

Carolina Conductor



Volume 6 Number 1

Monthly Newsletter of the Carolina Railroad Heritage Association, Inc.

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Preserving the Past Active in the Present Planning for the Future

Web Site: hubcityrrmuseum.org
Facebook: Carolina Railroad Heritage Association

Meeting Site:
Woodmen of the World Bldg.
721 East Poinsett Street
Greer, SC 29651-6404
Third Friday of the Month at 7:00 pm

**Hub City Railroad Museum and
SOU Rwy Caboose #X3115:**
Spartanburg Amtrak Station
298 Magnolia Street
Spartanburg, SC 29301-2330
Wednesday 10-2 and Saturday 10-2

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David Winans - 864-963-4739
Vice-President and Secretary:
Steve Baker - 864-297-0918
Treasurer:
Marv Havens - 864-292-3852

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Articles can be submitted anytime.

Olive Dennis The 'Lady Engineer' Who Took the Pain Out of the Train



Olive Dennis, "Lady Engineer"

Olive Wetzel Dennis spent years test-riding railways, improving everything from climate control to dining-car china along the way.

If you had ridden the Baltimore & Ohio Railroad in the American northeast sometime in the 1920s or '30s, you might have noticed a passenger who seemed unusually invested in her environment. While you snoozed through Cincinnati or looked out the window at the approaching Chicago skyline, this woman was probably carefully measuring the height of the seats or laying cloth swatches over them to check the colors.

As you chose your supper in the

dining car, you might have seen her sampling every single item offered. The next morning, when you blearily left your bunk, she might have greeted you, and asked you how you slept.

This was Olive Wetzel Dennis, the world's first "Service Engineer." During an era when few women even set foot on trains, let alone helped design them, Dennis spent most of her time riding the rails for the B&O, thinking of ways to improve the average traveler's experience. Over her decades-long career, the "Lady Engineer," as she was called, introduced scores of improvements to the company's railroads—from footrests and reclining seats to special ventilators she designed herself. As the *Baltimore Sun* put it years after her death, "she took the pain out of the train."

Although she entered the field late in life, Dennis was "a born engi-



Olive Wetzel Dennis in 1947 making some suggestions on how to improve a new B&O buffet car.

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President's Message

December Meeting

The December 21 meeting was held at 7:00pm at the Woodmen of the World Lodge in Greer. Thanks to Donna Hopkins for bringing the ham as our main course. Also thanks to all members who brought a side dish or dessert. We had a good variety of dishes and lots of food. No one should have gone home hungry.

January Meeting

The January meeting will be held at 7:00pm at the Woodmen of the World Lodge in Greer on January 18. Dave and Anne Winans traveled to Kansas City this past August to attend the NMRA National Convention. Dave will present the highlights of their trip and the week-long Convention activities. Although the



NMRA is oriented toward modeling, there were numerous prototype events for the railfan. Also a number of clinics were history oriented,

which interested both modelers and non-modelers. Dave and Anne also stopped in Paducah, Kentucky on their way to the convention and will highlight the Paducah Chapter of the NRHS' Railroad Museum that they visited.

2019 Directors Elected

The slate of 2019 Directors are as follows:

NRHS Directors: Lee Dobbs, Marv Havens, Bob Klempner, Pat O'Shields, Dave Winans

CRHA Directors: Steve Baker, Bruce Gathman, Duane Heard, Lee Dobbs, Marv Havens, Jim Hopkins, Bob Klempner, Mac McMillin, Dave Winans.

Calendar of Events

Mark your calendars for the following events:

January 18, 2019 – CRHA meeting at the Woodmen of the World Lodge, 7:00PM.

January 19, 2019 – Train Show, Infinite Energy Center, Duluth, GA.

February 2, 2019 – Mini Clinic sponsored by NMRA, Intro to T-TRAK Modular Railroading, at the Model Trains Station located in the Taylors Mill.

February 4, 2019 – CRHA Directors Meeting at Taylors Library, 6:30PM.

February 5, 2019 -Train Lovers' Lunch, 11:30 at the A&P Restaurant, Hwy 14, Greer. All Train Lovers invited.

February 8 & 9, 2019 – Train Show in Easley, SC sponsored by the Central Historical & Model RR Club. Call Marv Havens to volunteer to work at our sales tables either day.



February 15, 2019 - CRHA meeting at the Woodmen of the World Lodge, 7:00PM.

Caboose Renovation

The Caboose continues to be closed to the public during the ongoing renovation. We hope to have it back into service as soon as possible, but it appears that this will not be a short-term situation. As we have worked on the renovation, we have discovered other structural and electrical issues that need to be addressed.

We are in the process of having new replacement window frames fabricated for all caboose windows. Thanks to Duane, Marv and Jim for all the time they have spent working in the Caboose. In the interim, please visit the Museum. The HO model train inventory has been relocated to the Museum lobby.

We have established a Go-

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Wanted—Articles for the Carolina Conductor

Submit an article of 200 words or more with some photos and captions and see them in print. Every one of us has some unique railroad experience that would make interesting reading for our membership. Your editor always needs more contributions of local railway history and news.

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FundMe account to help with the renovation costs and appreciate all donations that are being made. If you would like to help with the renovation, please contact Duane Heard at 810-623-7444 or Dave Winans at 864-963-4739.

School Groups to visit the Museum in January

We have two school groups scheduled to visit the Museum on January 15 and January 17. The Tuesday and Thursday are not days the museum is normally open, but we will be open by appointment for the two groups on these days. If you would like to help out on either day they are visiting, please contact Dave or Anne Winans at 864-963-4739. Thanks.

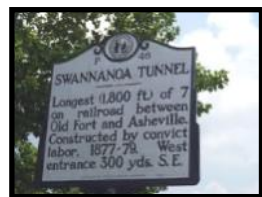
December Minutes

Approved December Board of Director’s minutes are attached.

Dave Winans, President
864-963-4739
dwinans4739@charter.net

Swannanoa Tunnel

The Swannanoa Gap Tunnel, a 1,832-foot-long railway tunnel through Swannanoa Mountain near Asheville,



Asheville, was completed on March 11, 1879. After chipping away the final barrier, workers tunneling from opposite sides of the mountain were elated to discover that the two tunnels lined up perfectly.

James H. Wilson, chief engineer of the Western North Carolina Railroad, immediately sent a telegram to Governor Zebulon B. Vance stating that "daylight entered Buncombe County this morning through the Swannanoa Tunnel." The first train finally steamed through the tunnel into Asheville on 3 Oct. 1880.

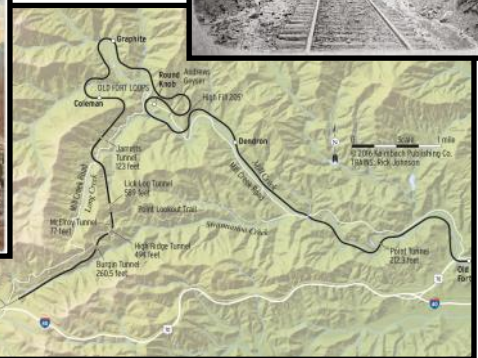
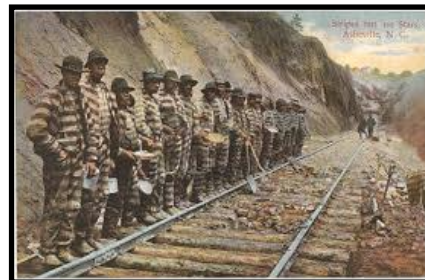
Plans for the Swannanoa Gap Tunnel were drawn up after the Civil War in an effort to make Asheville a railway hub for North Carolina's western counties. Of the large number of workers employed, many were convicts serving misdemeanor sentences, and approximately 120 perished during construction. The tunnel, which cost about \$120,000 to build, was cut with the help of nitroglycerine, marking an early use of the explosive in engineering.

Shielded from the rest of the state by towering mountains, residents in western North Carolina longed to connect to the rail system then being rebuilt after its near destruction during the Civil War. The chief obstacle to the construction was massive Old Fort Mountain, just east of Asheville, North Carolina. The engineer chosen for the task of building the difficult road was ex-Confederate major James Wilson.

Construction of the road began in 1877. Armed with \$800,000 in

state funds and 500 black convict laborers, Wilson was undaunted by the fact that his railroad would have to climb some 891 feet in elevation, winding through seven tunnels. As if that wasn't enough, the main tunnel would have to be constructed through solid granite rock with a length of 1832 feet. To speed construction of this tunnel, Wilson attempted to bore toward the center of the tunnel from each end at once, no mean feat. His efforts were successful some two years later when crews building toward each other connected the tunnels perfectly. On March 11, 1879, North Carolina Governor Zebulon Vance was notified that "daylight entered Buncombe County today through the Swannanoa Tunnel."

The construction of the Swannanoa Tunnel was not without its human costs. Estimates of fatalities of the convict laborers ranged from as low as 120 to a high of 400. The song, "Swannanoa Tunnel," was apparently composed and sung by crews building the tunnel. The cave-in mentioned in the song perhaps refers to the accident in March of 1879 when twenty-three workers were killed.



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neer,” says historian Sharon Harwood, who often presents on Dennis’s life at the B&O Railroad Museum in Baltimore. As a child, when relatives gave her dolls to play with, she built houses and furniture for them instead. If she was late coming home from school, it was likely because she’d stopped to talk shop with local construction workers.

In 1896, when Dennis was 10, her father—proud, but also tired of his daughter mucking up his wood-working equipment—gave her a tool set of her own. She quickly got to work building a scaled-down streetcar for her younger brother, “complete with seats that would turn over, steps that moved up and down, and a pivoting pole.”

Dennis went to Baltimore’s Goucher College, and then to Columbia University in New York. She then spent a decade teaching math at a technical high school in Washington, D.C. Throughout, she later told the *Sun*, “the idea of civil engineering just wouldn’t leave me.” In

1919, she enrolled in a master’s program in civil engineering at Cornell University. She graduated in the spring of 1920, knocking out the two-year curriculum in half the allotted time, and becoming the second woman to ever receive that degree. As she walked up to the podium on graduation day, a man in the audience apparently yelled out, “What the heck can a woman do in engineering?”

A rude question—but, if you consider the tenor of the times, not an entirely ridiculous one. Railroading in particular “has always been a male industry, bottom to top,” says Harwood. Although women worked as station-keepers, restaurant staff, and clerical staff*—and eventually,

turned. One *Evening Sun* article—headlined “Woman Civil Engineer Enjoys Technical Work”—described Dennis as “one of the few practicing woman civil engineers in the country and, so far as is known, the only one in Baltimore.”

Although Dennis always said her coworkers respected her, the article gives a good idea of the kind of overall environment she faced. “Women are not supposed to have mathematical minds, you know,” the



Olive Dennis designed lounge car for the B&O.



Dennis and two other engineers, at work in the B&O’s Mechanical Engineering Department in 1947.

during World War I, as metalworkers and pipe-fitters—it was pretty much unheard of for one to lean over a blueprint. So, when the Baltimore & Ohio Railroad hired Dennis, as a draftsman in the bridge engineering department, heads

Evening Sun reporter informs Dennis at one point. Later, he describes her as “not of the mannish type,” and informs readers that she is a good singer, can darn a sock, and “isn’t afraid of mice or snakes, but has an abiding horror of bugs.”

This kind of thing did not set Dennis back. (As she herself once put it, “There is no reason that a woman can’t be an engineer simply because no other woman has ever been one.”) Soon after starting her

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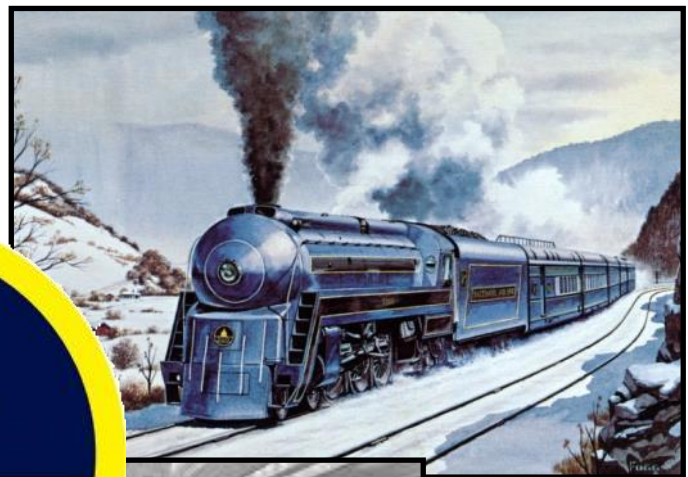
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Olive Dennis designed the china for the B&O.



The B&O streamlined steam locomotive design was influenced by Olive Dennis.



job, she designed her first railroad bridge, in Painesville, Ohio. Within a year, she had gotten herself a meeting with Daniel Willard, the president of the railroad. “Women are not supposed to have mathematical minds, you know”

For the first time in her life, Dennis found herself in a situation where her gender was seen as a professional asset rather than a liability. As America’s roads filled with cars and buses, the B&O was struggling to retain passengers, and Willard had decided to court a demographic that they had previously overlooked. “I was told to get ideas that would make women want



Olive Dennis designed lounge car.

to travel on our line,” Dennis later recalled. Willard was operating under the assumption, she continued, that “if women went on it, men would follow.” He appointed Dennis to a brand-new position, which involved coming

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up with new ideas to smooth out the journey. She was now the B&O's first "Engineer of Service."

Women on the Railroad

Before the 19th century the wives and mothers of previous generations had no rights to work for a living and certainly didn't work on the railroad. During the Industrial Revolution, few women began taking positions outside the home and by 1838 Union Pacific Railroad had already introduced Registered Nurse

-Stewardesses to their passenger trains, the first women to become part of an operating train crew.

Since that time, women's rights have changed by leaps and bounds, beginning with the Women's Rights Movement which started in 1848. In 1855, the B&O Railroad hired four women, who kept their station in Baltimore in top condition. Word caught on and quickly thereafter, women gained a place on the forefront of the railroad expansion. Women from the mid-west and east, looking for work and opportunity, grew in numbers. They were civilized and highly professional, bringing refinement to the west as well as to the railroad men that many of them would eventually marry.

Women in the railroad industry worked hard to ensure that their jobs were done diligently and efficiently so that they would not be replaced by a man. The majority of women employed by the railroads worked in the clerical field. Some women did perform more labor intensive duties on the railroad, working as shop helpers, crane operators or air brake cleaners among other tasks.

The most important breakthrough for women in railroading came when women telegraphers earned responsi-

ble positions taking orders and keeping trains on track. During the Civil War, many female telegraph operators were asked to help the war effort and took over or assisted when men left for the war. By the 1890s, women were working on small railroads in various capacities and by the early part of the 20th century, women were railroad designers, depot architects, and bacteriologists studying refrigerator car efficiency.

Skipping forward to the end of World War I (1918), most women holding positions in male-dominated fields were laid off so that our returning soldiers could resume their jobs. Women working in the less-coveted and traditionally female identified clerical and domestic positions, however, were able to retain their posts. In this capacity, women in the industry continued to provide support services essential to the efficient and effective operation of the nation's railroads even after the war.

In the 1920's and 1930's there was a major decline in railroad ridership and mileage due to the growing popularity of automobiles, airplanes and also due to the onset of the Great Depression. Railroad employment had decreased by 42% by 1932. Poverty swept the nation and people were losing their farms and being forced out of their homes. Men and women who heard about work hundreds of miles away, or even half a continent away, felt they had no choice but to leave their homes in search of work. Often the only way they could get there was by hopping on freight trains, illegally. More than 2,000,000



Abbie Gail Struble (later Vaughan) was a telegrapher for the Baltimore and Ohio Railroad in the 1860s. She was among the first to learn to receive by sound rather than by sight. Previously messages were received on a register which imprinted the dots and dashes on a strip of paper for decoding.

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men and approximately 8,000 women became train-hopping hoboes. Unlike today, many railroads crossed the country then, including the AT&SF, B & O, L & N, SP, NP, PRR, GN and UP railroads.

During the WWII years (1939-1945), the government's war-related "get-women-to-work" campaigning opened the door to women in the workforce, setting off a key change for women's civil rights and altering the demographics of the workforce in later years. At the end of December 1941, there were about 13 million women at work. 'Rosie the Riveter' and other campaigns helped to increase that number to 15 million in early 1943.



Trainmen



Harvey Girls



Tower Operators



Teletype Operators



Engine Wipers

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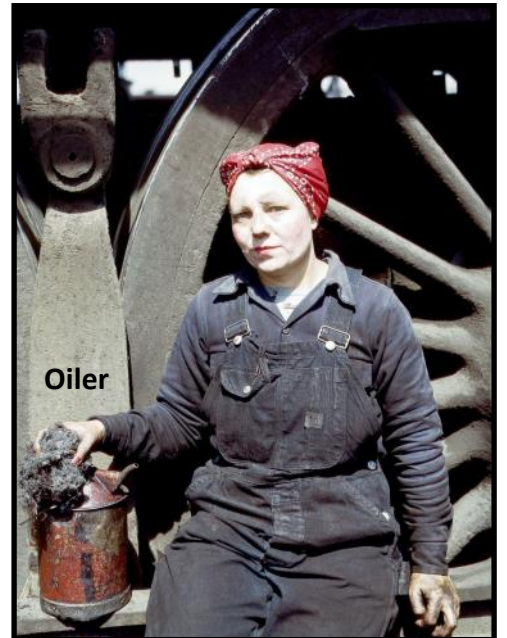
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Women on the RR



Car Washers



Hogger



Oiler



Maintenance Workers



Locomotive Washers



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