RAIL CANVAZ

A TrainTrackers' Initiative

June 2026

THE MAKING OF MUKHI

EDITOR'S DESK

"Creativity is not the finding of a thing but the making something out of it after it is found" – James Russell Lowell.

No one perhaps analyzed and interpreted creativity like the late American poet, critic and diplomat. Our Cover Story *'The Making of MUKHI'* aligns with these invaluable words of Lowell. In the hegemony of UNILIVERY barring a few sparks of brilliance that helped recreate some exceptional and extraordinary liveries, the electric locomotive fleet of Indian Railways has always been a visage of monotonousness. Its diesel counterpart, though on the verge of being relegated, have seen some remarkable attributes. Yet, no instance of a livery sporting a wild life in the truest sense has ever been conceptualized or materialized in the country until MUKHI arrived. The resurrection of Cheetah in the Indian soil through Project Cheetah was just the catalyst that one needed to work on the unique idea and what followed as result was no less remarkable. Reimagining the face of a cheetah on the front profile of a WAP7 Class locomotive; redefining the windshields of the locomotive as the eyes of the wildcat with the headlamps as nostrils to keep parity with the actual looks were no mean feats. Recreating the twin black tear marks of the face keeping the aspects of the agility and guile of a cheetah was a formidable challenge. The execution part was a tall order in itself and quite a task. The making of MUKHI covers all these intricate details, step by step and depicts how MUKHI finally captured the imagination of a nation thronged by rail buffs. No compliments get bigger when a little princess tells her daddy about spotting a 'cheetah-faced' locomotive after watching MUKHI go past her! The Cover Story will surely leave a lasting impression on the readers as they go through the facets of creativity, effort and dedication behind conceiving arguably one of the most scintillating liveries of Indian Railways.

The flair of creativity continues with our next article *'Redefining the Howrah WAP7 Decals'* which is about Samit Roychoudhury's (creator of the Great Indian Railway Atlas) creation of a WAP7 livery for application on POHed horses of Howrah ELS. For the unversed, Samit Roychoudhury has been the chief protagonist behind those P7 decals on the WAP7s of the Ghaziabad ELS/NR in its initial days along with the G9H decals on WAG9H Locomotive of the Bhilai ELS/SECR to go with the G9 ones on the WAG9 Locomotives of the Gomoh ELS/ECR. This time around, he not only created the livery for HWH WAP7s but also reshaped the logo of the Howrah ELS along with the signage indicating KAVACH, RTIS and HOG.

Moving beyond the realm of creativity, we have twin features on Kolkata Trams by **Rudranil Roychowdhury**. The '*Boishakhi TramJatra*' photo-story covers the unique event while '*The Future Kolkata Already Had*' discusses trams in the light of some contrasting perspective that include heritage vis-à-vis modernity with the all-important environmental aspect in play. Parallels have been drawn from the resurgence of tram networks in European cities like Prague, Vienna and Amsterdam with a vision for the future advocating modern trams with incorporation of low-floor accessibility, regenerative braking, AI-assisted safety systems, energy-efficient propulsion, silent bogie technology, articulated high-capacity coaches, smart signalling integration thereby redefining public mobility in Kolkata. The author emphasizes that it's time to transform heritage infrastructure into living modern systems embodying the heritage tag.

Rudranil Roychowdhury pens another story *Empowered on Rails – The Rising Track of Her Resolve* based on the campaign ***#Each for Equal*** by the Ministry of Railways focusing on the steps taken by our national carrier like operations of trains by all women crew, manning of stations exclusively by all women staff to empower women employees and enhance their role in largest employer of the world. Conscious efforts have been undertaken to help create a Gender Equal World as railways is also focusing on ***#She Inspires Us*** theme highlighting the inspiring stories of women achievers.

Up next is **Anamitra Ghatak** offering us a fascinating read in *Across Hooghly - The Two Legendary Railway Bridges*. As evident from the header itself, the author talks about the history behind coming up of the old Jubilee Bridge and the Willingdon Bridge that connected either bank of the Hooghly River through railways. After bridging the gap, **Akshay Deshpande** takes us through *The Dangari Train Journey* in the far east of the nation which still holds on to its old-world charm.

On the Technical Insight front, **Anamitra Bose** drafts in *'The AC EMU Paradigm'* which is about the nitty-gritty of AC EMU that has added to the comforts of daily suburban commute. It is an insight into the technical features of these hugely popular services across the nation. Shifting the focus

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away from technical particulars, **Tapan Pal** delves into a subject that is both sensitive and empathic. In *Not Everyone Loves the Railway*, he deals with the fast-growing cult of railfanning but from an angle which is less explored by any rail aficionado with several references to historical facts that makes this write-up unique in its own right. If Tapan Pal's article exudes a tapestry of sentiments then PK Mishra's rendition oozes raw emotions and melancholy. *An Ode to Dust* is a masterpiece by **PK Mishra** woven in the fabric of time, turning fleeting feelings into rhyme.

The PK Mishra connection continues with a review of his book, Rails Through Raj, named '*The Extraordinary Indian Railway*' by **Atulya Sinha.** We turn the final page with a report '*The Giant Strides of DLW*' on the landmark achievement by the Dankuni Locomotive Works for turning out record number of locomotives in FY 2025-2026. Last but not least, we are honoured to host some of the exclusive shutter-arts *'Meter Gauge Chronicles from the Terai'* by famous Social Media Influencer, **Saurabh Kumar** of 'Trains of India' fame.

At the heart of another year, it is high time to review the progress of the ambitious, year-long transformation drive "52 Reforms in 52 Weeks" launched by the railways with key reforms agendas that include Simplified Cancellations, Station Change Flexibility, Anywhere Counter Bookings, Food & Catering Upgrades, End-to-End Train Cleaning and AI & Tech Integration. We hope this drive to modernize operations improves passenger experience with enhanced systemic safety coming good and may railways attain and achieve greater heights with more attention on passenger amenities.

Until next time, in the words of Jimi Hendrix, "The story of life is quicker than the wink of an eye, the story of love is hello and goodbye, until we meet again."

Hasta entonces, adios!

Somsubhra Das

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An Ode to Dust

P K Mishra

Truth and sermons have a strange way of coming back.
They return and haunt you.
They hold up the mirror — unerring, unapologetic.
And these days, I am facing that truth every morning.
During my service years, I would nonchalantly lecture my officers and senior supervisors on the importance of keeping their work areas clean.
Clean stations, clean trains, clean workshops.
I would glide my fingers across a surface and show them the dust collected on my fingertips — gently rolling the tiny speck between thumb and forefinger.
The person standing beside me would carefully try to locate the microscopic particle and gravely nod his head, as if together we had just uncovered evidence of a national conspiracy.
I would once again remind him of the need for cleanliness and the necessity of launching an all-out war against the all-pervasive dust, dirt and garbage.
Across four decades, posts changed, responsibilities changed, men changed, workplaces changed.
But the only constant thing in this ever-changing world was dirt.
And lots of it.

With missionary zeal, I would inspect the nooks and corners of coaches, station staircases, underpasses, yards and workshops.
Actors changed, but the ubiquitous garbage remained faithfully present.
Sometimes, I feel dust must have listened to all my speeches with great patience.
It must have remembered every lecture and memorized every word.
Because after retirement, it quietly returned for revenge.
The newly laid white tiles in my house began amplifying every speck of dust, every stain, every smudge.
White tiles, I discovered, are not flooring material.
They are moral instruments.
They expose truth with frightening efficiency.

My speeches to officers came back to haunt me.
I could no longer concentrate on work.
One moment I would be looking at the computer screen, and the next moment the stain would be looking at me.
Or perhaps I could hear faint chuckles.
There is something strangely confident about a stain.
It does not threaten.
It simply waits.

Finally, defeated by silent provocation, I searched for a mop and started cleaning.
And then came the deeper realization of life.

The more I cleaned, the more glaring the leftover smudge became.
It was as if the universe was gently explaining a philosophical principle, I had ignored all my life — perfection recedes as one approaches it.
During service, I believed cleanliness was a management issue.
After retirement, I realized it is actually a metaphysical problem.

Dust is eternal.
Civilizations rise, governments fall, officers retire, files disappear, technology changes — but dust quietly survives everything.
It is perhaps the most resilient element in human history.
Human beings merely negotiate temporary settlements with disorder.
Every morning we sweep, wipe, arrange and organize our little corners of existence with enormous optimism.

And every evening entropy returns smiling.
Perhaps that is why saints preach detachment.
Because attachment begins innocently with white tiles and eventually consumes the entire afternoon.

Still, every morning I continue my battle with mop and cloth.
Not because I expect victory.
But because resistance to chaos, however futile, gives meaning to civilized life.
And also because guests may suddenly arrive.

Shri Prashant Kumar Mishra is a distinguished former IRSME officer who retired after an illustrious career in Indian Railways, serving in several key leadership positions including General Manager, Modern Coach Factory, Lalganj. A noted railway historian, researcher, author, and heritage conservationist, he is widely acclaimed for his extensive work in documenting and preserving India's rich railway legacy through numerous books, articles, and heritage restoration initiatives across the country.

Empowered On Rails

The Rising Track of Her Resolve

Rudranil Roy Chowdhury

In the grand and thunderous symphony of the Indian Railways—one of the world's largest and most dynamic transportation networks—resounds the firm and graceful footsteps of countless women who have dared to carve their niche upon steel tracks long thought to be the dominion of men. From signal cabins cloaked in solitude to bustling engine cabs roaring with might; from the humming powerhouses of administrative blocks to the dignified platforms echoing the lullaby of distant horns—today, Indian Railways proudly bears testimony to the indomitable spirit of womanhood.

> ***"Women Must be Equal Partners in Growth—Not Merely in Policy, But in Practice. Indian Railways is Committed to Creating Pathways for Them to Rise in Every Cadre & Every Corridor"***
>
> **Vinay Kumar Tripathi**
> Former Chairman & CEO, Railway Board (2022)

A Journey Through Time : The Genesis of Inclusion

Historically, the edifice of Indian Railways was envisioned and expanded within the entrenched boundaries of a patriarchal framework — an empire of steam and steel largely steered by male hands. Yet, even amidst the twilight of the colonial epoch, the first quiet stirrings of change were discernible. Women, though limited in number and scope, began to step into the periphery of the railway cosmos — initially entrusted with roles that were deemed 'suitable' by the conventions of that era. They appeared as ticket clerks in busy stations, as receptionists in railway hospitals and offices, and as telegraph operators delicately tapping Morse signals into the great arterial web of the subcontinent's rail communication system.

With the dawn of Independence and the ascension of democratic ideals, the winds of social reform gathered greater momentum. Slowly but inexorably, these currents began to flow into the administrative chambers and service corridors of Indian Railways. Women found entry into the clerical echelons, the expansive domain of the medical wing and various support services — each role a modest yet meaningful step forward in a long and arduous journey toward equality.

A Woman ALP Waving a Starter Green Flag *Image Courtesy - Prokerala*

However, it was not until the closing decades of the 20th century and the nascent years of the 21st that a transformative evolution truly began to unfurl. The age-old boundaries that had long circumscribed women's participation began to yield under the pressure of aspiration, education and an unwavering pursuit of dignity. No longer confined to peripheral roles, women began stepping into the very heart of operations — into domains that demanded not just intellect and resolve, but also physical endurance and technical finesse. From signal cabins to workshops, from control rooms to commanding offices, women began to claim their rightful place.

Amidst this unfolding narrative, the year 1988 emerged as a lodestar — forever etched in the annals of Indian Railways. It was in this year that Surekha Yadav, a woman of resolute spirit and quiet strength, shattered one of the final frontiers by becoming the first female train driver (loco pilot) in all of Asia. In a profession long dominated by men and steeped in a rugged lore of mechanical might, her ascent was nothing short of revolutionary. With a composed demeanour and an unflinching hand on the throttle of a mighty WDM-2 diesel locomotive, she guided her train along the iron veins of the nation, ushering not just passengers, but an entire epoch of possibility.

Her journey became more than a personal triumph; it was a symbolic clarion call —resonating across railway colonies,

All Female crew Mumbai-Pune Deccan Queen Exp. Leena Francis as the Train Manager

technical institutes and families where daughters dared to dream. Through her, the railway tracks, once considered too daunting for women, echoed with a new rhythm of courage and change. She did not just operate a train; she conducted a symphony of empowerment and with that, India's Railways began to truly reflect the nation's diverse soul.

The Contemporary Tableau : Women at the Helm of Indian Railways

Today, the panorama of women's presence within the Indian Railways is no longer confined to symbolic participation – it is a living, dynamic force that imbues the railway system with diversity, capability and transformative vigour. From the roaring heart of locomotives to the nerve centres of operations and strategy, women have not merely entered the frame, they now define its very composition. Their journey from pioneers to powerhouses is etched across stations, control rooms, sheds and offices and their collective footprint resounds across the length and breadth of the subcontinent.

• ***Loco Pilots and Assistant Loco Pilots:*** The image of a woman

India's First Woman Locopilot Mrs Surekha Yadav *Image Courtesy - cdn.publive.online*

First Ever All-Women Crew Special Train *Image Courtesy: hercircle.in*

Payel Mishra, LP (Goods) and Suruchi Kumari, ALP *Image Courtesy: pbs.twimg.com*

at the helm of a locomotive, once a distant dream, has become a stirring emblem of progress. Be it the humble suburban EMU slicing through cityscapes or the proud express trains traversing vast geographies, women now command these steel beasts with poise and precision. They decipher complex signalling, navigate gradients and shoulder the immense responsibility of hundreds of lives onboard, all with unwavering composure.

One such moment of pride unfolded in March 2021, when the **Vanitha Special** coursed through the verdant heartland of Kerala. This wasn't merely a commemorative run; it was a celebration of womanhood and excellence. Staffed entirely by women, from the loco pilot and guard to the ticket examiners and RPF personnel, it marked a symbolic high point during the observance of International Women's Day. A similar resounding triumph took place in 2023 when the prestigious **Howrah–New Jalpaiguri Shatabdi Express**, a flagship train of the North East Frontier Railway, was operated exclusively by women. The Regional Rapid Transit System or RRTS along with the various metro systems of the nation have employed women Motorman. A truly awe-inspiring orchestration of coordination, competence and confidence.

• ***Station Master:*** Once seen as a mantle requiring stern authority and unrelenting vigilance, attributes unjustly presumed the preserve of men, the role of **Station Master** has now been gracefully and ably embraced by women across India. They preside over the orchestration of arrivals and departures, oversee safety and passenger amenities and coordinate with myriad departments to ensure the seamless ballet of rail movement.

Woman Station Master & other staff *Image Courtesy: Deccan Herald*

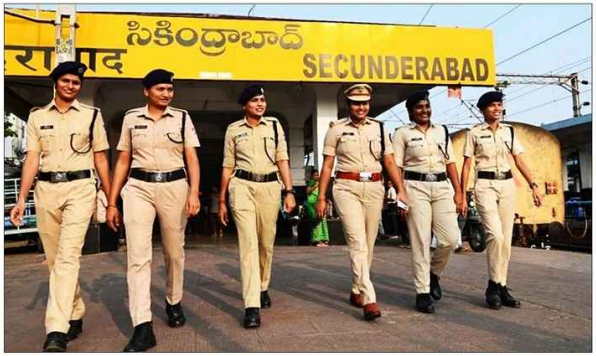
The crowning jewel in this domain remains **Matunga Station** in Mumbai. In 2018, it earned the distinction of becoming **India's first all-women operated railway station**, an unparalleled feat under the stewardship of Station Master **Mamta Kulkarni**. From ticketing and announcements to train operations and RPF supervision, every facet of the station pulsed with feminine strength and skill. So exemplary was this initiative that Matunga etched its name in the **Limca Book of Records**, not just as a statistic but as a symbol of institutional metamorphosis.

• ***Engineers, Technicians and Signal Inspectors:*** In the technical underbelly of the railways, where circuits are tested, rolling stock overhauled and the very sinews of the network are serviced, women are scripting quiet revolutions. From **loco sheds** thick with the scent of grease and metal to **signal maintenance units** humming with the rhythms of relay logic and circuit diagrams, women are no longer guests in these domains—they are practitioners, experts and torchbearers.

Whether it be tuning the traction motors of electric locomotives, inspecting brake rigging under a coach, configuring axle counters or aligning signal interlocking systems, women engineers and technicians are now integral to railway maintenance, modernization and innovation. Their rise speaks not only of personal ambition but of a system gradually unshackling itself from archaic notions of gendered work.

• ***Railway Protection Force (RPF):*** In the formidable realm of **railway security**, once a citadel of masculine prowess, the evolution has been nothing short of profound. The **Railway Protection Force (RPF)** today stands adorned with thousands of highly trained '**Mahila Commandos**', capable of neutralizing threats, assisting passengers in distress and upholding law and order with compassion and valour alike.

Woman Technical Staffs *Image Courtesy: Financial Express*



Lady Rail Protection Force Personnel *Image Source: Google*

2022 displayed remarkable presence of mind and bravery at **Agra Fort Station**. In a fraction of a second, she leapt forward and rescued a passenger from the jaws of a fatal accident. Her courageous act captured in CCTV was hailed across the nation. Her deed did not just save a life; it illuminated the calibre and readiness of India's female protectors in khaki.

• *Commercial, Administrative and Catering Cadres:* Beyond the frontlines of trains and tracks, lies the immense machinery of administration, commerce and passenger services where countless women toil with precision and empathy. From handling complex **freight contracts and catering logistics**, to conducting **passenger revenue audits**, staffing reservation counters and managing **public interface cells**, their impact is both visible and vital.

In the lofty corridors of power too, women have made assertive strides. No longer confined to subordinate roles, they now serve with distinction as **Divisional Railway Managers (DRMs)**, **Principal Chief Operations Managers (PCOMs)**, **Chief Personnel Officers (CPOs)** and even as **General Managers (GMs)** wielding strategic influence and policy-making authority across zones and divisions.

In every sphere, from the hum of the diesel engine to the stillness of the control panel, from the clang of the track to the hush of the boardroom, women have become an indispensable cadence in the grand symphony of Indian Railways. Their presence is not ornamental, nor occasional; it is foundational, profound and a harbinger of a future where the iron rails shall know no gender, only excellence!

Train Ticket Checking Crew *Image Source: X handle*

Challenges on the Journey : Traversing the Uneven Tracks

While the saga of women in Indian Railways glimmers with victories and iconic milestones, it would be remiss to paint it as a tale unblemished by struggle. The path carved by these trailblazers is often strewn with obstacles – some visible, many deeply entrenched. Beneath the resounding clang of success stories lies a persistent undercurrent of systemic challenges that continue to demand resolution and reform. These hindrances, though not insurmountable, remind us that progress, however valiant, must be constantly nurtured through vigilance, empathy and institutional will.

• *Workplace Safety and Infrastructural Constraints:* For women entrusted with duties that unfold across the crepuscular hours or within the remote hinterlands of India, the question of safety looms large. Many railway roles — especially in operations, technical inspections, and mobile units require rotational shifts, night duties and field postings in relatively isolated or unfamiliar settings. Here, the absence of women-friendly amenities such as clean restrooms, secure

Points women at work *Image Courtesy: The Telegraph*

Lady Loco Pilot & Assistant Loco Pilot of Madurai Div. *Image Courtesy: Southern Railway*

accommodation, designated changing spaces and adequate lighting in depots or yards creates deterrents not only for retention but also for aspiration.

To its credit, the Indian Railways has begun addressing these gaps through targeted infrastructure enhancements, inclusion of gender-sensitive facilities in new designs and increased vigilance through the Railway Protection Force. But the journey toward a truly secure and inclusive work environment is one still in motion — its success contingent not merely on budgets and blueprints, but on cultural recalibration and frontline implementation.

• ***The Uneven Ledger of Gender Parity:*** Despite the evocative images of women at signal panels and locomotive cabins, the statistical landscape reveals a glaring imbalance. According to 2023 data, women comprise less than 7% of the Indian Railways' vast workforce – a figure that belies the size and diversity of the institution. This numerical disparity becomes starker within traditionally male-dominated wings such as Mechanical Engineering, Civil Engineering and Electrical Traction Operations, where female representation remains a mere sliver.

Even in departments, where women are more visible, such as Accounts, HR or the Commercial wing, their numbers tend to thin out as one ascends the hierarchical ladder. This is not necessarily a reflection of merit, but rather of historic inertia, skewed recruitment pipelines and the absence of robust mentorship or re-entry mechanisms post-maternity. Until proactive measures are taken to identify and address these structural lacunae, the promise of parity may remain aspirational rather than actual.

• ***The Weight of Social Resistance and Cultural Inertia:*** In many parts of the country, particularly in rural belts or regions steeped in conservative cultural mores, the decision for a woman to join the Railways is not solely her own. Familial apprehensions, societal expectations surrounding gender roles, concerns about job locations and travel or even a simple lack of awareness about opportunities, often dissuade talented young women from venturing into this field.

There are also the intangible yet persistent pressures of needing to 'prove oneself' more rigorously, of negotiating scepticism and of shouldering domestic expectations alongside professional rigour. These invisible burdens, though rarely articulated in official documents, weigh heavily upon many women and can significantly affect both recruitment and retention.

Yet, even in the face of such resistance, there is a perceptible shift. Awareness campaigns, school outreach by the RPF, reservation in railway training institutes, mentorship networks and the powerful symbolism of female pioneers, are all beginning to erode these walls of doubt. The wheel of change, long set-in motion, is now turning and turning with unmistakable momentum.

Towards an Equitable Track : Institutional Reforms & the Will to Include

To truly honour the evolving role of women within Indian Railways, it is imperative to recognise not only the individuals who broke barriers but also the institutional scaffolding that made such breakthroughs sustainable. The journey from tokenism to genuine inclusivity has been **neither swift nor seamless, yet over the past two decades,** concerted policy efforts have been steadily laying the groundwork for a more gender-balanced and equitable railway ecosystem.

• ***Gender-Sensitive Recruitment & Reservation Policies:*** Recognising the acute under-representation of women in its workforce, Indian Railways has increasingly opened up diverse cadres to female applicants, including those once considered too rugged or hazardous. In Group C and D recruitments, particularly within the RPF, commercial and technical streams, there has been a targeted drive to encourage female participation. RRB notifications now routinely include gender-neutral language, promote equal opportunity, and provide clear clauses for maternity leave, childcare provisions and transfer policies.

In several apprentice programs, including the Act Apprentice Scheme and the Railway Recruitment Cell (RRC) intakes, the presence of women has grown year-on-year, especially in workshops and production units. The formalisation of lateral entries and re-entry routes for women returning post career-breaks is also slowly gaining traction thereby signalling a

A Lady Guard of a Goods Train *Image Courtesy: The Hindu*

Rosaline Arokia Mary - India's first woman ticket checker to collect fines more than Rs 1 crore

maturing human resource ethos.

• ***Infrastructure & Facility Enhancements:*** Acknowledging the infrastructural lacunae that once deterred female participation in core railway duties, Indian Railways has invested in a new wave of women-centric amenities. These include dedicated changing rooms, dormitories for night duty staff, reserved berths in trains for female RPF personnel and secure quarters for women in remote postings. Efforts have been made to install sanitary facilities at yards, depots and stations, particularly in workshops and loco sheds that now employ women technicians, welders and maintenance staff.

Importantly, in newly constructed stations under projects like Amrit Bharat and in the redeveloped stations under the Smart Station initiative, universal design principles are being used to ensure accessibility and dignity for all genders.

• ***Empowerment through Training & Career Development :*** Indian Railways has also focused on upskilling and leadership grooming for its women employees. Training institutes such as the National Academy of Indian Railways (NAIR) in Vadodara and various zonal training centres now feature women-specific sessions on leadership, workplace challenges and personal safety. Women officers are increasingly being deputed for advanced command and administrative programs, both within India and abroad, to nurture a

A Points Woman *Image Courtesy: navjeevanexpress.com*

pipeline of future General Managers and Board-level executives.

The inclusion of women in high-stakes operational roles, such as in Railway Board secretariats, Divisional Headquarters and zone-level strategic planning teams, is no longer an anomaly. Encouragingly, multiple divisions have appointed Women Liaison Officers tasked with grievance redressal, policy outreach and mentoring, especially for junior recruits.

• ***Security & Vigilance through 'Mahila Shakti' :*** In one of the most visible reforms, the Railway Protection Force has inducted and trained thousands of Lady Commandos, equipping them not only with martial skills but also with counselling training to assist female passengers and staff. The presence of women in RPF not only bolsters passenger security on trains and at stations but also enhances the confidence of female railway staff working in vulnerable zones.

Special squads such as '**Meri Saheli**', launched in 2020, have now become an indispensable part of safe travel for women. These squads, often led by women officers, proactively reach out to lone or vulnerable female passengers during journeys, offering a reassuring presence and intervention when needed.

• ***Celebrating & Showcasing Women's Contributions:*** Beyond policy, Indian Railways has also made visible efforts to

Women crew of a goods train *Image Courtesy: MoneyControl*

A Lady Diesel Loco Pilot *Image Courtesy: Times of India*

NFR Women RPF Personnel *Image Courtesy: East Mojo*

celebrate and normalize the presence of women in its institutional fabric. All-women crews on prestigious trains like the Howrah–New Jalpaiguri Shatabdi Express, Hyderabad–Vijayawada special trains and the Vanitha Specials in Kerala, are not isolated PR moments, but rather deliberate affirmations of capability and representation.

Stations such as Matunga, Gandhinagar (Jaipur Division) and Begumpet have emerged as case studies in women-led operations, offering powerful narratives that inspire aspiring railway women across the country. Internal newsletters, zonal magazines and e-portals now routinely feature success stories of women loco pilots, engineers and officers, thus creating a culture of visibility and recognition.

Landmark Moments and Milestones

- ***International Women's Day Special Trains :*** Over the past decade, the Indian Railways has routinely operated trains with an all-women crew on March 8 – celebrating the spirit of its women employees.
- ***First Woman Railway Board Member :*** Jaya Varma Sinha, in 2023, broke the highest glass ceiling when she became the first woman Chairperson and CEO of the Railway Board, the apex body of the Indian Railways. Her elevation marked a historic and symbolic ascension of feminine leadership in one of the most complex bureaucracies of the Indian State.

Mrs Jaya Verma, ex-CEO of Railway Board *Image Source: Google*

A trainee ALP along with loco crew *Image Courtesy: Ministry of Railways, FB Page*

- ***Skilling and Inclusion:*** Indian Railways' recruitment arms – Railway Recruitment Boards (RRBs) and Railway Recruitment Cells (RRCs) have opened wider gates for female aspirants across categories. In certain exams (e.g., RPF Constable, RRB ALP), relaxations and reservations for women ensure not just entry but retention.
- ***Northeast Frontier Railway's Female Track Maintainers:*** In 2022, a group of women in Assam donned the role of gang-women doing the arduous job of track patrolling and sleeper tamping, traditionally perceived as rugged male territory.

Indian Railways has also celebrated its women workforce through 'Sakhi Melas', honour ceremonies and motivational campaigns aimed at fostering awareness, reducing stigma and promoting safety at workplaces.

Onward She Rides : Towards a Horizon of Equitable Excellence

As the iron sinews of Indian Railways stretch across the subcontinent through mist-veiled valleys, sun-drenched plains and bustling metros, they now carry more than goods and passengers. They carry the silent resolve of thousands of women, whose journeys have been as intricate and determined as the very networks they serve upon.

From the rhythmic clatter of the telegraph keys once tapped by women clerks in colonial outposts to the thundering charge of locomotives helmed by modern-day loco pilots like Surekha Yadav and Jyothi Kumari, the arc of progress has

A Lady Guard showing green-flag on the arrival of a goods train *Image Courtesy: hindustantimes*

been long but unswervingly forward. Each generation of women has added a chapter, some with quiet perseverance while others with headline-making breakthroughs – yet all with a shared momentum that can no longer be reversed.

Looking forward, the vision is clear, that is, to make Indian Railways a model employer in gender inclusivity, not by exception, but by design. The roadmap ahead calls for –

- Sustained recruitment of women in technical and leadership roles, backed by policy guarantees.
- Safe, respectful and enabling work environments from frontline depots to corporate offices.
- Mentorship ecosystems where senior women professionals guide and uplift their younger counterparts.
- Active elimination of unconscious bias in postings, promotions and professional evaluations.

There is an unmistakable poetry in the image of a woman piloting a WAP7 at full throttle across the Gangetic plains or inspecting points and crossings under the starry dome of a midnight sky. She is not just an employee. She is the embodiment of India's shifting narrative where progress is measured not only in kilometers per hour but in courage per heartbeat.

Indeed, the odyssey of women in Indian Railways is far from over. But it is now powered by more than steam or electricity; it is powered by purpose, policy and most of all, by possibility. Let the wheels roll on!!!

All photographs used in this article were sourced from internet. Courtesy to the respective owners




EXCLUSIVE

THE DANGARI TRAIN JOURNEY

History Of The Dangari Railway Route

Akshay Deshpande

A dedicated rail enthusiast from Mysuru, he has been passionately immersed in the world of railways since his childhood. For over fifteen years, he has explored numerous Indian Railways routes, capturing their charm, diversity, and operational intricacies through his lens. His extensive collection of railway photographs and videos reflects not only his keen eye for detail but also his deep appreciation for the heritage, engineering, and spirit of Indian Railways. Through his journeys and documentation efforts, he continues to contribute meaningfully to the vibrant railfan community while preserving cherished railway memories for future generations.

Assam's Dangari Railway Station established in 1883, was one of the earliest railway stations in Assam and the entire Northeast, serving as a critical hub for the burgeoning tea industry initiated by the British in the undivided Dibrugarh district. This historic station now waits for government attention to restore to its former glory.

Dangari's story began with the British need for a robust transportation network to export tea from Assam's lush plantations to global markets. Located in the Sadiya region, 60 kilometers from Tinsukia, Dangari emerged as a vital node in this network. Along with other stations like Sadiya, Saikhowa, Talap, and Doom Dooma, Dangari facilitated seamless transportation of tea.

Iconic steam engines such as Jayamati, Gadapani and Lachit Borphukan became symbols of this era, hauling goods and ferrying hundreds of passengers daily from Dibrugarh to Sadiya. Despite the rail lines being meter gauge, passenger traffic remained high with limited passenger trains amidst predominant freight operations.

My Journey :

After getting to know about the history of the Dangari Makum Railway line, I decided to explore this route. My initial plan was to take DEMU train from Dangari to Makum as it is the only DEMU train and was departing from Dangari at 5.30 am but after the plan got underway with train tickets already booked, the DEMU timings got changed! Instead of the early morning Dangari Departure, it was now departing Makum at 7 am. I reached Makum railway station around 6.20 am. The DEMU was then going the Tinsukia side as I waited at Makum.

The DEMU returned around 6.50 am and I went to ticket counter to buy ticket. To my surprise, they told that ticket would be given inside the DEMU only. More surprises awaited me as the train departed Makum around 7 am was almost empty with the LP Guard and two gangmen keeping company whose duty was to close and open the all LC gates en route. Sounds like travelling on some of the erstwhile NG or still surviving NG services of the near LC gate for the said purpose. Between Makum to Dangari, there are five intermediate stations in Bara Hapjan, Hansara, Dum Duma Town, Rupai and Talap. All these five stations along with Dangari are all in bad state and looks like abandoned ones. During journey towards Dangari, I witnessed four defunct semaphore signals. The first one was before Dum Duma town, the second was between Dum Duma town and Rupai, the third was just before Talap while the fourth was between Talap and Dangari. Just after the Rupai railway station, I witnessed a vegetable market near the railway tracks – synonymous with this part of the country.

This journey has truly left a lasting impression with me as it tends to take one to those MG-days of Assam....

All photographs were provided by the author and are copyright protected

THE MAKING OF MUKHI

Somsubhra Das

:: Prologue ::

Stepping into the vicinity of a railway station or a railroad, how often we find inquisitive children asking their companions about the colossal metal body pulling in – well it's more often than not! Trains have always attracted attention of all and sundry since their inception, purely for their uniqueness that creates an aura about them. From the perspective of children what draws attention about a train zooming past is its spontaneity and vibrant colours. It's common for children to come up with queries regarding the category of train or traction of locomotive – be it for the heritage steams or diesel horses or for the electric runners based on the different colours or liveries. The grownups also often indulge in such interactions. This sums up the fact that trains or locomotives are the frequent topics for discussion across age, class and strata of our society and the hues associated with them even play a major role in that.

For Indian Railways, different shades and colours have defined the various classes of locomotives or class of travel which is often referred to as standard liveries. While standardization helps identification, it also narrows the scope of experimentation with different colours and shades that may make the trains/locomotives look smarter and exciting from an onlooker's perspective. Surfing through the Diesel Locomotive Sheds of the nation which once hosted the ALCos, one could easily recognize the 'homes' of the ALCos from the liveries they sported which was irrespective of Class. Things were different though for the electric runners; the concept of 'Standardized Liveries' was stringently followed. Thus, the electric locomotives got trapped in the humdrum existence of standardized liveries.

This lack of diverseness in liveries of e-locos was later alleviated by the 'Locomotive Beauty Contest of Electric Locomotives' which presented the opportunity to witness various creative liveries and modifications over standard designs on the contesting locos representing their respective sheds. Such event recognized, celebrated and rewarded the best-maintained and aesthetically enhanced locomotives along with certain other criteria. Later on, some rail afficionados stepped up the momentum by suggesting different liveries which got carried out but those numbers were few and far in between. Of late, certain initiatives of liveries on e-locos have been limited within the Electric Locomotive Sheds of the Southern Railway barring a few here

The Chosen One... *Photo Courtesy: Somsubhra Das*

and there. Still those creativities could not quite match the legacy of the colourful ALCos which was somewhat carried forward through their immediate successors – the Electro-Motive Diesels. EMDs hailing from Tughlakabad, Ludhiana, Jhansi, Hubballi, Andal, New Guwahati DLSs along with a few others have been draped in a gamut of liveries by 'Railfans' exuberating inventiveness and artistry that broke the element of unilivery.

We, Team TrainTrackers, have tread the same path after having already created and curated a bunch of liveries on WAP4 and WAP7 classes of Electric Locomotives homed by the Howrah Electric Locomotive Shed under the jurisdiction of the Howrah Division of Eastern Railway in collaboration with other railfans following approval from concerned authority.

There have been liveries that have transformed our thoughts and notions but somewhere and somehow, monotonousness had started to take shape thereby creating a sense of boredom. Thus, we needed to concoct something that was never seen or done before. And that's how **MUKHI** was born. Have you ever wondered about conceptualizing a livery based on wildlife! Have you wondered if the fastest land animal 'Cheetah' ever had a face representing any class of locomotive of Indian Railways, especially a 3-Phaser Electric, would look like! **MUKHI** was the answer.

Ladies and gentlemen, introducing **MUKHI** – the WAP7 Locomotive #***39178*** from the Howrah Electric Locomotive Shed. But who is Mukhi? And why Mukhi?

Mukhi happens to be the first native cheetah born in 2023 on Indian soil after reintroduction of the species in 2022. Cheetah, once native to the nation, had been declared extinct by the middle of the 20th century. ***Project Cheetah*** – aimed at reintroduction of the hunting cats in India was launched by the Hon'ble Prime Minister Shri Narendra Modi on 17th September, 2022 by releasing eight cheetahs from Namibia into the Kuno National Park, Madhya Pradesh. Jwala (original name Siyaya), one of those eight Namibian cheetahs gave birth to a litter of which Mukhi is the sole survivor. Later, in November 2025, Mukhi gave birth to five healthy cubs, marking the instance of a second-generation cheetah born in India for the first time since the reintroduction of the species here. Thus, Mukhi is an iconic figure in the nation's wildlife conservation and is the first cheetah to be born in the country to successfully reproduce thereby augmenting the cheetah population of the country and contributing to the success of the ambitious project.

:: The Protagonists ::

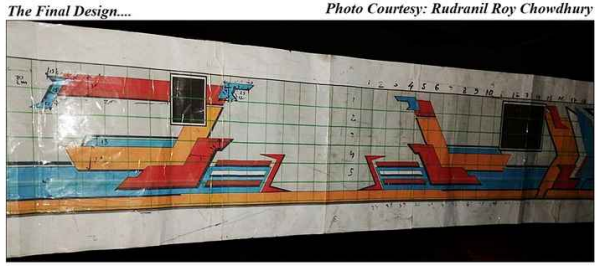
Every project has multiple protagonists helmed by a chief protagonist. In our case, **Sr. DEE HWH/TRS Shri Sandip Chatterjee** happens to be the principal protagonist who led a bunch of other officials and painters executing the task at hand.

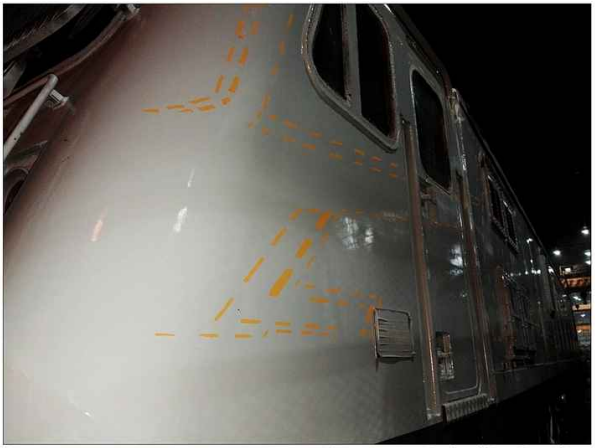
- **Sr. DEE HWH/TRS Shri Sandip Chatterjee :** The cliché of 'Railway Officials are no ferroequinologists' loses its relevance with Shri Chatterjee. He may not be a precedence of being the only one but is quite a recherché that one rarely comes across. Shri Sandip Chatterjee is one of those entities where innovative ideas and technical flair converges for greater outcomes – as evident from the previous instances that involved approval and implementation of a multiple liveries proposed from our end on WAP4 and WAP7 Classes of Locomotives along with christening of nine WAP7 Locomotives of the shed.
- **SSE/G1 Shri Dibyendu Bain :** A desired outcome involves a proper implementation that further involves great execution. Shri Dibyendu Bain has been the perfect foil and the key official whose tenacity and perseverance has enabled favoured outcomes in all our previous projects.
- **Shri Pranab Chakraborty, Shri Debasis Paik, Vijay & Shri Madhab Mandal :** The trio of painters and graphic designer whose sincere, diligent and sustained efforts have been pivotal in the upshots of all our ventures. By keeping up the night and braving sultry weather conditions, these staff have been relentless and conscientious in delivering the goods. Their passion in executing the job has been unmatched to say the least. All of them belong to a rare breed whose execution at the grass root level did wonders.

:: Walk The Talk ::

Against the backdrop referred herein, the Howrah Electric Locomotive Shed (HWH ELS from herein), nominated #39178 as MUKHI and dedicated it with a livery depicting the raw speed, sharp instinct and untamed elegance of cheetah

The Final Design.... *Photo Courtesy: Rudranil Roy Chowdhury*





Stencilling started after primer paintjob *Photo Courtesy: Rudranil Roy Chowdhury*

complete with the distinct black tear marks from eyes to snout. But hold on! The factum of stories behind this wonderful creation has quite a few twists and turns that surely makes an interesting read as MUKHI was never planned to be the face of one of the holdings of HWH ELS. Initially, Team TrainTrackers wanted to curate a livery on a WAP7 Class Locomotive that would have its own essence and significance, completely sui generis. Subhajit Saha, a creative designer and rail aficionado along with being an Associate Member of Team TrainTrackers suggested a livery which we put forward to **Sr. DEE HWH/TRS Shri Sandip Chatterjee** who had earlier approved a gamut of liveries proposed from our end on WAP4 and WAP7 Classes of Locomotives along with christening nine WAP7 Locomotives of the shed. Shri Chatterjee, just like the previous occasions, lent us a patient hearing before giving his personal touch. His introspection of the proposed livery was a game changer as he identified the same representing the agility and guile of a cheetah. As we plunged deep into the aspect of modifying the suggested livery, Shri Chatterjee suggested christening the WAP7 locomotive on which the livery would be done as Mukhi.

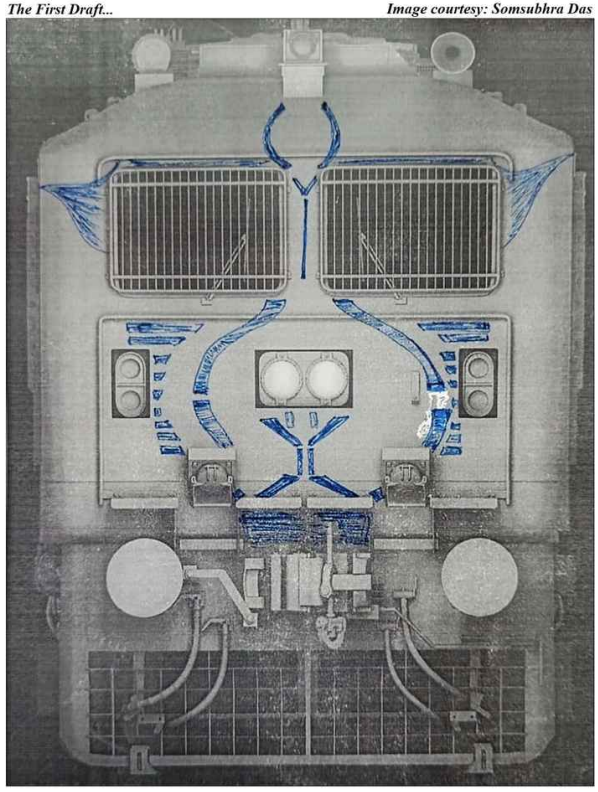
The Side profile... *Photo Courtesy: Rudranil Roy Chowdhury*

Handcarfted designing... *Photo Courtesy: Rudranil Roy Chowdhury*

Now, as we already know who Mukhi is, we promptly suggested changing the facial aspect of the proposed livery into a face of a cheetah which got his imprimatur.

We soon started work for reworking on the livery that would reflect the face of a cheetah.The new found idea of reframing the livery representing the face of a cheetah threw a fresh set of challenges. Creativity and ingenuity had to come together for an end product of highest order! While the windshields of the WAP7 were redefined as the eyes of the fastest wildcat,

The First Draft... *Image courtesy: Somsubhra Das*



Up close & personal *Photo Courtesy: Arkopal Sarkar*

its headlamps were re-imagined as nostrils to keep parity with the actual looks. The next challenge was to reproduce one of the distinct facial characters that distinguish a cheetah from other varieties of wildcats – the twin black tearmarks. Some extensive pencil sketches were done before finalizing the one what we see now. With all these characteristic features in place, the livery was digitized and finalized during the second sitting with the Sr. DEE HWH/TRS.

Miracles do happen; barring a few suggested subtle changes in colour schemes, Shri Chatterjee approved them all with a glee and exhilaration that redefined euphoria and jouissance. The livery itself has many other elements to it besides the base designs. The insignia of a 'Running Cheetah' was suggested by Shri Chatterjee himself. The font and design to mark 'Mukhi' along with incorporating the 'Tricolor' facet through the **Ashoka Chakra** in a completely inventive style and avatar were all prepared by Team TrainTrackers. Every single aspect of these insignia was as significant as the livery itself. Inscribing the words '**RETURN OF THE CHEETAHS**' / '**चीतो की वापसी...**' was visualized by Sr. DEE HWH/TRS himself and our design representing the Tricolour in a brand new fashion caught his imagination. Shri Chatterjee's expressions that day spoke volumes about the fact that we had created a livery that is complete with flair and

Work at full swing under carefull observation of Subhajit *Photo Courtesy: Arkopal Sarkar*

The Mukhi Design... *Photo Courtesy: Somsubhra Das*

finesse of a cheetah.

:: A Test of Faith ::

If the planning phase was challenging, then the execution part was even harder. The livery would be hand painted which reminded of the struggles which we ultimately overcame while creating the *Anubha* (WAP7 #37400). Thus, we were aware about the gap between planning and reality – no matter how much research is done, there always exists a gap between the two elements. Planning is an intellectual exercise while execution requires action, coordination and the ability to handle unforeseen obstacles. After wiping off the existing colours, two coats of primer were applied to start the groundwork. Choosing the correct shades representing the approved digitized image was a primary hurdle. Up next was creating paper stencils for execution of the designs followed by replicating the same on the locomotive's side profiles. The presence of the vents on either side did not make our task easier as continuity of the design overlapping the vents proved to be tricky. If recreating the side profile patterns meant climbing a hillock, reproducing the face profile was climbing Everest as we were reminded of the

Beloved Tri-color... *Photo Courtesy: Somsubhra Das*

Cab-1.... Photo by Somsubhra Das

Cab-2.... Photo by Somsubhra Das

Side Profile Photo by Somsubhra Das

Side Profile Photo by Somsubhra Das

Photo Courtesy: Arkopal Sarkar

famous adage by William Blake – "*The road of excess leads to the palace of wisdom...You never know what is enough until you know what is more than enough.*"

However, we, being wiser with experiences from our earlier endeavours of carrying out different liveries with perfection, we were confident of accomplishing our mission. We had immense faith and confidence on the dexterity of the painters for pulling off the task without much ado. Stencils were cut out in papers and used on the body of the locomotive to execute the design with minimal flaws and to keep coherence on both sides. The paintjob was personally supervised by Shri Dibyendu Bain, SEE/G1 who led an able team in Shri Madhab Mandal, Shri Pranab Chakraborty and Shri Debasis Paik among others. Tenuous changes were effected to suit the design keeping the aesthetic factor in mind. The changes in stenciling patterns of stickers enumerating 'Shed Marking' and 'Road Number' were also put to play to enhance the overall appeal. The significance of the occasion was marked as "**Celebrating 77th Republic Day**" / "**77वें गणतंत्र दिवस समारोह**" which was inscribed on the side profiles of the locomotive.

Photo Courtesy: Arkopal Sarkar

Photo Courtesy: Arkopal Sarkar

After an arduous 7-day exercise, which meant duty hours of the team extended to over 14 hours a day, we finally emerged victorious – triumphant over time, vanquishing incertitude, dispelling doubts and conquering hearts. The significance of the livery and nomenclature can be instantly recognized looking at the final product. With every passing hour, the cheetah seemed to take shape –poised, unruffled and unflustered!

:: Epilogue ::

The completion of the project within time was a great achievement itself. As news of unveiling spread, railfans and media thronged the Howrah Station premises to witness something special. The moment finally arrived as MUKHI moved out of its bastion for a round trip with the Shantiniketan Express (12337/38). As planned, the MUKHI Livery was unveiled by **Shri Vishal Kapoor**, the **Divisional Railway Manager**, **Howrah** in presence of Shri Sandip Chatterjee, Sr. DEE HWH/TRS among other officials on the auspicious day of 26th January which marks the 77th REPUBLIC DAY of the nation. The locomotive in its latest avatar was flagged off with the Bolpur bound Shantiniketan

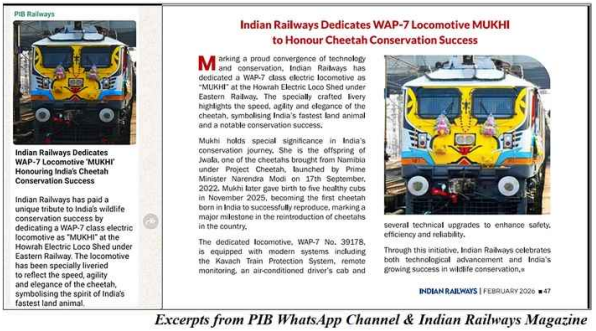
Photo Courtesy: Arkopal Sarkar

Somsubhra Das with Shri Vishal Kapoor *Photo Courtesy: Arkopal Sarkar*

Express as MUKHI was dedicated in service to the nation.

Our hearts fluttered in disbelief and joy as media persons, social media influencers, railfans and passengers scrambled and hustled to take a closer look at our creation. The Official WhatsApp platform of Indian Railways '**PIB Railways**' made a Press Release while appreciating this unique initiative with an article titled "Indian Railways Dedicates WAP-7 Locomotive 'MUKHI' Honouring India's Cheetah Conservation Success". **Shri Vishal Kapoor**, the **Divisional Railway Manager**, **Howrah** raised a toast for the accomplishment with a promise to back us through all our future initiatives. The Howrah Division, Eastern Railway has also tweeted about MUKHI event in its social media platform. A Jamshedpur

Subhajit Saha with Shri Vishal Kapoor *Photo Courtesy: Arkopal Sarkar*


PIB Railways

Indian Railways Dedicates WAP-7 Locomotive 'MUKHI' Honouring India's Cheetah Conservation Success

Indian Railways has paid a unique tribute to India's wildlife conservation success by dedicating a WAP-7 class electric locomotive as "MUKHI" at the Howrah Electric Loco Shed under Eastern Railway. The locomotive has been specially liveried to reflect the speed, agility and elegance of the cheetah, symbolising the spirit of India's fastest land animal.

Indian Railways Dedicates WAP-7 Locomotive MUKHI to Honour Cheetah Conservation Success

Marking a proud convergence of technology and conservation, Indian Railways has dedicated a WAP-7 class electric locomotive as "MUKHI" at the Howrah Electric Loco Shed under Eastern Railway. The specially crafted livery highlights the speed, agility and elegance of the cheetah, symbolising India's fastest land animal and a notable conservation success.

Mukhi holds special significance in India's conservation journey. She is the offspring of Jwala, one of the cheetahs brought from Namibia under Project Cheetah, launched by Prime Minister Narendra Modi on 17th September, 2022. Mukhi later gave birth to five healthy cubs in November 2025, becoming the first cheetah born in India to successfully reproduce, marking a major milestone in the reintroduction of cheetahs in the country.

The dedicated locomotive, WAP-7 No. 39178, is equipped with modern systems including the Kavach Train Protection System, remote monitoring, an air-conditioned driver's cab and several technical upgrades to enhance safety, efficiency and reliability.

Through this initiative, Indian Railways celebrates both technological advancement and India's growing success in wildlife conservation.»

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Excerpts from PIB WhatsApp Channel & Indian Railways Magazine

based daily named 'Hindustan' has reported about this initiative as well. The hugely popular Social Media Influencer '**Trains of India**' also mentioned MUKHI and the efforts put in for the project by Team TrainTrackers. But the greatest recognition came from the Indian Railways itself, once again, as MUKHI got featured in **February 2026 issue of INDIAN RAILWAYS magazine** through an article named '*Indian Railways Dedicates WAP-7 Locomotive MUKHI to Honour Cheetah Conservation Process*'.

Railfans across the nation rushed to have a glimpse of our work as MUKHI was soon allotted to haul the prestigious Howrah Rajdhani along with Dibrugarh Rajdhani among other premium services. The 'MUKHI Triumph' was another feather in the cap of the Team TrainTrackers as their camaraderie continues beyond this achievement. The path to success is never easy but one has to tread it to attain success and this livery, a first of its kind in the country, certainly tells many success stories....

:: Benediction ::

We convey our sincere thanks to Shri Vishal Kapoor, the Divisional Railway Manager, Howrah for his kind words of encouragement along with Shri Sandip Chatterjee, Sr. DEE HWH/TRS for approving and granting their kind consent about going ahead with this livery. Shri Dibyendu Bain, SEE/G1 and his team including Shri Madhab Mandal, Shri Pranab Chakraborty and Shri Debasis Paik needs special mention for taking the pain in executing the livery to perfection. We thank the hon'ble Editorial Team of Indian Railways magazine for accommodating MUKHI in their February 2026 issue. We also thank our Associate Members Shri Subhajit Saha, Shri Aishik Bhattacharya and our confederate Mr. Somanko Tiru for their timeless support in the project. The thanksgiving is incomplete without the mention of Social Media Influencer 'Trains of India' for the unwavering support.

गणतंत्र दिवस पर हावड़ा से चिता मुखी के नाम दौड़ा इंजन

Jan 27, 2026 05:31 pm IST
Newswrap हिन्दुस्तान, जमशेदपुर

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हिन्दुस्तान ई-पेपर Coins

होम राज्य देश क्रिकेट लाइव स्कोर VOICE OF UP मनोरंजन

नामीबिया से चीतों को भारत में लाने की शुरुआत की थी। 'मुखी' देश के वन्यजीव संरक्षण में एक महत्वपूर्ण हस्ती बन गई है।

जमशेदपुर। गणतंत्र दिवस के अवसर पर भारत में चिता के पहली नस्ल मुखी के नाम पर इंजन दौड़ने लगा। 20वीं शताब्दी के मध्य तक विलुप्त घोषित कर प्रजाति के उत्थान की भावना से रेलवे ने यह पहल की है। चीता मुखी के नाम इंजन को ट्रेन ट्रैकर्स टीम द्वारा डिजाइन किया गया है।, चीता के नाम का इंजन शांतिनिकेतन एक्सप्रेस का संचालन करेगा। परियोजना के क्रियान्वयन ट्रेन ट्रैकर्स टीम के शुभोजित साहा और रेल प्रेमी सोमांको तिरु ने अहम योगदान दिया। बताया जाता है कि, प्रोजेक्ट चीता की शुरुआत प्रधानमंत्री नरेंद्र मोदी ने सितंबर 2022 को मध्य प्रदेश के कुनो राष्ट्रीय उद्यान में नामीबिया से आठ चीतों को छोड़कर किया था।

उन आठ नामीबियाई चीतों में से एक ज्वाला (मूल नाम सियाया) ने शावकों को जन्म दिया, जिनमें से मुखी ही जीवित है। मुखी ने नवंबर 2025 में पांच शावकों को जन्म दिया। जो भारत में चीतों के पुन: परिचय के बाद पहली बार दूसरी पीढ़ी के चीते के जन्म का उदाहरण है। इस प्रकार, मुखी देश के वन्यजीव संरक्षण में एक प्रतिष्ठित हस्ती है और भारतीय धरती पर जन्म लेने वाला पहला चीता है। इससे देश में चीता की वृद्धि हुई। इससे 77वें गणतंत्र दिवस पर मंडल रेल प्रबंधक विशाल कपूर अन्य अधिकारियों ने 'मुखी' लोकोमोटिव को हरी झंडी दिखाकर राष्ट्र की सेवा में समर्पित किया है। मालूम हो कि इलेक्ट्रिक इंजन के 100 वर्ष पूरे होने पर रेलवे शहीदों और स्वतंत्रता सेनानियों के साथ देश के अनोखे अस्तित्व का महत्व बताने के लिए इंजन का नामांकरण कर रहा है।

लेखक के बारे में
Hindustan
हिन्दुस्तान भारत का प्रतिष्ठित समाचार पत्र है। इस पेज पर आप उन खबरों को पढ़ रहे हैं, जिनकी रिपोर्टिंग अखबार के रिपोर्टरों ने की है। ...और पढ़ें

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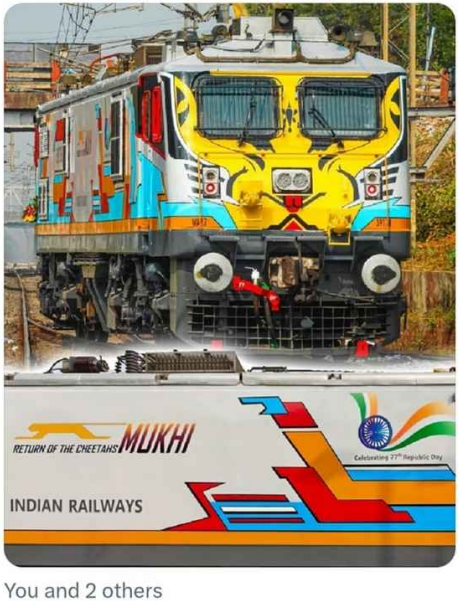
Howrah WAP7 Dedicated to "MUKHI", the First Indian-Born Cheetah Under the Project Cheetah!

An initiative from Eastern Railways, Howrah ELS, Railfans from Team TrainTrackers & Somanko Tiru.
#IndianRailways



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Howrah Division, Eastern Railway 's post

Howrah Division, Eastern Railway
27 January ·

MUKHI | Speed Meets Conservation
On the occasion of India's 77th #RepublicDay, Howrah Division, Eastern Railway dedicated WAP-Locomotive No. 39178 "MUKHI", featuring a striking cheetah-inspired livery symbolising speed, instinct and elegance.
The maiden run of the locomotive was started in the presence of Shri Vishal Kapoor, DRM/HWH, wh hauling Train No. 12337 Shantiniketan Express from Howrah to Bolpur.
A proud tribute to #ProjectCheetah and India's conservation success.
#HowrahDivision #EasternRailway #IndianRailways #Mukhi #JaiHind

MUKHI – Through the Lens of Rail-fans


Photo Courtesy: Tanmoy Ganguly


Photo Courtesy: Tanmoy Ganguly


Photo Courtesy: Sourav Das


Photo Courtesy: Arajit Gharai


Photo Courtesy: Arajit Gharai

REDEFINING THE HOWRAH 'WAP7' DECALS

A SAMIT ROYCHOUDHURY CREATION

Somsubhra Das

While stepping into the world of ferroequinology, one could not help but admire the **P7** decals on the WAP7s of the Ghaziabad Electric Locomotive Shed/NR in its initial days along with the **G9H** decals on WAG9H Locomotive of the Bhilai Electric Locomotive Shed/SECR to go with the **G9** ones on the WAG9 Locomotives of the Gomoh Electric Locomotive Shed/ECR. Those decals were something else – a completely unique illustration that made all other signage look inferior. The brainchild of all these designs was none other than the one and only ***Samit Roychoudhury***.

Samit Roychoudhury is an independent design consultant with graphic design being his core competency and the creator of the 'The Great Indian Railway Atlas', now in its fourth edition and the man behind those P7 and G9H/G9 decals. Samit Roychoudhury and Team TrainTrackers have maintained a close and harmonious relationship since long. This bond though became the harbinger for some exciting new scheme of things!

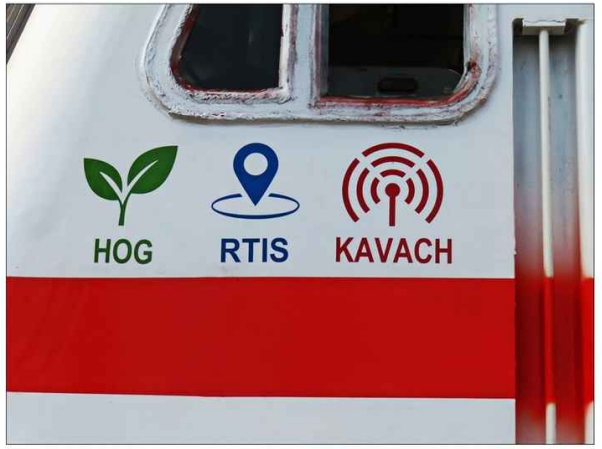
The 'Making of MUKHI' by Team TrainTrackers paved the way for another development. During multiple sittings with Shri Sandip Chatterjee, Sr. DEE HWH/TRS for implementation of the MUKHI Livery on WAP7 #39178, the proposal of standardizing a livery for WAP7s of the Howrah Electric Locomotive Shed came up. Shri Chatterjee was looking for something in the lines of the **P7** decals on the WAP7s of the Ghaziabad Electric Locomotive Shed/NR and the **G9H** decals on WAG9H Locomotive of the Bhilai Electric Locomotive Shed to go with the **G9** ones on the WAG9 Locomotives of the Gomoh Electric Locomotive Shed, as discussed earlier. To get something similar done called for expertise, experience and proficiency. Thus, who else than the protagonist himself would be the best bet? Not only livery, the logo of the Howrah ELS, earlier created by Team TrainTrackers along with a couple of other rail enthusiasts, and the signage

makeover – all under his creative aura.

As per Samit Roychoudhury – *"A chance discussion with Somsubhra Das, co-founder of Team TrainTrackers presented the opportunity to try out some livery options at the Howrah Electric Locomotive Shed. I created a few concepts, ranging from very simple text-based ones to slightly more elaborate options. The Sr. DEE HWH/TRS, Shri Sandip Chatterjee was kind enough to select one to be tried out and indeed be nominated as the standard livery for the shed's numerous WAP-7 fleet, to be incorporated as and when they came in for their scheduled IOH and POH.*

The chosen livery simply had 'WAP-7' written in large letters across the sides, with one side sporting English and the other side Devanagari. In addition, there were smaller text which had the locomotive number, the shed name, etc. using a very simple typeface.

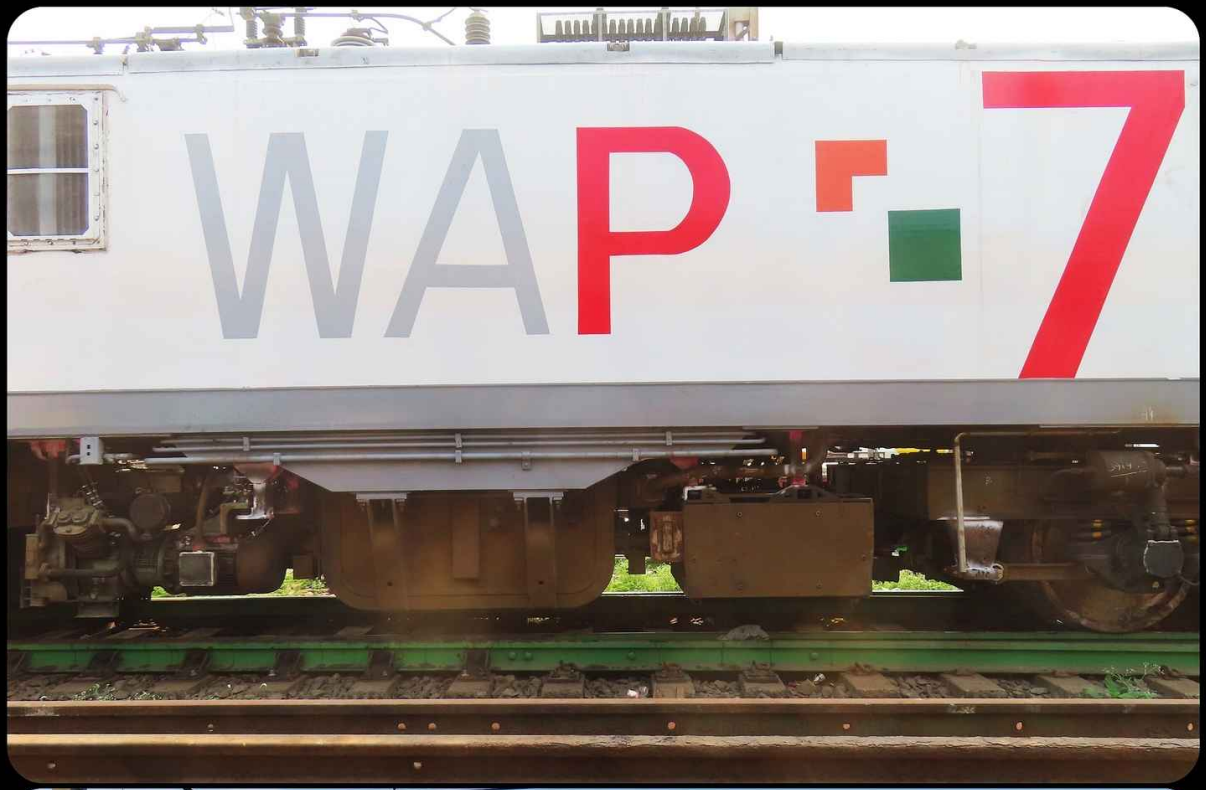
The challenge lay in fitting the text accurately. The English script was relatively easy, with full height text being accommodated without any issues. Devanagari proved to be tricky. The 'matras' (the horizontal line running along the top of most Hindi letters), both upper and lower, did not allow full height text. In addition, the positioning of side vents on the body limited the size of the text. The text had to be horizontally compressed and the tracking decreased to make things better.



The colour palette adopted was the standard red, with shades of grey, black and white, to keep things simple. Accents of the tri-colour have been used to enhance the effect.

I also worked on the shed logo (featuring the iconic Howrah Bridge) created by Team TrainTrackers, simplifying it to increase its visibility."

His words may sound simple but the tasks involving creation and execution weren't. Changes, some subtle while some distinct, had to be accommodated to keep within the extant advisories. Sr. DEE HWH/TRS had initially decided to implement the livery of Samit Roychoudhury on two WAP7 Locomotives bearing road numbers #**37585** and #**37586** but there lay a twist. Sr. DEE HWH/TRS hit upon the idea of getting the livery implemented on another WAP7 of the shed which was undergoing POH at the Kanchrapara Workshop – #**30478**. Meanwhile, Shri Roychoudhury also suggested changing the insignias of HOG, RTIS and KAVACH, initially created by the HWH ELS, into something more penger to suit the overall makeover. Sr. DEE HWH/TRS liked what was offered to him and approved the new insignias thus prepared. Now, the new livery along with the fresh insignias


WAP 7


डब्ल्यू ए पी 7

Photo Courtesy: Anish Banerjee

with their respective measurements was sent to the said workshop for getting the livery done on it. Thus, Samit Roychoudhury's design got simultaneously implemented on three WAP7s. But the story doesn't end here. Painter from the Kanchrapara Workshop (KPA) was summoned on urgent basis at the Howrah ELS for initial execution of the livery on #37585. He, along with the other painters of the shed delivered the desired result. The same person then went back to KPA and accomplished the same outcome on # 30478**.** Though the shed marking/zone marking fonts varied in size and the positioning of HOG, RTIS, KAVACH insignias shifted from the proposed earmarked space on either locomotives, the final output has left quite a few from the railway fraternity and from the world of ferroequinology awestruck. Truly, it is the beginning of a new era for the Howrah Electric Locomotive Shed as all its POHed WAP7 Locomotives may don the standardized decals prepared by the legendary graphic designer. Look wise, the POHed HWH P7s matched every inch of any brand new P7 with their grand new looks.

Both the POHed locomotives have long been pressed into service and successfully performing mainline duties. The

POHed WAP7 #37585 has already hauled the Mithila Express and the Viswabharati Fast Passenger while #30478 has done duty with the Kolkata-Ara Garib Rath Express and the Purvanchal Express.

It is a matter of great honour and privilege for Team TrainTrackers to be associated with the creation of Samit Roychoudhury. The team proudly continues to be a part in the creative activities associated with the HWH ELS, be it for co-conceptualizing the new logo of the HWH ELS with Samit Roychoudhury or for naming of locomotives and giving them unique liveries. Thus, the Team TrainTrackers juggernaut goes on as the latest successful initiative is another jewel in its crown. It is also a matter of great honour for the **Rail Enthusiasts' Society** as both Samit Roychoudhury and Team TrainTrackers are members of the registered organization.

In the monotonous world of Unilivery, these initiatives truly stand out and create something out of the ordinary that excites the ferroequinologists alike.

This project would have been incomplete without the unconditional support of Shri Sandip Chatterjee, Sr. DEE HWH/TRS whose insights played a key role in execution this livery. Shri Dibyendu Bain, SEE/G1 and his team also deserve kudos for giving their best for the desired outcome. We also thank our confederate Mr. Somanko Tiru for enduring with us.


36 KIDDERPORE ESPLANADE
SERVO
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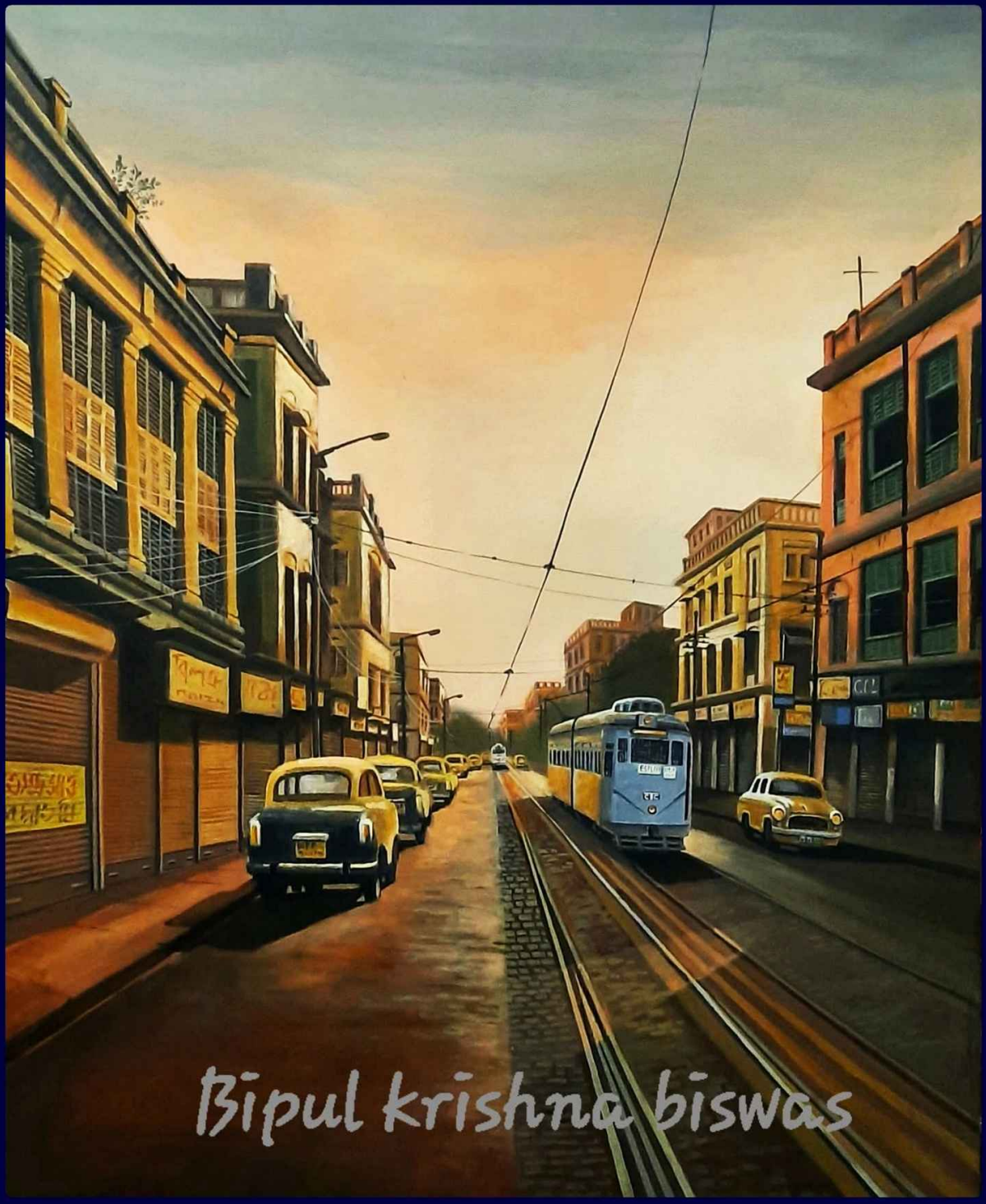
HIGH COURT
Avanish Trivedi

Sketches


Bipul krishna biswas

Across Hooghly

The Two Legendary Railway Bridges

Anamitra Ghatak

An entrepreneur and management consultant presently based in North America. A lifelong devotee of the railways, his passion was kindled in early childhood amidst the rhythmic clatter of trains in Eastern India. Growing up during the vibrant 1980s, he bore witness to the majestic twilight of the steam era on Indian Railways. His professional sojourns later carried him across Europe and North America, where he engaged closely with the world's most sophisticated passenger and freight railway systems. A connoisseur of motive power technologies, he remains deeply involved in the global community of railway enthusiasts and actively participates in specialist forums and lends his insights to researchers exploring the rich tapestry of railway science and history.

The Hooghly River does not give itself easily. Tidal, swift, and capricious, it has long been one of the most formidable waterways in the subcontinent; a natural moat that for centuries separated the eastern and western banks of Bengal. Ferrymen read its moods with the caution of those who had seen it claim the careless. Engineers feared it for different reasons – the river's bed was deep, its currents punishing and the soft alluvial silt beneath offered little purchase for the foundations that a railway bridge would demand.

Yet, within the span of half a century, two railway bridges rose above it — each an act of audacity dressed in riveted steel, each leaving a mark on Indian Railway history, that no timetable can fully capture.

The First Win : Jubilee Bridge

By the 1870s, Bengal's railway network was expanding rapidly, but the river Hooghly remained a hard stop. Goods and passengers crossed by ferry, an arrangement that was inconvenient, slow, and increasingly inadequate for the expanding industrial hub of Calcutta. The East Indian Railway (EIR) had pushed its tracks far, but the river sat between the lines of upper India and the port of Calcutta like one small but significant last mile connection. Calcutta's main railway hub, the Sealdah station, Calcutta Port and its suburbs were part of the Eastern Bengal Railway (EBR) in the east bank. Due to the lack of a connecting railway, EIR and EBR could not directly exchange railway traffic, making the supply chain greatly inefficient.

The man who decided to finish that sentence was Sir Bradford Leslie. A veteran civil engineer, Leslie partnered with Alexander Meadows Rendel to apprehend a problem that others had shelved as impossible or impractical. The Hooghly's tidal bed required foundations sunk to extraordinary depths, thirty meters below high-water level at places.

Cover Photo Courtesy: Rudranil RoyChowdhury

The Royal Plaque @ Jubilee Bridge *Courtesy: Somsubhra Das*

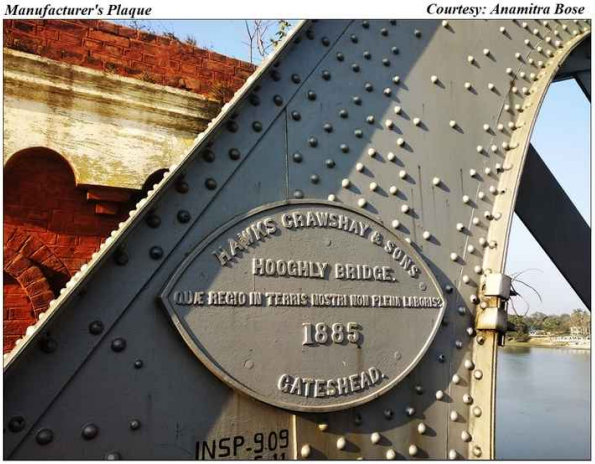
Maker's Plate @ Jubilee Bridge *Courtesy: Somsubhra Das*

To make it harder, the sheer speed of its current made conventional construction methods perilous.

Their solution was a three-span cantilever truss : a design that would allow large sections to be assembled outward from their piers without requiring a temporary scaffold from the riverbed. Construction began in earnest in March 1884. On-site, the work fell to Lieutenant Colonel Arthur John Barry, nephew of Sir John Wolfe-Barry, the man who would later complete Tower Bridge in London. It was, in many ways, a family business.

What emerged from those three years of labour was a bridge like nothing India had seen. Every joint was riveted, not a single nut or bolt was used anywhere in the structure. The fabrication, handled by Hawks, Crawshay & Sons of Gateshead and James Goodwin & Co. of Motherwell, was of a quality that engineers would later describe as almost impossible to replicate. The bridge sat on pendulum bearings, unique among Indian railway structures, allowing it to flex with thermal expansion and the rhythmic burden of passing trains. In an age before finite element analysis, it was engineering as much art as science.

Manufacturer's Plaque *Courtesy: Anamitra Bose*



On 16th February 1887, Lord Dufferin, the incumbent Viceroy of India, inaugurated the bridge by traveling on a special train before a gathering that understood it was witnessing something historic. The Hooghly; considered unbridgeable, had been bridged. Named the *Jubilee Bridge*, in honour of Queen Victoria's Golden Jubilee, it carried the first train across the river at Garifa on the east and Hooghly Ghat on the west, completing the Naihati-Bandel line and stitching together the freight arteries of upper India with the port city of Calcutta.

It would go on to carry trains for 129 years until a new bridge came up by its side.

A New Century And A Bolder Ambition : Bally Bridge

The Jubilee Bridge was a beginning, not a ceiling. As Calcutta grew into one of the great metropolises of the empire, the demand for rail connectivity deepened. Sealdah Station, the terminus that served eastern Bengal (EBR), had no convenient rail link to the western bank that would connect it to the Howrah suburbs. Passengers and goods still changed modes at the river between Howrah and Kolkata. By

The Century Old Jubilee Bridge *Courtesy: Rudranil Roy Chowdhury*

An Express Train Crossing Jubilee Bridge in 2014
Courtesy: Somsubhra Das

Now defunct Jubilee Bridge
Courtesy: Anamitra Bose

Express Train crossing Bally Bridge aka Vivekananda Setu

An EMU Train Entering the Mighty Rail-cum-Road Bally Bridge

the 1920s, this gap had become a structural inefficiency that the railway administration could no longer ignore.

The project that followed was more ambitious than anything attempted before on the Hooghly. The brief called not just for a railway bridge but for a combined rail-and-road crossing, the first of its kind in India. The challenge was immense – the river here was wider, the tidal forces no less fearsome and the engineering ask considerably greater.

Consulting engineers; Rendel, Palmer and Tritton, successors to the firm of Rendel himself, who had helped design the Jubilee, were appointed. It was an almost poetic continuity. On the ground, foundation contractor Rai Bahadur Jagmal Raja Chauhan directed the sinking of enormous octagonal steel caissons, each measuring twenty-one meters by eleven, into a riverbed where six-mile-per-hour tidal currents ran in barely four feet of water. The steel for the spans came largely from Tata Steel's Jamshedpur works, a detail that, in 1931, carried its own significance as Indian industry began asserting its place in the nation's infrastructure.

The bridge that emerged spanned 880 meters on nine spans, seven of them crossing the main channel at roughly 110 meters each. It was wide enough to carry dual railway tracks at its center, flanked by a roadway and sidewalks on either side. The erection method broke convention; the bottom booms of each span were assembled level, then dropped four inches at their ends after erection; an unusual post-construction camber that drew admiring commentary from the engineering press.

On 29th December 1931, the *"Willingdon Bridge"*; named for the then-Viceroy, the Marquess of Willingdon, was opened to traffic. The inaugural train was named the *"Jagmal Raja Howrah Express"* in recognition of the contractor's formidable contribution. India's first rail-cum-road bridge was complete, and for the first time, a railway passenger could travel from Sealdah to Howrah suburbs without stepping off the train.

The bridge was later renamed *"Vivekananda Setu"*, as post-independence India re-imagined its landmarks. The ironwork, however, remained unchanged; dark, massive and enduring, framing views of Dakshineswar Temple and Belur Math on either bank with a grandeur that seemed almost

Freight Train Crossing Bally Bridge

Erstwhile Willingdon Bridge now Vivekananda Setu *Image Courtesy: Vushii.com*

The Road-cum-Rail Bally Bridge aka Vivekananda Setu
Courtesy: Rudranil Roy Chowdhury

The Bally Bridge
Courtesy: Wondering Photos 2014 Flickr Account

The bridge was later renamed *"Vivekananda Setu"*, as post-independence India re-imagined its landmarks. The ironwork, however, remained unchanged; dark, massive and enduring, framing views of Dakshineswar Temple and Belur Math on either bank with a grandeur that seemed almost intentional.

Built with the intention of connecting EIR, EBR and BNR (Bengal Nagpur Railway) on a seamlessly integrated railway network, this bridge still plays the same role keeping Eastern (Howrah and Sealdah Divisions) and South Eastern Railway (Kharagpur Division) connected on their critical freight traffic alongside suburban local and long-distance passenger traffic.

Two Bridges, Two Destinies

The two legendary bridges served the same river and the same railway zone, yet the fates of these two bridges could scarcely be more different.

The Jubilee Bridge closed on 17th April, 2016. The final train; the 13141 Teesta Torsha Express crossed at night, carrying with it 129 years of continuous service. On the same day, the newly erected double track "Sampreeti Bridge" opened beside it – a continuous steel bow-string structure 415 metres long, the first of its type in India. Its clean modern curves are a deliberate contrast to the Victorian latticework that it replaced. Proposals were raised to preserve a span or the pendulum bearings in a museum.

Vivekananda Setu, by contrast, shows no sign of retirement. It still carries Eastern Railway trains on the Sealdah–Dankuni Calcutta Chord line and around 24,000 vehicles daily on its road deck though heavier vehicles have been diverted to the parallel Nivedita Setu since 2007. In January 2025, the bridge was closed for a hundred hours to allow strengthening works on its approaches. A repainting campaign in 2019 saw zinc chromate primer being applied across its spans. The bridge is tended, maintained and very much alive.

What the River Remembers

There is a particular kind of pride that attaches itself to large bridges. Not just the engineering pride of the builders, but something more collective is here to remember. These were structures that changed how people moved, how commerce flowed, how a city related to its own geography. The Jubilee Bridge made the Hooghly crossable by rail for the first time. The Bally Bridge made it crossable for the first time by both rail and road, in a single structure, at a single point.

Between them, they represent two generations of Victorian and Edwardian engineering confidence; a confidence that the most difficult problems yielded, eventually, to calculation, to craftsmanship and to the willingness to try. Both were designed by engineers with roots in the same firm. Both were built under the supervision of contractors and workers whose names rarely appear in the histories. Both carry, in their steel, the specific knowledge of the river that only comes from having fought it and won.

The Hooghly flows on, indifferent as ever. But somewhere in its tidal memory, the river knows what it cost to be crossed. In a few years, it will be 100 years for Vivekananda Setu. Yet, there are no alternative bridges planned yet that can replace this legendary structure. In upper Hooghly and Bhagirathi, two railway bridges came up in recent years. One to connect Krishnanagar with Nabadwip Ghat that remains unfinished, while the other one between Murshidabad and Azimganj is up and running. But none of these in their full capacity would be able to serve SER/BNR traffic as an alternative to Vivekananda Setu. That retains the very unique and powerful position of this century old bridge. We pray that it stays strong and serves the nation for decades to come.

Sources: Wikipedia (Jubilee Bridge, Vivekananda Setu, Sampreeti Bridge); Graces Guide (Jubilee Bridge, Willingdon Bridge); FIBIwiki; Rail Enthusiasts' Society of India; Structurae; Google Arts & Culture; Transportation History; Get Bengal; Past-India photo archive.

Image courtesy: Rudranil Roy Chowdhury

The Future Kolkata Already Had

The Bell That Still Echoes Through a City Losing Its Rails

Rudranil Roy Chowdhury

There are cities that merely *possess* transport systems and there are cities whose transport systems become inseparable from their cultural soul. Kolkata belongs unmistakably to the latter category.

For over one hundred and fifty years, the tramways of Kolkata were not simply carriers of passengers. They were arteries of urban civilisation — silent custodians of continuity that witnessed the transformation of Calcutta from an imperial colonial capital into the pulsating, chaotic, intellectually vibrant metropolis of modern Kolkata. The tram bell became part of the city's acoustic identity; the steel rails embedded into old streets became as intrinsic to Kolkata's physiognomy as the Hooghly River, the Maidan, College Street or North Kolkata's crumbling verandahs.

Yet today, while the world witnesses an extraordinary renaissance of tramways and light rail systems as instruments of sustainable urban mobility, Kolkata — the proud possessor of Asia's oldest electric tram network — stands perilously close to allowing one of its greatest urban inheritances to dissolve into engineered obsolescence.

The irony is almost tragic in scale.

Across Europe, Asia and even the Middle East, cities are investing billions to reintroduce or expand tram systems in response to climate change, vehicular congestion, urban pollution and the failures of excessive automobile dependency. Meanwhile Kolkata, which already possesses an operational tram ecosystem, inherited infrastructure, depots, workshops, rights-of-way, trained manpower traditions and a historic urban compatibility with tram mobility, continues witnessing route closures, infrastructural neglect, concretisation of tracks, shrinking services, and administrative indifference.

The issue therefore transcends nostalgia. This is no longer merely a debate about heritage preservation. It is a profound question of urban planning, environmental philosophy, transport economics and the future liveability of Kolkata itself.

The Politics of Road Space

The decline of tramways across many parts of the world during the twentieth century was not always the consequence of technological inadequacy or transport inefficiency. More often, it was the result of a profound ideological transformation in urban planning itself — the gradual political and administrative prioritisation of the private automobile over collective public mobility.

The modern city, particularly after the Second World War, increasingly came to be designed not around pedestrians or public transport users but around the movement and accommodation of cars. Roads were widened, intersections redesigned, flyovers erected and vast sections of urban policy began revolving around the assumption that private motor vehicles represented the inevitable future of mobility. Within this emerging automobile-centric framework, tramways were frequently portrayed as "obsolete obstructions" impeding road traffic.

Yet such arguments concealed a deeper contradiction. The tram did not consume excessive urban space; rather, it was the unchecked proliferation of private automobiles that gradually overwhelmed city streets. A single tramcar, operating efficiently on steel rails, can transport hundreds of passengers within the spatial footprint occupied by only a handful of private cars. In terms of road-space efficiency, energy consumption and passenger capacity, the tram remains vastly superior to automobile-dominated mobility.

The irony is striking; cities dismantled trams in order to accommodate more cars, only to later discover that increasing road capacity merely generated more traffic congestion, higher pollution levels, greater fossil-fuel dependency and declining urban lifestyles. Urban transport scholars now widely acknowledge this phenomenon as the failure of "car-centric urbanism." Roads expanded. Flyovers multiplied. Vehicles increased. Yet congestion worsened relentlessly. The promised liberation through automobiles instead produced gridlock, noise, pollution and fragmented urban landscapes increasingly hostile to pedestrians and public life.

Kolkata too became gradually vulnerable to this philosophy. Over the decades, tram corridors were increasingly forced to compete with chaotic mixed traffic instead of being protected through dedicated right-of-way systems. Tracks that once functioned as organised transit corridors became trapped amidst unregulated vehicular encroachment. Rather than strengthening tram infrastructure through signal prioritisation, segregated lanes and modern traffic integration, policy directions increasingly favoured road widening and unrestricted automobile movement.

In this process, the tram began to be perceived not as a solution to congestion but as its cause. This inversion was deeply misleading. The fundamental issue was never the tram itself, but the absence of coherent traffic discipline and the uncontrolled expansion of private vehicular dependence within an already spatially constrained historic city.

Indeed, many of the world's most successful tram systems today operate precisely because city administrations consciously decided to reclaim road space from excessive automobile domination. Modern European urban planning increasingly recognises that roads must primarily serve people rather than merely vehicles. Consequently, several cities have –

- Reduced private car access in core urban zones
- Pedestrianised historic districts
- Introduced dedicated tram corridors
- Expanded cycling infrastructure
- Prioritised electric public transport over private automobiles

The result has not only been improved mobility but also quieter streets, cleaner air, enhanced urban aesthetics and significantly higher quality of life.

Kolkata, with its dense urban morphology, historic neighbourhoods and naturally compact travel patterns, remains exceptionally suited for such a transition. The city was never structurally designed for an overwhelming

automobile dependence. Its historic streets, bazaars, mixed-use neighbourhoods and pedestrian-oriented urban form evolved around public transport systems such as trams and suburban railways. Attempting to retrofit excessive automobile-centric planning into such an organically evolved city has often produced precisely the congestion and infrastructural stress now visible across large sections of the metropolis.

The tram, therefore, represents something far greater than an old transport technology. It symbolises an alternative philosophy of the city itself – a city where mobility is collective rather than individualistic; a city where streets remain civic spaces rather than mere conduits for automobiles; a city where sustainability outweighs unchecked vehicular expansion; a city where movement coexists with heritage, environment and urban dignity. The tram did not fail because it lacked relevance; it failed because the twentieth century increasingly surrendered its streets to the automobile.

The Global Renaissance of Tramays

One of the greatest misconceptions propagated in Kolkata is the belief that tramways are obsolete relics of the nineteenth century. Contemporary urban transport history proves precisely the opposite. In fact, the modern tramway has emerged as one of the most preferred forms of medium-capacity sustainable urban transit across the world. Cities that dismantled tram systems during the automobile-centric planning madness of the mid-twentieth century are now rebuilding them at enormous expense.

Why? Because urban planners globally have realised several undeniable truths:

- Roads cannot endlessly absorb private vehicles
- Metro systems, while immensely effective, are extraordinarily capital-intensive
- Buses alone cannot ensure long-term sustainable modal shift
- Electrified surface transit integrated with pedestrian-friendly corridors offers superior urban liveability
- Tramways encourage public transport usage while simultaneously beautifying and humanising cityscapes

Modern tram systems today are no longer slow, rattling antiquities. They are fully low-floor, air-conditioned, digitally monitored, energy-efficient, aesthetically integrated, accessible to elderly and disabled passengers, equipped with regenerative braking and often capable of catenary-free operation in heritage zones. Companies like Alstom, CAF and Škoda Group are producing advanced tram rolling stocks that are becoming central to modern sustainable mobility planning worldwide. In fact, city's own Titagarh Wagons is also capable of manufacturing state-of-art tram rolling stocks.

Europe's Return to the Tram

Perhaps nowhere is the tram renaissance more visible than in Europe. Cities like Vienna, Prague, Budapest, Barcelona, Berlin, Amsterdam, Strasbourg and Zurich have demonstrated that tramways can successfully coexist with metro systems and buses as part of an integrated multimodal urban transport ecosystem. In Vienna, trams continue serving as an indispensable surface mobility network complementing the metro. Urban transport experts there describe the tram system as the city's "sleeping superpower." Barcelona has recently expanded its tramway network using advanced catenary-free technology to preserve urban aesthetics while simultaneously reducing automobile dependency. The extension alone is projected to eliminate nearly 2,000 cars daily from central city roads. Prague, another historic European city with medieval streets and dense urban morphology, continues heavily investing in state-of-the-art low-floor trams capable of negotiating sharp curves and congested historic districts. The significance of these examples is profound. These are not cities with broad American-style avenues or limitless urban space. They are dense, old, historically layered cities remarkably similar in spatial complexity to Kolkata. Yet instead of dismantling tramways, these cities have modernised them.

The Tram as an Urban Philosophy

Often there are debates about tram vs metro. A metro system and a tram system are fundamentally different transport philosophies.

The metro is primarily designed for rapid, high-capacity, long-distance movement across major corridors of a city. It is indispensable for large metropolitan regions. But a tram network performs a different; equally vital; urban role. A tram is not merely a mode of transport. It is a *networked circulatory system.* It penetrates neighbourhoods. It stitches together short-distance urban mobility. It enables last-mile and intermediate-distance connectivity. It supports a highly walkable environment. It reduces dependence on private vehicles for short trips. It activates street life rather than bypassing it underground. This distinction becomes especially relevant in Kolkata.

The ongoing expansion of the Kolkata Metro Rail is undoubtedly transformative and necessary. Metro corridors are essential for connecting the vast north-south and east-west axes of the metropolis. However, metros alone cannot adequately address fine-grained urban mobility within dense traditional neighbourhoods. It lacks last mile connectivity. A metro station may exist every kilometre or more. But tram networks distribute mobility across the city fabric itself. This is precisely why many advanced cities use trams *alongside* metros rather than replacing one with the other.

If the metro forms the spine, the tram forms the capillaries.

Another greatly overlooked dimensions in Kolkata's tram debate is comparative infrastructure economics. Metro construction involves enormous tunnelling costs, land acquisition or purchase, elevated viaducts, station construction, ventilation systems, signalling complexity, underground utility diversion and massive long-term maintenance & human resource expenditure. The cost per kilometre of metro construction can run into several hundreds of crores or even thousands depending on alignment complexity.

By contrast, tramway modernisation, particularly on existing alignments, is significantly less expensive. A tram system primarily requires dedicated permanent way, track modernisation, overhead electrification or ground power supply, upgraded substations, modern rolling stock and traffic signal prioritisation.

The fundamental right-of-way already exists in Kolkata across substantial stretches of the city. Approximately 72 kilometres of route length still survive in varying states — an extraordinary inherited urban asset that many global cities would consider priceless. To destroy such infrastructure only to regret it decades later would represent an urban planning catastrophe of irreversible proportions.

Parameter	Metro Rail	Tramway
Construction Cost	Extremely High	Moderate
Time to Build	Long	Short
Underground Requirement	Often Yes	No
Last-Mile Connectivity	Limited	Excellent
Surface Urban Integration	Low	Very High
Flexibility	Corridor-Based	Network-Based
Carbon Footprint	Low	Very Low
Heritage Integration	Difficult	Excellent

The Missing Vision of Dedicated Tram Corridors

The failure of Kolkata's tram system was not intrinsic technological inadequacy. The principal failure was administrative and infrastructural neglect. For decades, tram routes were increasingly mixed with chaotic vehicular traffic, track maintenance deteriorated, route rationalisation remained absent, modern rolling stock was not introduced at scale, signal priority systems were ignored and road planning overwhelmingly prioritised automobiles. Any transport system deprived of institutional support will decline. Yet tram critics often compare neglected Kolkata trams with modern buses or metro systems while ignoring the fact that world-class tram systems operate on, segregated lanes,

signal priority, dedicated medians and carefully integrated urban design frameworks. The lesson from Europe is unequivocal – Trams succeed when cities decide they should succeed.

Successful Tram Cities in Congested Urban Environments

A frequent argument raised against trams in Kolkata is congestion. Yet some of the world's most congested historic cities operate extraordinarily successful tram systems.

Prague : Narrow medieval streets coexist with dense tram operations carrying enormous passenger volumes daily.

Budapest : The city's tram routes along the Danube are among the busiest in Europe and form the backbone of surface transit.

Istanbul : Historic districts with extreme congestion successfully use modern tram corridors integrated with metro and ferry systems.

Melbourne : Possesses the world's largest operational tram network and demonstrates how trams can remain relevant even in modern metropolitan traffic conditions.

Zurich : Consistently ranked among cities with the world's finest public transport systems, where trams dominate urban surface mobility.

Barcelona : Uses modern catenary-free tram technology integrated with sustainable urban redevelopment.

These examples collectively demolish the simplistic notion that trams are incompatible with dense urban environments. In reality, trams thrive precisely in dense cities where excessive private vehicle growth becomes unsustainable.

The Environmental Imperative

Kolkata today suffers from rising vehicular congestion, deteriorating air quality, noise pollution, fossil fuel dependence, shrinking pedestrian comfort and increasing urban heat stress. In such a scenario, dismantling an electrified zero-tailpipe-emission transport system appears deeply paradoxical. Modern tramways consume less energy per passenger kilometre, reduce road emissions, encourage

modal shift away from cars and support climate-resilient urbanism. Even contemporary debates in Kolkata increasingly recognise that trams remain environmentally valuable, if properly modernised and integrated into a broader transport policy. At a time when the world speaks of carbon neutrality and sustainable mobility, Kolkata already possesses a foundational green transport infrastructure awaiting revival.

Heritage Is Not the Opposite of Modernity

One of the most intellectually impoverished misconceptions in Indian planning discourse is the belief that heritage and modernity are mutually exclusive. The world's greatest cities prove precisely the opposite. Prague, Vienna and Amsterdam modernised its trams without dismantling or abandoning them. Then why should Kolkata alone imagine that progress demands destruction?

The tram is not an obstacle to modernity. The tram can become the very symbol of Kolkata's modernity. A fully redesigned tram ecosystem could include air-conditioned low-floor tramcars, smart ticketing integration, unified metro-tram mobility cards, dedicated landscaped corridors, multimodal interchange hubs, tourism circuits, riverfront tram boulevards, pedestrian-friendly tram avenues and transit-oriented urban renewal. Such transformation would elevate Kolkata into a rare global category – a city where heritage infrastructure becomes the foundation of future sustainability.

Likewise, one of the most troubling aspects of the contemporary discourse surrounding Kolkata's tramways is the growing tendency to redefine 'preservation' in increasingly superficial and symbolic terms. As operational tram routes continue shrinking, depots disappear, tracks vanish beneath asphalt and concrete with regular commuter services on decline, a parallel narrative often emerges claiming that the tram heritage of Kolkata is nevertheless being 'protected' through museum projects, decorative tramcars, occasional ceremonial rides, café trams, tourism-oriented short loops or static heritage displays.

At first glance, such initiatives may appear culturally sensitive and well-intentioned. But beneath this carefully curated symbolism lies a deeply uncomfortable reality - a transport system cannot truly survive if it is separated from the everyday life of the city it once served. A tram preserved only as a museum object is no longer a living tramway system. It becomes an artefact, a relic, an urban fossil. And therein lies the profound difference between genuine preservation and token preservation. True urban heritage does not survive solely through static conservation of machinery or architecture. Heritage survives through continuity of function, rhythm, relevance and public interaction.

The greatness of Kolkata's tramways lies not merely in the age of the rolling stock or the antiquity of the tracks. Their true significance lies in the fact that for generations they remained woven into the daily movement of the city itself. Students travelled by tram, office workers commuted by tram, markets awakened beside tramlines, neighbourhood rhythms evolved around tram corridors – entire urban memories accumulated through ordinary journeys conducted over decades. This continuity transformed the tram from a mere transport mechanism into a cultural ecosystem. To reduce such a living system into occasional nostalgia-oriented exhibitions is therefore not preservation in its truest sense.

Across many cities of the world, failed heritage policies have often followed a predictable pattern. First, authorities gradually weaken operational systems through neglect. Then routes shrink. Services deteriorate. Public confidence declines. Eventually, the system is declared 'economically unviable.' Finally, a symbolic fragment is preserved ceremonially to soften public criticism. A single heritage tramcar is restored. A short demonstration line survives. A tourism circuit is announced. Photographs are taken as souvenirs. The city congratulates itself for 'saving heritage.' Meanwhile, the real network disappears. This phenomenon may be described as *decorative preservation* — the transformation of functional infrastructure into symbolic urban ornamentation stripped of practical relevance. The danger of this approach is immense because it creates the illusion of conservation while simultaneously legitimising systemic dismantling. The tram survives visually but dies functionally.

A Vision for the Future

The true question before Kolkata is not whether trams belong to the past. The real question is whether Kolkata possesses the imagination to integrate its past into its future. A visionary urban transport strategy for Kolkata could realistically include metro corridors for rapid long-distance mobility, modernised tram networks for surface connectivity, buses for feeder integration, pedestrianisation around tram boulevards, cycling infrastructure, river transport integration and unified smart mobility systems. In such a framework, trams would not compete with metros. They would complement each other. Together, they could fundamentally redefine public mobility in Kolkata. The result would be cleaner air, quieter streets, lower fossil fuel dependence, enhanced tourism, improved urban aesthetics and a far more humane cityscape.

Modern tram engineering has evolved dramatically. Today's tram systems incorporate low-floor accessibility, regenerative braking, AI-assisted safety systems, energy-efficient propulsion, silent bogie technology, articulated high-capacity coaches, smart signalling integration and even wire-free operation in heritage zones. Companies now manufacture aesthetically elegant rolling stocks capable of transforming entire urban boulevards into environmentally sustainable transit corridors. Imagine such vehicles traversing through the Red Road, College Street, Esplanade, Ballygunge, Gariahat, Tollygunge, Kalighat, Shyambazar, Khidirpur, Rajabazar or the riverfront corridors of Kolkata. The transformation would not merely be functional. It would be civilisational.

History occasionally presents cities with a final opportunity to choose wisdom over short-sightedness. Kolkata stands at such a crossroad today. To abandon the tramways entirely would not merely signify the closure of a transport system but it would represent the surrender of sustainable foresight, the destruction of inherited infrastructure, the abandonment of ecological advantage and the severing of one of the deepest emotional links between Kolkata and its own urban memory.

It's an irony that cities around the world are rebuilding what Kolkata already possesses!

The AC EMU Paradigm

Anamitra Bose

'Air-conditioned Local Train' – a proportion which seemed nothing less than an antithesis, just a few years ago, is no more a day dream. From the late 2010s to the early 2020s, it became a reality that offered a comfortable means for commute in the suburban sector. The face of suburban travel underwent a major facelift and got a major boost with the introduction of air-conditioned rakes. Air-conditioning at last got out of the fold of the metro rail services to get introduced in suburban communication dawning a new chapter in the annals of Indian Railways. Quite a large part of daily commuters was ready to pay for the service to and from their workplaces to escape the ever-escalating temperatures. The fare chart of the monthly and quarterly tickets offers a fare structure that is just about affordable to get a good patronage for the air-conditioned services on offer. The first AC local train of India quite expectedly took to the tracks in the Mumbai suburban area and that too in Western Railway on the Christmas Day of 2017. The Made-in-India rake commenced offered services between Virar and Church Gate in its inaugural run. The gradual success rubbed off on the immediate neighbor in Central Railway who also started their AC local services on 30th January 2020 between Thane and Panvel on trans-harbour line.

After almost 8 years of Mumbai enjoying of AC EMU travel, the metro cities of Chennai and Kolkata whose British Era old public transit have played their part finally got their own AC EMU rakes in 2025. In this article, we will gradually sneak peek into some of the technical aspects of the air-conditioned EMU rakes.

The EMU rakes of India are mostly manufactured and assembled at the Integral Coach Factory (ICF), apart from some private players like TWL (Titagarh Rail Systems) and erstwhile Jessop & Company. But since when 3-Phase EMUs were getting introduced, it was the one and only ICF Chennai who supplied the rakes to different zones of IR. For the case of AC EMUs also, there was no exception. ICF along with sub-contractors like Medha Servo Drives or BHEL,

Cover photo courtesy: Arkopal Sarkar

manufactured the AC EMU rakes. The rakes are basically based upon the three-phase IGBT-based traction drive technology which is the mainstay of most of EMU rakes in India now.

An AC EMU is basically a EMU trainset designed to operate in high density suburban route centered around a busy metropolis and its huge catchment area serving a large passenger base. Therefore, it should be lightweight, capable of quick acceleration, spacious and well-ventilated. So, what is a Trainset? A trainset is a set of train coaches coupled mechanically and electrically with distributed motive power equipped with driving cab at both the ends. Unlike a locomotive powered conventional train which is powered at one end and can be driven in one direction only, the trainset can be operated from both ends without the requirement of a loco for reversal. The most amazing and interesting aspect of every trainset is the formation which is unique with every manufacturer and purpose. A trainset is completed by assembling various categories of coaches in a particular formation. These categories are mainly the Motor Coaches (the coaches having the motors installed in it and can haul rest of the formation) and the Trailer coaches (the coaches that are non-powered). The number of motor coaches in a trainset determines the acceleration, speed, tractive effort and efficiency. The number of motor coaches divided by the total number of coaches in a trainset gives the percentage of powering for the same.

:: MECHANICAL TECHSPEC ::

The mechanical part of any coach of any rolling stock is broadly divided into two parts – Shell and Bogies. The Shell is the upper part of the rolling stock including the body, equipment onboard and the passenger area. The bogie is lower part consisting of underframe, wheels and traction motors, axles etc. The bogies decide the ride quality, top speed, oscillations of the rolling stock while the shell ensures safety and security of the onboard equipment and payload.

The bogie is bolster-less designed and is based on a Y-shaped frame. Bolster is the main part through which the car-body and bogie are connected. For the sake of better ride quality, an advanced bolster-less bogie design has been adopted. Every train bogie has two types of suspensions — primary and secondary. Here, the Primary suspension consists of Coil Springs with control arm and the Secondary suspension is provided by Air springs which are proved to give excellent stability for the coaches. For more-jerk free ride, 3 types of dampers had been utilized – horizontal, vertical and YAW. YAW dampers are used in aviation industry especially in airplane blades for reducing tendencies of oscillations. Apart from ride quality, wheel mounted disc brakes have been installed in the bogie for better braking and lesser maintenance.

The body shell is made up of stainless steel for being lightweight than mild steel bodies and also is much stronger.

:: ELECTRICAL EXCELLENCE ::

The Motor coach has the equipment needed for movement of the train and all other trailer coaches have different equipment to run the motor or the 'engine'. The converters driving the traction motors, the mastermind that controls them, forms the propulsion of the TrainSet which acts as the heart that keeps it moving.

The traction of the TrainSet, considered as the blood running through our veins, comes from the secondary winding of the Main Transformer which is installed underslung in the Trailer Car. The Traction Transformer has one Primary winding which interfaces the 25Kv AC, coming from the pantograph. The secondary coil side has four Traction windings for four traction converters and two auxiliary windings. Each transformer in a Trailer Car feeds two adjacent motor cars. The Transformer Primary winding is connected to the 25KV overhead supply through the main VCB (Vacuum Circuit Breaker). The transformer secondary winding has four traction windings rated at 625KVA each and two auxiliary windings rated at 234 kVA each. Transformer tank also holds series resonant choke (100Hz filter choke). The transformer is oil cooled with the help of oil pump and blowers.

Motor Car : Motor Car is a powered vehicle with one traction motor driving each axle. The motor coach consists of smaller shunting cab (including a shunting desk), High Tension (HT) compartment and passenger saloon area.

Trailer Car : Trailer car is a non-powered vehicle with only a passenger saloon area. The passenger saloon area includes lights, fans, emergency lights, air handling unit and passenger information system consisting of LED displays and speakers for announcements.

The HT compartment consists of traction converter, auxiliary converter, electrical cabinet and other ancillary equipment. On the roof of the HT compartment, there is a pantograph, vacuum circuit breaker and other ancillary equipment. Traction transformer is an underslung mounted on the motor coach. The passenger saloon area is similar to the trailer coach except for the space occupied by shunting cab and HT compartment.

There is a forced air-cooled traction converter cubicle (Line and Traction Converter-LTC) per motor coach. Each traction converter cubicle consists of two-line converters, DC link and two traction inverters.

Each LTC has three basic parts – Line Converter, DC Link Stage and the Traction Converter. The line converter has input from the traction winding from the transformer as single-phase AC and the IGBT switches, forming a full-bridge rectifier converts it into a constant DC voltage. IGBT is modern power-electronic device which can be fully controlled by gate current giving maximum efficiency. Its faster switching speeds enables motors to give maximum acceleration. The DC link stage is an intermediate stage and consists of a DC link capacitor, earth leak detection circuit and brake chopper resistor. As for brake chopper resistor, it is a safety device to protect the LTC from over-voltage due to sudden fluctuations and non-reception from OHE. Both the brake chopper resistors of tow LTCs are installed in a single cubicle. The traction converter acts as an inverter using IGBTs to produce 3-phase VVVF traction required for Traction Motors. VVVF (Variable Voltage Variable Frequency) technology is a counterpart of 3-phase propulsion and it refers to variation of both voltage and frequency of 3-phase AC to control the torque and speed of the traction motors.

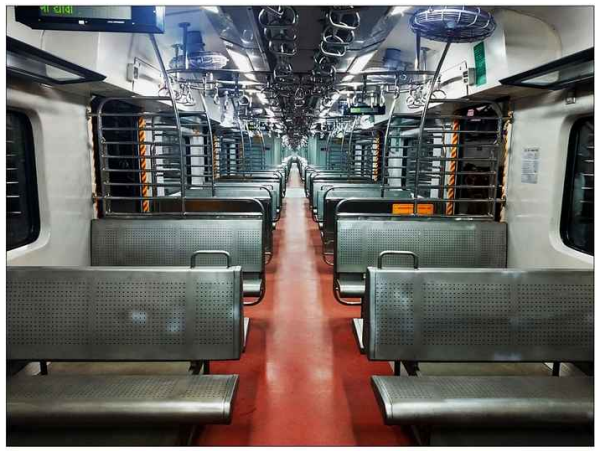
For two LTCs, there is one LTCU (Line and Traction Control

Unit) which is the mini-brain driving the LTCs of the Trainset by sending commands to the IGBTs of the converter, after receiving demand of traction or braking from the drivers' cab. It is connected to Main Control Unit (MCU) through Controller Area Network (CAN) interface.

Leaving aside the traction, the other needs of voltage is met by the Auxiliary Converters in the Trailer Coach. The name itself, comes from the fact that it feeds the auxiliary loads i.e., Cooling of coaches, cab, lights, blowers, battery charging etc. The Auxiliary converter also has similar stages of line-converter, DC-Link and Inverter. The line-converter receives single-phase AC input from the two auxiliary windings of the secondary coil. The Auxiliary Converter is a Pulse with Modulation (PWM)-based converter having IGBT as the active device. The auxiliary loads are of two types – 415V 3ph AC and 110V DC. The auxiliary power supply segment has two main components: the Auxiliary Converter Unit (ACU) and Battery Charger System (BCS). The ACU has Auxiliary Converter-1, Auxiliary Converter-2 and DC Converter modules. The AC-1 and AC-2 module consists of Line Converter, DC Link, Inverters and Converter Control section. Both the AC-1 and AC-2 is IGBT-based PWM converter, pulses controlled by Digital Signal Processors of the Control section. Both these sections supply 3ph 415V AC outputs. From the DC link stage of AC-2, a DC converter generates 110V DC voltage. Significant loads which consume 415V AC 3ph include Roof Mounted AC Package Unit (RMPU) signifying AC of coaches, Cab AC, blower section etc. Loads fed by 110V DC are Battery Charger Units, Lights and Charging sockets, Headlamps and other lamps of the trainset and the Passenger Information System. The control section communicates to the TCMS by CAN communication.

Brake Blending : Following are the different types of brake systems present in AC EMU.

i. Regenerative brake or Electrodynamic brake
ii. Electro-pneumatic brake
iii. Pneumatic brake or auto brake
iv. Parking brake



Auto brake is a pneumatic brake and is controlled by auto brake handle provided in DTC. Whenever auto brake handle is moved, BP pressure drops and equivalent differential pressure is developed in brake cylinder by triple valve of BP unit.

Service brake is a combination or blend of ED, that is, Electrodynamic or regeneration and EP or Electro-pneumatic braking. Based on MCH brake command requested by motorman, CCU calculates total required braking effort and this is distributed among various basic units for final brake application.

Train Control & Management System (TCMS) : The entire trainset is driven by a common software called Train Control and Management System (TCMS). It acts as whole train bus and connects all of the coaches to the driver's desk. The TCMS is mainly an Ethernet connection to all the main nodes or hubs, where from CAN communication or RS-485 modes of communication connect other control units or nodes. On one hand, the TCMS directs the MCU (Main Control Unit) in the MC to deliver the required tractive or braking efforts which would be communicated to LTCU through CAN while on the other hand, Passenger Information System door controls, RMPU controls are also handled by TCMS. ACU (Auxiliary Converter Control Unit) is also communicated through TCMS.

Various subsystems of TCMS are as follows –

- Central Control Unit (CCU) : CCU acts as complete master control for entire EMU formation. All the control related information through dual Wired Train Bus (WTB) is distributed to other coaches control system. It functions include Pantograph and VCB control, TE/BE control, holding brake and rollback control, cruise control, neutral section, DDU communication, TCN communication etc.
- Driver Display Unit (DDU) : Driver display unit, DDU, is based on TFT-LCD and is a human-machine interface through which user interacts with the system. There are two displays in the train, one in each end driver cab of

DTC. Display module communicates with any of the central control units through RS-485 in one cab. It provides user with the necessary data of what exactly is going on within the system and it is a user-friendly, menu-driven operation.

- Frequency Generator Unit (FGU) : Frequency Generator unit generates a frequency signal corresponding to drive or brake command given by Loco pilot. This frequency signal runs as HWDL signal for CCU, MCU, VCU of all basic units.
- Main Control Unit (MCU) : Main Control Unit, is used as a control master for each basic unit in EMU formation. MCU performs all control-related calculations on the basis of data received from CCU and data read through digital and analog inputs for the particular basic unit. Main Control Unit has a CPU module that controls the complete system operation based on signals, data, commands received from CCU, monitoring conditions of various equipment, etc. MCU controls as a control master for particular basic unit. It works on the command received from CCU through wired train bus or wired train lines. Mainly, it performs the following functions – shunting disk integration, communication with traction converter and line converters, auxiliary converter interface, TEBE calculation, brake blending, EP brake control, holding brake control, rollback detection, pantograph and PCB control, wheel slip and slide control, load weighing measurement, powered wheel diameter calibration, event recording.
- Passenger Comfort Unit (PCU).

:: TYPES OF AIR-CONDITIONED EMU BASED UPON TRACTION EQUIPMENT ::

Based upon traction equipment placement, there are basically two categories of AC EMUs – Underslung and Onboard. To define them, Underslung AC EMU means EMU rakes with traction equipment like Line and Traction Converters and Traction Motors mounted below the underframe of the coach and passenger salon can be utilized within the full space of Motor Car. On the other hand, onboard AC EMU have the traction equipment placed inside the Motor Coach within the shell area, just like other non-AC regular 3-phase EMUs.

- Types of coaches: For Underslung EMU, there are four

types of coaches – Driving Motor Car (DMC), Motor Car (MC), Trailer Car (TC) and Non-Driving Motor Car (NDMC).

For onboard EMU, there are three types of coaches – Driving Motor Car (DMC), Trailer Car (TC) and Non-Driving Motor Car (NDMC).

- No of coaches per Basic Unit (BU): There are 4 coaches per Basic Unit for underslung EMU as DMC/NDMC-TC-MC-TC. For onboard EMU, the configuration for Basic Unit of 3 coaches as DMC/NDMC-TC-TC.
- Percentage of motoring : For underslung EMU, the motoring percentage is 50% whereas for onboard EMU it is 33%.
- Gangway concept is present for both of them unlike non-AC EMUs.
- Shunting Desk : For underslung EMU, shunting joystick is present instead of shunting desk. Shunting desk is present in NDMC for onboard EMU.
- RMPUs are present for both AC rakes which draw power from Auxiliary converters connected to secondary winding of the traction transformer.
- For onboard AC EMU, MCU is basic unit level master controller in TCMS while in underslung EMUs, EPCU (Electronic Propulsion Control Unit) is the one.
- Number of LTCs per Basic Unit : In underslung EMU, there are 4 LTCs per basic unit, while onboard EMU has 1 LTC per basic unit.
- Number of Aux. converters in Basic Unit : In Underslung EMU, there are 1 Auxiliary converter in each Basic Unit (in TC). In Onboard EMU, there are 2 auxiliary converters in each Basic Unit (DMC/NDMC).
- LTC Rating : 546 KVA for underslung EMU and 1300 kVA for onboard AC EMU.
- Main Transformer Rating : 2880 kVA for underslung EMU and 1875 kVA for onboard AC EMU.
- For underslung EMU, pantograph is present in every TC while for onboard AC EMU, pantographs are present for every DMC/NDMC.
- The EMUs are driven by 3-phase AC asynchronous traction motors of rating 268 kW for underslung EMU and 352 kW for onboard AC EMU.

:: VARIANTS OF AC EMUS OPERATIONAL IN IR ::

In Indian Railways, based upon the distribution of Underslung and On-board traction equipment and firms supplying the traction equipments, there are three types of AC EMUs in operation. M/s. Bharat Heavy Electricals Limited (BHEL) supplied On-Board (OB) propulsion-based AC EMU only while M/s. Medha Servo Drives supplied both Underslung (US) propulsion fitted AC EMU and On-board (OB) propulsion-based AC EMU. They are working in the different zones of IR as depicted below.

ZONE	MAKER'S NAME		ZONE	MAKER'S NAME	
	BHEL	MEDHA		BHEL	MEDHA
WR	7001-04	7101-02 (OB)	CR	7051-54	8051-53 (US)
	7005-08	8001-02 (US)		7055-58	8101-02 (OB)
	7009-12	8005-06 (OB)		7059-62	8054-56 (US)
	7013-16	--		7063-66	--
	7017-20	--		7067-70	--
	7021-25	--		7071-74	--
	7025-28	--		--	--
Total Holdings	10		Total Holdings	09	
ER	--	258017-18 (US)	SR	--	248836-37 (US)
	--	258301-02 (US)		--	--
Total Holdings	02		Total Holdings	01	

:: SALIENT FEATURES OF AC EMU ::

I. Air-conditioned passenger area and driver cabin with comfortable cooling by RMPUs.

II. Sealed gangways through the train (Within 6 coach for onboard EMU) and throughout 12 coaches for underslung EMU.

III. CCTV surveillance enhancing passenger security.

IV. Automatic Door System similar to metro rakes with Door Control Unit (DCU) controlling the opening and closing of the gates.

V. State-of-the-art three phase propulsion system ensuring faster acceleration and regenerative braking saving running costs.

VI. Stainless steel passenger seats for enhanced comfort.

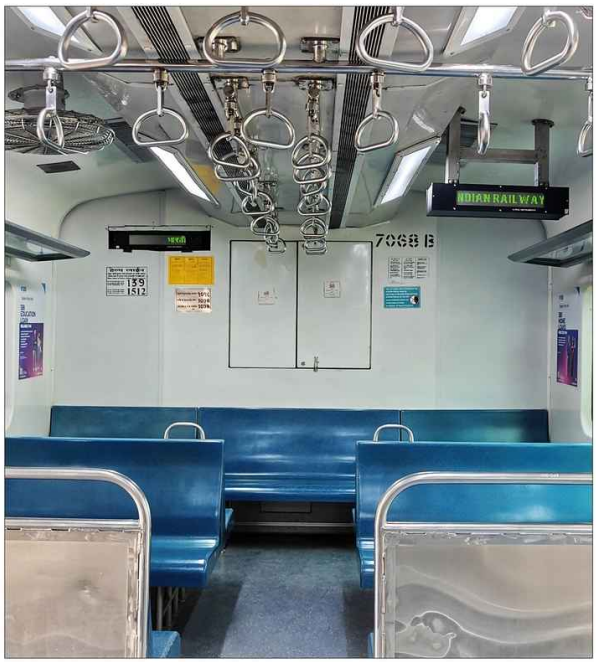
VII. Provision of sleek and large luggage racks.

VIII. Smart passenger information and display system driven by TCMS.

IX. Vande-Bharat like bogies ensuring smooth ride.

This was a virtual tour to the heart and soul of the new sensation of suburban commute in India – the AC EMUs. We hope the fares to be rationalized more to attract more patronage, popularity and gradual conversion of the fleet from non-AC to AC rakes for better travel experience in the metropolises of India as with soaring temperatures, AC Travel is no longer a luxury but a necessity. However, a fine balance must be maintained between AC and Non-AC Services to meet the demands of all and sundry for a more robust and lean transport system.

Acknowledgements :
1) Biswajit Shewlee from M/s. Medha Servo Drives
2) IRSEE documents

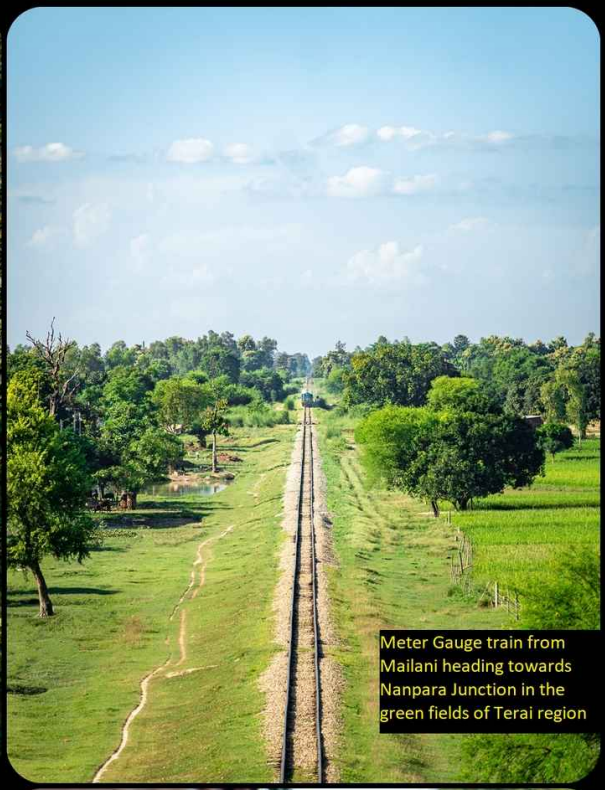


Meter Gauge Chronicles from the Terai

Featuring Shutter-arts of Saurabh Kumar

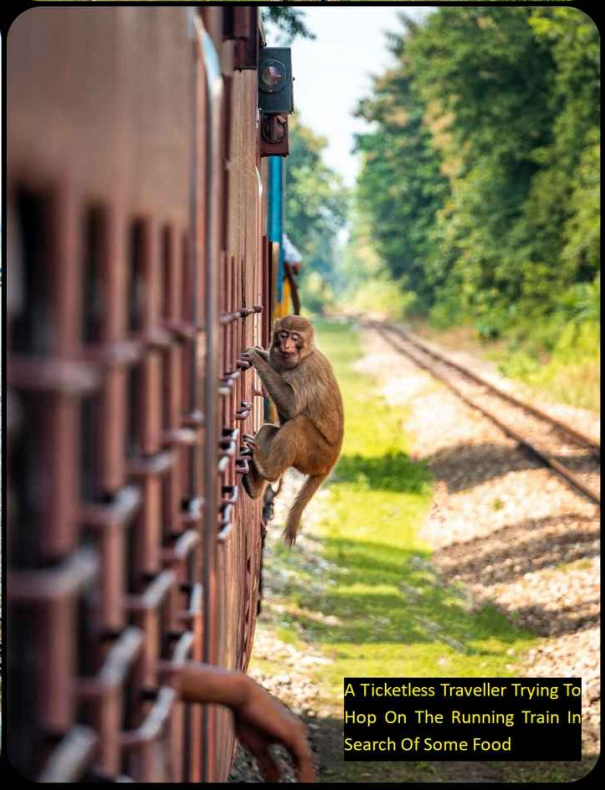
An edited from for turning imagination to reality, two Meter Gauge service from Nanpara junction, left towards Nepalgunj Road and right one towards Mailani, PS: This wasn't possible in reality until one train was late....

A Crossing Deep Inside The Katarnighat Wildlife Scanctuary

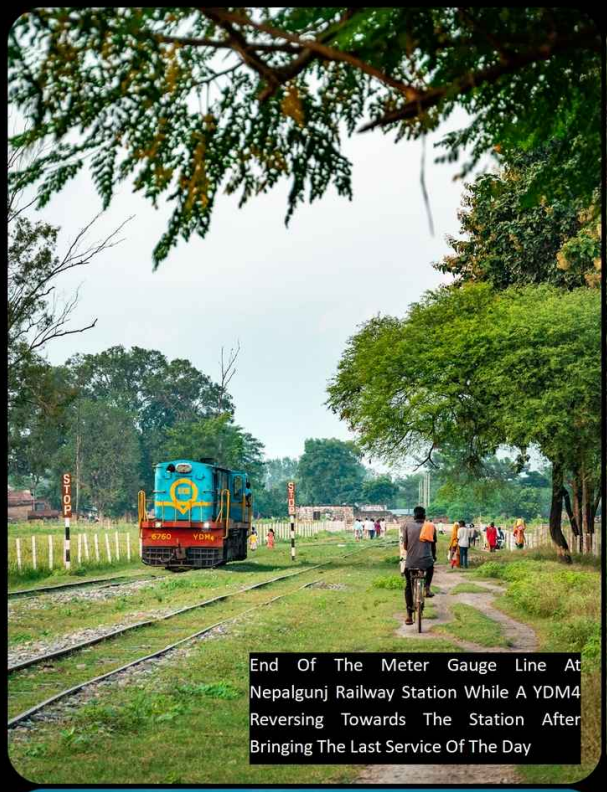


Meter Gauge train from Mailani heading towards Nanpara Junction in the green fields of Terai region

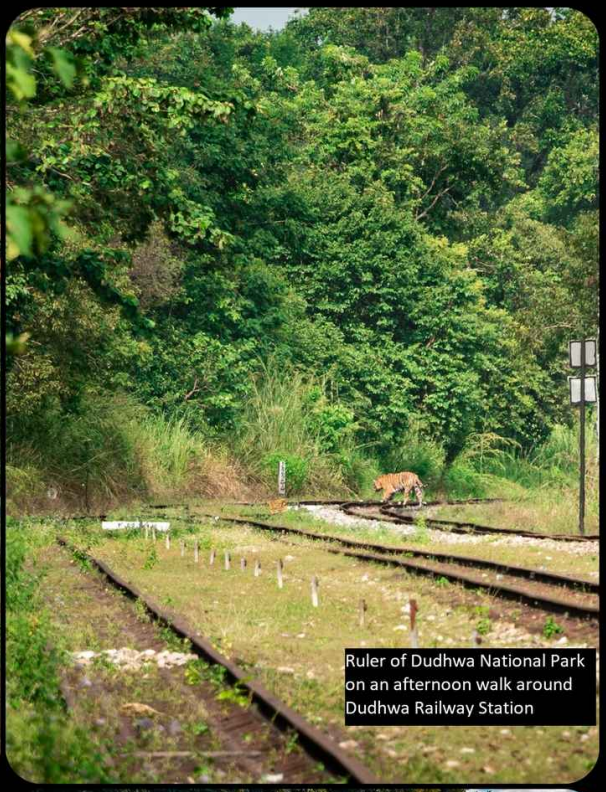
Mailani Bound Train crossing Kailashpuri Dam over the Ghagra River



A Ticketless Traveller Trying To Hop On The Running Train In Search Of Some Food

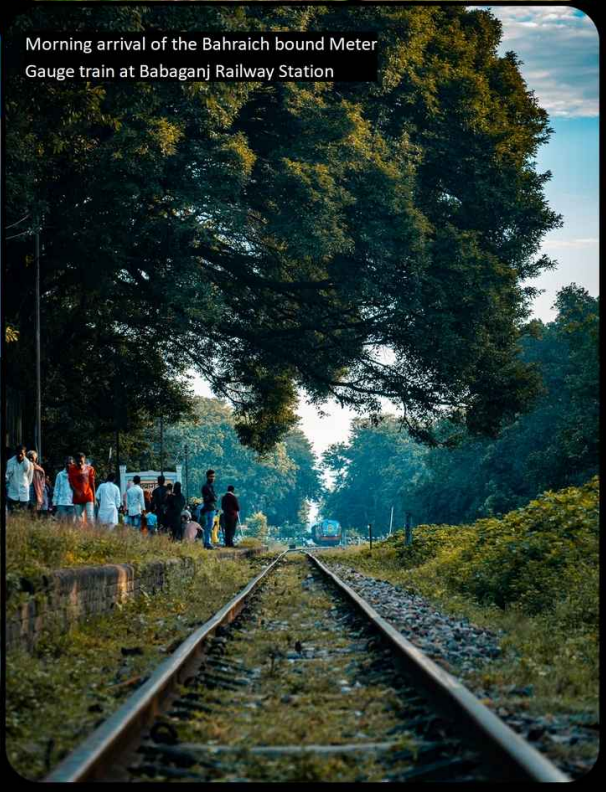


End Of The Meter Gauge Line At Nepalgunj Railway Station While A YDM4 Reversing Towards The Station After Bringing The Last Service Of The Day



Ruler of Dudhwa National Park on an afternoon walk around Dudhwa Railway Station

Morning Departure Of The Meter Gauge Train From The Erstwhile MG Nepalgunj Road Railway Station With Shivalik Ranges Of Himalayas In The Backdrop



Morning arrival of the Bahraich bound Meter Gauge train at Babaganj Railway Station

Bahraich Bound Service From Mailani Crossing Over Babai River

Not Everyone Loves the Railway

Tapan Pal

-1-

"If God had intended us to fly, he'd have never given us railways." - Michael Flanders.

A fan, sometimes also called aficionado or supporter, is a person who is enthusiastically devoted to something, such as a band, a sports team or entertainer. We are railfans; naturally we are obsessive about our love for everything rail related – its technology, finance, demography, network, food, history and many more. We do combine our interest with other hobbies like photography and videography, railway modelling, studying railroad history and participating in railway station and rolling stock preservation efforts. At its core, railfanning is an academic hobby. It explores the effect of the railroad system on our society, literature, economy, demography, politics; and everything. An inquisitive mind and an analytical brain are the sine qua non to become a railfan.

Globally, railfanning is a growing cult. With the arrival of social media and cell set cameras, it had seen an exponential growth. The hobby is referenced in Edith Nesbit's 1905 children's book 'The Railway Children'. 'Anatomy of a Railfan' by Byron Babbish is another. This article begins with a quote from Michael Henry Flanders (1 March 1922 – 14 April 1975), an English actor, broadcaster, writer and performer of comic songs best known for his song 'The Slow Train' - a popular comedic elegy written as a reaction to the rapid decline and closure of rural passenger lines and stations. The song hauntingly lists various disappearing rural and branch-line stations as a satirical but affectionate tribute to the romance of slow rail travel.

But the society at large, in India at least, does not see the hobby in good light. "What is there to see in a train"; "So what for you if the Narrow-Gauge connectivity between Katwa and Balgona gets shut", "Do you get paid by the Railways for your work" – are some of the mindless questions that you need to face every day from your friends, colleagues and relatives, ridiculing your interest. Our social tapestry is rich with bizarre jokes about railfans like 'if you see something white moving by the track in summer, be sure it is either cattle or a railfan with a white cap or in Monkey Hill (the railway station on Bhor Ghat that serves as technical halt to check brakes. Earlier a reversing station was there between Monkey Hill and Khandala) earlier there were a hundred monkeys and two railfans; and now there are two

Cover Photo Courtesy: Somsubhra Das

monkeys and a hundred railfans – proving Darwin correct'. "I think the discomfort that some people feel in going to the monkey cages at the zoo is a warning sign." — Carl Sagan, *The Varieties of Scientific Experience : A Personal View of the Search for God.*

But we do not bother. We are passionate about our obsessive love about the Railways. But we need to remember Newton's Third Law that for every action (force) in nature, there is an equal and opposite reaction. Forces come in pairs - they never exist in isolation. You cannot push an object without it pushing back on you.

Likewise, if a hundred of us do love the Railways, be sure that there are at least a hundred people who hate Railways. And you can trust my words, as I have seen enough of them in a lifetime. I was a Daily Commuter of Sealdah Section of Eastern Railway 1975 – 1981, 1992 – 1994 and 2002 – 2019. In India, Railways is seen as a fetish of authority. So, people vent their wrath on rail property and disrupt it operations even when the associated issue is totally non rail related; like monsoon waterlogging or bad roads. In my youth, I used to think it to be an Indian trait for historical reasons – as the British laid railroad in India and well up to The First World War (28 July 1914 – 11 November 1918), its manpower was totally British. Demographic factors like 750,000 to 880,000 military deaths in United Kingdom (1914 - 1918) and death of around 228,000 Britons in Spanish Flu pandemic of 1918–1919 resulted into a massive loss of working-age men. The 1921 Census of England and Wales recorded a total population of around 37.9 million, indicating an increase of just 5% since 1911, which was the lowest intercensal growth rate in a century. This depletion gave rise to the term "Lost Generation" – coined by Gertrude Stein and popularized by Ernest M. Hemingway in using it as the epigraph for 'The Sun Also Rises' (1926). This somewhat compelled the Britishers to source their manpower from India itself. Initially, it was not ethnic Indians but Anglo-Indians – a community with a distinct cultural identity – primarily for their proficiency in English and secondarily for their unflinching loyalty to the Crown. Mr. J.L. Singh, who was an apprentice at Jamalpur Workshop in 1966, told me that in those days most of the supervisory personnel were Anglo Indians. But as I grow older, I realized that the phenomenon is not exclusively Indian, but global in nature.

But before we spread our sight to faraway countries to see their opposition to railroading, let us see closer, as "A journey of a thousand miles begins with a single step." When railways were introduced in colonial India, they met stiff social resistance. When Howrah Bally Hooghly line was opened, Hindu pundits passed a futwa that people must not travel by them as in such a fast-moving mode of transportation, heads of the travelers will be crushed by the friction with wind. There are some blood curdling stories of how sahib engineers, failing repeatedly to erect a pillar for a rail bridge, sacrificed a Brahmin boy at the base of that pillar. It was also pleaded that Railways is a way of tweaking our caste system, as people are made to sit side by side and

made to drink water from the same source at the station irrespective of their castes; making it a tool to spread Christianity.

It is aam janata's reluctance to buy tickets for the Service availed that killed the Narrow Gauge in Bengal Plainland, like Howrah-Amta Light Railway (49.5 miles) with a branch to Champadanga, Howrah-Seakhala Light Railway (approx. 19 miles), Kalighat-Falta Railway (27-mile), Ahmedpur-Katwa Railway (approx. 32 miles), Burdwan-Katwa Railway (33-mile), Bankura-Damodar Railway (75-mile) and Tarakeswar-Magra-Tribeni Line with a branch to Jamalpur. Only Cooch Behar State Railway's Gitaldaha to Jayanti Line was shut in 1986 for non-financial issues; it was shut when the Buxa region was declared a Tiger Reserve. We lost diversity, we lost heritage – but none bothered about the philistinism.

Kolkata Police had refused No Objection Certificates (NOCs) to the Rail Vikas Nigam Limited (RVNL) to implement traffic diversions for girder and viaduct launching to bridge the 366-meter missing viaduct gap for the New Garia-Airport Metro (Orange Line) over the Chingrighata Crossing. They delayed the permit citing concerns over festive season, school leaving examinations, monsoon and many others – fearing massive traffic jams. When Rail Vikas Nigam Limited moved Calcutta High Court and the High Court asked the State Government to cooperate, the State Government – a democratically elected government "for the people by the people and of the people" – moved the Supreme Court spending taxpayers' money to stall the work. Supreme Court in March severely criticized the state government for its 'obstinate' stalling of the project, labeling it a dereliction of constitutional duties and refused to intervene. Change of government made Kolkata Police ultimately granting the necessary 60-hour traffic blocks. Rail Vikas Nigam Limited successfully completed the long-delayed girder launching work at the Chingrighata crossing in May 2026 in a mere 120 hours only.

And this example is not solitary. I can give you several examples like Tarakeshwar-Bishnupur New Line, Deshpran-Nandigram Line, Balurghat-Hilli Line, Khana Junction-Bowaichandi Line, Khatra-Mukutmanipur Line, Siuri-Prantik Line, Canning-Bangankhali Line, Amghata-Nabadwip Dham Line, Chapapukur-Hasnabad Track Doubling, Kalyani-Ranaghat Track Tripling, EDFC in WB; Metro Lines like Joka-Esplanade, New Garia-Airport. Noapara-Barasat, Baranagar-Barrackpore where rail projects were stalled for land acquisition and lack of cooperation between the central and state governments manifesting in prolonged NOCs delays, disputes over pipeline alignments and pending eviction of unauthorized structures like Bidhan Chandra Roy Market.

And not to forget how the environmental terrorists to whom one tree matters more than millions of humans commuting in an environment friendly way had nearly stalled the Joka BBD Bag Metro Project by obsessive litigations. The Supreme Court ultimately ruled that no trees can be felled or

transplanted for the Kolkata Metro Project without the permission of the Central Empowered Committee (CEC).

Discontent is the first step in the progress of a man or a nation. — Oscar Wilde.

-2-

"This railway is the most absurd scheme that ever entered into the head of a man to conceive. Mr. Stephenson never had a plan — I do not believe he is capable of making one." - Edward Hall Alderson (Counsel opposing the Liverpool & Manchester Railway, 1825).

The mindset is endemic and pandemic. Over the ages, Railways is perceived as an evil measure that destroys local landscape, culture and flora and fauna. Railroad development and heritage often seem to be mutually exclusive ideas. The Old Indian Railways Act, 1890 authorized Railways to change topography if required for laying tracks. Kolkata Metro's Blue Line's southern extended part came up on Tolly Nullah – a 28 KM tidal creek known as Adi Ganga that was the original main flow of the Hooghly River between the 15th and 17th centuries before naturally silting up - on that provision, blocking natural drainage of the city. Indian Railways Act 1989 somewhat rectified that. Going back to history, post silting up, the Hooghly River had changed its course what is now known as Bidyadhari River. Its present course originates near Haringhata in Nadia district and flows through Deganga, Habra and Barasat areas of North 24 Parganas before joining the Raimangal River in the Sundarbans. The name Tolly Nullah has a British connection as well. Colonel William Tolly (1715–1784) was an officer of the British East India Company. Like many of his colleagues, he ran a thriving business of paddy in the name of his wife Anna Maria Tolly. To ease the movements of large cargo boats (Mohajoni Noukas like Chhot, Khadiya Kisti, Goyna etc.) he excavated the silted creek in 1777 to connect the Hooghly River with the Bidyadhari River. Since then, the lower part – Garia to Khidirpur – of it came to be known as Tolly's Nullah. It currently serves primarily as an urban drainage artery.

The Sealdah Dumdum Junction Line was constructed in the 1850s runs for over 5½ KMs on elevated surface, having plenty of underpasses primarily to cross meandering canals, and also to provide for traffic needs of a widening city. It hindered the natural flow of rainwater (Calcutta's topography slopes from West to East putting the monsoon water to East Calcutta wetlands which is a RAMSAR (The Convention on Wetlands of International Importance, is an international treaty for the conservation and sustainable utilizations of wetlands) site. The blocked natural drainage, exacerbating waterlogging, resulted into outbreak of malaria.

Lahore Multan Railway Line (the original Multan to Lahore and Amritsar Line was one of the first major railway projects in the region, initially constructed and completed in 1861 by the Punjab Railway) was being built in late Nineteenth Century, with wagons of old bricks being removed from old mounds to be used as ballasts. Those were of good quality and people thought they are of recent origin. In the winter of 1911 –1912, D R Bhandarkar of the Archeological Survey of India decided to visit one such site called Mohenjo-daro. The rest is history.

Elders still blame the Railways for The Bengal Famine of 1943 as then the railway infrastructure in India was utilized primarily to support the Allied war effort and military logistics rather than the distribution of domestic food supplies. Administration's 'denial policy' included the confiscation and destruction of boats that could have been used for local transportation, forcing a heavy reliance on the heavily burdened rail system.

Since the invention of railroading, people are trying hard to malign it and discourage its spread. A brand-new coast to coast line persuaded British Columbia to join the Canadian Federation on July 20, 1871, becoming the country's sixth province. The push for British Columbia to enter Confederation was driven by several key factors like Financial Relief (Canada agreed to absorb the colony's significant public debt, a major issue following the decline of the Gold Rush), American Threat (fearing annexation by the United States—especially following the American purchase of Alaska in 1867; joining the Dominion of Canada offered protection and geopolitical security); and Political Representation (as part of the Terms of Union, the region was granted three seats in the Canadian Senate and six in the House of Commons) – but the prime mover was 'The Railway Promise' - the Federal Government promised to build a transcontinental railway connecting British Columbia to the rest of Canada within 10 years.

Tibetans complain that the Qinghai-Xizang Railway completes their enslavement. The Qinghai–Tibet railway or Qingzang railway is a high-elevation railway line in China between Xining, Qinghai Province, and Lhasa. With over 960 KM of track being more than 4,000 m above sea level, it is the highest railway line in the world. Construction began on the 815 KM section between Xining and Golmud in 1958 and was completed in 1984; the remaining 1,142 KM from Golmud to Lhasa started construction in 2001 and opened in 2006, making it the first railway line in Tibet. Passenger trains run from Beijing, Chengdu, Chongqing, Guangzhou, Shanghai, Xining, and Lanzhou. It includes the Tanggula Pass, the highest point on a railway in the world at 5,072 m above sea level, and Tanggula railway station at 5,068 m (16,627 ft) is the world's highest railway station. The 1,338 m long Fenghuoshan tunnel is the highest rail tunnel in the world at 4,905 m above sea level.

On a lighter note, 53 Up 54 Down Triweekly Sealdah Malda Town Sealdah Gour Express was introduced on 20th April 1980. It revolutionized Malda's connectivity with the outer world, but the local people of Malda were not impressed. When I went there in 1981 to serve as a rookie bureaucrat, public sentiment was that it drains Malda of its vegetables, fish and mango for Calcuttan *baboos* and prices skyrocketed in local market as products are going to Calcutta.

Queen Victoria's uncle, the Duke of Cumberland went on a public blitzkrieg against railroading saying that the Great Western Railway's rumblings would disturb Eton schoolboys while trains would enable radicals easily and cheaply to hop from place to place. The Great Western Railway (GWR) was a British railway company that linked London with the southwest, west and West Midlands of England and most of Wales. It was founded in 1833, received its enabling act of Parliament on 31 August 1835 and ran its first trains in 1838 with the initial route completed between London and Bristol in 1841. The GWR ("God's Wonderful Railway" as it took holidaying people to English and Bristol Channel resorts) chose a Broad Gauge of 7 ft (2,134 mm)—later slightly widened to 7 ft 1⁄4 in (2,140 mm); but converted to Standard Gauge later.

Lord Napier (Field Marshal Robert Cornelis Napier, 1st Baron Napier of Magdala, 6 December 1810 – 14 January 1890) led the expedition of 1868 against Emperor Tewodros II of Ethiopia as he was holding a number of Protestant missionaries and two British diplomats' hostage in his mountain capital of Magdala. He succeeded, and was made a Fellow of the Royal Society and a Freeman of the City of London. He was also elevated to the peerage as Baron Napier of Magdala on 11 July 1868 and granted an annuity for life. He was compelled to import forty-four elephants from India to run trains – if the provision carrying vehicles of the Army can be called so - in Ethiopia as his efforts faced teething troubles.

The Cape to Cairo Railway was largely based on the vision of Cecil Rhodes (Cecil John Rhodes 5 July 1853 – 26 March 1902) in an attempt to connect African colonies of the British Empire through a continuous railway line from Cape Town, South Africa to Cairo, Egypt. It would have been the largest and most important railway of the continent. The plan was initiated at the end of the 19th century, during Western European colonial rule. The British Empire possessed the political power to complete the Cape to Cairo Railway, but economics - including the Great Depression (1929–1939) prevented its completion before World War II. After World War II, the decolonization of Africa and the establishment of independent countries removed the colonial rationale for the project and increased the difficulties, effectively ending it. Thus died the dream of Cecil Rhodes, a British mining magnate and politician in southern Africa who served as Prime Minister of the Cape Colony from 1890 to 1896.

Nikolai Karlovich von Meck (28 April 1863 – 24 May 1929) was a Russian engineer and entrepreneur involved in the development of Russia during the first part of the Twentieth Century. He came from an old Baltic-German noble family. His father, Karl, was among the Russian Empire's first railroad builders after Russia's defeat in the Crimean War (16 October 1853 – 30 March 1856) motivated the Tsar to modernize.

After the October Revolution – or Counter Revolution depending on your outlook - in 1917 and nationalization of the Moscow–Kazan Railway in 1918, von Meck hoped that his expertise would be useful to the new regime. He outlined his ideas in economics and prospects for domestic rail transport in a series of books published between 1921 and 1927. He was ultimately hanged in the 1929 for improving the speed of trains. The prosecution complained that von Meck's high speed trains would wear out the tracks and leave the Soviet Union defenseless in the event of war. That USSR did not need a war to get liquidated is an altogether different story. "It is a riddle wrapped in a mystery inside an enigma. . . ." - Winston Churchill.

So, Boys, relax. If a parallel universe exists, the version of you there could be living any conceivable variation of your life, presumably hating Railways. Theoretical physics and philosophy present fascinating possibilities for what your cosmic twin might be doing right now.

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Tapan Pal

He did his Post Graduation from Calcutta University in 1980. He joined West Bengal Audit & Accounts Service the same year to retire in 2019. Bappa to his railfan friends, he is a an avid railfan whose area of interest lies on rail history and rail-accounting and rail - economics. He is also a member of Bombay Natural History Society.

Boishakhi TramJatra

Wheels of Hope on the Bengali New Year

Rudranil Roy Chowdhury

The arrival of Poila Boishakh, the Bengali New Year, has always symbolised renewal, optimism and fresh beginnings. For Kolkata's tram fraternity, however, one such New Year's Day became much more than a festive occasion—it became a determined public expression of hope for the revival of the city's most cherished mode of transport.

At a time when the future of Kolkata's historic tramways appeared increasingly uncertain, the Calcutta Tram Users' Association (CTUA) organised the grand *Boishakhi TramJatra* to demonstrate that public affection for the tram remained alive and vibrant. The objective was simple yet significant: to draw attention to the urgent need for restoring tram services across their traditional routes and to remind the city that the tram is not merely a vehicle, but an inseparable part of Kolkata's identity.

The celebrations commenced at 10 a.m. from the historic Gariahat Depot amidst an atmosphere of festivity and enthusiasm. Tram supporters, rail enthusiasts, citizens, media representatives and well-wishers gathered in large numbers to participate in this unique event. The occasion was further enriched by the presence of distinguished guests including Dr. Swapan Dasgupta, Rupa Ganguly and Papiya Adhikari. Addressing the gathering, they acknowledged the importance of preserving Kolkata's tramways and expressed support for initiatives aimed at

safeguarding this environmentally sustainable mode of transport.

The inaugural session featured speeches, cultural performances and interactions with the media. Yet the centre of attraction remained the magnificent tramcars specially prepared for the occasion.

Leading the procession was Tram No. 498, affectionately known as *Geetanjali*, whose elegant appearance once again captured the imagination of the public. Accompanying her was Tram No. 256, popularly known as the *Sunderban TramJatra Tram*, carrying themes inspired by

Bengal's unique natural heritage. Completing the distinguished trio was Tram No. 237, freshly painted and meticulously prepared for the event, symbolising a renewed aspiration for the future of the tramways.

As the decorated tramcars rolled out of Gariahat Depot, they transformed the streets of Kolkata into a moving celebration of heritage. Travelling along Route No. 25, the convoy attracted curious glances, appreciative smiles and nostalgic memories from countless onlookers. For many, the sight of beautifully adorned trams traversing the city streets was a reminder of a Kolkata that continues to survive despite the relentless pace of urban transformation.

The procession made its first halt at Esplanade, historically regarded as the heart of Kolkata's tram network. Here, CTUA members addressed the media and reiterated their demand for the restoration and expansion of tram services. Emphasis was placed on the tram's unparalleled environmental credentials, energy efficiency and ability to provide sustainable urban mobility in an era increasingly concerned with pollution and climate change.

Following the halt at Esplanade, the TramJatra proceeded northwards towards Shyambazar via Route No. 5. The journey encountered an unexpected delay owing to a political rally along the route. While the interruption temporarily slowed the progress of the procession, it did little to diminish the enthusiasm of the participants. Indeed, it served as a reminder that the struggle to preserve heritage often requires patience, perseverance and unwavering commitment.

Eventually, the trams reached the iconic Shyambazar Terminus, where the concluding session of the programme was held. Addressing the assembled participants, CTUA President Dr. Debashish Bhattacharyya and General Secretary Shri Mahadeb Shi delivered inspiring messages to the younger members of the association. They emphasised that the movement to save Kolkata's trams was not a short-term campaign but a continuing mission requiring dedication from future generations.

Their words carried particular significance. Since its formation in 2016, the Calcutta Tram Users' Association has consistently worked to protect and promote Kolkata's tramways through awareness campaigns, heritage programmes, public outreach and sustained advocacy. The Boishakhi TramJatra represented another milestone in that ongoing journey—a journey driven not by nostalgia alone, but by the conviction that trams remain relevant to the future of sustainable urban transport.

As the festivities drew to a close and the decorated tramcars retired for the day, the message of the event remained unmistakably clear. Kolkata's trams continue to inspire affection, loyalty and civic pride among thousands of citizens. More importantly, they continue to represent a vision of urban mobility that is clean, efficient and environmentally responsible.

For those associated with the movement, the Boishakhi TramJatra was far more than a celebratory ride. It was a declaration that the tram still matters. It was a reminder that heritage and progress need not be opposing forces. And above all, it was a reaffirmation that as long as dedicated citizens continue to raise their voices, the dream of seeing Kolkata's trams thrive once again will never fade.

It would be pertinent to mention here that the tram preservation movement received a notable fillip when Prime Minister Narendra Modi, during his election campaign in West Bengal last April, underscored the importance of reviving Kolkata's iconic tramways. For countless tram enthusiasts, conservationists and heritage activists who have devoted years to this cause, such recognition from the country's highest political office was both heartening and encouraging. It reaffirmed the conviction that Kolkata's trams are not merely symbols of a glorious past, but sustainable assets capable of contributing meaningfully to the city's future.

The wheels that turned through Kolkata's streets that day carried more than passengers—they carried hope.

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FEATURE

THE GIANT STRIDES OF DLW

Somsubhra Das

Whenever one refers to the acronym of DLW, the first thing that crosses our mind is the Diesel Locomotive Works located at Varanasi. But things have dramatically and drastically changed with times. The Diesel Locomotive Works is no longer DLW as it has been rechristened as the Banaras Locomotive Works or BLW since it began assembling electric locomotives while nearly doing away with the production of the diesel counterparts except for private players or export. The CLW or the Chittaranjan Locomotive Works has since been expanded to open a unit at Dankuni, West Bengal which was earlier known as Electric Loco Assembly & Ancillary Unit (ELAAU). But during the last FY, ELAAU has also been renamed as the Dankuni Locomotive Works or DLW which is headed by the Principal Chief Electrical Engineer/CLW and is assisted by the Chief Electrical Engineer/Dankuni, Dy. Chief Mechanical Engineer, Dy. Chief Electrical Engineer and Asst. Works Manager.

DLW has obtained ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 certifications in January 2018, 5S certification in November 2018 & ISO 50001:2018 certification in March 2021. The unit is equipped with one 500 KWp capacity roof mounted Solar Power Plant with the provision of excess energy feedback to WBSEDCL grid as well.


Dankuni Loco Works of CLW
Flagging-off Ceremony
200th Electric Locomotive (No. 42864)
of DLW of CLW in FY 2025-26
(Highest ever annual production)
on
31st March 2026
DLW / Dankuni


Dankuni Loco Works of CLW
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200th Electric Locomotive (No. 42864)
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(Highest ever annual production)
on
31st March 2026
DLW / Dankuni
आज़ादी का अमृत महो


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42864
Dankuni Loco Works of CLW
Flagging-off Ceremony
200th Electric Locomotive (No. 42864)
of DLW of CLW in FY 2025-26
(Highest ever annual production)
on
31st March 2026
DLW / Dankuni


INDIAN RAILWAYS
200

Since inception from November 2015, this DLW has assembled hundreds of WAG9 Class Locomotives – its only assigned class of production. Targets have been revised with every FY with higher limits and DLW has achieved the targets every FY. It was no exception for the last FY as well as a target of assembling 175 locomotives in the 2025-26 FY was achieved with a surplus production of another 25 units. Thus, a total of 200 WAG9 Class locomotives have been turned out from DLW in the last FY – a record in itself.

The 200th electric locomotive bearing road number 42864 was allotted to PUNE DLS under Central Railway which was flagged off by the high officials of DLW on 31.03.2026 marking a landmark year of production. DLW has already rolled out 10 WAG9s in the current FY.

THE EXTRAORDINARY INDIAN RAILWAY

Atulya Sinha

The Scenario

Imagine a scenario where an ambitious infrastructural project gets delayed by the bureaucracy, followed by difficulties in land acquisition. When the work finally starts, there are disputes with contractors, many of which end up as arbitrations or court cases. Meanwhile, there are allegations of crony capitalism and a great deal of unfavourable media coverage.

In his monumental new book ***Rails Through Raj : The East Indian Railway (1841-1861)*** Prashant Kumar Mishra describes such a scenario prevailing in the mid-nineteenth century, when the East Indian Railway Company (EIR) had to deal with the bureaucracy of the infamous East India Company (EIC), in London as well as in Calcutta, apart from politicians, investors, contractors, merchants, journalists and sceptics of various hues.

The Promoter and the Administrator

Rowland Macdonald Stephenson (no relation to locomotive builders George Stephenson and his son Robert), who eventually became the managing director of EIR, had approached the Court of Directors of the East India Company in 1844, with a formal proposal to construct a railway line to connect Calcutta with the coalfields near Burdwan. In order to attract investors, he had proposed a guaranteed dividend. His proposal was greeted with widespread scepticism, because Britain was passing through a railway mania in those days, a techno-commercial frenzy the likes of which would not be seen till the dotcom boom more than 150 years later!

"The coming of the railways to India was not merely an act of engineering," says the author, "it was an act of empire." The East Indian Railway Company came into existence in 1845, with a capital of four million pounds sterling comprising 80,000 shares. Within a few days, however, share applications were received for more than 1,40,000 shares! Moreover, EIR obtained an exclusive right from the Court of Directors to construct railways from Calcutta to Delhi, "a golden corridor that its founders had long coveted."

In the words of the author, "The dawn of India's railway age did not arrive with the thunder of locomotives, but with the rustle of legal notices, the scraping of surveyor's compasses and the cautious footfall of British deputy collectors tracing future empires upon the soil." It took many more than four years, with many twists and turns in the story, before a formal contract was signed between EIR and EIC for an 'experimental' line between Howrah to Raneegunge (Ranigunj) via Burdwan, which the author describes as "modest, but monumental."

In school history books, Lord Dalhousie is remembered mainly for his infamous 'Doctrine of Lapse' – but he had also made history with his famous Minute on Railways issued in 1853. "In a single stroke of administrative clarity and

imperial ambition, Dalhousie outlined the rationale, route, and roadmap for Indian Railways..." says the author. "He understood that beyond commercial profit, the railway would serve four imperatives; military consolidation, political control, social reform, and economic integration."

The 'Experimental Line'

In July 1854, EIR made its first experimental run with one engine and one coach from Howrah to Pandooah, gradually extending the line to Raneegunge the next year. Meanwhile, both Dalhousie and Stephenson returned to Britain in 1856. The progress of EIR was arrested by the First War of Independence which broke out across East and North India in 1857. The Company Raj finally ended in 1858 and the subcontinent came directly under the control of the Crown. Meanwhile, the EIR line was extended upto the hills of Rajmahal in 1860.

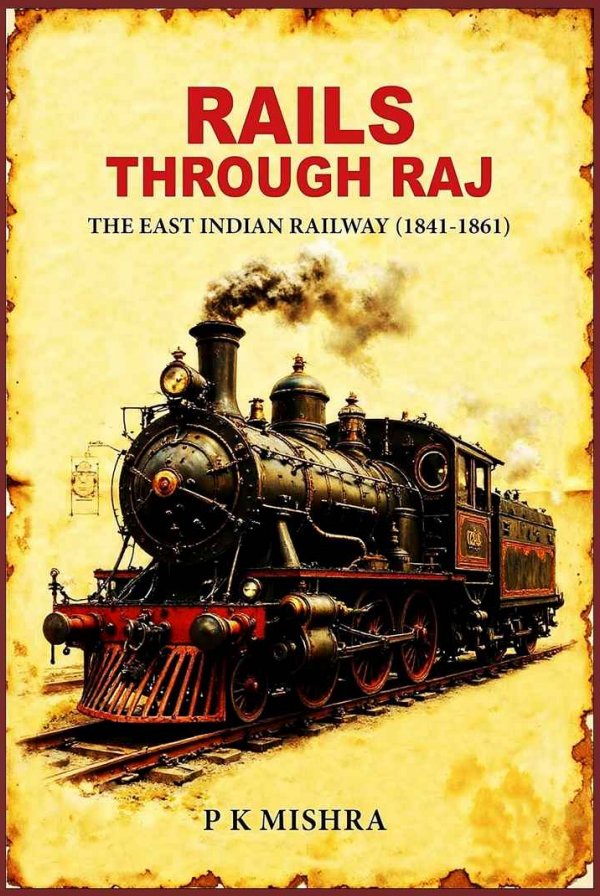
"If Rajmahal symbolised Bengal's regal past, Bhagalpur represented its mercantile present. Cotton, silk, and saltpetre had long passed through this town, carried by boats along the torturous channels of the Bhagirathi and the Ganges." Having conquered Rajmahal, the next year EIR continued its line upto Bhagalpur (which happens to be the author's hometown). Here the book ends in a sort of cliffhanger, leaving the reader keen to know about later events.

Apart from presenting historical facts in a systematic manner, Mishra has shared many anecdotes and snippets about the leading railwaymen of the period. EIR's Chief Engineer George Turnbull was known for his diligence and eventually gazetted as "the first railway engineer of India"- but the author recounts that in the beginning of his illustrious career he had practically 'turned into a bull' in the proverbial china shop and destroyed a wide swathe of jungle from Howrah to Chandernagore without authority!

"They lined the tracks, eyes wide with a mixture of reverence and fear, as the iron monster thundered past... Children pointed in awe; old men folded their hands; and women blew conch shells and smeared vermillion on the locomotive's metallic face as if welcoming a deity into their midst." Certain passages in this book give such vivid descriptions that one feels that the author must have been present there in his previous birth!

Alternative Viewpoints

It is said that history is written by the victors. Although this book is based on primary sources, mostly written by British authors, Mishra has not failed to present alternative viewpoints, e.g. "What the British viewed as a marvel of progress, many Indians saw as a harbinger of displacements – spiritual, economic, and political. And though the railway did indeed serve to carry troops and reassert British control, its tracks would, in time, become the very arteries of nationalist mobilization." The author has also commented on what he calls "the early reality" of rail travel in India, "a story of overcrowding, indifference, and the unspoken cruelty of class and race."



The sacrifices made by the anonymous Indian labourers who laid the tracks cannot be overlooked. "In a grim truth seldom acknowledged," asserts the author in his Foreword, "the iron network of the East Indian Railway was laid, quite literally, over their bones."

Closing thoughts

One of the interesting features of this book is the use of old spellings for the names of places. While places like 'Hooghly' and 'Cawnpore' can be easily identified by present day readers, it takes an effort to understand that 'Colgong' refers to Kahalgaon and the mountain stream named 'Adjye' is actually the Ajay River!

While the paper and binding are excellent, one expects to see more authentic cover illustrations in future editions.

Note : Prashant Kumar Mishra is a professional railwayman and he retired recently from the post of General Manager of Modern Coach Factory, Lalganj. I have had the privilege of knowing the author as a colleague and good friend for over forty years. I have long admired his efforts at preserving railway history and his original researches into railway history. I look forward to his next book, which will presumably cover extension of the line from Bhagalpur to Jamalpur and onwards towards Delhi.

Kamatham Sirish

Photo Junction

Kamatham Sirish

Nikhil Ashok

Soumik Chowdhury

Anish Banerjee

Indian Railways Comes Up With A New Zone And New Logo

The newest zone of Indian Railways, the South Coast Railway has started its operations from 1st June. The 18th zone has been carved out of East Coast Railway and South-Central Railway and is headquartered at Visakhapatnam. The zone consists of Visakhapatnam division (carved out of erstwhile Waltair division of ECoR) and Vijayawada division, Guntakal division along with Guntur division of South-Central Railway. The route km length of the zone is 3532 kms. Shri Sandeep Mathur has taken charge as the first General Manager of the zone. Following the introduction of this new zone, logo of the national carrier wears a new look with 18 stars, each representing a zone.

First Non-AC Local Train With Automatic Doors Reaches Mumbai And Await Trials

The first Non-AC rake for the suburban area of Mumbai with automatic doors reached Kurla Carshed of Central Railway in April. The rake, allotted to Central Railway, is the first of its kind in Indian Railways. The rake is built on AC EMU shell with large sliding windows and sealed gangways in configuration of 6+3+3. In order to facilitate proper ventilation in crushing crowd and hot Mumbai weather, powerful RMVU (Roof Mounted Ventilation Units) have been provided. The automatic doors will function like the ones fitted in the AC rakes with Door Control Unit as the master with emergency evacuation facility. The rakes will undergo extensive trials under the watchful eyes of RDSO before getting introduced in service.

Electric Locomotives Start Trials In Subhramanya - Sakleshpur Ghat Section

From the 1st week of June, electric locomotives have started their trial runs in the Subhramanya Road-Sakleshpur Ghat Section in Mysuru division. Electrification works have already been completed which was a challenging task in itself. The section is one of the steepest in terms of gradient and all trains need bankers or brakers. Rigorous trials are being performed with WAP7 twins, WAP5 twins, WAG9HC twins and WAG5 twins for the desired change in traction.

Diesel Locomotive Comes Up As One Of The Top Export Items From India

In the 2025-26 FY, diesel electric locomotives are among the topmost goods that heavily contributed to the export revenue of the country. The locomotives made by the Banaras Locomotive Works (BLW), erstwhile Diesel Locomotive Works largely has been exported to countries like Mozambique, Guinea, Uganda etc. The export amount surged to 107.18 million dollars from 0.95 million dollars from the previous FY.

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