go? Listening to the answer - Bandhaghat, he said that I crossed the place some 10 minutes back and the car was heading towards Howrah Station. I was utterly surprised because neither the tram entered a depot nor loop nor the driver or the passengers deboarded at some point. Then how did I miss Bandhaghat?

On my second ride onboard a Bandhaghat tram, I was careful and requested the conductor to drop me at Bandhaghat to avoid embarrassment. While deboarding at Bandhaghat in the middle of the road, I found that the conductor reversed the route board from 42 to 41 that took about 10 seconds and the car headed towards Howrah station. I discovered that it was the same tram that initially followed a clockwise direction under Route No. 41 from Howrah Station and changed to 42 at Bandhaghat without any formal halt. Calcutta never had such a circular system where tramcars followed clockwise or anti-clockwise direction having reversal of route numbering in the middle of a road.

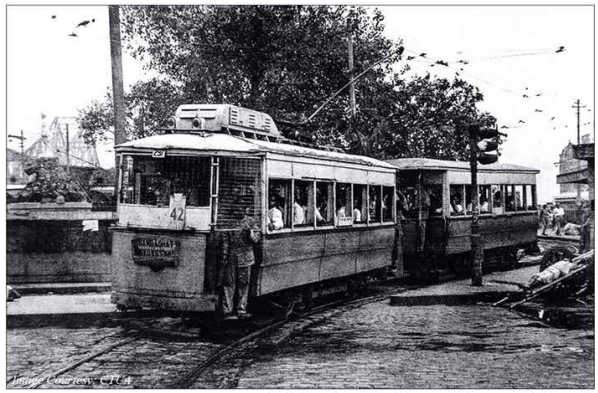
Railroad Crossing

There were four bridges in Calcutta where tramlines crossed the railway tracks - Belgatchia bridge, Tollygunge bridge, Majherhat bridge and Howrah Bridge eastern approach. Manicktala bridge (underpass) is a recent addition. Nowhere tram tracks were at grade with railway tracks. It was only at Dobson Road (Bandhaghat section) where a single railway track connecting the main line to a factory outlet crossed the tram tracks at a level crossing. Such cross-over was possible as the railway track was not electrified. Thus, the complication of connectivity between low voltage tramway and high voltage railway electrical wires did not arise. The railway track is no more but the level crossing gate still exists.

Description of the Tramcars

Evolution of Howrah as well as Calcutta trams from their inception were at par with the British and European systems till 1930s. Earliest versions had face to face seating accommodation on benches across the width of the car in 4

Primitive Tramcars with isolated cubicles



Uni-directional Double-coach Tramcars @ Howrah

isolated cubicles. Later, these cars were modified to have doors at the ends. The passenger compartments were fully protected against the rain and the Sun by full drop windows. Air circulation within the cars was guaranteed though wooden frames having shutters placed over the windows. However, in all these sets, the driver's cabin was unprotected except the protruded roof. Later, iron nets were fixed in all trams of Howrah and also Calcutta to protect the drivers against stone throwing by the demonstrators during independence movement. Also, the designing for air circulation above the full drop windows was replaced by glass standee windows.

What I witnessed in 1969-70 was as follows: Howrah-Bandhaghat being a circular route, enabled varieties of trams to ply in this section; bidirectional single coach Shibpur cars (second class only in near original structure or refurbished), unidirectional single coach cars (first class with fans and cushioned seats) and unidirectional double coach cars (first class as stated and second class having wooden seats without fans). The refurbished single coaches were common. From my estimation, only one or two cars from each of the other varieties were in service. All seats were longitudinal except the first-class compartment which had four 2x2 transverse seats covering about 40% of the space. All cars were of 2 axles - 4 wheels.

Bi-directional Single coach Sibpore Tramcars

Physical Connection with Calcutta System

From the maintenance point of view, Calcutta Tramways had a well equipped Nonapukur workshop from the beginning. Until Howrah Bridge was constructed, there was no scope for the Howrah Trams to visit this workshop. So, Ghashbagan Depot was self-sufficient to maintain the Howrah trams. Considering the size of the depot that still exists to house almost condemned state transport buses, one can speculate that heavy repairing was not possible there. Small spare parts like wheels, brakes and some under frame structures might have been sent to Nonapukur using the wooden floating bridge. Howrah tram workers must be greeted for locally maintaining their own fleet between 1908 and 1943 in the absence of a regular workshop. Once Howrah Bridge was opened, this problem was solved.

Ghasbagan Depot

All Howrah trams were homed in this depot located in Bandhaghat section. Using 4 curved tracks, trams from any direction could enter or exit the depot. Track layout inside the depot remains unknown as nobody was able to provide a diagram so far. As far as I have read, about 30 cars were there under the depot. On the day of closure of Howrah trams, the employees protested. I remember, the next day, The Statesman reported – 'Neither the drivers surrendered the driving instrument power keys, nor the conductors surrendered their fare collection bags to continue the services. On that day 16 cars were removed from holding against an average of 12'. That gave a rough idea about 6 cars being there service for each route. Assuming that some 6 cars were permanently damaged, out-shedding efficiency was 50%. It was normal in West Bengal culture. Amongst the out-shedded cars, I observed, one had unmodified drivers cab having extended iron net, offering a primitive look. Bidirectional Shibpur cars were better maintained. Unidirectional cars had knockdown appearance similar to their Calcutta counterparts. The depot still exists without any trace of tram tracks. Its overhead structure is most probably original. Currently, it houses condemned and condemn-like running state transport buses.

Ghasbagan Depot. Present day aerial view. *Image Courtesy: CTUA*

Fare Structure

Due to the presence of short stretches, there was only one stage of fare in both Shibpur and Bandhaghat sections. Fare was equivalent to the lowest stage of second class in Calcutta trams. Thus, it was only at Bandhaghat, where one could travel in a first-class coach by paying the fare of a second class. This practice was impossible in Calcutta. In spite of this advantage, I did not find any preference amongst passengers to travel in the first class. A flat fare of 12 paise (in 1969-70) being affordable for all, evasion of fare by the passengers or non-issuance of tickets by the conductors after accepting fare was essentially nonexistent. Monthly tickets of unlimited rides at Rs 3.50 were also available. I observed that in any car, at most 10-12 people travelled as standee. It was the occupancy in the lean period of working days as I always travelled during day school hours. In the rush hours, occupancy was certainly higher. Only on one occasion, I found passengers were clinging on the footboard as there was a strike of private bus operators. In earlier days when private bus service in the town of Howrah was scarce, trams were used at their full capacity.

To help residents of Howrah city reach their offices in Calcutta, one or two trams each from Sibpore (40) and Bandhaghat (41 and 42) were deployed up to Dalhousie Square beyond Howrah station in the morning. The same set of cars originated from Dalhousie square in the evening for ferrying the office goers back to their home. Though I have not seen those cars, an official sign board at a tram stoppage in Dalhousie square having route numbers 40, 41 and 42 printed on it confirmed the services. A photograph of a Howrah tram running in Dalhousie Square also confirmed trans-river service. In contrast, no Calcutta tram ever visited Howrah town beyond Howrah station. If desired, they could visit Bandhaghat section for its circular layout but not Sibpore section.

Prominent Personalities

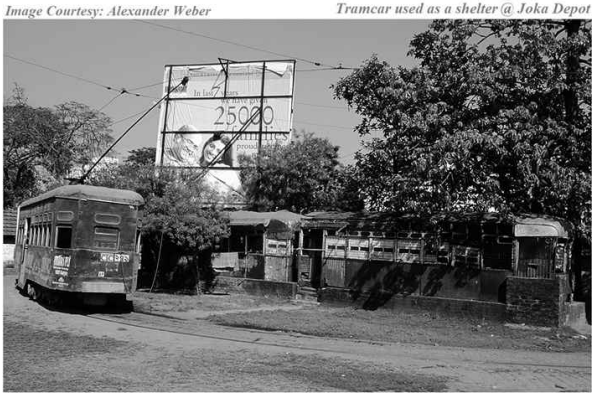
Shibpur area was the birthplace of many creative Bengalis who grew up there. Actor Tulsi Chakrabarty who played the unforgettable role in Satyajit Ray's *'Parashpathar'* is an example. He always travelled all the way from Shibpur to Tollygunge tram depot by tram. The film studio was next to Tollygunge tram depot. He even refused cars offered by the cinema coordinators. According to Chakrabarty, he collected the essence of life from the lengthy travels in trams. During the journeys, he felt unified with the society. I read this after his demise as a statement from his wife in a newspaper. Bandhaghat section was dominated by small to medium size iron factories. Nevertheless, Bandhaghat-Salkia region was distinctly progressive. Palatial heritage buildings and temples near the riverbank are testimonials of their bygone days.

Recalling Satya Bandyopadhyay of IPTA (Indian Peoples Theater Association) who appeared in numerous Bengali art films including some of Ray's creations. In Mrinal Sen's *Akdin Pratidin*, he had a shot with the last tramcar of the city. Incidentally, he was our front door neighbor. Once I found him waiting for a Howrah tram at Howrah station. Immediately, I left the area apprehending that he would recognize me in school uniform & realize that I had bunked school. Later, in my college days, I met him often at Kalighat tram depot.

After Closure of Howrah Section

Protest of the employees against the closure did not last long as authorities transferred all cars and employees to the Calcutta tram system. Unserviceable cars were used off track as shelters of depot timekeepers and resting rooms of running stuffs at Ballygunge station, Joka terminus, Esplanade junction etc. Some serviceable single coaches

Image Courtesy: Alexander Weber *Tramcar used as a shelter @ Joka Depot*



Converted unidirectional single coach Tramcar @ Dalhousie

Converted unidirectional single cars joined to form double coach tram

Images Courtesy: CTUA

were converted to unidirectional cars after disconnecting cabin – 2 and remodeling the driver's cab in terms of closing the right-hand side door and creating a left hand side door instead. They were homed by Rajabazar depot and plied on North Calcutta- Sealdah section. Some of the single coaches were refurbished and joined together to form double coaches. As a result, they became indistinguishable from Calcutta cars.

The Aftermath

Howrah trams were the only civilized mode of public transport in the town that provided safe, comfortable, cheap and socially equitable journeys to the people. Fellow commuters and tramway employees were courteous and helpful. I asked many people of Howrah whether they are happy after dismantling of Howrah trams. The unanimous reply was 'No'. The system was closed for a fruitless attempt to make the town 'street smart' by such people-in-power who were completely ignorant about the benefits of a tramway. Now, Howrah city dwellers depend on dilapidated and polluting private buses, mini buses and auto-rickshaws as transit. All are infamous for rash driving and misbehavior. Majority of the road space is occupied by many moving and parked private cars, taxies, delivery vans, hawkers and storage or display of commercial materials leaving no room for the pedestrians leaving aside the trams.

Interestingly, compared to the narrow roads of Howrah city, the stretches of tram routes were relatively wider. After a little realignment of the track design, one can still reintroduce trams provided there is an honest political will.

Cover photo courtesy: CTUA
All photographs used were provided by Calcutta Tram Users Association (CTUA).

Image Courtesy: Strassenbahn Magazine

Tramjatra 2001 - *The Prelude*

Roberto D' Andrea

Kolkata and Melbourne are two rare surviving tramway systems of continuous use outside of Europe. Both cities are a part of a prestigious global tram family along with other classic cities like Amsterdam, Vienna, Budapest, Prague, Kyiv, Toronto, San Fransisco and Hong Kong.

The 2001 Kolkata Melbourne Tramjatra was staged over 3 months from January the 23rd until April the 24th. It was truly a wonderful pro-tram event which had many elements from a comprehensive tram track 'technical' exchange to the beautification of tram terminuses with artworks and the high-profile decoration of 4 tramcars, 'Tramjatra', 'Sundari', 'Tramsport-Cricket' and the 'Baccha' (Children's) tram. Trammies, gunzels, artists and students from Melbourne were stationed in tram depots and legendary Bengali pop singer Usha Uthup expressed her love for trams at the launch of the Sundari tram. Trust and friendship were strong off the back of the previous Tramjatra Festivals staged in Calcutta in 1996, Melbourne and Calcutta in 1997 and 2000 in Melbourne (articles in previous editions of Rail Canvaz). By the time the 2001 Tramjatra was ready to start in Kolkata we had the Calcutta Tramways Company (CTC), The MET and Yarra Trams, the Victorian State Government and the Government of West Bengal in partnership with official support sanctioned by all parties. One of Tramjatra's founding members, Mick Douglas, organised official support from many arts funding bodies like The Australia Council, The Australia India Council and Arts Victoria, giving us the opportunity to stage a Tramjatra in both Kolkata and Melbourne in 2001.

Across the 3-month long Kolkata Tramjatra, over a hundred newspaper articles were written in the English, Bengali, Hindi and Urdu language media, covered by all television channels and given a wide radio coverage. Tramjatran Susie

◀ Victorian Govt Transport Minister letter of support

▼ WB Govt Transport Minster letter of support

Minister for Transport

Nauru House
80 Collins Street
Melbourne Victoria 3000
GPO Box 27475
Melbourne Victoria 3001
Telephone (03) 9655 8682
Facsimile (03) 9655 8617

To whom it may concern,

MELBOURNE-CALCUTTA TRAMWAYS FRIENDSHIP

I have pleasure in writing a letter of support for the Melbourne-Calcutta Tramways Friendship Project.

The Friendship plays an important role in supporting public transport in both Cities and providing an important cultural link between Melbourne and Calcutta, and Australia and India.

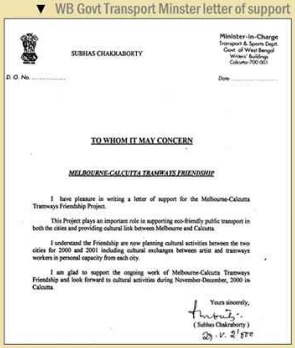
I understand the Friendship are now planning further cultural activities between the two Cities for 2000 and 2001, including cultural exchanges between artist and tramway workers from each City.

I have no hesitation in supporting the ongoing work of the Melbourne-Calcutta Tramways Friendship and look forward to this next phase of the Friendship's work.

Yours sincerely

Peter Batchelor MP
Minister for Transport

28/3 / 2000



SUBHAS CHAKRABORTY

Minister-in-Charge
Transport & Sports Dept.
Govt. of West Bengal
Writers' Buildings
Calcutta-700 001

D. O. No. .....

Date .....

TO WHOM IT MAY CONCERN

MELBOURNE-CALCUTTA TRAMWAYS FRIENDSHIP

I have pleasure in writing a letter of support for the Melbourne-Calcutta Tramways Friendship Project.

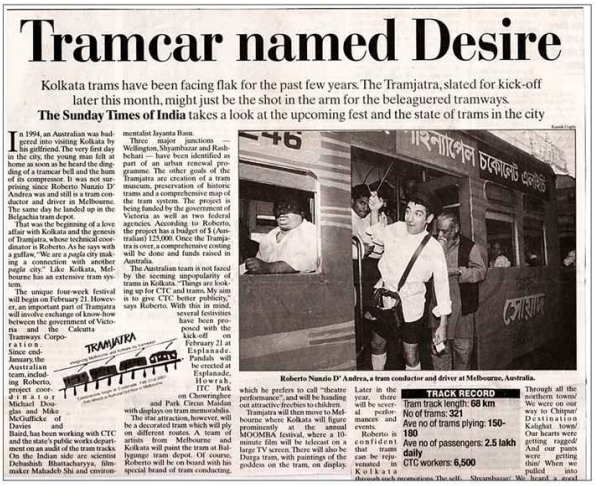
This Project plays an important role in supporting eco-friendly public transport in both the cities and providing cultural link between Melbourne and Calcutta.

I understand the Friendship are now planning cultural activities between the two cities for 2000 and 2001 including cultural exchanges between artist and tramways workers in personal capacity from each city.

I am glad to support the ongoing work of Melbourne-Calcutta Tramways Friendship and look forward to cultural activities during November-December, 2000 in Calcutta.

Yours sincerely,

(Subhas Chakraborty)



Tramcar named Desire

Kolkata trams have been facing flak for the past few years. The Tramjatra, slated for kick-off later this month, might just be the shot in the arm for the beleaguered tramways.

The Sunday Times of India takes a look at the upcoming fest and the state of trams in the city

In 1994, an Australian was badgered into visiting Kolkata by his girlfriend. The very first day in the city, the young man felt at home as soon as he heard the dingding of a tramcar bell and the hum of its compressor. It was not surprising since Roberto Nunzio D' Andrea was and still is a tram conductor and driver in Melbourne. The same day he landed up in the Belgachia tram depot.

That was the beginning of a love affair with Kolkata and the genesis of Tramjatra, whose technical coordinator is Roberto. As he says with a guffaw, "We are a *pagla* city making a connection with another *pagla* city." Like Kolkata, Melbourne has an extensive tram system.

The unique four-week festival will begin on February 21. However, an important part of Tramjatra will involve exchange of know-how between the government of Victoria and the Calcutta Tramways Corporation. Since end-January, the Australian team, including Roberto, project coordinator Michael Douglas and Mike McGuffcke of Davies and Baird, has been working with CTC and the state's public works department on an audit of the tram tracks. On the Indian side are scientist Debashish Bhattacharyya, filmmaker Mahadeb Shi and environmentalist Jayanta Basu.

Three major junctions — Wellington, Shyambazar and Rashbehari — have been identified as part of an urban renewal programme. The other goals of the Tramjatra are creation of a tram museum, preservation of historic trams and a comprehensive map of the tram system. The project is being funded by the government of Victoria as well as two federal agencies. According to Roberto, the project has a budget of $ (Australian) 125,000. Once the Tramjatra is over, a comprehensive costing will be done and funds raised in Australia.

The Australian team is not fazed by the seeming unpopularity of trams in Kolkata. "Things are looking up for CTC and trams. My aim is to give CTC better publicity," says Roberto. With this in mind, several festivities have been proposed with the kick-off on February 21 at Esplanade. Pandals will be erected at Esplanade, Howrah, ITC Park on Chowringhee and Park, Circus Maidan with displays on tram memorabilia.

The star attraction, however, will be a decorated tram which will ply on different routes. A team of artists from Melbourne and Kolkata will paint the tram at Balygunge tram depot. Of course, Roberto will be on board with his special brand of tram conducting, which he prefers to call "theatre performance", and will be handing out attractive freebies to children.

Tramjatra will then move to Melbourne where Kolkata will figure prominently at the annual MOOMBA festival, where a 10-minute film will be telecast on a large TV screen. There will also be Durga tram, with paintings of the goddess on the tram, on display. Later in the year, three trams will be severed for performances and events.

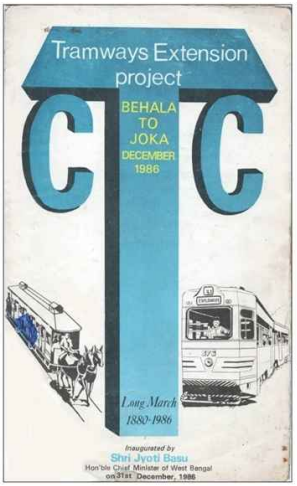
Roberto is confident that trams can be rejuvenated in Kolkata through such promotions. The self-

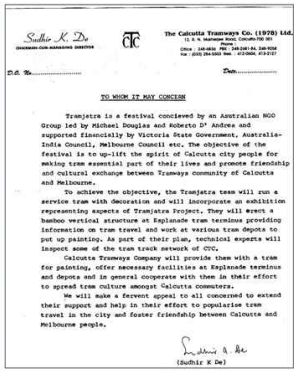
Roberto Nunzio D' Andrea, a tram conductor and driver at Melbourne, Australia.

TRACK RECORD

Tram track length: 68 km
No of trams: 321
Ave no of trams plying: 150-180
Ave no of passengers: 2.5 lakh daily
CTC workers: 6,500

Through all the northern towns/ We were on our way to Chitpur/ Destination Kalighat town/ Our hearts were getting ragged/ And our pants were getting thin/ When we pulled into Shyambazar/ We heard a good





Sudhir K. De

The Calcutta Tramways Co. (1978) Ltd.

TO WHOM IT MAY CONCERN

Tramjatra is a festival conceived by an Australian NGO Group led by Michael Douglas and Roberto D' Andrea and supported financially by Victoria State Government, Australia-India Council, Melbourne Council etc. The objective of the festival is to up-lift the spirit of Calcutta city people for making tram essential part of their lives and promote friendship and cultural exchange between Tramways community of Calcutta and Melbourne.

To achieve the objective, the Tramjatra team will run a service tram with decoration and will incorporate an exhibition representing aspects of Tramjatra Project. They will erect a bamboo vertical structure at Esplanade tram terminus providing information on tram travel and work at various tram depots to put up painting. As part of their plan, technical experts will inspect some of the tram track network of CTC.

Calcutta Tramways Company will provide them with a tram for painting, offer necessary facilities at Esplanade terminus and depots and in general cooperate with them in their effort to spread tram culture amongst Calcutta commuters.

We will make a fervent appeal to all concerned to extend their support and help in their effort to popularise tram travel in the city and foster friendship between Calcutta and Melbourne people.

(Sudhir K De)

▲ CTC Tramjatra 'Letter of Support' Copy

◀ CTC Brochure - 1986 Tramways Extension Project Behala to Joka

Attwell had a daily column in the Statesman Newspaper. A public tram debate about the future of the CTC and Calcutta's Tramways was staged in the media and in and around the decorated terminuses and 4 Tramjatra trams.

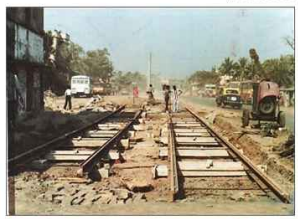
The friendship and trust we had with CTC trammies from all depots to the Nonapukur Workshops, with West Bengal's Transport Minister, Shri Subhas Chakraborty, the Chairman cum Managing Director of the CTC, Mr Sudhir K Dey, and the various Tramway Workers Unions, gave the event enormous energy, so much so that three of the decorated trams were 'spontaneous' and not in the original plan. By the end of the festival CPM Transport Minister Subhas Chakraborty had announced that there was a future for trams in Kolkata. It would be a timely pro-tram festival that led to one of Tramjatra's great wins, the system-wide upgrade of tram tracks across the CTC tramway system through the 2000's. It should be noted that both Melbourne and Kolkata run their tramways on standard gauge track and this article concentrates on Tramjatra's successful tram track renewal campaign as a part of the 2001 Tramjatra Technical Exchange.

Kolkata Tram Track - Tramways Extensions mid-1980s

The last time the CTC laid any serious tram track was in the mid-1980s with the extension of the tram system to Bidhannagar (Route 17-18) and to Joka along Diamond Harbour Road (Route 37). This was the last expansion of the Calcutta Tramways and it came with several kilometers of new tram tracks as a part of the tram line extensions. The last tram track extension from Behala to Joka opened in December 1986 and was inaugurated by the Chief Minister Shri Jyoti Basu. Quoting directly from Page 2 of the Tramways Extension brochure which is titled **'Calcutta extends to Joka' -** *'Tramways has long been playing a significant role in the passenger transport of the city. With the inauguration of tram services from Behala to Joka on this auspicious day of 31st December 1986, the far flung suburban areas lying along the extended tram line will have easier access to the heart of the city and around. During the last decade, following the widening of Diamond Harbour Road, there has been rapid urbanisation with the growth of population in these areas. Consequently, easy transport became a formidable problem for the people of the region who had long been demanding better public transport facilities. To alleviate this acute problem, the Calcutta Tramways Company envisaged a plan for the extension of tram services from Behala to Joka, utilising the vacant space in the verge of the widened Diamond Harbour Road. The West Bengal Government being sanctioned the scheme for an estimated amount of Rs. 17 crores.*

The project comprises of laying of tracks and overhead electrical system over a distance of 6 km, acquisition of 25 tramcars, construction of two new substations at Simultala and James Long Sarani for feeding power to the extended tram line and construction of a full-fledged tram depot at Joka. The new route between Joka and Esplanade/BBD Bag will be designated as Route No. 37.

▼ Photos of 1986 Tramways Extension Project Behala to Joka



▲ Flooded Tram Tracks @ Kidderpore


▲ Tracks with bluestone blocks @ Rabindra sarani


▲ Broken tram tracks various places along M G Road

Tramjatra Campaign to Renew Tram Track

By the early 1990s, tram tracks across Calcutta were showing signs of decay and derailments were on the increase. The majority of the tram network needed a track upgrade and it was clear during my previous visits to Calcutta in 1994, 1996 and 1997, that the bad and deteriorating state of tram tracks was the major and most substantial issue faced by the tram division of the CTC. By 1994, Transport Minister Shyamal Chakraborty proposed to close many tram routes, most likely due in part to the expense and difficulty of maintaining tram tracks in a city which floods during the monsoon. The CTC had started running a bus service and there was no future for a functional, high frequency tramway in Kolkata unless tram tracks were renewed. Tram derailments were common and I believe this is where the Kolkata Traffic Police (KTP) formed a negative 'get rid of trams' attitude that prevails today. To them, a bad derailment caused traffic chaos and gridlock. Derailments gave the tramways a bad look as passengers and citizens lost confidence. It gave those speaking against the tramways, who called it an 'old and outdated mode of transport' a voice in the media. The Mayor of the Kolkata Municipal Corporation (KMC) was publicly against trams and called for their withdrawal. Autorickshaws and buses, which belched dark smoky poisonous pollution into the air, would cut in front of trams to poach and take tram passengers. The very survival of the CTC was dependent on tram track renewal. I witnessed many tram derailments across the system, especially at tram junctions. Further to seeing the problem with my own eyes was discussions with senior Tramjatrans - Dr Debasish Bhattacharyya, Mahadeb Shi and Jayanta Basu, trammies, CTC officials, and when at Rajabazar Tram Depot, special visits to the Tram Track - Public Works Department (PWD) who are stationed behind the tram sheds. I believe the CTC was trying its best to repair bad sections of old and worn-out tram tracks. The CTC-PWD track gangs were using old 1950's welding equipment and other out dated 'essential tools' required for good solid tram track repairs.

The tram network had some areas where the track was left in the original blocks of blue stone, mostly in the northern parts of Mahatma Gandhi Road, Rabindra Sarani and BB Ganguly Street. Like other aspects of the CTC, I was enchanted by the original old-school look. Some tram routes were worse than others. The popular routes No 1 and 5 along College Street and Bidhan Sarani were in bad condition. The problem was huge and was made worse in some areas by the laying of bitumen next to tram track by the road maintenance crews of the Kolkata Municipal Corporation (KMC). The CTC was not the sole keeper of tram track in Kolkata. The erratic and uneven layering of bitumen meant that over time some of the track was 'sunken' under a few layers of bitumen and after rain water sat in the sunken tram lines. In spots with pot holes that often formed after the monsoon, track was high and exposed. It was only possible for the CTC to 'patch' the worst areas. I did see some interesting adaptations. The track gang welders would weld 'round building construction iron rods or rectangular steel plates' under broken rail joints to stabilise broken track, a low budget quick fix. As a Melbourne trammie having spent many hours inside trams running on rails, Calcutta's trams felt like they were 'surfing and skating from side to side' rather than riding on the rails. It was common when riding trams to hear and feel the "crunch crunch" of tram bogies and wheels as they went over broken track. Tram junctions became 'derailment hotspots' and I'd cross my fingers hoping the tram bogies would not jump the track. The bumpy state of track caused structural damage to trams. It was clear that system-wide tram tracks could not be repaired or sections replaced. The old, fragile and thin tracks needed to be dug up and new tram track laid along the entire route. The CTC could not do this job alone and Melbourne was willing to help as a part of Tramjatra.

Melbourne Sharing Tram Knowledge with Kolkata

Tram track renewal and maintenance was identified as a major issue for the CTC. With this in mind we spent much

▲ Tram tracks renewal works at Melbourne

time in Melbourne preparing for the first act of the 2001 Tramjatra. I started collecting documents that could help the CTC lay new and more modern tram tracks. To highlight the issue in the media, we also prepared a tram track audit as a part of the technical exchange. A visit to Melbourne's Track Department at E Gate was the first port of call. Here, I met the head of the Track Department, Masood Majidi. Happy to help Kolkata, after discussions he gave me a copy of the Public Transport Corporation's document titled **'SPECIFICATION FOR THE LAYING OF TRAM TRACKS IN CONCRETE'**. A comprehensive 42-page document that outlines tram track construction and laying techniques in Melbourne. Tramjatra is very proud that this tram track document would go on to become the guiding principle for track renewal in Kolkata.

I also visited Melbourne's Track Junction Manufacturer, a company called Davies and Baird, and was taken on a tour of their foundry in the Melbourne suburb of Coburg. Davies and Baird had been making new tram track junctions for Melbourne for the last 115 years. The 'D&B' stamp can be seen on many track junctions and crossovers here. Davies and Baird also supplied tram junctions, crossovers and switches for the Toronto Tramways in Canada and Hong Kong. After discussions, they were happy to help Kolkata and send a representative to Kolkata to inspect tram junctions and provide quotes for new junctions that would be sent from Australia. Davies and Baird gave Tramjatra the tram track expertise we needed for a serious and accurate review and the Victorian Transport Minister and Government covered the costs for a visit to Kolkata by their Sales Manager, Mike McGufficke.

2001 Tramjatra Tram Track Audit & Technical Exchange

We started the 2001 Tramjatra with a **tramway technical exchange.** The author arrived in Kolkata on January the 20th and brought with him official documents containing information on Melbourne's Tram track maintenance and rejuvenation, overhead electrical specifications, tramcar prioritization, use and preservation of historic tramcars, creation of a tram museum, tram timetabling and maps.

Tramjatra had identified tram track renewal as the priority issue. Tram track was the most important request from CTC officials and they wanted to know more about tram track laid in mass concrete and how Melbourne managed all aspects of tram track construction and maintenance. Armed with some useful tram documents our first discussions were held with the CMD of the CTC, Mr Sudhir K Dey, Chief of Operations at the Nonapukur Tram Workshops, Mr SK Mitra, the head of the CTC's Public Works Department (PWD) at Rajabazar Tram Depot, Mr Bhattacharyya and Chief Engineer, Mr Rama Pada Chatterjee at the long-time British era CTC Head Office on RN Mukerjee Rd, not far from BBD Bag. A copy of the **'Specifications for the Construction of Tram Tracks in Concrete'** document was given in the first meeting with the CTC, accompanied by many Melbourne track renewal photos as a part of the presentations. The said document had a big effect and made an immediate impact on the CTC officials. Follow-up meetings were staged through the week.

The CTC now had modern, up to date information on all aspects of track renewal. The document covered everything from 'Survey Works', 'Materials and Workmanship', 'Preparation Work', 'Earthworks', 'Crushed Rock Base Course', 'Trackwork', 'Bonds', 'Track Drainage', 'Concrete Track Slab', 'Concrete Composition', 'Placing of Concrete', 'Concrete Acceptance Testing', 'Asphalt Paving' and 'Completion of Works'. Laying track in mass concrete would give Kolkata's tram roads a solid and strong foundation at a reasonable cost. This tram track document was discussed widely at a number of meetings and it wasn't long before we made a joint Tramjatra-CTC presentation to Transport Minister Subhas Chakraborty at the Writers' Building.

Davies and Baird - Tramjatra - CTC Track Audit

A few days after my arrival, Mike McGufficke from Davies and Baird arrived in Kolkata and added great momentum to the campaign for track renewal. Back to another round of meetings with senior CTC officials, together with CTC track personnel from the PWD Dept, Mike and I started inspecting sections of tram track and junctions across the tram network. The **'Tram Track Audit'** took a special interest in 4 badly worn tram junctions. It was agreed that Davies and Baird would supply details and a quote for the supply of readymade tram junctions for the Shyambazar 5-Ways and Maniktala in the north, and in the south at Rashbehari Avenue in Kalighat. On a few occasions, we took the media with us. The Statesman Newspaper article titled 'Melbourne Boost for the City's Trams' is written by senior long-time Journalist Manash Ghosh. Manash is a great supporter of Tramjatra and the Statesman Newspaper led the charge and sparked the interest with other media outlets.

This led to a massive positive impact on mass & CTC workers.

Saturday 10 February 2001 — The Statesman Weekly

MISCELLANY

Melbourne boost for city trams

MANASH GHOSH
STATESMAN NEWS SERVICE

KOLKATA, Feb. 2. — This state government may have thought of doing away with the 110-year-old Calcutta Tramways Corporation in phases but another state government, in Australia, thinks otherwise.

The Victoria government, in Australia, has sent a technical team to the city for "tramtrack audit" to give a new life to trams. Leading the team is Melbourne trammie, Mr Roberto D'Andrea. He and Mr Mike McGufficke of tram-junction manufacturer, Davies and Baird, and other experts have begun identifying the city's damaged tram junctions and tracks.

Davies and Baird has been associated with Melbourne's 250-km tramways for 115 years. The firm supplies vital track components to Melbourne Tramways and exports "cast manganese steel points and crossings" to Toronto and Hong Kong Tramways.

The team, part of Tramjatra 2001, plans to assemble experts, artists and tramway workers from Melbourne and Kolkata to prove that trams have a future. Mr D'Andrea, Mr McGufficke and CTC experts say tram junctions at Wellington and the Rash Behari and Shyambazar crossings need to be replaced immediately.

Steve Waugh's team will be in Kolkata and may lend a helping hand to the festival. "We'll make the Tramjatras here a big event," said Mr D'Andrea.

STEVE WAUGH MAY WOW TRAMJATRA

Melbourne trammie, Mr Roberto D'Andrea, and Victoria's tram junction manufacturer, Davies and Baird's employee, Mr Mike McGufficke, inspect tram tracks on AJC Bose Road near Nonapukur tram depot. — Sailendra Mal

The Australians say trams can regain their lost glory as an effective mode of transport if the tracks and crossings are "rejuvenated".

The "track audit" will be a comprehensive review of the state of Calcutta's tram tracks. Its deterioration for want of investment has prompted the Left Front government to think of winding up the CTC. The audit will identify the equipment in need of immediate repair and include studies on cost approximations, tram-route usages, population density, commercial, cultural and social significance and existing and potential integrated transport interchanges. After this Australia's federal and Victoria state governments will be urged to fund the replacement of the run-down tracks in the city.

Said Mr D'Andrea: "Kolkata and Melbourne are the only two cities outside Europe which have over century-old tramways.

Both are tram-loving cities. Melbournians have responded in great way to revive CTC. For this, in the past three years we've been able to raise $110,000 (Australian) by organising Tramjatras." The overwhelming response to the project has prompted the Australian and Victorian governments, Australia Council, Melbourne City Council, Rail, Tram and Bus Union and the Public Transport Users' Association to back the Tramjatras financially.

This help has enabled the Australian experts to come to Kolkata for the track audit. A workshop in Kolkata, to be attended by Melbourne and Kolkata experts, will discuss maintenance of tracks and overhead electric system and tramcar prioritisation. The Australian government will fund the visit of two CTC officials to Melbourne in October to participate in a Tramjatra.

Mr D'Andrea said: "Technical rejuvenation of Kolkata rmas is not our sole goal. We'll pack a lot of culture and fun into the Tramjatras in Kolkata so that people of the two cities can come closer and understand each other better.

A 10-member Australian team, including Mr Michael Douglas, Tramjatra project coordinator, and three students from his Melbourne Royal Institute of Technology, will reach the city on Saturday for the Tramjatra.

A Tram Track Renewal Win for The Kolkata & The CTC

The tram track renewal campaign, as a part of the 2001 Tramjatra, was staged over a 2-week period. By the first week of February, Mick Douglas had arrived with teachers, artists and students from Melbourne's RMIT University. The huge artistic component of the Tramjatra Festival was about to begin. It was about a year later in 2002, after the highly successful event was staged in both cities, that we received news from our CTC friends that the West Bengal Government had approved the laying of new tram tracks across their extensive tram network in mass concrete using the **'Specifications for the Construction of Tram Tracks in Concrete'** document from Melbourne as the guide. The CTC shared the document with the Hooghly River Bridge Commissioner (HRBC) and the company that won the contract to lay new tram tracks.

Tramjatra achieved 26 years of age in 2022, and outside of the many beautiful decorated trams that have tracked in both cities, this is one of our greatest acts.... a successful tram track renewal campaign! Today, this gives Kolkata a solid foundation and the possibility to return to functioning tramways that runs a high frequency tram service to help reduce air pollution, mitigate the effects of Global Heating, climate change, sea level rise and traffic congestion. Laying the tram tracks in mass concrete has been a huge success and has given the city stronger and much improved roads. Tram lines and roads are flat and even because, like Melbourne, the concrete extends about 30 cm past the edge of outside rails. The next time you're out and about on a tram in Kolkata, take a look at the tram track laid in concrete, and you'll see long stretches of Melbourne in Kolkata.

Photo used in this article were provided by the author.
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Golden Jubilee Celebration of Mumbai Rajdhani Express

Sourav Dutta

Rajdhani Express – a name which carries with itself a sense of pride & dignity; a name which is offered the highest regard from all aspects across the entire Indian Railway network. It is the flagship of Indian Railways. The Rajdhani Express is a high speed fully air-conditioned train connecting the National Capital to different State Capitals. As of today, 26 pairs of Rajdhanis are operational in the Indian Railways network.

The first Rajdhani Express ran from New Delhi to Howrah on 1st March, 1969 & from Howrah to New Delhi on 3rd March, 1969. The second Rajdhani Express was flagged off on 17th May 1972 from the then Bombay Central as a bi-weekly service. Recently, on 17th May 2022, Indian Railways celebrated the **Golden Jubilee of Mumbai Rajdhani Express.** This article shall cover the highlights of the Grand Celebration held in honour of the above occasion but before that let's have a look at some more facts about the Mumbai Rajdhani Express:

- The Bombay Rajdhani Express started off as a 10-coacher powered by a single ALCO locomotive, WDM-2 from Ratlam. Later on, the train started getting double headed diesel locomotives, WDM-2 multi-unit from Ratlam following the increase in number of coaches from 10 to 18.
- Sometime after the introduction of WAP-1, it was double headed by diesel locomotives till Ratlam. Thereon, a Ghaziabad WAP-1 took charge all the way to New Delhi.
- Post completion of electrification works on the Mumbai – Ratlam stretch, a Valsad WCAM 2P was used to power the train through the DC traction region in Mumbai & its suburbs. Thereafter, the WCAM 2P gave way to a Ghaziabad based WAP-1 or a Vadodara WAP-4E occasionally at later point of time.
- One of the very few trains, if not the only train with which the WCAM 2P units used to clock 120 kmph under AC traction.
- The first Rajdhani Express to receive LHB (Linke Hofmann Busch) rakes along with its cousin, the August Kranti Rajdhani Express in 2005.
- With time, the AC traction link between Vadodara & New Delhi got upgraded from WAP-1 to a frequent allocation of Ghaziabad WAP-5 & Vadodara WAP-4E.
- Sometime after the DC-AC conversion in Mumbai region & its suburbs, it started getting a WAP-5 locomotive end to end along with WAP-4 & WAP-7 pitching in time to time. Eventually, the regular link changed to Ghaziabad WAP-7. Now, Vadodara P7 does the honours and has become its permanent link.
- The Mumbai Rajdhani along with its cousin, the August Kranti Rajdhani are the only trains to have run in push-pull configuration powered by WAP-5 locomotives.
- On 19th July, 2021 the rake of Mumbai Rajdhani was upgraded from normal LHB to semi-high speed & smart Tejas LHB.

Mumbai Rajdhani Express, the entire station was specially kept spic & span as per special orders for the special occasion. By afternoon, a decorated dais was setup to host the planned events/functions. Meanwhile, the railway men along with a few rail enthusiasts were busy in the electric loco trip shed; preparing the locomotive designated to haul the Mumbai Rajdhani on its Golden Jubilee Run, **Vadodara (BRC) WAP 7 # 37491**. By 2 o' clock in the afternoon, the locomotive was almost ready, decorated like a bride on her

wedding- with garlands of flowers & stickers boasting of the Mumbai Rajdhani's Golden Jubilee. The pre-ceremonial preparations also included rehearsals of the flash-mob skit. Western Railway didn't leave any stone unturned to celebrate the occasion with full pomp & grandeur along with certain hints of nostalgia which took us back in time to the early days of the Bombay Rajdhani Express. Let's have a look at the proceedings & we will gradually come across certain special & nostalgic elements who made the Golden Jubilee Celebrations more promising.

The program began at around 3:30 pm after the arrival of the dignitaries in Smt. Veena R. Srinivas, CPMG Maharashtra Circle, Mumbai GPO; Shri Alok Kumar Mehta, CGST Mumbai & Shri G.V.L. Satyakumar, DRM Mumbai Central, Western Railway. Shortly after the felicitation of the dignitaries, Shri G.V.L. Satyakumar, DRM Mumbai Central welcomed all followed by a wonderful speech about the history of the Bombay Rajdhani, its milestones till date & how important the train is for the division. The speech was followed by a very special event, something which had never occurred earlier in the history of Indian Railways. Smt. Veena R. Srinivas, CPMG Maharashtra Circle, Mumbai GPO introduced the special cover particularly designed for the Golden Jubilee of Mumbai Rajdhani. In general, the introduction of a normal dedicated special cover would have been extraordinary but not a historic event from the perspective of railways, but this particular special cover was the *first ever two-way stamp unveiled for the Indian Railways by India Post.* Being a two-way stamp/special cover, one part was scheduled to travel between Mumbai GPO & New Delhi GPO onboard 12951 Mumbai Central – New Delhi Rajdhani Express whereas the counterpart was scheduled to travel vice versa from New Delhi GPO to Mumbai GPO onboard the returning train the next day i.e., 12952 New Delhi – Mumbai Central Rajdhani Express (same rake). The first part was addressed to Ms. Manju Kumar, CPMG Delhi Circle, New Delhi from Smt. Veena R. Srinivas, CPMG Maharashtra Circle, Mumbai GPO & vice versa for its counterpart. After unveiling the above two-way stamp, the same was handed over to the on-duty Guard in charge of the Rajdhani Express that day.

The next event was a short flash mob skit performance followed by one of the most important chapters of the program. It was time for those moments of nostalgia which I had mentioned earlier in this article. Western Railways did a commendable task of inviting some sensational personalities who had been associated with the Mumbai Rajdhani right from its inception in some way or the other. These personalities were very passionate about the Bombay Rajdhani & it was a dream come true moment for them to be there on the 50th Birthday.

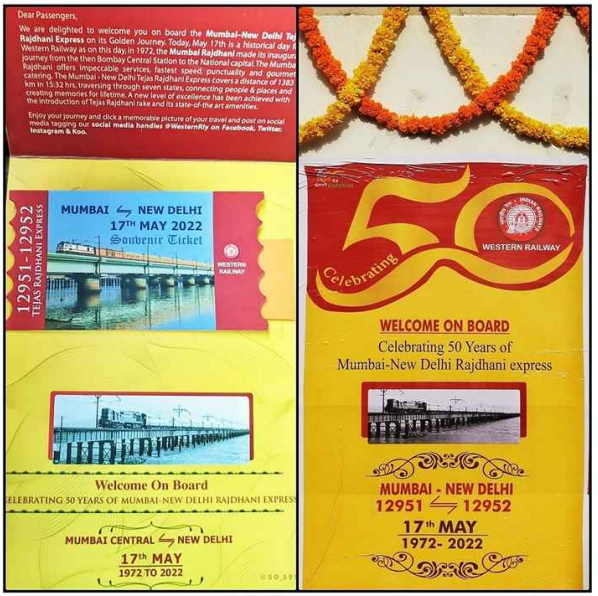
The first person amongst them to bless this occasion was Shri Hukumchand Gautam. Popularly known as the 'KEEPER OF THE TRAIN' where 'THE TRAIN' refers to none other than the Bombay Rajdhani Express. He has provided excellent service as a *steward in the Bombay Rajdhani Express for 36 years* right from the very beginning. His name shall remain evergreen till the existence of the Bombay Rajdhani Express in Indian Railways in any shape or form.

The next person was *Shri Zakir Haider*, a retired loco pilot who joined Indian Railways in 1965 during steam era. Apart from normal mail/express, he has also taken charge of the Bombay Rajdhani Express on numerous occasions right from its early days in 1972 till his retirement in 2004, when WCAM 2P locomotives used to power this prestigious train. Therefore, he has had a vast experience all three tractions: steam, diesel & electric.

Following the speech by Shri Zakir Haider ji, *Shri Ramdas, a senior & experienced loco pilot, mail/express,* retiring on 31st May, 2022 shared his experience of working the Rajdhani Express in brief.

Yet another interesting personality took over the stage after the above speech. *Shri Kamal J., the man who was onboard the Bombay Rajdhani Express on its very first run 50 years ago* & no doubt, he was onboard on the Golden Jubilee run too. He was the first passenger to receive the souvenir ticket & key ring specially made to commemorate 50 Years of the Bombay Rajdhani Express.

The brief nostalgic journey to the glorious past of the train gave way to the cake cutting ceremony by the dignitaries & a photo session of the onboard crew (Train Captain & TTEs) with them. Last but not the least, before conclusion of the ceremony prior to departure of the train, the Golden Jubilee souvenirs meant for passengers onboard, were separately handed over to a group of rail enthusiasts representing IRFCA Chennai as well as few others who had their own stories to tell about the Mumbai Rajdhani Express. The closure of the ceremony was followed by a string of interviews of the eminent personalities by press.



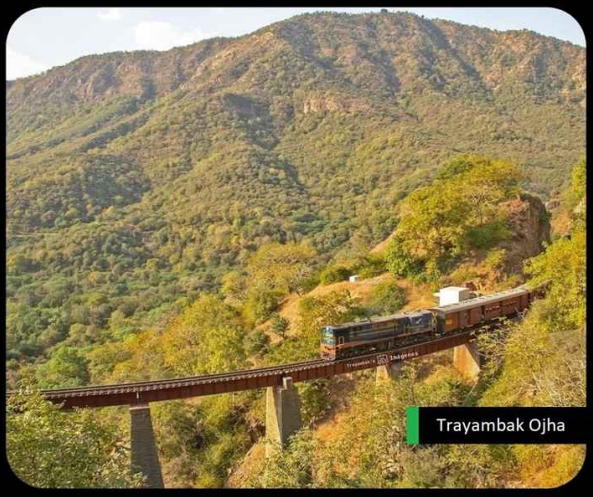
The only task we were left with was to photograph the decorated Rajdhani Express & get ourselves framed as well before boarding the train. The service onboard was like every other day except the distribution of Golden Jubilee souvenirs to all passengers by the TTE. We had an excellent run all the way to reach New Delhi right on time. As expected, the source, destination & a few other stations enroute were dotted with rail enthusiasts recording the Golden Jubilee Run of 12951/12952 Mumbai Central – New Delhi – Mumbai Central Tejas Rajdhani Express.

All photographs used in this article were provided by the author

50 years of Mumbai Rajdhani

Somanko Tiru

Rabiratan Samanta



Trayambak Ojha

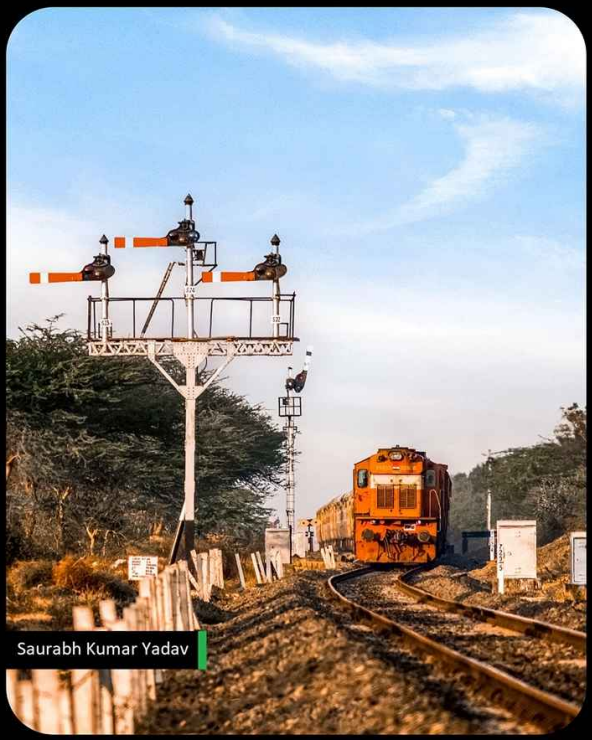
Trayambak Ojha

K Gautham Karthik

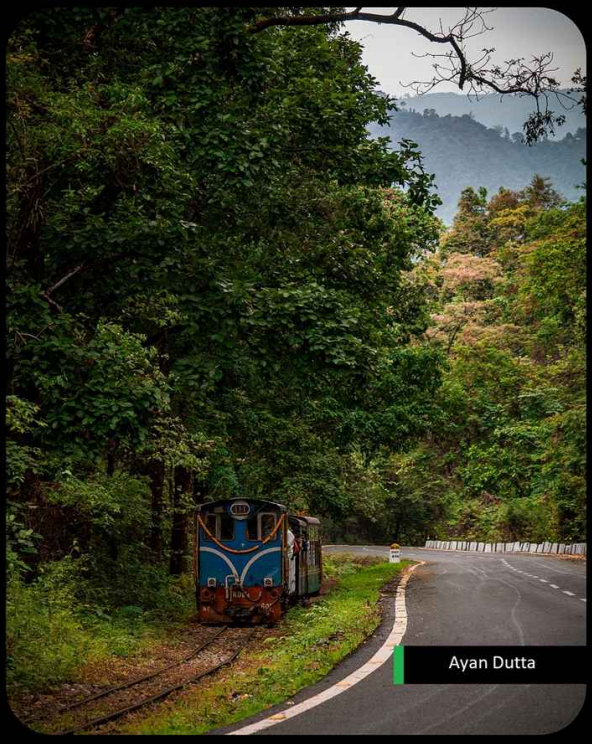
Sumit Nath

Rabiratan Samanta

Saurabh Kumar Yadav

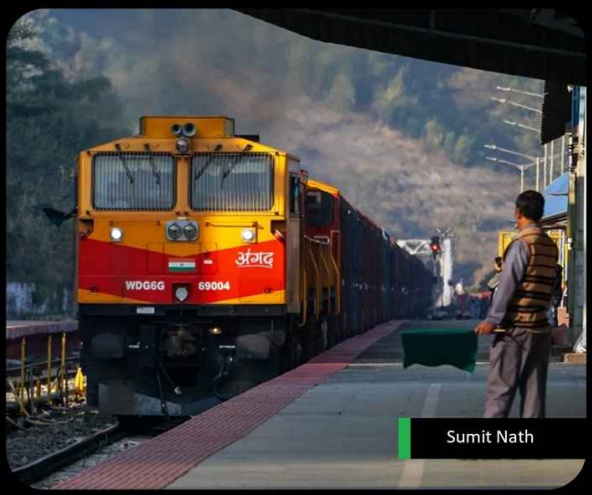


Saurabh Kumar Yadav



Ayan Dutta

Aniket Das



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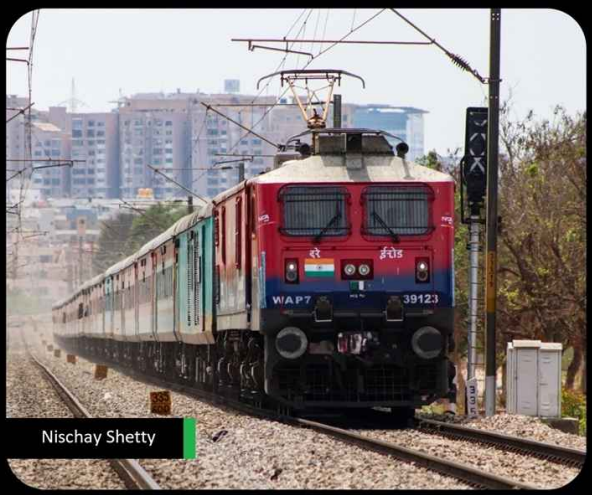
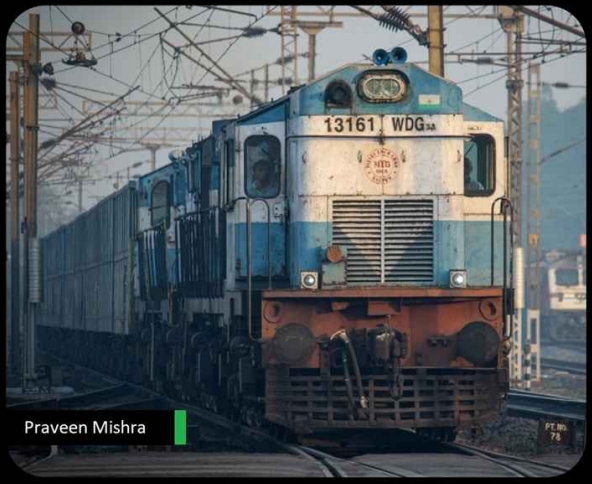


Nischay Shetty

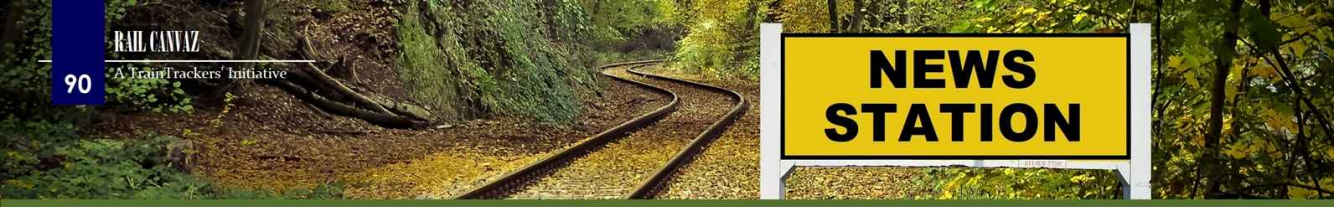


Praveen Mishra

Roshan Rajeev

Raktim Bhattacharjee

Nischay Shetty



Dahod To Get Manufacturing Unit for 1200 Number of Freight Locomotives

On the 20th of April, the Hon'ble Prime Minister laid the foundation stone of 20,000 crore mega-project of manufacturing 1200 number of 9000 HP electric freight locomotives at Dahod. Since 1926, the Dahod workshop had been overhauling steam locomotives which was followed by electric locomotives. The manufacturing unit will be established with infrastructural upgradation by the highest bidder who will be entrusted with production and maintenance of these locomotives at the various loco sheds. As of now, Visakhapatnam DLS, Kharagpur ELS and Pune DLS have been nominated to home these locomotives. The project will not only be a great marquee of 'Make In India' but also for 'Make For World' as the production unit is set to produce standard-gauge electric locomotives as well for international market in future.

Alstom delivers first semi high-speed Trainset for Delhi-Meerut RRTS

Alstom handed over the first semi-high speed trainset to National Capital Region Transport Corporation (NCRTC) for the Delhi-Meerut Regional Rapid Transport System (RRTS) from its manufacturing unit at Savli, Gujarat. The 82.5 Kms long Delhi-Ghaziabad-Meerut RRTS will be the first-of-its kind in India with trains running at a speed of 180 kmph in a frequency of 5-10 minutes. Alstom was awarded the contract 24 months ago for supply of 40 six-car rakes for the system. The rakes are ultra-modern and equipped with ATO (Auto-Train Pilot). The corridor will use European Train Control System (ETCS) Level 2 signalling system as supplied by Alstom. Trains will take around 55 minutes to reach Meerut from Delhi. The rake is soon expected to arrive the depot at Ghaziabad and trial runs in the priority stretch will begin soon. These trainsets are designed at Alstom's Hyderabad engineering centre.

Some of the features on these AC trains include ergonomically built 2x2 transverse seating, wide gangways, dynamic route display maps, auto controlled ambient lighting system, large windows for panoramic view and ergonomically designed areas to support disabled people and for medical emergencies.

Massive Landslide disrupts train operations in Barak Valley

Massive landslides and flood following incessant downpour in the Dima Hasao district of Assam has badly hit railway services in the northeast parts of the nation. New Haflong station has been buried under the debris of mudslides. Around 2400 people were stranded in two trains which got trapped in nature's fury. Later, they were rescued by the railways and Indian Air Force. Many were airlifted to safer places. An empty rake standing at New Haflong station had been nearly washed away along with four locomotives which are now lying under the rubbles. Restoration works are underway on war footing.

Lucknow Mail Equipped with Two Baby-berths

Northern Railway gave a Mother's Day gift to all the women travelling with babies on 9th May this year. They have introduced 'Baby Berth' facility for infants, on a trial basis for two lower berth seats bearing number 12 and 60 of coach/194129 in the Lucknow Mail (12229/12230). These baby berths are foldable and come equipped with a stopper to make sure that the babies do not fall off.

New Rail Connection between India and Bangladesh

As the long wait finally gets over, the third passenger service between India and Bangladesh is all set to blur the boundaries between the two neighbouring States. A new international passenger service from New Jalpaiguri, West Bengal to Dhaka Cantonment under the nomenclature of 'Mitali Express' will start rolling from 1st June, 2020 under the jurisdiction of the Northeast Frontier Railway. The train has been numbered as 13132 and will depart from NJP on Sundays and Wednesdays at 11:45 IST to reach Dhaka at 22:30 BST. The return train numbered as 13131 will depart Dhaka at 21:50 BST and reach NJP at 7:15 IST. The rake will consist of 4 First Class coaches (cabin) and 4 AC Chair Cars with two power cars. Tickets will be available from counters at New Jalpaiguri and Haldibari in the Indian side and a new VISA office has been opened at Sevok Road, Siliguri for quicker processing of visas to Bangladesh. Apart from Mitali Express, the Maitree Express to Dhaka and the Bandhan Express to Khulna have also resumed their services after the pandemic from 29th May, 2022.

Hyperloop technology in Indian Railways

Railway Ministry has extended a Rs. 8.3 crore grant for hyperloop development in the hyperloop research centre in New Academic Complex at IIT Madras. The Ministry has approved the research proposal submitted by IIT Madras for collaboration with IR for indigenous development and validation of hyperloop technology-based transportation system and setting up a Centre for Excellence for Hyperloop Technology. Team Avishkar of the IIT Madras is developing a breakthrough solution towards this goal and has patented a cost-effective design.

RAIL CANVAZ

A TrainTrackers' Initiative

August 2022

Watch out for something special in our upcoming 2nd Anniversary Issue....