



THE SIGNAL BRIDGE

NEWSLETTER OF THE MOUNTAIN EMPIRE MODEL RAILROADERS CLUB
SEPTEMBER 2014 - MEMBERS EDITION

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LOCATION

ETSU Campus
George L. Carter
Railroad Museum

HOURS

Business Meetings are held the 3rd Tuesday of each month. Meetings start at 6:30 PM in:

Brown Hall
Room 312

ETSU Campus,
Johnson City, TN.

Open House for viewing every Saturday from 10:00 am until 3:00 pm.

Work Nights are held each Thursday from 5:00 pm until ??

TENNESSEE CENTRAL

EMD E8 - # 6902

Ex-NYC 4084/ PC/ NJT/ NG/ BWDX





*NYC E8 4080 charges through Westfield, New York in May of 1956.
Photo from the Randy Masales collection.*



*NYC E8 4068 leads a TCRM excursion in September of 2001.
Photo by Brian Turner*



Locomotive 6902 was built for the New York Central in 1953 and originally numbered 4048. The locomotive served the New York Central, Penn Central, New Jersey Transit, and the New Georgia Railroads before being used on the Broadway Dinner Train in Nashville for several years. It retains its Broadway maroon and silver paint scheme.



The 6902 was joined by sister locomotives 4064 and 4080 on TCRM excursions for several years. These two locomotives were also built in 1953 for the New York Central. After many years of passenger and commuter service on a variety of railroads, 4064 and 4080 were sold to a private individual who restored them to their original NYC paint scheme. These locomotives pulled TCRM excursions for several years but were sold in early 2007 to a museum in New York State for service on an ex-NYC line.



The E8's at the Medina NY Railroad Museum

The Museum purchased a pair of historic New York Central E-8 diesel locomotives (NYC 4068 and NYC 4080) from Michael Fox of Kansas in 2007. The Units were transported via CSXT from Nashville, TN arriving in Lockport, NY in early April 2007.

E-8 experts Roger and Dwayne Fuehring (sons of the late Bill Fuehring who was instrumental in forming the national Rail Passenger Car Association) were on hand to check them over and fire them up. However, having not been operated in the previous 3 years, the E-8's needed a good deal of maintenance and service. The units were stored in Lockport for a couple of years and are now stored in Medina, where they are undergoing restoration as time and funds permit.



New E-8's on display in Lockport on April 29, 2007

In early August 2007 the Fuehring brothers were back in Lockport assisting with the servicing necessary to bring these units up to FRA maintenance standards for return to active duty on the "Falls Branch and Erie Canal Excursions" between Medina and Lockport, NY. New motor brushes and a pair of bolster shims have been installed. One replacement governor has been installed and checked out. Most of the FRA 92-day inspections have been completed. The brake valves were sent out for re-certification. Volunteer labor has been difficult to schedule and these units have not been in service here yet. Hopefully they will be ready for service soon.

Your help in preserving these great locomotives will be most welcome. Upgrades and service work on these units is very expensive. Donations and gifts for this work will be greatly appreciated.

*Photos from Ted Bleck-Doran, Tennessee Central, and Medina Railroad Museum
Text from Tennessee Central and Medina Railroad Museum*

MOUNTAIN EMPIRE MODEL RAILROADERS MEETING MINUTES August 19, 2014

President Fred Alsop called the meeting to order at 6:35 P.M. in room 312 Brown Hall, ETSU, with 18 members present.

President Alsop called for the reading of the Secretary's report from the July meeting as published in *The Signal Bridge* with a motion being made to accept them by Paul

Haynes, seconded by Tommy Knisley. The report was accepted.

Officer Reports

Newsletter:

Ted Bleck-Doran, Newsletter Editor, said the current newsletter was twenty pages long. He said that he expected articles from Paul Haynes and Hobie Hyder for the next issue. President Alsop commended Ted for a continued good job with the publication of *The Signal Bridge*.

Treasurer:

Gary Emmert, Treasurer, reported that the club's finances were in good standing.

Webmaster:

John Edwards, Web-Master, stated that everything was up to date and complete with the club's web page. John said he has added a picnic page for everyone wishing to attend the annual club picnic at the McKee's to sign up and list what they wanted to bring.

Vice-President :

John Carter reported that Bear Anderson's program on weathering structures will have to be put on hold a while longer due to his involvement with the Tweetsie Layout. Gary Emmert said he would do his long-awaited railroad radio communication program in November. President Alsop said that he had spoken with John Edwards and he had agreed to do another program on how to operate the HO Scale Layout at the Museum for the September program.



E8 6902 with train on the siding at Watertown in the fall of 2001.
Photo by Brent Gaddes

President:

Alsop begin his report by thanking all those members who helped keep the George L. Carter Railroad Museum open and running while he was away on vacation.

President Alsop continued by conveying his condolences to Duane Swank in the passing of his mother and asked Secretary Hobie Hyder to send him a sympathy card.

He also reported on Mike Buster and Ted Bleck-Doran who both have had a bit of bad health of late and also asked that each be sent a get well card.

President Alsop said that while Mike had not been able to come to the museum he wanted everyone to know that he was continuing to work on painting and numbering the club's Deceased Members passenger cars. For those club members that were Veterans, Mike will be placing a flag draped casket in the center of the passenger cars in honor of their service.

President Alsop continued his report by informing the membership that News Channel 5 did an interview on the Tweetsie Trail and as a part of that interview included a segment on the Tweetsie Room. He also reminded the membership that while we had received a lot of publicity on the Tweetsie Layout that a lot of help was still needed to complete the Tweetsie Layout and all help would be appreciated.

President Alsop concluded his report by reminding the membership of the continued importance of keeping accurate account of all visitors coming to the museum and reporting them. He said Joe Smith with University Relations had contacted him concerning how many visitors were coming to the museum. President Alsop stated that since the museum had clickers and had been able to keep tally on visitation to the museum, there have been over 6,200 visitors to the museum since June of last year.



E8 4068 on L&N Historical Society Charter Excursion on September 29, 2001. Photo by Bryan Turner

Old Business':
Learning Clinics:

Alsop said that Ken Harmon did an informative 'how to' clinic on building trees in July as a part of the planned learning sessions at the museum. President Alsop said he hoped to make the planned learning sessions a monthly thing at the museum. John Carter asked if Bear Anderson would be willing to do a 'how to' clinic on rocks. Bear has been sculpting the entrances to the tunnels on the Tweetsie Layout. President Alsop said that Bear was there every work night and he was sure that he wouldn't mind the membership watching him and asking questions about his technique. Ted Bleck-Doran said that he would do a 'how to' clinic in September on how to build the Jordan Model Trucks. In October, President Alsop will get with Bear and Fred will do a 'how to' clinic on painting rocks. Gary Emmert said that he had been asked about opening to the public the 'how to' clinics.

Holiday "How-to" Clinics:

President reminded the membership that we used to do the clinics during the Holiday Season and that we could explore the idea again at a future club meeting, but the current clinics were for club members only.



E8 4080 westbound at Baxter, TN on October 18, 2003. Photo by Kevin Andrusia.

Book Order Discounts:

Jim Pahrts reported that members could receive a 30% discount from Morning Sun Books and TLC Publishing for books being ordered for the Fall NRHS Convention, however, you must have your orders in by mid-September. All orders will be put with the club's order and separated out when they arrive.

Donation form Sargent Engineering

Wrapping up 'Old Business', President Alsop again reminded the membership that a lot of help was needed on the Tweetsie Layout. He said that Sargent Type K couplers had been donated to the museum to replace current Kadee couplers on the HOn3 rolling stock. This should make uncoupling easier since all un-coupling will be manual.

New Business:

Heritage Days:

President Alsop, on behalf of Geoff Stunkard, Heritage Days Coordinator, reported that the next Heritage Days at the museum will be on August 30th. The theme will be "Prairie Fires and Mountain Peaks; The West Side of the Mississippi". President Alsop asked that someone please make sure to let Bob Jones know, so he could bring in his passenger trains to run.

August Coordinators' Meeting Cancelled:

President Alsop reported that there was no Coordinator's Meeting in August, however there would be one in September and all Officers and Coordinators are urged to attend.

Picnic plans Announced:

Plans are now under way for the Annual Fall Picnic on Sunday, September 14th, 4 P.M. at the McKee's house. Jim Pahrts asked the membership to please let John Edwards know as soon as possible if they were going to attend and let him know what they were going to bring so he could post it to the club's website.



E8 4080 leads an E8A, two F7B's, and another E8A westbound at Sykes, TN on October 18, 2003. Photo by Kevin Andrusia.

Festival Of Nations Display - Greenville

The Festival of Nations as reported by President Alsop will be held 10 till 4 at Notre Dame Church in Greenville on Sept. 20th. President Alsop said the club would be taking the Cope Traveling Layout and the 6-footer to display at the event.

Book Ad for Jonesborough Genealogical Society

Charlene McCloud said that the Jonesborough Genealogy Society is publishing a book entitled 'Early Settlers of Washington County' and was seeking paid advertisements. It was suggested that if the club had an interest in placing an advertisement in the book that the cost could be split equally between the Carter NRHS Chapter, Carter RR Museum and Model Railroad Club. The clubs cost would be \$83.35. Charlene stated that at least 500 books will be printed and out there for sale. Jim Pahr made the motion that the Mountain Empire Model Railroaders agree to placing an advertisement in this publication. Ted-Bleck-Doran seconded the motion. Motion carried unanimously.

Library Computer on Line:

Gary Emmert said that the computer was up and going in the Library. He also said that more space was needed in room #236 upstairs. He said there are a lot of extra buildings that could be sold to club members or the public that would help free up much needed space.



View of the TC Railway shops and yard in Nashville in 1968. The Master Mechanic's building, now the home of our museum, is visible on the right. Photo from the TCRM collection

Museum Proposal from Town of Jonesborough

President Alsop reported to the membership that Bob Browning, Jonesborough City Manager, had asked him about opening a satellite location of the George L. Carter Museum in Jonesborough. The town of Jonesborough has a house available that they would like to see used for such a venture. Since the Museum is a part of ETSU, President Alsop told him that he would have to make overtures to President Nolan. Since City Manager Browning's initial conversation with President Alsop, a meeting has been scheduled for 9:30 Thursday August 21st to meet with Mr. Browning and discuss specifics. President Alsop and Bridget Baird from ETSU will be attending on behalf of the University and the Museum. Fred said he would keep the MEMRR updated on any developments regarding this Jonesborough proposal.

Railroad China Display :

President Alsop said that he would like to have the Railroad China and Silver out for display for the NRHS meeting November 13-16. He will be working with Geoff Stunkard to create the display, however if anyone has ideas, you are encouraged to let him know.

The business portion of the meeting was adjourned at 7:47 P.M.

Gary Emmert then presented a very informative Q&A educational session on Railroad Crossings.

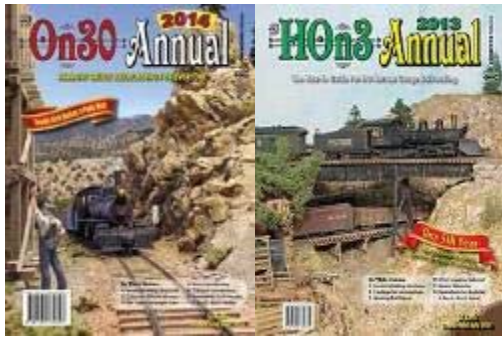
The next meeting will be Tuesday, September 16th at 6:30 P.M. in room 312 at Brown Hall, ETSU.

Those who want to dine together will meet at 5:00 P.M. at the ETSU Market Place cafeteria on the 3rd floor of the D.P. Culp Center.

*Respectively submitted,
Hobie Hyder, Secretary*

***** SAD NEWS *****
CARSTENS PUBLISHING
CLOSES SHOP
RMC, R&R, GREAT RAILROAD
PHOTOGRAPHS, On3 ANNUAL, HO3
ANNUAL MAGAZINES ARE DISCONTINUED





It is with regret that Carstens Publications, Inc. will be closing permanently at close of business on Friday, August 22,

2014. Carstens Publications, Inc. has been a leading publisher of leading hobby magazines for over 50 years. Unfortunately the current economic climate has placed us in this position.

Discussion is continuing with several parties who expressed desire to take on the continuance of the magazines. At this point there is still hope that all three titles will remain in existence. But I can offer no guarantees. We thank you for your patronage over the years, and wish you the best of luck in your endeavors.

MODELING CLINIC: WIRE ARMATURE TREES Ken Harmon

July's "How-To" clinic was led by "Mr. Tree Man" – Ken Harmon. The theme of the clinic focused on making wire armature trees. Ken has perfected the technique of hand turning wire tree trunks and branches, making realistic trees that can be mounted on the "Tweetsie" Layout's step mountainous sides.



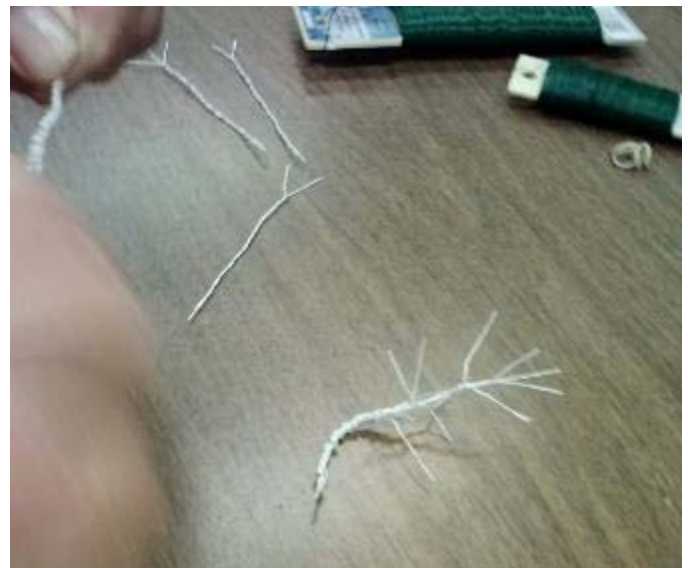
Ken demonstrates how to wind the wire strands



MEMRR Members gather for the tree clinic

STEP 1: Materials that you will need include: 18 gauge wire or light gauge floral wire, floral tape, white glue, polly fiber, and several shades of fine ground foam, and some inexpensive hair spray. **NOTE: When using hair spray or any aerosol spray – work in a well-ventilated area.**

STEP 2: precut the wire into 6 and 9 inch lengths and start with three short strands. Holding the three strands together in one hand, start to twist the strands together, keeping the twists tight to one another. Continue the twist the strands until only around a 3rd of the length remains. These ends become the branches while the wound portion represent the trunks.



Finished twists of 2- and 3 - strand armatures

STEP 3: Once you have several bundles of 2- and 3- strand armatures, you start combining the bundles into the main tree trunk. Using the same twisting technique work from the base of the tree towards the top. An armature bundle can be added to the trunk and worked into the main trunk to create a divergent limb and a cluster of smaller branches.

STEP 4: The floral tape can be wound around the trunk and secondary branches and a coating of white glue used to seal the tape.

- or -

As Bear Anderson suggests, a thin slurry of plaster can be made and the trunks dipped into the plaster. When using the plaster technique the plaster coating is built up like the layers when dipping wax candles.

The layer of glue sealed tape or plaster coating can be painted to represent the tree's bark.

be bent into position to form tree's shape and fill any unwanted gaps as the tree form takes shape.



White glue is used to affix the poly fiber clusters to the armatures



STEP 5: while the glue - plaster - and paint dries take the poly fiber and trim off small clumps of the fiber. The fiber should be spread and separate to give an airy appearance. These clumps will make up the smaller branches toward the crown of the tree.

STEP 7: Once the glue has dried and the poly fiber clumps are secured to the armatures, the ground foam can be added. Apply a liberal amount of hair spray over the poly fiber. The sprinkle some fine ground foam on to the fiber.



NOTE: work for the underside of the tree form and start with the darker shade of foam. Continue to add hair spray and apply lighter shades of ground foam to give the tree depth.



Small clumps of poly fiber are added to the armatures to represent the smaller branches near the crown of the tree.

NOTE: fine red - yellow - or - orange foam can be applied sparingly to represent fruit on fruit bearing trees.

STEP 6: Using the white glue, affix the poly-fiber clumps to the armatures. The branch, limb and trunk wire clusters can



Three examples of finished trees using the wire armature method



FORD MODEL T GALLERY
IDEAS FOR FINISHING JORDAN VEHICLES

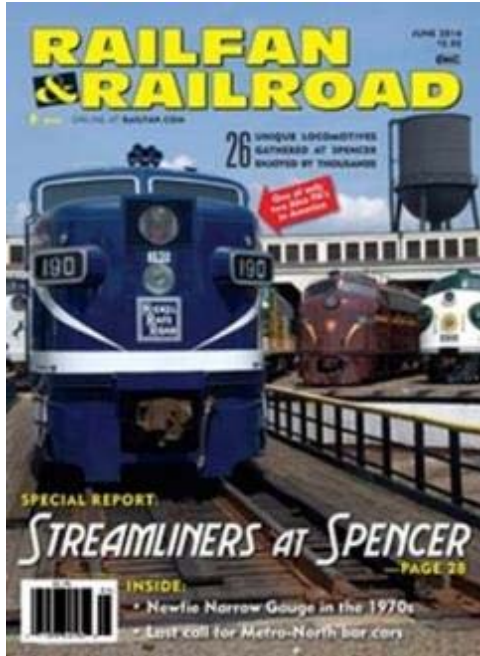








WHITE RIVER ACQUIRES CARSTENS RAIL MAGAZINES



The final issue of Railfan & Railroad produced by Carstens.

BUCKLIN, Mo. – White River Productions has acquired Railroad Model Craftsman and Railfan & Railroad magazines from Carstens Publications Inc., effective Sept. 1. The asset

purchase agreement between Carstens and White River was completed Aug. 28. Carstens Publications had closed at the end of business Aug. 22

Staff assignments for the two publications have not yet been determined. Included in the agreement is the books division of Carstens Publications, which will continue under White River Productions. Not included is Flying Models magazine.

Railroad Model Craftsman magazine was founded in 1933 by Emanuele Stieri as The Model Craftsman, aimed at all areas of scale modeling. Ownership of the publishing company passed in 1934 to Charles Penn. In 1949 the name of the publication was changed to Railroad Model Craftsman, with a focus on the scale model train hobby exclusively. Hal Carstens joined the publishing firm in 1952 and purchased the company in 1963, renaming it Carstens Publications.

Railfan Magazine was founded in 1974. In 1979 it was merged with the defunct Railroad Magazine (which began in 1906 as Railroad Man’s Magazine), becoming Railfan & Railroad.

Kevin EuDaly founded White River Productions in 1992. It is currently producing 22 railroad historical society magazines plus calendars, books, and other peripheral items.

The company also publishes Model Railroad News, Railroads Illustrated, Passenger Train Journal, and The Railroad Press.

FORD MODEL T FROM WIKIPEDIA, THE FREE ENCYCLOPEDIA



1919 Ford Model T Coupe	
Overview	
Manufacturer	Ford Motor Company
Production	1908–1927
Assembly	Detroit, Michigan, U.S.; Highland Park, Michigan, U.S.; Los Angeles, California, U.S.; Minneapolis, Minnesota, U.S.; St. Louis, Missouri, U.S.; St. Paul, Minnesota, U.S.; Dothan, Alabama, U.S.; Cincinnati, Ohio, U.S.; ^[1] Cleveland, Ohio, U.S.; ^[2] Columbus, Ohio, U.S.; ^[3] Buenos Aires, Argentina; Geelong, Australia; São Bernardo do Campo, Brazil; Toronto, Canada; Walkerville, Canada; Copenhagen, Denmark;

	Manchester, United Kingdom; Berlin, Germany; Cork, Ireland; Cádiz, Spain
Designer	Henry Ford, Childe Harold Wills, Joseph A. Galamb and Eugene Farkas
Body and chassis	
Class	Full-size Ford, economy car
Body style	2-door touring (1909–11) 3-door touring (1912–1925) 4-door touring (1926–1927) no door roadster (1909–11) 1-door roadster(1912–1925) 2-door roadster (1926–1927) roadster pickup (1925–1927) 2-door coupé (1909–1912, 1917–1927) 2-door Coupelet (1915–17) Town car (1909–1918) C-cab wagon (1912) 2-(Center) door sedan (1915–1923) 2-door sedan (1924–1927) 4-door sedan (1923–1927) Separate chassis were available all years for independent coachbuilders
Layout	FR layout
Powertrain	
Engine	177 C.I.D. (2.9 L) 20 hp 14
Transmission	2-speed planetary gear
Dimensions	
Wheelbase	100.0 in (2,540 mm)
Length	134 in (3,404 mm)
Curb weight	1,200 pounds (540 kg)
Chronology	
Predecessor	Ford Model S
Successor	Ford Model A

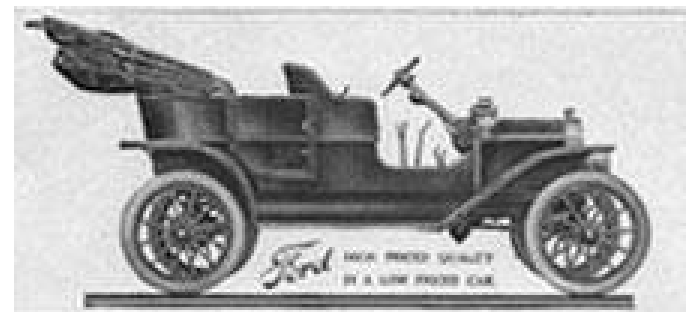
The **Ford Model T** (colloquially known as the **Tin Lizzie**, **Tin Lizzy**, **T-Model Ford**, **Model T**, or **T**) is an automobile that was produced by Henry Ford's Ford Motor Company from October 1, 1908, to May 27, 1927.^{[4][5]} It is generally regarded as the first affordable automobile, the car that opened travel to the common middle-class American; some of this was because of Ford's efficient fabrication, including assembly line production instead of individual hand crafting.^[6] The Ford Model T was named the world's most influential car of the 20th century in an international poll.

Although automobiles had already existed for decades, their adoption had been limited, and they were still mostly scarce and expensive. Automobiles were considered extreme luxury for the common man until the Model T. The Model T was a car that everyone except beggars could own. The Model T set 1908 as the historic year that the automobile became popular for the mass market. The first production Model T was produced on August 12, 1908^[8] and left the factory on September 27, 1908, at the Piquette Plant in Detroit, Michigan. On May 26, 1927, Henry Ford watched the 15 millionth Model T Ford roll off the assembly line at his factory in Highland Park, Michigan.^[9] There were several cars produced or prototyped by Henry Ford from the founding of the company in 1903 until the Model T was introduced. Although he started with the Model A, there were not 19 production models (A through T); some were only prototypes. The production model immediately before the Model T was the Model S,^[10] an upgraded version of the company's largest success to that point, the Model N. The follow-up was the Ford Model A (rather than any Model U). The company publicity said this was because the new car was such a departure from the old that Henry wanted to start all over again with the letter A. The Model T was Ford's first automobile mass-produced on moving assembly lines with completely interchangeable parts, marketed to the middle class.^[11] Henry Ford said of the vehicle:

"I will build a car for the great multitude. It will be large enough for the family, but small enough for the individual to run and care for. It will be constructed of the best materials, by the best men to be hired, after the simplest designs that modern engineering can devise. But it will be so low in price that no man making a good salary will be unable to own one - and enjoy with his family the blessing of hours of pleasure in God's great open spaces."

Credit for the development of the assembly line belongs to Ransom E. Olds with the first mass-produced automobile, the Oldsmobile Curved Dash, beginning in 1901

Characteristics



1908 Ford Model T advertisement

The Model T was designed by Childe Harold Wills, and Hungarian immigrants Joseph A. Galamb and Eugene Farkas

Henry Love, C. J. Smith, Gus Degner and Peter E. Martin were also part of the team. Production of the Model T began in the third quarter of 1908. Collectors today sometimes classify Model Ts by build years and refer to these as "model years", thus labeling the first Model Ts as 1909 models. This is a retroactive classification scheme; the concept of model years as we conceive it today did not exist at the time. The nominal model designation was "Model T", although design revisions did occur during the car's two decades of production.

Engine



1926 Model T engine.



1910 Model T, photographed in Salt Lake City.

Ford Model T engine

The Model T had a front-mounted 177-cubic-inch (2.9 L) inline four-cylinder engine, producing 20 hp (15 kW), for a top speed of 40–45 mph (64–72 km/h). According to Ford Motor Company, the Model T had fuel economy on the order of 13–21 mpg_{us} (16–25 mpg_{imp}; 18–11 L/100 km).^[18] The engine was capable of running on gasoline, kerosene, or ethanol,^{[19][20]} although the decreasing cost of gasoline and

the later introduction of Prohibition made ethanol an impractical fuel for most users.

The ignition system used an unusual trembler coil system to drive the spark plugs, as used for stationary gas engines, rather than the expensive magnetos that were used on other cars. This ignition also made the Model T more flexible as to the quality or type of fuel it used. The need for a starting battery and also Ford's use of an unusual AC alternator located inside of the flywheel housing encouraged the adoption of electric lighting, rather than oil or acetylene lamps, but it also delayed the adoption of electric starting.

Transmission and drive train



1925 Ford "New Model" T Tudor Sedan



Ford Speedster T

The Model T was a rear-wheel drive vehicle. Its transmission was a planetary gear type billed as "three speed". In today's terms it would be considered a two-speed, because one of the three speeds was reverse.

The Model T's transmission was controlled with three foot pedals and a lever that was mounted to the road side of the driver's seat. The throttle was controlled with a lever on the steering wheel. The left pedal was used to engage the gear. With the floor lever in either the mid position or fully forward and the pedal pressed and held forward the car entered low gear. When held in an intermediate position the car was in neutral. If the driver took his foot off the left pedal, the Model T entered high gear, but only when the lever was fully forward- in any other position the pedal would only move up as far as the central neutral position. This allowed the car to be held in neutral while the driver cranked the engine by hand. The car could thus cruise without the driver having to press any of the pedals. There was no separate clutch pedal. When the car was in neutral, the middle pedal was used to engage reverse gear, and the right pedal operated the transmission brake - there were no separate brakes on the wheels. The floor lever also controlled the parking brake, which was activated by pulling the lever all the way back. This doubled as an emergency brake.



The three pedal controls of the Model T

7

Although it was uncommon, the drive bands could fall out of adjustment, allowing the car to creep, particularly when cold, adding another hazard to attempting to start the car: a person cranking the engine could be forced backward while still holding the crank as the car crept forward, although it was nominally in neutral. As the car utilized a wet clutch, this condition could also occur in cold weather, where the thickened oil prevents the clutch discs from slipping freely. Power reached the differential through a single universal joint attached to a torque tube which drove the rear axle; some models (typically trucks, but available for cars as well) could be equipped with an optional two-speed Ruckstell rear axle shifted by a floor-mounted lever which provided an

underdrive gear for easier hill climbing. All gears were vanadium steel running in an oil bath.

Transmission bands and linings

There are four main types of band lining material commonly used today:

- **Cotton** - Cotton woven linings were the original type fitted and specified by Ford. Like all band materials, if "abused" they will not last their normal lifespan. The same is true of all other band lining materials, but the others described below are less affected by improper use. Generally, the cotton lining is "kinder" to the drum surface, with damage to the drum caused only by the retaining rivets scoring the drum surface. Although this in itself does not pose a problem, a dragging band resulting from improper adjustment causes overheating transmission and engine, diminished power, and—in the case of cotton linings—rapid destruction of the band lining.
- **Wooden** - Wooden linings were originally offered as a "longer life" accessory part during the life of the Model T. They are a single piece of steam bent hickory fitted to the normal Model T Transmission band and experience has shown them to have a long life, often more than the original style cotton linings. These bands give a very different feel to the pedals, with much more of a "bite" feel. The sensation is of a definite "grip" of the drum and seems to noticeably increase the feel, in particular of the brake drum.
- **Kevlar** - Kevlar linings often create a fair amount of discussion. They are a modern alternative lining with Kevlar fibers woven into a polyester band lining. Kevlar bands have been reported to have an extremely long life span, even under adverse usage conditions. It seems that they generally need to be more carefully bedded in and require frequent small adjustments in the initial run in stage, but after this, require little to no adjustment for very high mileages. Because of the nature of the fibers, they have a very high melting point and can therefore stand a lot of slipping and heat, however, the heat tolerance of Kevlar is much higher than that of the actual drum that it is clamping. Model T Ford drums are prone to cracking, and high levels of heat exacerbate this considerably, so the heat resistance benefit of the Kevlar is counteracted by the adverse affect it has on the drum.
- **"Hard" bands** - Hard bands are standard Model T Ford transmission steel bands that have a composite material bonded then riveted to them. The material is similar to modern brake linings.

Suspension and wheels

Model T suspension employed a transversely mounted semi-elliptical spring for each of the front and rear beam axles which allowed a great deal of wheel movement to cope with the dirt roads of the time.



The suspension components of a Ford Model T. The coil-spring device is an aftermarket accessory, the "Hassler shock absorber".

The front axle was drop forged as a single piece of vanadium steel. Ford twisted many axles eight times and sent them to dealers to be put on display to demonstrate its superiority. The Model T did not have a modern service brake. The right foot pedal applied a band around a drum in the transmission, thus stopping the rear wheels from turning. The previously mentioned parking brake lever operated band brakes acting on the inside of the rear brake drums, which were an integral part of the rear wheel hubs. Optional brakes that acted on the outside of the brake drums were available from aftermarket suppliers.

Wheels were wooden artillery wheels, with steel welded-spoke wheels available in 1926 and 1927.

Tires were pneumatic clincher type, 30 in (76 cm) in diameter, 3.5 in (8.9 cm) wide in the rear, 3 in (7.5 cm) wide in the front. Clinchers needed much higher pressure than today's tires, typically 60 psi (410 kPa), to prevent them from leaving the rim at speed. Horseshoe nails on the roads, together with the high pressure, made flat tires a common problem.

Balloon tires became available in 1925. They were 21 in × 4.5 in (53 cm × 11 cm) all around. Balloon tires were closer in design to today's tires, with steel wires reinforcing the tire bead, making lower pressure possible – typically 35 psi (240 kPa) – giving a softer ride. The old nomenclature for tire size changed from measuring the outer diameter to measuring the rim diameter so 21 in (530 mm) (rim diameter) × 4.5 in (110 mm) (tire width) wheels has about the same outer diameter as 30 in (76 cm) clincher tires. All tires in this time period used an inner tube to hold the pressurized air; "tubeless" tires were not generally in use until much later.

Wheelbase was 100 inches (254 cm); while standard tread width was 56 in (142 cm), 60 in (152 cm) tread could be obtained on special order, "for Southern roads", identical to the pre-Civil War track gauge for many railroads in the former Confederacy.

Colors

By 1918, half of all the cars in the US were Model Ts. However, it was a monolithic bloc; Ford wrote in his autobiography that in 1909 he told his management team that in the future "Any customer can have a car painted any color that he wants so long as it is black".

However, in the first years of production from 1908 to 1913, the Model T was not available in black but rather only grey, green, blue, and red. Green was available for the touring cars, town cars, coupes, and Landaulets. Grey was only available for the town cars, and red only for the touring cars. By 1912, all cars were being painted midnight blue with black fenders. It was only in 1914 that the "any color so long as it is black" policy was finally implemented. It is often stated that Ford suggested the use of black from 1914 to 1926 due to the cheap cost and durability of black paint. During the lifetime production of the Model T, over 30 different types of black paint were used on various parts of the car. These were formulated to satisfy the different means of applying the paint to the various parts, and had distinct drying times, depending on the part, paint, and method of drying.

Diverse applications

When the Model T was designed and introduced, the infrastructure of the world was quite different from today's. Pavement was a rarity except for sidewalks and a few big-city streets. (The sense of the term "pavement" as equivalent with "sidewalk" comes from that era, when streets and roads were generally dirt and sidewalks were a paved way to walk along them.) Agriculture was the occupation of many people. Power tools were scarce outside factories, as were power sources for them; electrification, like pavement, was found usually only in larger towns. Rural electrification and motorized mechanization were embryonic in North America and Europe, and nonexistent elsewhere.

Henry Ford oversaw the requirements and design of the Model T based on the realities of that world. Consequently, the Model T was (intentionally) almost as much a tractor and portable engine as it was an automobile. It has always been well regarded for its all-terrain abilities and ruggedness. It could travel a rocky, muddy farm lane, ford a shallow stream, climb a steep hill, and be parked on the other side to have one of its wheels removed and a pulley fastened to the hub for a flat belt to drive a bucksaw, thresher, silo blower, conveyor for filling corn cribs or haylofts, baler, water pump (for wells, mines, or swampy farm fields), electrical generator, and countless other applications. One unique

application of the Model T was shown in the October 1922 issue of *Fordson Farmer* magazine. It showed a minister who had transformed his Model T into a mobile church, complete with small organ.



A Model T homemade tractor pulling a plow.

During this era, entire automobiles (including thousands of Model Ts) were even hacked apart by their industrious owners and reconfigured into custom machinery permanently dedicated to a purpose, such as homemade tractors, ice saws or many others. Dozens of aftermarket companies sold prefab kits to facilitate the T's conversion from car to tractor. In a world mostly without mechanized cultivators, Model Ts filled a vacuum. Row-crop tractors such as the Farmall did not become widespread until the 1930s. Like many popular car engines of the era, the Model T engine was also used on home-built aircraft (such as the Pietenpol Sky Scout) and motorboats.

Many Model Ts were converted into vehicles which could travel across heavy snows with kits on the rear wheels (sometimes with an extra pair of rear-mounted wheels and two sets of continuous track to mount on the now-tandem rear wheels, essentially making it a half-track) and skis replacing the front wheels. They were popular for rural mail delivery for a time. The common name for these conversions of cars and small trucks was *snowflyers*. These vehicles were extremely popular in the northern reaches of Canada where factories were set up to produce them.

Production

Mass production

The knowledge and skills needed by a factory worker were reduced to 84 areas. When introduced, the T used the building methods typical at the time, assembly by hand, and production was small. Ford's Piquette plant could not keep up with demand for the Model T, and only 11 cars were built

there during the first full month of production. More and more machines were used to reduce the complexity within the 84 defined areas. In 1910, after assembling nearly 12,000 Model Ts, Henry Ford moved the company to the new Highland Park complex.



Ford assembly line, 1913.

As a result, Ford's cars came off the line in three-minute intervals, much faster than previous methods, reducing production time by a factor of eight (requiring 12.5 hours before, 93 minutes afterwards), while using less manpower. By 1914, the assembly process for the Model T had been so streamlined it took only 93 minutes to assemble a car. That year Ford produced more cars than all other automakers combined. The Model T was a great commercial success, and by the time Henry made his 10 millionth car, 50 percent of all cars in the world were Fords. It was so successful that Ford did not purchase any advertising between 1917 and 1923, instead it became so famous that people now considered it a norm; more than 15 million Model Ts were manufactured, reaching a rate of 9,000 to 10,000 cars a day in 1925, or 2 million annually, more than any other model of its day, at a price of just \$240. Model T production was finally surpassed by the Volkswagen Beetle on February 17, 1972.

Henry Ford's ideological approach to Model T design was one of getting it right and then keeping it the same; he believed the Model T was all the car a person would, or could, ever need. As other companies offered comfort and styling advantages, at competitive prices, the Model T lost market share. Design changes were not as few as the public perceived, but the idea of an unchanging model was kept intact. Eventually, on May 26, 1927, Ford Motor Company

ceased production and began the changeovers required to produce the Model A.

Model T engines continued to be produced until August 4, 1941. Almost 170,000 were built after car production stopped, as replacement engines were required to service already produced vehicles. Racers and enthusiasts, forerunners of modern hot rodders, used the Model T's block to build popular and cheap racing engines, including Cragar, Navarro, and famously the Frontenacs ("Fronty Fords") of the Chevrolet brothers, among many others.

The Model T employed some advanced technology, for example, its use of vanadium steel alloy. Its durability was phenomenal, and many Model Ts and their parts remain in running order nearly a century later. Although Henry Ford resisted some kinds of change, he always championed the advancement of materials engineering, and often mechanical engineering and industrial engineering.

In 2002, Ford built a final batch of six Model Ts as part of their 2003 centenary celebrations. These cars were assembled from remaining new components and other parts produced from the original drawings. The last of the six was used for publicity purposes in the UK.

Although Ford no longer manufactures parts for the Model T, many parts are still manufactured through private companies as replicas to service the thousands of Model Ts still in operation today. On May 26, 1927 Henry Ford and his son Edsel, drove the 15 millionth Model T out of the factory. This marked the famous automobile's official last day of production.

Price

The standard 4-seat open tourer of 1909 cost \$850 (equivalent to \$22,311 in 2014); in 1913, the price dropped to \$550 and \$440 in 1915. Sales were 69,762 in 1911; 170,211 in 1912; 202,667 in 1913; 308,162 in 1914; and 501,462 in 1915. In 1914, an assembly line worker could buy a Model T with four months' pay.

By the 1920s, the price had fallen to \$260 (equivalent to \$3,061 in 2014) because of increasing efficiencies of assembly line technique and volume.

Recycling

Henry Ford used wood scraps from the production of Model Ts to make charcoal. Originally named Ford Charcoal, the name was changed to *Kingsford Charcoal* after Ford's brother-in-law E. G. Kingsford brokered the selection of the new charcoal plant site.

First global car

The Ford Model T was the first automobile built by various countries simultaneously since they were being produced in Walkerville, Canada and in Trafford Park, Greater

Manchester, England starting in 1911 and were later assembled in Germany, Argentina, France, Spain, Denmark, Norway, Belgium, Brazil, Mexico, and Japan, as well as several locations throughout the US. Ford made use of the knock-down kit concept almost from the beginning of the company as freight cost had Ford assembling on the west coast of the US.



The first Ford assembly plant in La Boca, Buenos Aires, c. 1921.



A 1923 Ford T in Canada.

The AeroFord was an English automobile manufactured in Bayswater, London, from 1920 to 1925. It was a Model T with distinct hood and grille to make it appear to be a totally different design, what later would have been called badge engineering. The AeroFord sold from £288 in 1920, dropping to £168-214 by 1925. It was available as a two-seater, four-seater, or coupé.]

Advertising, marketing, and packaging

Ford created a massive publicity machine in Detroit to ensure every newspaper carried stories and advertisements about the new product. Ford's network of local dealers made the car ubiquitous in virtually every city in North America. As independent dealers, the franchises grew rich and publicized not just the Ford but the very concept of automobiling; local motor clubs sprang up to help new drivers and to explore the countryside. Ford was always

eager to sell to farmers, who looked on the vehicle as a commercial device to help their business. Sales skyrocketed – several years posted 100% gains on the previous year.

Sales passed 250,000 in 1914. By 1916, as the price dropped to \$360 for the basic touring car, sales reached 472,000. In 1919, forty-three percent of all motor vehicles registered in Great Britain were Fords.

THE VIEW FROM THE ENGINEER'S SIDE OF THE CAB THE PRESIDENT'S COLUMN

Summer is winding down and most of us have gotten away for a little family vacation time, perhaps ridden a few trains, gone to a couple of train shows, or just had fun with our hobby of model railroading. We have had good visitation at the Carter Railroad Museum this summer and a lot of progress has been made on our two big projects, the HO yard and the HO_{n3} Tweetsie Project. We have welcomed several new members into the MEMRR who bring new talents, experience and perspective to the club. Some members have fought through illness and some have had the loss of family members. Fall is often a transition time and a time to focus on those things that we deem important to do before the coming winter. I hope that your continued support and activity as a member of the Mountain Empire Model Railroaders will be high on your list.

you plan to bring to share with the group. The picnic is on Sunday, 14 September and begins at 4:00 p.m. Tom has added to his garden railway and if you have a G-scale locomotive you want to run, bring it along and try it out in the open.

The Carter Chapter NRHS and the Carter RR Museum are hosting a **rail excursion on the Smoky Mountain Railroad** in Bryson City, NC on Saturday, October 25th. Information is on the MEMRR website along with ticket requests and waiver of liability forms for your convenience. There are several classes of coaches for you to choose from and the fall colors on the 44 mile round trip train ride should be outstanding. Come help support the museum and the Carter Chapter by joining us and tell your friends, fellow church members, other organizations, etc., about the trip.

If you want to **add to your railroad library** with some good hardbacks on your favorite railroad at a 30% discount, see the list of books that the Carter Chapter NRHS has posted on the website that will be ordered for the NRHS National Fall Convention they will be hosting in Johnson City in mid-November. Contact **Jim Pahr** with your order and the books will be delivered prior to the convention. This is a great opportunity to get some good railroad books at a very good discount.



The latest Ford Model T Touring Car seen in Valley Forge

Our **annual railroad museum picnic** is very near. Once more we have been invited by **Kim and Tom McKee** to be guests for this highly anticipated social event at their lovely home on the lakeshore. Please check the list of fellow members of the MEMRR and the Carter Chapter of the NRHS on our website (memrr.org) and add your name to the list and what

Some of you are not only MEMRR members, but also members of the NRHS. They just had their national elections and have elected a new president, Al Weber, from the St. Louis, MO area. Our own **Jim Pahr** was elected to the National Board of Directors as the Director of District 5. Congratulations Jim! If you are a National NRHS member, and a member of one of the many chapters across the nation, but not a member of the George L. Carter Chapter, you can hold join chapter memberships by only paying the dues of each of the chapters you wish to belong to. The Carter Chapter invites you to join our chapter and join in our activities that include the sponsorship of rail excursions, the collection of oral histories of Southern Appalachian railroads, and the hosting of the National NRHS Fall Convention in Johnson City.

Let me also remind you that the **ET&WNC RR Historical Society** will be returning to Johnson City in June 2015 for their 27th Annual Convention and the Carter RR Museum will

be co-hosting their convention for the second consecutive year at the Carnegie Hotel. This historical society is engaged in preserving the history of the "Tweetsie" railroad and the heart of that little narrow gauge railroad was right here in Johnson City. They are building a much better website as one means of improving member communication and with dues of only \$30 per year they are an historical society that I would encourage you to consider joining. We will become more and more associated with them as they continue to hold their conventions in Johnson City and as we progress in our creating the ET&WNC RR in HO_n3 scale in the Carter RR Museum. The Historical Society has established a committee to recommend whether or not to become affiliated with the Carter RR Museum in a more formal way and will make their recommendation to the membership sometime within the next year.



The use of train operations via radios on the club's HO layout is going very well. Operations are smoother and more efficient because of the improved communications between the Yard Master and the Engineers operation trains on the layout. The club plans to order some additional headsets to meet the demand for them and members can give you assistance in ordering your personal radio if you would like some help (the club has some club radios for you to use, but you need your own headset). **John Edwards** has been acting as our Yard Master as we have been developing the more complex control of the yard and the movements of our trains involving radio communications, throttle control of the turnouts via the switch-8s, and the integration of computers and the yard diagram boards with their LED lighting. John faces some possible surgery to correct some painful problems with his back and is asking for several members to step forward to volunteer to learn how to do this important job in his coming absence from this post. John is available to instruct you on how this all works, so please let him know of your interest and get involved in the basic training he will provide so we can keep the HO layout running smoothly on those days when he is not able to sit up high in the familiar

chair of the Yard Master. John will present a program at the September Club Business Meeting, September 16th, on how to boot up the layout, trouble shoot for basic minor problems in its operation, and how to shut it down. He will follow up on this presentation with a hands-on session on the first Thursday evening following his program (September 18th at 6:00 p.m.) on the club HO layout at the Carter Railroad Museum. This will be a most informative program and training session and I hope you will mark your calendars to be present to bring your skills of operating the club layout up to where you would like for them to be.

One more note on the club HO layout. Members are asked not to leave personal rolling stock in the freight yard as the yard is to be used to build and break down trains in a prototypical fashion, providing realism and the fun of switching operations. We have a staging yard that is to be used to set up your trains for operation on the layout and the two outside tracks are left open for convenience of accessibility for members to do so. There may be limited space in the staging yard only to temporarily store trains and/or consists if you want to set them up on Thursday night for operations on the following Saturday. No member's trains are to be left on the active freight yard following a Saturday operating session; please. Some members use personal, lockable tool chests under the layout to store some of their rolling stock and locomotives and this is a good solution to having a secure storage space that is convenient to the layout.

We have lots of great railroad books in our library as well as DVDs on railroading and model railroading. These are available for member's use. See **Gary Emmert**, our librarian, if you want access to these resources.

Here is an update on the City of Jonesborough's proposal to ETSU for a branch of the Carter Railroad Museum in that city. I met with 12 of our members who reside in or near Jonesborough for an evening meal and discussion about this proposal, and discussions I had had with the Jonesborough City Manager, Bob Browning, ETSU President Noland, and other ETSU administrators. The purpose of the meeting was to hear their comments, their questions, and get their input based on the reality that if we do decide to place a small museum there, these members would be the nucleus of the needed volunteer staff that would be required to man it. There was unanimous consensus from these members, and two who were absent, but sent "proxy votes", that we should proceed toward this goal. Let me state that the ETSU president will make the final decision based on all the information we can supply him with, in addition to careful cost analysis that will center on what the university shall have to supply and what would be expected from the City of Jonesborough. So, this is only the process of reacting to the proposal from the City of Jonesborough at this stage, and no decisions have been made. As I have additional meetings on this proposal I shall strive to keep you informed of

everything I know about what is happening, or not happening, and continue to seek your input. On Thursday, Sept. 4th, I met with Jonesborough members from the MEMRR and the Carter Chapter NRHS, **Dick Conger**, **Bill Beagen**, and **Dan McLeod** at the Slemmons House in Jonesborough (the property the city is offering as the museum site) for a thorough inspection of the premises, inside and out, so that we could collectively analyze what the structure was like, its potential as a small railroad museum, and what it would need to bring it to that juncture. I have a meeting scheduled with ETSU administration on Sept. 16th to discuss my findings and to continue the due diligence planning necessary before the university would decide to pursue negotiations with Jonesborough.



Ken Harmon held a very successful workshop in the RR Museum in August demonstrating his art of creating miniature trees. There are scores of his trees now on the Tweetsie Layout and we need many more. Ken is often in the museum workroom making trees and he will happily show you how to make them with him. Just say 'hello', tell him you would like to learn to make some trees, and sit down and join him in producing the Tweetsie Forest. His workshop was the first in a series we plan for member to demonstrate some of the modeling skills that go into creating the many facets of a model railroad layout. We hope to have at least one each month in the museum on a Thursday night for our members. Please let us know what you would like to learn

and we will find a volunteer expert to lead us through the steps of each process that will produce the knowledge you are seeking. We have a lot of talent in our club and setting up these workshops should not be difficult. The museum can supply many of the materials needed and a lot of what you produce can find its way onto one of our layout exhibits. Bachman, Inc. replaced our G-scale 15 year old 2-truck shay that we returned to their service department for repair with a brand new 3-truck shay for the cost of repairing the old one. They had put two new powered trucks on our old locomotive and placed it on their test track to discover that it would not run and lots of real smoke was coming out of it. We are grateful to have the replacement that retails for much more than the repair costs on our old locomotive would have been. Come take a look at it running on the McKee G-Scale layout in the museum. **Mike Baker** is coordinator for the large scale layouts at the museum and he has installed the crew and a lot of the detailed parts that came with the sound-equipped locomotive.

If you have not checked out our Donor's Wall recently you will find that 10 new name plates have been added to it. We greatly appreciate the gifts that these donations represent to the museum and the support of the exhibits we create and the layouts we operate. Please thank those you know whose names we post for their continued generosity towards us. The university is back in session for its fall semester and that means parking is harder to find once more. If you plan to arrive at the museum on weekdays around 4:30 p.m. you can usually find parking spots as many of the university staff ends their work day and leave the campus. You don't need to use your volunteer parking permit after 3:30 p.m., but remember to always park in legal spots or run the risk of having to pay a parking fine. The Market Place, the university cafeteria in the Culp Student Center, is now serving meals all day long on its regular schedule and we will plan to dine at 5:00 p.m. on club meeting nights there. The price for a meal is still \$5.25 and it is an easy walk from there to our meeting room in 312 Brown Hall.

Thank you for your membership, your energy and talents, your support of the MEMRR and the Carter RR Museum, and most of all for your friendship. We have a terrific model railroad club in and outstanding venue. There are lots of things happening at the Carter Railroad Museum and in the Mountain Empire Model Railroaders club. We are gathering a lot of attention in the community and in the region and we continue to have a lot of visitors on any given Saturday. Continue to enjoy the hobby of model railroading and continue to be ambassadors of railroading in all its forms to others. Hear the sound of the whistle of the train in the night and dream of all the destinations yet to come.

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