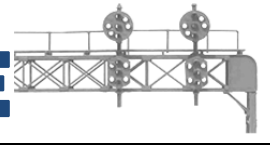


# THE SIGNAL BRIDGE



Volume 18

NEWSLETTER OF THE MOUNTAIN EMPIRE MODEL RAILROADERS CLUB  
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## WHITTAJER CAMP #1 CASS, WV



Cass Scenic Railroad, with the help of Mountain State Railroad and Logging Historical Society, has recreated the remnants of a logging camp. At the halfway point on the ride to Bald Knob, passengers have the opportunity to debark and tour the display of artifacts and equipment. The displays vary from season to season, but the core is always available to see.

On a 2010 visit one could get a good idea of how the loggers worked and lived. Prominent in the display were three wood shanties. The first was a bunk house (not open to the public, however, the windows permitted a view of the interior idea for scratch builders. The second was an example of a Filer's bunkhouse and shop. The third is an example of a surveyor's/cruiser's shanty.

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### LOCATION

ETSU Campus,  
George L. Carter  
Railroad Museum

### HOURS

Business Meetings are held the  
3<sup>rd</sup> Tuesday of each month.  
Meetings start at 7:00 PM at  
ETSU Campus, Johnson City, TN.  
Brown Hall Science Bldg, Room 312,

Open House for viewing every Saturday from 10:00 am until 3:00 pm. Work Nights each Thursday from 5:00 pm until ??



Each are built from materials at hand. They are furnished with tools, equipment and creature comforts a logger would need during his time on the mountain.

The cook was possibly the most important member of the crew,



Nearby were two camp cars. The first, a kitchen/dining car, can be viewed and is accessible by a ramp and walkway. The other is a bunk car and was closed to the public. For the 2011 season it has been relocated to the Cass station area and is awaiting repair and restoration.



turning out 3 meals a day providing a high calorie diet for the loggers. Bad cook equaled bad morale. He was so important that



his wage frequently equaled or surpassed the company superintendent.

The Bunk Car is in sad shape and needs serious restoration work. It may wind up being restored as a log flat however, since the existing example of a flat is in far worse shape.



Also on display are two examples of a diesel log loader and a Ledgerwood Log Skidder. The loader would sit astride rails secured on a log car's deck moving from car to car along the rails to load each successive car.

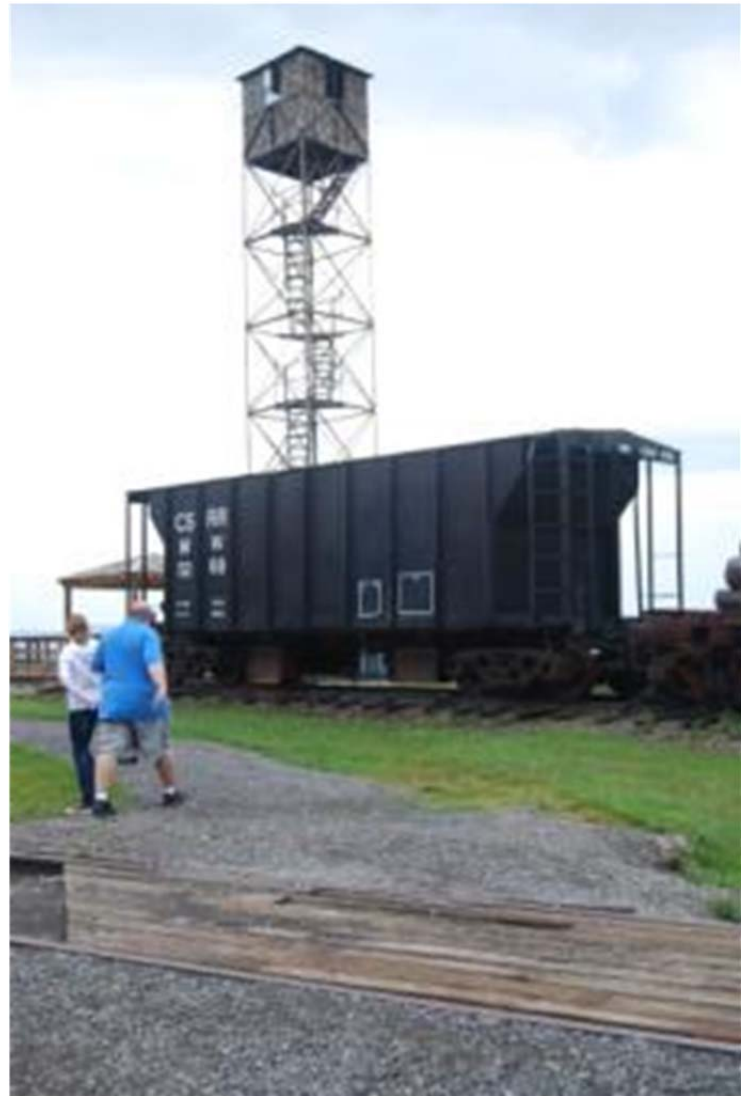


The Ledgerwood skidder allowed logs to be brought to a loading site by aerial line as far away as 3,000 feet! The skidder consisted of a steam donkey engine mounted on a car body which in turn powered a series cable drums and winches. Attached to the frame was an 85 foot tall main pole to which the aerial lines and stays were secured.



The skidder was built by the Meadow River Lumber Company in 1904 and used until 1966. It was operated by a leverman and a fireman to control the boiler.

Additionally there is an example of a fire watch tower. Logging operations were notorious for causing forest fires and to protect the company's investment fire watches were established during the dry seasons.



Shay locomotive

From Wikipedia, the free encyclopedia



Class C Sonora (three driven trucks and articulated tender)

The **Shay locomotive** was the most widely used geared steam locomotive. The locomotives were built to the patents of Ephraim Shay, who has been credited with the popularization of the concept of a *geared steam locomotive*. Although the design of Ephraim Shay's early locomotives differed from later ones, there is a clear line of development that joins all Shays.



Drive side of the Class B Shay locomotive *Dixiana* at the Roaring Camp and Big Trees Narrow Gauge Railroad, Felton, California

#### Development

Ephraim Shay (1839–1916), was a schoolteacher, a clerk in a Civil War hospital, a civil servant, a logger, a merchant, a railway owner, and an inventor. He lived in Michigan.

In the 1860s he became a logger and wished to devise a better way to move logs to the mill than on winter snow sleds. He built his own tramway in 1875, on 26 inch (66 cm) gauge track on wooden ties. This was much more efficient than his competitors because he could log all year round.

Two years later he invented the Shay Locomotive. In about 1877 he developed the idea of having an engine sit on a flat car with a boiler, gears, and trucks that could pivot. The first Shay only had two cylinders and the front truck was mounted normally while the

rear truck was fixed to the frame and could not swivel, much as normal drivers on a locomotive. He mounted the 3' diameter by 5' tall boiler centered on the car with the water tank over the front trucks and the Crippen's engine mounted crossways over the rear trucks. Shay experimented first with a chain drive from the engine through the floor to the truck axle. It is not known if he powered one or both axles, but he soon found that the chain drive was not practical and he next tried a belt drive. It did not take long for the idea to become popular.

Shay applied for and was issued a patent for the basic idea in 1881. He patented an improved geared truck for his engines in 1901.

Lima Locomotive Works of Lima, Ohio built Ephraim Shay's prototype engine in 1880. Prior to 1884, all the Shays Lima produced weighed 10 to 15 tons each and had just two cylinders. In 1884, they delivered the first 3-cylinder (Class B) Shay, and in 1885, the first 3-truck (Class C) Shay. The success of the Shay led to a major expansion and reorganization of the Lima company. When Lima first received the Shay idea it was not impressed, until John Carnes influenced the company to use the idea, resulting in the classic Shay design.

In 1903, Lima could claim that it had delivered the "heaviest locomotive on drivers in the world", the first 4-truck (class D) Shay, weighing 140 tons. This was built for the El Paso Rock Island line from Alamogordo, New Mexico to Cox Canyon, 31 miles away over winding curves and grades of up to 6%. The use of a two-truck tender was necessary because the poor water quality along the line meant that the locomotive had to carry enough water for a round trip.

Lewis E. Feightner, working for Lima, patented improved engine mounting brackets and a superheater for the Shay in 1908 and 1909.



No. 7 Sonora Class C Shay  
Roaring Camp and Big Trees Narrow Gauge Railroad, Felton, California

After the basic Shay patents had expired, Willamette Iron and Steel Works of Portland, Oregon, manufactured Shay-type locomotives, and in 1927, Willamette obtained a patent on an improved geared truck for such locomotives. Since "Shay" was a trademark of Lima, strictly speaking it is incorrect to refer to locomotives manufactured by Willamette and others as "Shays".

Six Shay Patent locomotives, known as Henderson-style Shays, were built by the Michigan Iron Works in Cadillac, Michigan.

#### Overview

Shay locomotives had regular fire-tube boilers offset to the left to provide space for a two or three cylinder "motor," mounted vertically on the right with longitudinal drive shafts extending fore and aft from the crankshaft at wheel axle height. These shafts had universal joints and square sliding prismatic joints to accommodate the swiveling trucks. Each axle was driven by a separate bevel gear, with no side rods.

The strength of these engines is that all wheels, including, in some engines, those under the tender, are driven so that all the weight develops tractive effort. A high ratio of piston strokes to wheel revolutions allowed them to run at partial slip, where a conventional rod engine would spin its drive wheels and burn rails, losing all traction.

Shay locomotives were often known as *sidewinders* or *stemwinders* for their side-mounted drive shafts. Most were built for use in the United States, but many were exported, to about thirty countries, either by Lima, or after they had reached the end of their usefulness in the US.



Accessory side of the *Dixiana*

#### Classes

2768 Shay locomotives were built by Lima in four classes, from 6 to 160 tons between 1878 and 1945.

- **Class A:** two cylinders, two trucks. Weights between 6 and 24 tons.
- **Class B:** three cylinders, two trucks. Weights between 10 and 80 tons.
- **Class C:** three cylinders, three trucks. Weights between 40 and 160 tons.
- **Class D:** three cylinders, four trucks. Weights of 100 and 150 tons.

**Note:** Two 15 ton Shays were built with two cylinders and three trucks.

Twenty Class D shays were built. They were no more powerful than Class C, but had greater fuel and water capacity, resulting in improved adhesion.

Four Shays were built left-handed, all special ordered for the Sr. Octaviano B. Cabrera Co., San Luis de la Paz, Mexico.

#### Survivors

- The "Leetonia No.1" at the Railroad Museum of Pennsylvania
- Only 117 Shays survive today, some a combination of parts of two Shays.
- The oldest surviving Shay sn-122, built in 1884, is currently displayed in Redding CA, at Turtle Bay Exploration Park.
- The oldest operational shay is located at the Cass Scenic Railroad State Park in West Virginia as Shay locomotive #5. It was first bought in 1905 by the West Virginia Pulp & Paper Co. at Cass. Shay#5 is in fact still running on its original rail since it first ran in 1905
- The Camino-Placerville & Lake Tahoe No. 2, a three-truck Shay, is on display at the Travel Town Museum in Los Angeles' Travel Town Museum.
- The Roaring Camp and Big Trees Narrow Gauge Railroad operates the class B *Dixiana* and the class C *Sonora*.
- Railtown 1897 preserves a class C Shay, Sierra Railroad # 2, and occasionally runs it as part of its excursion trains.



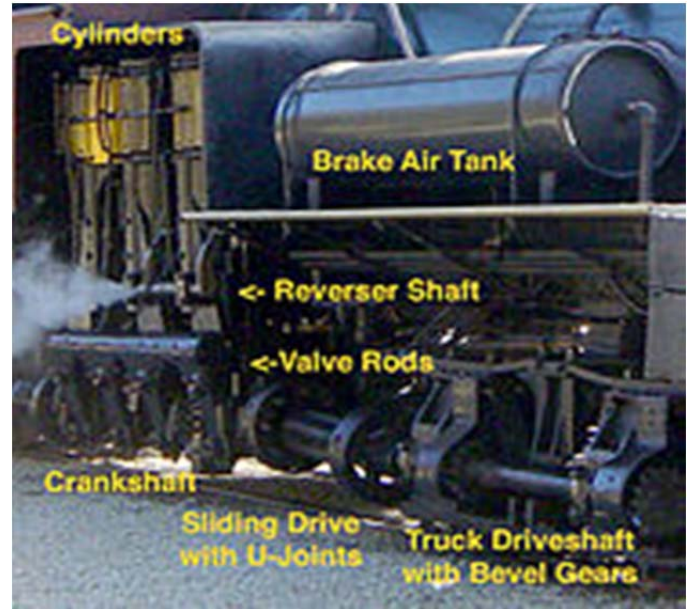
- The Colorado Railroad Museum holds two Shays, Nos. 12 and 14 which operated on the Georgetown Loop Railroad for about 20 years.!
- The New Jersey Museum of Transportation at Allaire State Park is currently restoring the 36-inch gauge Ely-Thomas Lumber Company No. 6. This locomotive ran on the Pine Creek Railroad from around 1955 through 2002, when she was taken out of service for boiler work.
- The Yosemite Mountain Sugar Pine Railroad owns and operates two former West Side Lumber Company Shays, Nos. 10 and 15, on its line just south of Yosemite National Park.
- The Canada Science and Technology Museum owns one operational engine constructed from two locomotives, numbered engines 3 and 4 built for the Merrill & Ring Lumber Co., Ltd and used in their forestry operations at Theodosia Arm on the British Columbia mainland. This Shay is operated by volunteers of the Bytown Railway Society.



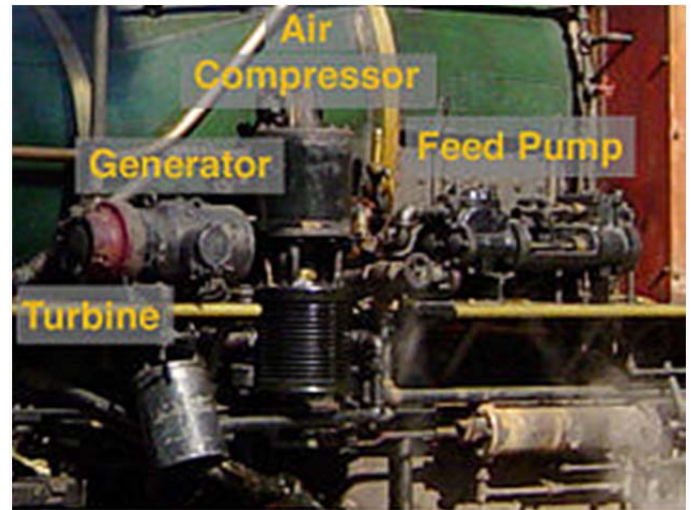
MCCR Three Truck Shay Number-9 001

- The Graham County 3-truck shay #1925 survives at the North Carolina Transportation Museum in Spencer, NC. It ran at the museum until the mid-1990s, until operation ceased because the state couldn't provide enough funding to run it. Since then it has been stored in the roundhouse as a static exhibit, and the universal joints have been removed.
- Sn-3345, a class C Shay built for New Mexico Lumber Co. in 1929, survives at the Hesston Steam Museum in Hesston, Indiana. This was the last narrow gauge Shay built. It was acquired by the LaPorte County Historical Steam Society and moved to the Hesston Steam Museum, where it was damaged in an engine house fire in 1985. It was rebuilt and resumed operation in 2006.
- West Side Lumber #9 (a Class C Shay) was purchased by the Midwest Central Railroad in 1966, and with a minor refurbishment in the mid '90s, continues to operate at their southeastern Iowa location. The locomotive is used during the MCCR's three operating sessions (the Midwest Old Threshers' Reunion, Midwest Haunted Rails, and the North Pole Express). In January, 2011, the MCCR and the Georgetown Loop Railway entered into a 7 to 10 year agreement where the 9 will be refurbished by and reside at the GLRR
- Cadillac, Michigan also features a Shay Locomotive in a downtown park, in homage to the city's importance in the locomotive's manufacture.
- The last Shay, sn-3354 built in 1945, still operates on the Cass Scenic Railroad State Park. One of the largest Shays built, this 150 ton Class C locomotive was in service only five years when it was retired and placed in the B&O Railroad Museum. In 1981 it was removed from static display, in exchange for a smaller Shay and a Porter locomotive, and placed in service on the Cass Scenic Railroad. It has now served in tourist and enthusiast service for a longer period than it did for its original owners. It is still in near-new condition. The second largest Shay ever built was Western Maryland No. 6, nicknamed "Big 6." Big 6 is Currently in active service at the Cass Scenic Railroad in Cass, WV and is the largest Shay currently in existence. Cass Scenic Railroad is also the home of the largest collection of operational geared steam locomotives in the world.

Images



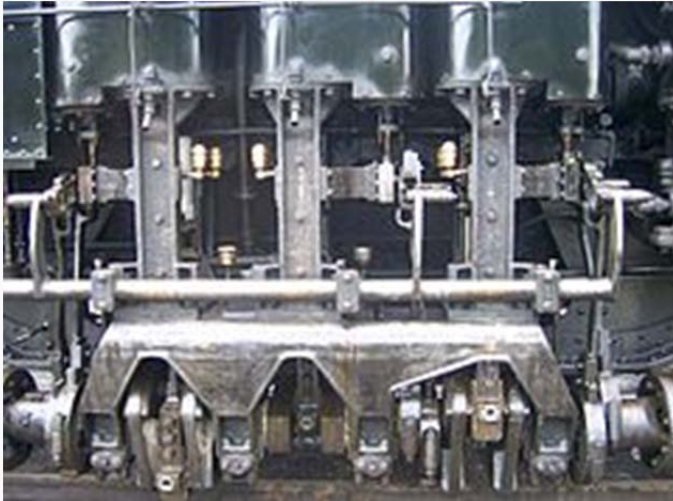
Dixiana drive details



Dixiana accessory details



Sonora's universal joints with sliding coupling between



Engine of Shay locomotive built by Lima Locomotive Works. Lima # 3320. Locomotive is still in operation in Cass Scenic Railroad State Park.

Sources

- Kyle Neighbors (1969) *THE LIMA SHAYS ON THE GREENBRIER, CHEAT & ELK RAILROAD COMPANY* ASIN B001M07YHO
- Michael Koch *The Shay Locomotive: Titan of the Timber World* Press; Limited ed edition (1971) ASIN B0006WIHIE
- Shay Locomotive Works *Shay Geared Locomotives and Repair Parts Catalogue* Periscope Film LLC (January 26, 2010) ISBN 9781935327929
- Philip V. Bagdon *Shay Logging Locomotive at Cass, West Virginia, 1901-1960* TLC Publishing (December 21, 2001) ISBN 9781883089658
- The Lima Locomotive & Machine Company *Shay Patent and Direct Locomotives: Logging Cars, Car Wheels, Axles, Railroad and Machinery Castings* Periscope Film LLC (March 24, 2010) ISBN 9781935700111



Contemporary illustration

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1. Ephraim Shay, Locomotive-Engine, U.S. Patent 242,992, June 14, 1881.
2. Ephraim Shay, Locomotive-Truck, U.S. Patent 706,604, August 12, 1902.
3. Shay" Locomotives at Work, *The Locomotive*, Vol XV, No. 198 (February 15, 1909); page 37.
4. Angus Sinclair, *Development of the Locomotive Engine*, New York, 1907; page 566.
5. H. C. Hammack, A Remarkable Locomotive -- Heaviest on Drivers in the World, *Locomotive Engineers' Monthly Journal*, Vol. XXXVII, No. 1 (Jan. 1903); page 51.
6. Lewis E. Feightner, Locomotive Crank-Shaft Bracket, U.S. Patent 879,617, Feb. 18, 1908.
7. Lewis E. Feightner, Superheater for Locomotive Boilers, U.S. Patent 939,237, Nov. 9, 1909.
8. Albert Claypoole, Geared Locomotive, U.S. Patent 1,622,765, Mar. 29, 1927.
9. ShayLocomotives.com. "116 Known Surviving Shays." Accessed 2010-02-14.
10. ShayLocomotives.com. "sn-3345" Accessed 2010-02-21.
11. Cook, Roger; Zimmermann, Karl (1992). *The Western Maryland Railway: Fireballs and Black Diamonds* (2nd ed.). Laurys Station, Pennsylvania: Garrigues House. ISBN 0-9620844-4-1.

External links

- Shay Locomotives.com - Comprehensive database and reference
- Geared Steam Locomotive Works' Shay pages
- Cass Scenic Railroad
- Ephraim Shay website
- W&H Main Yards
- The Shay Locomotive at the Canada Science and Technology Museum
- El Dorado Western Railway blog Shay construction number 1896 under restoration
- New Jersey Museum of Transportation Ely-Thomas Lumber Company No. 6
- Midwest Central Railroad

## 116 Known Surviving Shays

### ShayLocomotives.com

*Note: Surviving Willamette Locomotives are at the bottom of list*

Lima #	Road #	Current Owner & Location - Last Working RR	Status
122	2	Turtle Bay Museum, Redding, CA - Michigan-California Lumber Co., #2, Camino, CA	Display
169	23	Scott Wickert (railfan) Centralia, WA - Georgia-Pacific Corporation, Powers, OR	Under Restoration
549	3	City of Cadillac, MI, Town Park, Cadillac, MI - Cadillac-Soo Lumber Co., Sault Ste Marie, MI	Display



789	12	<b>The Pacific Locomotive Association</b> , Sunol, CA - <i>Pickering Lumber Co., Standard, CA</i>	Stored
906 2097	1	<b>Illawarra Light Railway Museum Society</b> , Wollongong, NSW, Australia - <i>Munro's Hampton-Perseverence Tram, #1, Hampton, Queensland, Australia</i>	Restoration
911	1	<b>The Northwest Railway Museum</b> , Snoqualmie WA - <i>S. A. Agnew Lumber Co., Centralia, WA</i>	Display
918	2	<b>Ralph Day</b> (railfan), Biddeford Station Inc., Hwy 1, Biddeford, ME - <i>Intermountain Coal &amp; Lumber Co., Putney, KY</i>	Display
949	1	<b>Will Harris</b> (railfan), North Fork & Western RR, Goshen, VA - <i>McClure Lumber &amp; Builder's Supply Co., McClure, VA</i>	Display
982	5	<b>Cia de Luz Y Power Museum</b> , Chapultepec Park, Mexico City, Mexico - <i>Mexican Light &amp; Power Co. (Beristain-Necaxa RR), Beristain, Mexico</i>	Display
1503	5	<b>Cass Scenic Railroad #5</b> , Cass, WV - <i>Mower Lumber Co., Cass, WV</i>	Operational
1519	1	<b>The B &amp; O Railroad Museum</b> , Baltimore MD - <i>Mower Lumber Co., #1, Cass, WV</i>	Display
1568	19	<b>Veterans Park</b> , Harrod, OH [12 miles east of Lima OH] - <i>Georgia-Pacific Corp., Swandale, WV</i>	Display
1643	4	<b>Heritage Museum</b> , Libby, MT - <i>J. Neils Lumber</i>	Display
1799	2	<b>Railroad Museum of Pennsylvania</b> , Strasburg, PA - <i>Ely Thomas Lumber Co., Fenwick, WV</i>	Display
1848	2	<b>Teziutlan Copper Co. Plant</b> , Teziutlan, Mexico - <i>Teziutlan Copper Co., Teziutlan, Mexico</i>	Display
1896	4	<b>El Dorado Western Railway Foundation</b> , Placerville, CA - <i>Diamond &amp; Caldor Ry, Diamond Springs, CA</i>	Restoration
2005	2 (7)	<b>Austin State University</b> , Nacogdoches, TX - <i>W. T. Carter &amp; Brothers Lumber Co</i>	Display
2143	9	<b>Mid-Continent Railway Museum</b> , North Freedom, WI - <i>Goodman Lumber Co., Goodman, WI</i>	Display
2147	2147	<b>Little River Railroad Museum</b> , Townsend, TN - <i>Conasauga River Lumber Co, Conasauga, TN</i>	Display
2172	1	<b>World Forestry Center</b> , Portland, OR - <i>Stimson Lumber Co., #1 PEGGY, Gaston, OR</i>	Display
2194	3	<b>Brad Milne</b> , (railfan) McKenna, WA - <i>Bristol Silver Mines, Pioche, Nevada</i>	Restoration
2257	5	<b>Codelco Chile Division El Teniente</b> , Rancagua, Chile - <i>Braden Copper Co., #5, Rancagua, Chile</i>	Display
2297	3	<b>Tuolumne Co. Fairgrounds</b> , Sonora, CA - <i>Pickering Lumber Corp., Standard, CA</i>	Display
2305	3	<b>Aaron Zorko</b> (railfan), Tillamook, OR - Stored at Oregon Coast Scenic Railroad Awaiting restoration <i>Rayonier, Inc., Hoquiam, WA</i>	Restoration
2317	1	<b>Steamtown National Historic Site</b> , Scranton, PA - <i>Meadow River Lumber Co. Rainelle, WV</i>	Needs Restoration
2334	2	<b>Insular Lumber Co.</b> , Fabrica, Negros Occidental, Philippine Islands - <i>Insular Lumber Co. #2, Fabrica, Negros Occidental, Philippine Islands</i>	Abandoned
2348	10	<b>Insular Lumber Co.</b> , Hinobar-an, Negros Occidental, Philippine Islands - <i>Insular Lumber Co. #10, Hinobar-an, Negros Occidental, Philippine Islands</i>	Display
2351	13	<b>Alishan Forest Railway</b> , Central Film Co.'s Cultural City, Taipei, Taiwan - <i>Alishan Forest Railway #13, Taiwan</i>	Display
2352	12	<b>Alishan Forest Railway</b> , New Station, Taiwan - <i>Alishan Forest Ry #12, Taiwan</i>	Display
2366	35	<b>Bob Kirtlan</b> , (railfan), Clarksburg, CA - <i>Brimstone &amp; New River RR, New River TN</i>	Under restoration For Sale
2374	4	<b>Ingenio Plantation, Plantation</b> , Guatemala - <i>Ingenio Pantelon (Pantaleon Sugar Plantation), Pantaleon, Cotzugamalpa, Guatemala</i>	Displayed
2449	3	<b>Buena Vista Station</b> , Mexico City, Mexico - <i>Teziutlan Copper Co., Teziutlan, Mexico</i>	Display
2465	7	<b>Roaring Camp &amp; Big Tree #7</b> , Felton, CA - <i>West Side Lumber Co. #7, Tuolumne, CA</i>	Operational
2475	1	<b>British Columbia Forest Discovery Centre</b> , Duncan, BC - <i>MacMillan-Bloedel, Ltd., Chemainus, BC</i>	Display
2490	102	<b>City of Vernonia</b> , City Park, Vernonia, OR - <i>Long-Bell Lumber Co., Vernonia, OR</i>	Display
2519	7	<b>Roaring Camp &amp; Big Trees NG RR #6</b> , Felton, CA - <i>W. M. Ritter Lumber Co., Hurley, VA</i>	Restoration due
2548	2	<b>Alberni Valley Museum</b> , Port Alberni, BC - <i>Alberni Pacific Lumber Co., Port Alberni, BC</i>	Restoration
2549	14	<b>Puffing Billy Preservation Soc</b> , Belgrave, Victoria, Australia - <i>Alishan Forest Ry, #14, Taiwan</i>	Display
2550	15	<b>Alishan Forest Railway</b> , Pei-men yard, Cha-Yi, Taiwan - <i>Alishan Forest Ry, #15, Taiwan</i>	Display
2557	21	<b>Alishan Forest Railway</b> , Chun-San Park, Cha-Yie, Taiwan - <i>Alishan Forest Ry, #21, Taiwan</i>	Display

2576	-	<b>M. McEwen</b> , (railfan), Melbourne , Victoria, Australia - <i>Cameron &amp; Sutherland (D), Melbourne, Australia</i>	In Parts, less trucks
2582	3	<b>Gomez Palacio</b> , Durango, Mexico - <i>S. A. Compania Maderera Durango, El Salto, Durango, Mexico</i>	Display
2593	1	<b>Roaring Camp &amp; Big Trees NG RR #1</b> , Felton, CA - <i>W. M. Ritter Lumber Co., Hurley, VA</i>	Operational
2598	3	<b>Pennsylvania Lumber Museum</b> , Denton Hill (Galeton), PA - <i>Ely Thomas Lumber Co., Fenwick, WV</i>	Display
2632	16	<b>Alishan Forest Railway</b> , Chi-nan Forestry Park, Taiwan - <i>Alishan Forest Ry, #16, Taiwan</i>	Display
2633	17	<b>Alishan Forest Railway</b> , Rail Hotel on Alishan, Taiwan - <i>Alishan Forest Ry, #17, Taiwan</i>	Display
2634	18	<b>Alishan Forest Railway</b> , Fen-Chi-Hu Engine House, Taiwan - <i>Alishan Forest Ry, #18, Taiwan</i>	Display
2645	15	<b>Yosemite Mountain-Sugar Pine RR, #15</b> , Fish Camp, CA - <i>West Side Lumber Co. #15, Tuolumne, CA</i>	Operational
2664	22	<b>Alishan Forest Railway</b> , Chi Chi Train Station, Taiwan - <i>Alishan Forest Ry, #22, Taiwan</i>	Displayed
2679	1	<b>Komoka RY Museum</b> , Komoka, Ont., CAN - <i>Ray Industries, South River, Ont.</i>	Restoration
2712	3	<b>Atikokan Centennial Museum</b> , Atikokan, Ont., Canada - <i>Casland Ore Co., Ont.</i>	Display
2714	23	<b>Alishan Forest Railway</b> , Alishan New Station, Taiwan - <i>Alishan Forest Ry, #23, Taiwan</i>	Display
2724	24	<b>Alishan Forest Railway</b> , Hotel in Alishan, Taiwan - <i>Alishan Forest Ry, #24, Taiwan</i>	Display
2769	-	<b>City of Columbia Falls</b> , Town Park, Columbia Falls, MT - <i>F. H. Stoltz Land &amp; Lumber Company</i>	Display
2773	5	<b>Sergio Gamero</b> , (railfan), El Salto, Durango, Mexico - <i>Cia Maderera De Durango, S. A., Salto, Durango, Mexico</i>	Stored
2787	25	<b>Alishan Forest Railway</b> , Pei-men yard, Chia-yi, Taiwan - <i>Alishan Forest Ry, #25, Taiwan</i>	Operational
2788	26	<b>Alishan Forest Railway</b> , Pei-men yard, Chia-yi, Taiwan - <i>Alishan Forest Ry, #26, Taiwan</i>	Operational
2790	28	<b>Alishan Forest Railway</b> , Miao-li Rail Park, Miao-li , Taiwan - <i>Alishan Forest Ry, #28, Taiwan</i>	Display
2791	29	<b>Alishan Forest Railway</b> , Fen-chi-hu engine house, Taiwan - <i>Alishan Forest Ry, #29, Taiwan</i>	Display
2800	-	<b>Maroochy Shire Council</b> . Stored at Workshops Museum, Ipswich, Queensland, Australia - <i>Moreton Central Sugar Mill, Maroochy Shire, Queensland, Australia</i>	Restoration
2804	36	<b>Cass Scenic Railroad #36</b> , Cass, WV - <i>Brimstone &amp; New River RR, New River, TN</i>	Restoration
2835	14	<b>Georgetown Loop RR, Inc.</b> Stored at Colorado Railroad Museum, Golden Colorado - <i>West Side Lumber Co., Tuolumne, CA</i>	Operational
2876	14	<b>Codelco Chile Division El</b> , TenienteRancagua, Chile - <i>Braden Copper Co., #14, Rancagua, Chile</i>	Display
2933	508	<b>Ferrocarril Nacinal de Brazil</b> , La Paz, Bolivia - <i>Ferrocarril Nacinal de Brazil, La Paz, Bolivia</i>	Reported derelict by 1991
2938	6	<b>Private Owner</b> , Escanaba, MI - <i>J. Neils Lumber Co., Libby, MT</i>	Restoration
2940	5	<b>National Railroad Museum</b> , Green Bay, WI - <i>Ely-Thomas Lumber Co., Fenwick, WV</i>	Display
2946	31	<b>Alishan Forest Railway</b> , Pei-men yard, Chia-yi, Taiwan- <i>Alishan Forest Ry, #31, Taiwan</i>	Operational
2947	32	<b>Alishan Forest Railway</b> , Chu-chi, Chia-yi, Taiwan- <i>Alishan Forest Ry, #32, Taiwan</i>	Display
2977	8	<b>Railway Historical Society of Northern New York</b> , Croghan, NY - <i>Pascagoula Veeneer Co., Crosby, MS</i>	Restoration
2978	2978	<b>Roots of Motive Power</b> , Willits, CA - <i>Robert Dollar Co., Glendale, OR</i>	Display
3014	7	<b>Timber Heritage Association</b> , Eureka, CA - <i>Northern Redwood Lumber Co. (Arcata &amp; Mad River RR), Korb, CA</i>	Stored
3066	5	<b>White Mountain Central RR</b> , North Woodstock, NH - <i>East Branch &amp; Lincoln RR, Lincoln, NH</i>	Stored
3092	4	<b>Sierra Nevada Logging Museum</b> , Arnold, CA - <i>Yosemite Lumber Co. #4, Merced Falls, CA</i>	Restoration
3118	12	<b>Doug Kuntz</b> , (railfan), <b>Foster Brook &amp; State Line RR</b> , Bradford PA - <i>Colbert Lime Rock Asphalt Co., Cherokee, AL</i>	Operational
3131	7	<b>Cass Scenic Railroad #7</b> , Cass, WV - <i>Meadow River Lumber Co., Rainelle, WV</i>	Restoration
3142	3	<b>Cass Scenic Railroad #3</b> , Cass, WV - <i>S. A. Agnew Lumber Co., Centralia, WA</i>	Restoration
3147	1	<b>British Columbia Forest Discovery Centre</b> , Duncan, BC - <i>Osborn Bay Wharf Co., Crofton, BC</i>	Display
3169	1	<b>Hewitt Park</b> , Oroville, CA - <i>Feather River Ry, Feather Falls, CA</i>	Display
3170	6	<b>El Portal Transportation Museum</b> , El Portal, CA - <i>Pickering Lumber Corp., Standard, CA</i>	Display
3172	2	<b>Travel Town Museum</b> , Los Angeles, CA - <i>Camino, Placerville &amp; Lake Tahoe Railway, Camino, CA</i>	Display
3176	8	<b>Royal Gorge Route</b> , Canon City, CO - <i>West Side Lumber Co #8, Tuolumne, CA</i>	Display

3177	2	Railtown 1897 State Historic Park , Jamestown, CA - Georgia-Pacific Corp., Feather River Ry #2, Feather Falls, CA	Operational
3180	33	Timber Heritage Association, Eureka, CA - Pickering Lumber Corp., Standard, CA	Stored
3189	4	Cass Scenic Railroad #4, Cass, WV - Mower Lumber Co., Cass, WV	Operational
3197	11	Duncan Park, Natchez, MS - Crosby Lumber & Manufacturing Co., Crosby, MS	Display
3199	9	Midwest Central Railroad, Mt Pleasant, IA * - West Side Lumber Co., #9, Tuolumne, CA - (* 1-8-2011, leased to Georgetown Loop RR, Silver Plume, CO)	Operational
3203	5	Arizona State Railroad Museum, Williams AZ - Anaconda Copper Mining Co., Bonner, MT	Restoration
3221	3	Cass Railroad #11, Cass, WV - Georgia-Pacific Corp., Feather Falls, CA	Operational
3233	1	Oregon Historical Society, Prineville, OR - Mount Emily Lumber Co., Hillgard, OR	Operational
3241	112	Center for Transportation & Commerce, C. T. & C Ry, Galveston, TX - On loan for display Texas City, TX - Conasauga River Lumber Co., Conasauga, TN	Display
3248	7	Shelton Chamber of Commerce , Shelton, WA - Simpson Logging Co., McCleary, WA	Display
3249	5	Port of Longview, Longview, WA - Long-Bell Lumber Co., Vaughn, OR	Restoration
3254	8	Fred Kepner, (railfan), Merrill, OR - Pickering Lumber Corporation, Standard, CA	Stored
3256	1925	North Carolina Transportation Museum, Spencer, NC - Bemis Lumber Co. (Graham County RR), Robbinsville, NC - Day On Shay 3256	Awaiting Service
3262	3	British Columbia Forest Discovery Centre, Duncan, BC, CAN - Mayo Lumber Co., Paldi, BC	Operational
3264	10	Lopez Sugar refinery, Negros, Philippines - Insular Lumber Co. #4, Fabrica, Negros Occidental, Philippines	Display
3274	4	Philippine Lumber Manufacturing Co., Fabrica, Negros Occidental, PI - Philippine Lumber Manufacturing Co., Catabangan, Luzon, Philippines	Stored
3281	1	City of Picayune, Chamber of Commerce Park, Picayune, MS - Crosby Forest Products	Display
3286	7	Dr. Al Nickel, (railfan), Jamestown, CA - Stored at Railtown 1897 State Historic Park, Jamestown, CA - Pickering Lumber Corporation, Standard, CA	Private
3288	10	Allen County Museum, Lima, OH - National Lime & Stone Co., Lima, OH	Displayed
3289 {3243}	1	National Museum of Science and Technology, Ottawa, Ont. Canada - Elk Falls Co. Ltd., Duncan Bay, BC	Operational
3298	70	Town of Iroquois Falls, Anson Park, Iroquois Falls, ON, CAN - Abitibi Power & Paper Co., Iroquois Falls, Ontario, CAN	Display
3299	3229	Michael Miller (railfan), New Centerville, PA - Bemis Lumber Co. (Graham County RR #3229), Robbinsville, NC	Under Restoration
3302	12	Georgetown Loop RR, Inc. - Stored at Colorado Railroad Museum, Golden CO - West Side Lumber Co., Tuolumne, CA	Operational
3309	8	Insular Lumber Co., Sagay City, Negros, PI - Insular Lumber Co. Fabrica, Negros Occidental, Philippines	Stored
3311	12	Kaatza Station Museum, Lake Cowichan, BC - Comox Logging & Railway Co., Ladysmith, BC	Display
3314	6	NJ Museum of Transportation, Inc., Farmingdale, NJ - Ely-Thomas Lumber Co., Jetsville, WV	Restoration
3315	10	tain-Sugar Pine RR, Swiss Melody Inn, Fish Camp, CA - West Side Lumber Co., Tuolumne, CA	Operational
3320	2	Cass Scenic Railroad #2, Cass, WV - Railway Appliance Research, Ltd. #114, North Vancouver, BC, CAN	Operational
3327	11	Mt. Rainier Scenic Railroad, Mineral, WA - Pickering Lumber Corporation, Standard, CA	Awaiting Restoration
3336	5	Illinois Railway Museum, Union, IL - Klickitat Logging & Lumber Co. (St. Regis Paper Co.), Klickitat, WA	Restoration
3345	107	LaPorte County Historical Steam Society, Hesston, IN - Oregon Lumber Co., Baker, OR	Operational
3346	7	Point Defiance Park Camp 6, Tacoma, WA - Klickitat Logging & Lumber Co. (St. Regis Paper Co.), Klickitat, WA	For Sale Camp Closed
3348	10	City of Forks, Tillicum Park, Forks WA - Rayonier Inc., #10, Sekiu, WA	Display
3350	115	Fort Steele Heritage Town, Ft Steele, BC - Railway Appliance Research Ltd., North Vancouver, BC	Display
3354	6	Cass Scenic RR #6, Cass, WV - Western Maryland Railway, Elkins, WV	Operational

## Questionable Reports of Surviving Shays

Lima #	Road #	Current Location - Last Working RR	Status
196	3	Private Property West of Sumter, SC - Sumter Pine & Cypress	Abandoned
431	2	In swamp near Port Gibson, Alan, MS - Allen Cooperage Co., Nanachehaw, MS	Abandoned
1579	-	rumored "Washed into the Red River", Colfax, LA - Latt Lumber Co. Ltd., Colfax, LA	Doubtful
1913	6	On beach near Beaver Cove, BC - Wood & English Timber Co., Englewood, BC	In Shallow Water
2932	1	Ferrocarril Nacinal de Brazil, La Paz, Bolivia - Ferrocarril Nacinal de Brazil, La Paz, Bolivia	For Parts

## Willamette Survivors Often confused with Shays

Willamette cn-#	Road #	Current Location - Last Working RR	Status
cn-7	#7	Historical Museum, Ft. Missoula, MT - Anaconda Copper	Display
cn-13	#6	City Park, Cathlamet, WA - Crown Zellerbach Corp.	Display
cn-16	#4	East Lauridsen Blvd., Port Angeles, WA - Rayonier Corp.	Display
cn-18	#4	Railroad Park, W of I-5, Medford, OR - Medford Corp	Restoration
cn-21	#7	Dumsmuir Transportation Park, US I-5, Dunsmuir, CA - Medford Corp.	Display
cn-34	#2	Mt. Rainier Scenic Railroad, Mineral, WA - Rayonier Incorporated	Operational

## The Town of Cass From Cass Railroad website

The history of the town of Cass follows the evolution of the lumber companies that inhabited the valley and operated the West Virginia Pulp and Paper Mill. Once a symbol of the economic power that drove this valley, the mill building has been victim of two major fires in 1978 and 1982. Now only twisted steel and rusted machinery remain amid the cracking cement. Trees and vines grow in a place where humans once toiled among the machines of lumber and fine wood products production.

The mill operation was enormous during its heyday 1908 to 1922. It ran two 11-hour shifts six days per week, cutting 125,000 board feet of lumber each shift, an impressive 1.5 million feet of lumber per week. The Cass mill also had drying kilns using 11 miles of steam pipe to dry 360,000 board feet of lumber on each run.



The adjoining planing mill was three stories high, measuring 96 by 224 feet. Massive elevators carried up to 5,000 feet of lumber to the separate floors and machines. Some of the flooring machines were so big that it took 15 men to operate them. There were two

resaws here that could accommodate boards up to 35 feet long. The large surfacing machines finished all four sides of a board in one operation.



Roy Clarkson, in Tumult on the Mountain, estimated that in 40 years the Cass mill and the mill at Spruce turned more than 2-14 billion feet of timber into pulp or lumber. The town of Cass was named for Joseph K Cass (left picture), Chairman of the Board of W.Va. Pulp & Paper Co. Each morning the C&O dispatched a 44-car pulpwood train for the paper mill at Covington. At its peak, West Virginia Pulp and Paper employed between 2,500 and 3,000 men. In an average week six to 10 carloads of food and supplies traveled over the railroad to 12 logging camps. Indeed, the ruined mill is a symbol and a reminder of a past resplendent with human achievement. But the story of the mill is also a story of the rails that linked that mill with the timber in the nearby mountains.

At the turn of the century lumbermen eyeing the large tracts of virgin timber on Cheat Mountain, west of Cass, decided to route the timber east through a mountain gap and down the steep grade to the planned mill. An interchange between the Greenbrier and Elk River Railroad at Cass and the C&O was most economical but it called for the building of a difficult mountain railroad.

In 1900 Samuel Slaymaker, a timber broker, set up a construction camp at the mouth of Leatherbark Creek (the present site of the Cass shops). He and his hardy men pushed the rails up and along Leatherbark Creek, and gained altitude by constructing two switchbacks. Tracks were laid around the face of the promontory -- up and up along the ridge, winding until at last the rails reached

the gap between the mountains. Here a camp named Old Spruce was established.

Around 1904, 1-1/4 miles of track were laid from Old Spruce to [Spruce](#), a new town on the Shavers Fork on the Cheat River. At 3,853 feet, Spruce became the highest town in the eastern United States. From Spruce, the track eventually ran 35 miles south into the Elk River Basin to the town of Bergoo and 65 miles north, along Shavers Fork of Cheat River. Spruce became the hub of the rail empire. The main lines (Cass to Spruce, Spruce to Bergoo and Spruce to Cheat Junction) were 82 miles long. During the 1920s there were many miles of branches in use at once, but the total length was probably about 140 miles at maximum. Altogether the logging railroad built about 250 miles of track. At Spruce a large pulp peeling rossing mill was constructed. Billions of board feet of logs passed through Spruce and eventually went over the mountain behind the tanks of big 4 ton Shays like Number 12.

#### The Town of Cass after 1905



After 1905 the railroad went through a succession of name changes. The Greenbrier & Elk River became the Greenbrier, Elk & Valley Railroad in 1909, only to become the Greenbrier, Cheat & Elk Railroad (GC&E) in 1910. This quick succession of names reflects the early permutations so characteristic of a young and booming logging empire. Actually, all these names changes are a bit misleading because West Virginia Pulp and Paper (WVP&P) owned and operated the entire lumber operation from its beginnings. The original lumber company was West Virginia Spruce Lumber, set up by West Virginia Pulp and Paper to develop Cass property. WV&P bought (on paper) its West Virginia Spruce operation in 1910. At that time the railroad became a common carrier.

In 1926 merger negotiations were conducted between GC&E and the Western Maryland, which wanted to tap the rich coal reserves of the region. March 3, 1927 saw an agreement reached, and the Western Maryland purchased the 74 miles of north-south mainline between Cheat Junction to Bergoo. Shays were used to pull coal until the line could be renovated to accommodate the massive WM H-8 2-8-0's. Up to 10 locomotives were required to boost the coal loads up the steep grade.

The town of Spruce began to die when the peeling mill ceased operations in 1925. In the early 1930s the town became an isolated helper station on the Western Maryland. With the coming of diesels, all locomotives serving Cass were transferred to Laurel Bank and Spruce became a ghost town; all that is left now is crumbling concrete slabs, rubble and a two-track horseshoe curve of railroad track.

Mower Lumber Company acquired the Cass operation in 1942 to cut second growth timber on Cheat and Back Allegheny. Track was re-laid into old logging areas. Huge steam skidding machines were rigged on the hillsides and knobs, bringing saw logs for the mill on the rail lines. But second growth could not feed the mighty mill for long. By 1950 the operation was in decline. The sawmill worked only one shift; the big four-truck shays languished on sidings while three overworked and tired three-truck Shays, Number 1, 4, and 5, were assigned to the hill.

With Edwin Mower's death in late 1955 family members were unable to keep the operation going. The rail-haul logging operation and bandsaw mill ceased operation abruptly July 1, 1960. Employees were not notified until their shift ended on June 30. That night gloom and despair hung heavy over the town of Cass; it seemed likely that the town would go the way of Spruce. Three months after the mill closed, Walworth Farms (controlled by Peter Grace, a principal of W.R. Grace Co. of New York) purchased all the landholdings and acquired Mower Lumber Company. The town of Cass and railroad was retained by real-estate-oriented offshoot, The Don Mower Lumber Co. A scrap dealer, the Midwest Raleigh Corporation, was subcontracted to dismantle the line. It seemed that the life cycle of the logging town and its railroad had reached its bitter end.

But other forces were at work this time. In late September 1960, a rail fan, Russel Baum of Sunbury, Pa., initiated an effort to save the railroad. Baum reasoned that the Shays and the old logging track could become a big tourist attraction. A small number of local businessmen formed the Cass Planning Commission and state legislators were approached. Skeptical officials initially declined to participate. But when the state legislature's prestigious Joint Committee on Government and Finance took an inspection trip over the former Mower Lumber "railroad to the sky," to Bald Knob, the bureaucratic wheels were set in motion.

During the State Legislature's regular session in early 1961 an appropriation was approved and the governor of West Virginia signed a bill bringing Cass into the state parks system. The Midwest Raleigh Steel Corporation received \$125,000 for seven miles of "main line" track from Cass to Old Spruce and four miles of branch line from Old Spruce to Bald Knob. Also included in the agreement were three locomotives, 10 flat cars, four camp cars, three motor cars and other equipment. Work began almost immediately, but an old logging railroad doesn't turn into a tourist line overnight. It wasn't until 1963 that Shays Nos. 1 and 4 were put in working order and safety rails and benches were installed on a few flat cars. Trains went about halfway up Back Allegheny Mountain, above the switchbacks to a pleasant pasture that has since come to be known as Whittaker Station. At that time there was not enough money to fix the tracks the remaining distance to Bald Knob.

The first year of operation was all that was needed to prove the skeptics wrong. Twenty-three thousand people flocked to this remote mountain town and its former back woods logging railroad. Expansion of Cass continued. The shop, initially leased, was purchased from Mower Lumber Company. In 1966, \$800,000 was invested in rehabilitating the line to Bald Knob; the total line was opened in 1968. In 1977, the West Virginia Department of Natural Resources acquired the former logging Company properties in Cass. Buildings were repaired and repainted. And by 2010, twenty of the former company houses have been restored

and are rented to the public as park cottages. People now have the opportunity to spend their vacation in Cass.

Since 1985, the West Virginia Department of Commerce has proceeded with plans to further develop the historic town. More company houses are being restored for use as cottages. Replica plank walkways have been constructed throughout the town, and white picket fences now surround the cottages.



## THE VIEW FROM THE ENGINEER'S SIDE OF THE CAB: Commentary from MEMRR's President

Jo Ann and I are happy to be back on our 'home rails' after almost a month away from Tennessee with time being almost equally spent between the prairies of western Minnesota and the mountains of Peru. I can report, however, that we did ride the narrow-gauge rails of Inca Rail to and from the lost city of the Incas, Machu Picchu while we were away. I wish to express my thanks to Vice-President John Carter for hosting the July Coordinator's Meeting as well as the club's July business meeting in my absence.

I understand I missed a 'lively' discussion at that meeting sparked by the club's continued electrical problems with the HO layout that needed to be aired. That discussion during the business meeting and individual conversations I had prior to that meeting, and following it, has resulted in a most positive outcome. A new electrical committee has been formed with volunteers coordinated by Bill Hensley. That committee has been charged with the goal of identifying the current electrical problems that have been preventing smooth and reliable operation of the layout, with creating a wiring diagram that will provide a standard for troubleshooting any future problems, with designing the wiring for the newly added staging yard and freight yard, and with communicating with the membership on a regular basis on their progress, their proposed changes (major changes subject to vote by module owners and an additional single vote by the club as per a previously passed motion). This group is to be congratulated on their acceptance of this charge by me on behalf of the membership and on the active and cooperative manner in which they have proceeded to work over the past few weeks. They are spending many hours together under the layout tracing every wire, identifying its purpose, and making the changes they collectively decide are necessary to achieve our common goal of a model railroad layout that runs as well as it looks. Please assist them in any way you can and thank them for the excellent work they are

Possibilities for development for the Cass Scenic Railroad State Park are limitless. The future will bring additional recreational facilities for park visitors, including a campground, hiking trails, and additional interpretive programs.

The people of Cass and West Virginia are deeply rooted in their own expansive and fascinating history – the history of bold, pioneering men and women who settled this country and built a magnificent logging empire under very difficult circumstances. The spirits of the past were reincarnated in the original visionary and determined supporters of the Cass Scenic Railroad who engaged in the lonely, tough struggle of transforming a tired, worn-out and about-to-be-scraped logging railroad into a first-rate living museum. Today the spirits of past achievement live on in the men and women who keep a priceless collection of antique steam locomotives running much longer than ever intended, on a railroad that is surely one of the most interesting and challenging in the world.

doing and the speed at which they are accomplishing their tasks. Gentlemen, we thank you for your knowledge in an area that is foreign to most of us who identify with the top of the rails and not what goes on below or through them that makes our trains operate, and for the time, effort and teamwork you are providing for the good of us all. All signals are green and our model railroading experiences at the Carter Railroad Museum are going to be even more pleasurable because of your dedication to the club. We appreciate you very much!



I had the pleasure to bring ETSU President, Paul Stanton, Jr., over to the Carter Railroad Museum for a tour and an update of all our projects on Thursday, August 11<sup>th</sup>. We spent about an hour looking at the club's work and reviewing all our initiatives over the past year. Dr. Stanton had not been in the railroad museum for almost a year and he was very surprised with all the changes that have taken place in that time due to your efforts, dedication and hard work. He was very excited about the newly renovated and enlarged room on the south side of the building with its emerging Tweetsie layout and our little railroad library. He asked many questions about our club and how you accomplished all the work that has gone into making the museum what it is today and expressed his personal appreciation for all you are doing for the university and the surrounding community. He remains our most

loyal and strongest supporter and pledges to do everything he can to make his current administration fully aware of the importance of our museum and contribution to the university and the value of its being a permanent part of the university campus. He will also do his best to inform his successor of our history as a museum and the important connection between us, George L. Carter the railroad man and business entrepreneur, and the founding of ETSU on his donated property. With regard to continued articles in local newspapers reporting our future move to this place or other in Johnson City, he has no knowledge of any such plans and is as much in the dark about them as I am or you are as to their origin. He wishes only for us to be where we are and to continue to do what we are doing. Thank you President Stanton, for your support and for being on the same track as we are.



My thanks to our exceptional newsletter editor, Ted Bleck-Doran, not only for the outstanding job he does every month producing *The Signal Bridge* that we all look forward to getting and reading from cover-to-cover, but especially for his detailed and informative articles promoting our upcoming club sponsored trip to Cass Scenic Railroad, and other area rail excursion possibilities in West Virginia, over the Labor Day Weekend. This is an exciting area for steam locomotives and for getting up-close-and-personal with the motive power for the trains. There are excellent opportunities for photographers. It's going to be a fun-filled weekend. Currently 10 of us are going and I have lodging accommodations in 2 of the restored Cass Lumber Company houses that will sleep 14 people. Total cost of the houses will be equally shared by the group (currently about \$25/night for the 3 nights; lower if more go). I



have room for 4 more folks in these houses—first come; first served. Reservations on the railroads are to be handled individually, but Ted has provided details and prices so you can contact the vendors directly by telephone or email. **But you have to act soon—it's going to be a great trip; don't be left at the station!!!!**

Our annual club picnic hosted by Tom and Kim McKee is only days away. Make arrangements with Jim Pahr, picnic coordinator, if you plan to attend and go to the club website to sign up and to indicate the covered dish you are bringing so we don't show up with 30 bowls of potato salad. Tom has a great G-Gauge garden railroad and he may also run some live-steam locomotives. This is a great annual social event that gets us out with our spouses or 'significant-others' and away from our modeling work at home or at the railroad museum. Remember, adults only (no children). Parking is very limited at the McKee's home, so we are providing nearby church lot parking and a shuttle service. We could use additional vans for this so please contact Jim if you can help with this service by driving your van or SUV to transport some party-goers. Thanks in advance.



ETSU will begin fall classes on August 29<sup>th</sup> and parking will once again be tight for Thursday evenings. I'll get parking passes for the club once more and have them available for you ASAP. Lots of big projects are well underway at the Carter Railroad Museum, our home, including the wiring on the HO club layout, the construction of the new freight yard on that layout, and the building of the Tweetsie railroad layout in the Ken Marsh room. There are many opportunities for all our members to come and help out, lend your time and modeling talents, or to learn new ones. Come join in the fun and excitement. This is a great time to take your membership seriously and pitch into one of these projects. We could really use your help so bring your tools, get on your work clothes and come on down any Thursday evening. Don't forget to bring your favorite trains and come to a Saturday operating session as well. If you don't have DCC in one of your locomotives yet no worries!!! The club has DCC equipped motive power and will show you how to operate the engines. Bring your own consist and hook it up to a club engine and enjoy the run! Hear the whistle blow and dream of all the destinations yet to come.

*Fred Alsop*  
 President, Mountain Empire Model Railroaders  
 Director, George L. Carter Railroad Museum, ETSU

