



THE WHISTLE

The official publication of:
THE BRITISH COLUMBIA SOCIETY OF MODEL ENGINEERS (BCSME)
Operators of BURNABY CENTRAL RAILWAY Vol 56; Issue 4 – July/August 2026



Play Day, June 19th



Photograph courtesy of Daniel Ahadzadeh

BCSME Member Meetings

Next General Meeting on August 5th
In-person and on Zoom 7pm

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Submissions & Deadline

The editor's role is to assemble and publish the newsletter, but it truly serves as a platform for members to share their BCSME stories with one another. Your contributions make The Whistle vibrant and meaningful.

If a BCSME member has any articles or photos that they'd like to submit for publication, please send them to the editor as an attachment in an e-mail.

Please add the words "The Whistle" in the e-mail's subject line. The more submissions made by members of the Society the better this newsletter will be.

The deadline for any submissions is one week prior to an issue being published. New issues are published every second month, starting at the beginning of January.

Means of Publication

I use Apache's OpenOffice suite on a PC to create this newsletter. OpenOffice can open almost any Microsoft document file.

Photos are handled using GIMP. Any digital pictures being submitted for publication should be in as high a resolution .jpeg format as possible. 200 DPI is a good value.

The BCSME Directors

PresidentPeter Berry
Vice-president.....More McCormack
Secretary.....Tom Carr
Treasurer.....Brian Carlson
Business Director.....Gord Tilley
Site Manager.....Matthew Berry
Operations Director.....Bruce Wilson
Shop Director.....Chuck Laws
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Librarian.....**Vacant Position**
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Comm. Chair, Garden Railway.....Brian Ruebottom
Comm. Chair, Raised Track.....Doug Bach
Trainers/Examiners.....Doug Bach and Bruce Wilson
Steam Instructor.....John Ostler
Shop Frm.....Bruce Johnston (M) and Phil MacGregor (C)
Social Media Manager.....John Roberts
New Steam Loc. Project Mgr.....Chuck Laws
Comm. Chair, 100th Ann...Tom Carr and Kent Cavaghan

CALENDAR OF EVENTS

Also check: bcsme.org

2026 Play Day Calendar

From 3:00 PM to Dusk

Monday – July 6th
Friday - July 24th
Monday - August 10th
Friday – August 28th
Friday - September 18th

Canadian Toy Train Association will be in Rainbow Creek Station during the last 3 weekends in July

Chilliwack Heritage Park

Train & Hobby Show – Oct 24th and 25th

Contact for BCSME Concession and Bookings

Gord Tilley: concession@bcsme.org / **Bruce Wilson:** bookings@bcsme.org

President's Message

Our ridership remains steady, though we've noticed a slight drop in attendance on days when the weather hasn't cooperated, as well as during the recent FIFA World Cup matches. Thank you to everyone who braved the elements and skipped the soccer matches to support us!

The "Join Us" Campaign continues to actively seek new volunteers to help with the daily operations of our beloved railway. I am thrilled to report that we've recently welcomed several new members who used to spend time around the park in the past. Additionally, a couple of new members who have joined us bringing valuable experience in model trains and backgrounds in miniature train ride operations. Their expertise will be an incredible asset to the Society moving forward. Welcome aboard!

Finally, with a number of exciting projects currently in the planning stages, we have officially formed an internal Building Committee and a complete Professional Design Team. As we look at several buildings that will be renovated or potentially replaced, this group will be instrumental in guiding the Society smoothly through the upcoming design and construction processes. Thank you for your continued dedication and support. See you out on the tracks!

Happy Steaming, Peter Berry, President, BCSME

Editor's Message

Marie Rogers has hired two BCIT students for a summer member recruitment project. "Aika and Ring" are busy interviewing current members and creating short videos to tell our recruitment story via social media and in presentations to organizations that we think might be a good fit. Please be generous with your time and enthusiasm if these ladies ask for your input.

VIME Spring meet up 2026 on Youtube: [VIME spring meet 2026](#)

In my Selkirk article from the last issue I had mistake in the class for the Mikados and the Santa Fe types. The Mikados were P1 class and the Santa Fe type were S2 class.

Bruce Wilson has a long list of private events booked for the summer. If you can help with engineering, then please let him know.

Brian Ruebottom
Editor, The Whistle
Committee Chair, Garden Railway

JOB JAR

Item 1: Bruce has many small jobs in Operations. If you can help, please contact him at bookings@bcsme.org

ITEM 2: The Track Gang - if you can help, please contact More McCormack at vicepresident@bcsme.org

ITEM 3: The Garden team is in critical need of help on Tuesdays. Please contact Catherine at 604-420-1778

Reminder: For members who frequent the park – please walk the tracks when you arrive at the park and help with keeping the tracks free of debris.

East Junction: An Ambitious, Collaborative Volunteer Effort

Here we are, halfway through the 2026 operating season. Looking back to February, I could not have imagined what this would look like. Back then, a crew of stalwart volunteers was toiling in the cold and rain, watching a section of the East Junction quiver like a bowl of jelly. That was the reality we faced, and I genuinely wondered if our work would stand up to the impact of the multitudes of trains passing over the rails we were preparing to lay.

So far, it seems that for the most part, the project has been a resounding success. With an improved design to increase sightlines, line crossings up more uniformly, and 11 standardized switches and 6 diamonds prefabricated off-site in a commercial machine shop, not to mention rail welded on-site in a jig produced by the BCSME shop crew, this has truly been a collaborative effort.

It involved the shop crew creating and modifying the track jig and drilling jigs for joiners, operations creating an improved layout and taking the time to lay it out in the field, and members contributing the heavy equipment for excavating, filling, compacting, and grading the roadbed to minimize the levelling required after the track and switches were laid down. Over 1,300 volunteer hours went into this project by a dedicated team of volunteers with shovels and rakes to put this together in time for opening day.

Here we are at day 32 of a 64-day running season. Roughly 48,500 riders have passed through the East Junction. That's almost 2,000 trains, or about 60 trains a day. We are 9% over our rider count from 2025 and the rails are holding up beautifully. I am not aware of any derailments due to the track condition. We have some remedial grading that needs to be addressed as things settle in, but the tireless effort of many people has created a safer and smoother ride through the junction.

I don't want to name names because I am sure I'll miss more than a few. So, everyone who helped whether in the shop, during the week on their own or during the formal work parties we, as a society, owe a **big thank you**. From coordinating deliveries of materials, paying the bills, working with the fabrication shop to make switches and diamonds, welding late into the evening, laying out drawings, surveying and grading, digging and tamping, drilling and bolting joiners, wire brushing ties and putting track in place, it truly shows what the power of volunteerism can accomplish (I'm sure I missed a few steps in there on what it takes to build a railroad).

We are already planning for next year's track work. If you wish to help out in any way, please reach out to me at vicepresident@bcsme.org and I will put your name on the list.

More McCormack
Vice-president of the BCSME

Visiting Clubs

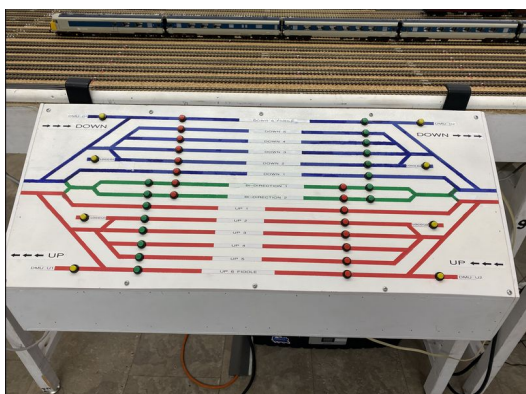
The Vancouver Lego Club occupied Rainbow Creek Station station with their layout for three weekends in June. The layout is rebuilt for each new event that they take part in and the models that make the layout are all scratch built. The club uses a computer program that allows them to plan a Lego layout, with each section marked by the contributing club member's name, and the sections are then assembled at the start of the event. This year, the club participated in World Play Day 2026. This is a global Lego event, and the Lego Group supplied the club with 5000 bricks to play with. Club members occupied one of the tents in the Garden Railway area for this event. The Lego Group also provided a stamp for the public to stamp their Lego Passport. If you have never heard of a Lego Passport, you can get one from any Lego store, and have the passport stamped. Each store has its own stamp, and the idea is that you take your passport into a store to get it stamped by each store.



Top Link

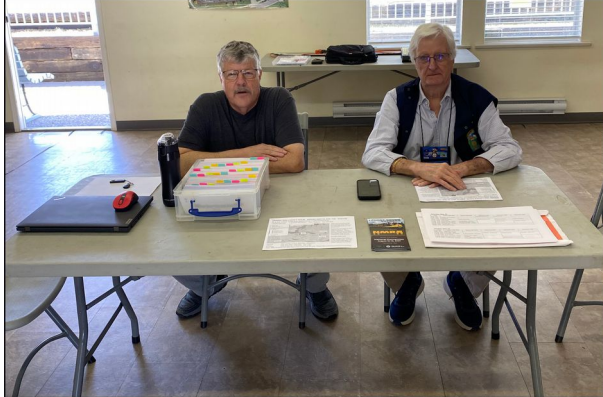
Top Link brought their Nettlewood layout for display and we will see it back in the station in September. This is a 1/76 British style layout.

All photographs are courtesy of Brian Ruebottom



RMMBC

The RMMBC (Railway Modellers Meet of BC [About RMMBC – Railway Modellers' Meet of BC](#)) spent Friday morning, May 22, at the park. The group held a registration day for a weekend of Operation Sessions and Layout tours. Tom Carr arranged for the group to come in and see our park.



Photographs courtesy of Brian Ruebottom

The Evolution of Locomotive Power: The 4-4-0 American Type

Author: Brian Ruebottom

Robert Stephenson's 0-2-2 *Rocket* defined how a steam locomotive should be built mechanically. It introduced a structural blueprint that became standard for the next 120 years: a firebox integrated with a boiler and its flues, leading directly into a smoke box. However, it was the 4-4-0 American type that truly defined how a locomotive should look.

With its prominent cow-catcher, swivelling leading truck, horizontal boiler, enclosed cab, and trailing tender, the 4-4-0 achieved a beautiful symmetry with its four pilot wheels and four driving wheels. Developed during an era of intense trial-and-error, approximately 25,000 4-4-0 American-type locomotives were manufactured between the 1830s and the 1920s¹. This incredibly adaptable platform evolved over a century, bridging the gap between early experimental engines and the massive, mathematically engineered locomotives of the twentieth century that were designed around precise steam tables, tractive effort calculations, and strict factors of adhesion.

The Problem with the "Permanent Way"

During the early 1830s, locomotive development moved at a breakneck pace. American railroads initially imported British models, including early 0-4-0 designs like the *Stourbridge Lion*, the 4-4-0 *America*, the 2-2-0 *Planet* type, and the 2-2-2 *Patentee* type. While these British locomotives were mechanically advanced, they were entirely unsuited to the rugged landscape of the United States.

British engines were built for the "permanent way" of the smooth, straight, and expensive mainlines of the UK. They featured inside cylinders, light axle loads, small fireboxes, minimal adhesion, and a rigid, single-piece iron longitudinal frame that kept all the wheels in a perfectly straight line².

In the United States, railroad companies prioritized laying track as quickly and cheaply as possible over vast distances. The result was a low-quality network defined by sharp curves and uneven track levels. On these rough American lines, a rigid British frame acted like a crowbar. When the front wheels hit a sharp curve, the unyielding frame refused to pivot, forcing the wheel flanges to climb right over the rail and derail the train³.

American Ingenuity and the "Eight-Wheeler"

Faced with these unique infrastructure challenges, American machinists, concentrated heavily in the northeastern region, diverged sharply from European traditions. While they initially experimented with the standard 0-4-0 setups, and Matthias Baldwin's second locomotive the 4-2-0 *E.L. Miller*⁴, lacked the necessary tractive effort. American railroads desperately needed a machine that could safely navigate imperfect, twisting tracks⁵. By the mid-1830s, builders began experimenting with a layout utilizing four pilot wheels and two driving wheels.

The true breakthrough came in 1836, when Henry Roe Campbell of the Philadelphia, Germantown and Norristown Railway patented a new layout that would become famously known as the "Eight-Wheeler." Campbell's design distributed the locomotive's weight far more evenly by placing one set of drivers in front of the firebox and a second set behind it, paired with a swivelling four-wheel front truck. While his initial prototype was not a commercial success, it was a massive step in the right direction. Within a year, Andrew M. Eastwick introduced further refinements to Campbell's design, and in 1838, Eastwick's partner Joseph Harrison Jr., introduced a revolutionary improvement to the front truck mechanism⁶.

¹ Perfecting the American Steam Locomotive, Indiana University Press, J. Parker Lamb, 2003, pg. 47

² [Planet \(locomotive\) - Wikipedia](#)

³ [Steam locomotive profile: 4-4-0 American | Classic Trains Magazine](#)

⁴ Perfecting the American Steam Locomotive, Indiana University Press, J. Parker Lamb, 2003, pg. 15

⁵ [Steam locomotive profile: 4-4-0 American | Classic Trains Magazine](#)

⁶ [The locomotive engine, and Philadelphia's share in its early development, 1872, pg 46-50](#)

By the close of the 1830s, American steam locomotives had firmly established two defining features entirely absent from European designs: the swivelling front truck and equalizing levers that dynamically distributed the weight¹. These advancements allowed the leading wheels to fluidly follow the rise and fall of uneven track. Furthermore, placing the firebox between the drivers lowered the locomotive's centre of gravity and made the valve gear far more accessible for maintenance. While European builders stuck to a tradition of placing the firebox behind the drive wheels and burying the valve gear, the American builders designed their engines for rugged durability and easy field repair².

Scalability and the Golden Age

During the 1830s and 1840s, these Eight-Wheelers remained relatively primitive, 15-ton wood-burning machines with small-diameter drive wheels. However, as the "Iron Age" of railroading gave way to the "Steel Age," track technology matured, and the 4-4-0 design proved to be an incredibly scalable platform. By the 1850s, the engines had grown significantly, routinely approaching weights of 25 tons with standardized 60-inch drivers.

Locomotives like *The General* (1855) and the *William Mason* 4-4-0 (1856) serve as premier examples of this mechanical evolution. While they shared the same basic wheel arrangement, they represented a massive shift toward specialized fuelling and precision manufacturing. *The General* featured an enlarged firebox capable of burning either wood or coal, whereas the *William Mason* engines emphasized strict aesthetic symmetry and precision-machined, interchangeable parts.

Around 1872, the railroad industry officially standardized the nomenclature of the Eight-Wheeler, naming it the "American type." During this decade, the 4-4-0 underwent a functional split to handle specialized tasks:

- **Passenger Service:** To meet the demand for higher speeds on competitive express routes, passenger versions saw their drive wheels swell to 70 inches or more, creating a high-speed "gear ratio" for rapid travel. A crowning achievement of this lineage was the New York Central No. 999, built in 1893, which featured massive 85-inch drivers for fast passenger service³.
- **Freight Service:** Freight-specific models maintained smaller drivers to maximize tractive effort for hauling heavy loads. For example, Union Pacific No. 119 operated with 57-inch drivers for freight duties⁴, while Central Pacific No. 60 *Jupiter* used 62-inch drivers for versatile passenger and general goods transportation^{5 6}.

During the "Golden Age" of transcontinental rail expansion (1860–1880), standard American types grew to weigh between 30 and 45 tons, serving as the primary technological bridge connecting East and West. By the 1880s, heavy-duty variants reached up to 75 tons.

The Aesthetic, Ergonomic, and Modern Legacy

Beyond its mechanical prowess, the 4-4-0 established the "aesthetic grammar" of global railroading. It became the default visual template for trains in toys, illustrations, and early films. Even as future locomotives expanded into massive 300-ton articulated Mallets, they continued to follow the visual hierarchy established by the 4-4-0: the pilot leading into the front truck, followed by the boiler and drivers, the cab, and the tender. Ergonomically, it also established the "Engineer on the right, Fireman on the left" cab standard that remains the rule in American railroading today.

1 The North American Railroad: Its Origin, Evolution, and Geography, The Johns Hopkins University Press, James E. Vance, Jr., 1995, pg 36

2 Perfecting the American Steam Locomotive, Indiana University Press, J. Parker Lamb, 2003, pg. 9-10

3 [loco-info.com - New York Central No. 999](#)

4 [Union Pacific No. 119 - Wikipedia](#)

5 [loco-info.com - Central Pacific No. 60 "Jupiter"](#)

6 [Jupiter \(locomotive\) - Wikipedia](#)

The design essentially wrapped the internal organs of the steam engine in a beautifully balanced silhouette. The cow catcher gave the engine a sense of directionality, while the horizontal boiler and cab provided a human scale. Its symmetrical proportions created a stretched look that brilliantly suggested speed, even while the engine stood perfectly still.

The 4-4-0 American type did not fail; rather, it served as the direct "parent" design for the next generation of specialized steam power. As railroads required more specialized engines, designers directly modified the American's proven layout to create new wheel arrangements. For heavy freight, the Consolidation (2-8-0) type multiplied the number of driving axles to maximize tractive effort and grip on the rails. For general, versatile growth, the Ten-Wheeler (4-6-0) scaled up the American's core flexibility simply by adding a third driving axle into the mix. Finally, to meet the demands of sustaining high speeds with heavier passenger trains, the Pacific (4-6-2) took the American's leading truck setup and added both a third driving axle and a trailing axle, which allowed for a significantly larger firebox and boiler volume. By the 1900s, the production of approximately 25,000 American types had taught engineers exactly where the physical limits of a two-axle driving system lay. Yet, these nimble workhorses refused to be left in the past. Because they could "tread lightly" on ageing wooden trestles and lightweight branch lines where a massive 4-8-4 Northern would have snapped the rails, the railroads began an extensive modernization campaign.

Older models were retrofitted with twentieth-century technology. A prime example is the Missouri-Kansas-Texas Railroad's No. 311¹. Originally built in 1901 as a traditional coal-burner, it was converted to burn oil in 1923 and retrofitted with modern piston valves and superheaters, dramatically increasing its thermal efficiency and power output.

The final commercial 4-4-0s for major lines were produced for the Chicago & Illinois Midland as late as 1928. Able to easily whisk a three-car passenger train at 60 mph on light branch lines, the 4-4-0 remained an essential piece of industrial machinery deep into the twentieth century. It stands as the most significant design in the history of American railroading, and it was the foundational machine that successfully transitioned an entire industry from trial-and-error experimentation to mathematical precision.

Illustration of a 4-4-0 American type from: *Drawings of Maps, Bridges, Profiles, Coal Burning Locomotives; Report of the Board of Rail Companies for 1856*, published in 1857. Digitized by Google via the HathiTrust Digital Library. Reproduced for educational, non-commercial historical review.

[#7 - Report 1855-1856. - Full View | HathiTrust Digital Library](#)



¹ [Missouri-Kansas-Texas 311](#)