



# Railway & Locomotive Historical Society, Inc.

## Southeast Chapter

### Newsletter No. 119 – June 2010

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**“John Henry was a steel driving man.”  
Jawn Henry was a N&W steam turbine locomotive.**

In May, 1954 Baldwin built a 4,500 horsepower (3,400 kW) steam turbine-electric locomotive for freight service on the Norfolk and Western Railway (N&W), #2300, nicknamed the Jawn Henry after the legend of John Henry, a track layer who famously raced against a steam drill and won, only to die immediately after winning. The unit was similar in appearance to the C&O turbines but very different mechanically; it had a C+C-C+C wheel arrangement, and a Babcock and Wilcox water-tube boiler which was fitted with automatic controls. Unfortunately, the boiler controls were sometimes problematic, and (as with the C&O turbines) coal dust and water got into the motors. The Jawn Henry was retired from the N&W roster on January 4, 1958.

A steam turbine locomotive is a steam locomotive which transmits steam power to the wheels via a steam turbine. Numerous attempts at this type of locomotive were made, mostly without success. In the 1930's this type of locomotive was seen as a way both to revitalize steam power and challenge the diesel locomotives then being introduced. The advantages are: high efficiency at high speed, far fewer moving parts, hence offering greater reliability. Conventional piston steam locomotives give a varying, sinusoidal torque, making wheelslip much more likely when starting. The side rods and valve gear of conventional steam locomotives create horizontal forces that cannot be fully balanced without substantially increasing the vertical forces on the track, known as hammer blow. The disadvantages are: high efficiency is ordinarily obtained only at high speed. Peak efficiency can be reached only if the turbine exhausts into a near vacuum, generated by a surface condenser. These devices are heavy and cumbersome. Turbines can rotate in only one direction. A reverse turbine must also be fitted for a direct-drive steam turbine locomotive to be able to move backwards. There are two ways to drive the wheels: either directly via gears, or using generator-driven traction motors. Continued on page 2. (By John Leynes, copied from source: Wikipedia)



Photo: Frank Watson  
from *Norfolk & Western Steam in Color*  
by William G. McClure III, Jeremy F. Plant (2007, Morning Sun Books, Scotch Plains, NJ, USA)

Norfolk & Western #2300 "Jawn Henry" Steam Turbine  
Near Blue Ridge summit, VA ~ mid-1950s

***Southeast Limited***

## Steam Turbine Locomotives, Continued.

The Pennsylvania Railroad used the largest direct-drive steam turbine locomotive in the world. Built by Baldwin Locomotive Works, the S2 Turbine, c/n 70900, was delivered to Pennsylvania Railroad in September 1944. It was originally designed as a 4-8-4, but due to shortages of lightweight materials during World War II, the S2 became the only locomotive ever built with a 6-8-6 wheel arrangement. PRR #6200, the S2 turbine, had a maximum power output of 6,900 HP (5.1 MW) and was capable of speeds over 100 mph (160 km/h). With the tender, the unit was approximately 123 feet (37 m) long. The steam turbine was a modified marine unit. While the gearing system was simpler than a generator, it had a fatal flaw: the turbine was inefficient at slow speeds. Below about 40 mph (64 km/h) the turbine used enormous amounts of steam and fuel. At high speeds, however, the S2 could propel heavy trains almost effortlessly and efficiently. The smooth turbine drive put far less stress on the track than a normal piston-driven locomotive. However, poor efficiency at slow speeds doomed this turbine, and with diesel-electrics being introduced, no more S2s were built. The locomotive was retired in 1949 and scrapped in May, 1952.

General Electric built two steam turbine-electric locomotives with a 2+C-C+2 (4-6-6-4) wheel arrangement for the Union Pacific Railroad in 1938. These locomotives were essentially mobile power plants and were correspondingly complex. They were the only condensing steam locomotives ever used in the United States. A Babcock and Wilcox boiler provided steam, and an electric generator was fitted in the front of the locomotive to provide head-end power, a concept that would not catch on until the creation of Amtrak. Boiler control was largely automatic, and the two locomotives could be MUed together, both controlled by one engineer. The fuel was Bunker C oil, the same fuel that was later used in Union Pacific's gas turbine-electric locomotives. Union Pacific accepted the locomotives in 1939, but returned them later that year, citing unsatisfactory results. The GE turbines were used during a motive power shortage on the Great Northern Railway in 1943, and appear to have performed quite well. However, by the end of 1943, the wheels of both locomotives were worn to the point of needing replacement, and one of the locomotive's boilers developed a defect. The locomotives were returned to GE and dismantled.

Between 1947–1948, Baldwin built three unique coal-fired steam turbine-electric locomotives, designed for passenger service on the Chesapeake and Ohio Railway (C&O). Their official designation was M1, but because of their expense and poor performance they acquired the nickname "Sacred Cow". The 6,000 horsepower (4,500 kW) units, which were equipped with Westinghouse electrical systems, had a 2-C1+2-C1-2 wheel arrangement. They were 106 feet (32 m) long, making them the longest locomotives ever built for passenger service. The cab was mounted in the center, with a coal bunker ahead of it and a backwards-mounted conventional boiler behind it (the tender only carried water). These locomotives were intended for a route from Washington, D.C. to Cincinnati, Ohio, but could never travel the whole route without some sort of failure. Coal dust and water frequently got into the traction motors. While these problems could have been fixed given enough time, it was obvious that these locomotives would always be expensive to maintain, and all three were scrapped in 1950.

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### Announcements:

Our regular meetings are the 2nd Thursday of the month @ 6:30 PM, in the CSX Bldg., 500 Water St. Jacksonville, FL.  
July 8<sup>th</sup> - July monthly meeting at the CSX building.  
August 12<sup>th</sup> - August monthly meeting at the CSX building.

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### SOUTHEAST CHAPTER OFFICERS

<b>W. Reid Adams,</b>	<b>Chairman</b>	<b>904-400-4680</b>
<b>Jim Smith</b>	<b>Vice-Chairman</b>	<b>904-276-2972</b>
<b>Paul Newton</b>	<b>Secretary</b>	
<b>Robert Van Nest</b>	<b>Treasurer</b>	

**The *Southeast Limited* is published bi-monthly by the Southeast Chapter of the Railway and Locomotive Historical Society  
P. O. Box 600544, Jacksonville, FL  
32260-0544**

The *Southeast Limited* Newsletter is edited and published by John Leynes and Jim Smith.  
The newsletter is printed by the Florida Railroad Company – [www.flarr.com](http://www.flarr.com)

## Meeting of May 13, 2010

The meeting of the Southeast Chapter of the Railway & Locomotive Historical Society was called to order at 6:45 pm by Jim Smith. There were 9 members present.

Secretary's Report: The minutes for the March & April meetings were read and approved by the members that were present.

Treasurer's Report: Robert Van Nest reported on the treasurer's information showing the balances. There is \$5,239 in the balance. The treasurer's report was approved by the members that were present.

### Committee Reports:

- Newsletter: Six members have confirmed they are willing to receive the newsletter via e-mail. Jim Smith reported that he and Reid Adams want to call all members to inquire whether they want to receive the newsletter via e-mail.
- Trip Committee: Paul Newton passed out information on a possible Tampa Bay trip. Further discussion regarding this and other trips will be forthcoming.
- Website Committee: Reid Adams made suggestions to make the website better. We are paid on the domain name until October.

### Old Business:

- There is no update on the ACL 1504 project.
- Ed Mueller reported on his and John Leynes' project regarding a new DVD on railroad music. We will discuss this further at the next meeting.

### New Business:

- Larry Shughart is hosting a model railroad Open House at his home at 5216 Lourcey Rd. in Jacksonville Friday. This is an opportunity to promote the R&LHS.
- Upcoming Programs
  - June 10: 15-minute locomotive – Reid Adams. Art Towson will present on the B&O west of Cumberland.
  - July 8/August 12: Possible: Palatka Railway Preservation Society. TBD.
  - July 8/August 12: Cliff Vander Yacht – Owosso, MI 2009 Train Festival DVD.

### Announcements:

- Bill Howes has co-authored a new book titled "The Cars of Pullman" to sell.

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Tonight's speaker is Bill Ingram on his captivity in Burma and Thailand during WWII and Extreme Railroading.

Respectfully Submitted,

Paul Newton

## Meeting of June 10, 2010

The meeting of the Southeast Chapter of the Railway & Locomotive Historical Society was called to order at 6:45 pm by vice-chairman Jim Smith. There were 9 members present.

Secretary's Report: The minutes from the May meeting were read and approved by the members that were present.

Treasurer's Report: Robert Van Nest was not present, however Bill Howes reported on his behalf that the balance for May ended at \$5,076.73 . In addition to this amount, we have the two CD's. The treasurer's report was approved.

### Committee Reports:

- Newsletter: Jim Smith reports that Reid Adams recommends contacting the membership via telephone on whether or not they would like to receive the newsletter via e-mail. During this call, the caller will ensure the member has a good e-mail address and that it is correct. The June issue is being worked on.
- Trip Committee: Paul Newton will send out an e-mail request asking members when they would want to take a possible Tampa Bay train trip. The dates recommended are Aug 14 & 15 or 21 & 22.
- Website Committee: John Leynes reported that we are paid up on the Chapter's domain name until October. There was much discussion surrounding keeping, or not, the rlhssec.org website after the October renewal is required. Cliff Vander Yacht will research having our website be connected with the National website.

### Old Business:

- Ed Mueller reported on his and John Leynes project regarding a new DVD on railroad music. Ed showed some of the photos he will use for the DVD. The group will discuss this topic with Larry Shughart, who had some ideas about this project.
- We are trying to line up a meeting in conjunction with the Palatka Railway Preservation Society group. Ed Mueller recommends and will research having the Palatka group give a presentation for our August meeting.

### New Business:

- The group is willing to sell the chapter's reprint of "Bulletin 86" books, in bulk, for \$10.00 a copy to Alden Dreyer, who expressed interest in purchasing books for sale.
- Upcoming Programs:
  - August 12: Palatka Railway Preservation Society.
  - September 9: Paul Newton on a private luxury railcar excursion.

### Announcements:

- Deland Train Show – July 10.

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Tonight's speaker is Art Towson on the B&O (Bill Price videos.)

Respectfully Submitted,

Paul Newton

# The Jawn Henry Specifications

## C-C+C-C TE1

In 1954, the N&W, Westinghouse Electric, the Baldwin-Lima-Hamilton Corporation and boiler-builders Babcock & Wilcox made one final attempt to develop a more efficient coal-fueled steam locomotive. The monstrous steam turbine experimental was officially identified as 2300, but was known to railroaders and onlookers as the "Jawn Henry", or simply "Big Jawn".

The diagram below shows the facilities arrangement, right down to the massive traction motors on each of twelve axles. That continuous tractive effort rating of 144,000 pounds was, by the way, a conservative indication of the loco's capacity.

The mighty loco's durable traction motors could sustain enormous overloads for short time periods. What the loco's true capacity was, we don't know, but on one memorable occasion while in helper service, Jawn telescoped a steel-underframe caboose over a tank car as a small indication of his prowess.

Up to about 12 m.p.h., Big Jawn bested the Y6b and A locos in both tractive effort and horsepower! Better yet, the new behemoth hauled more freight for less fuel cost than the competing Y6b's over the hilly Radford and Pocahontas divisions between Roanoke, Bluefield, and Williamson. Savings relative to the operation of an A over the Scioto division between Williamson and Portsmouth were equally impressive, though the A's brought the freight over the road about 15% faster than the TE1 whose turbine reached maximum allowable r.p.m.'s at a road speed of 41.5 m.p.h.

2300 Built 1954 by  
Baldwin-Lima-Hamilton

Total Loco Wt  
(On Drivers) 818,000 lbs.

Tender Wt.  
(Loaded) 364,100 lbs.

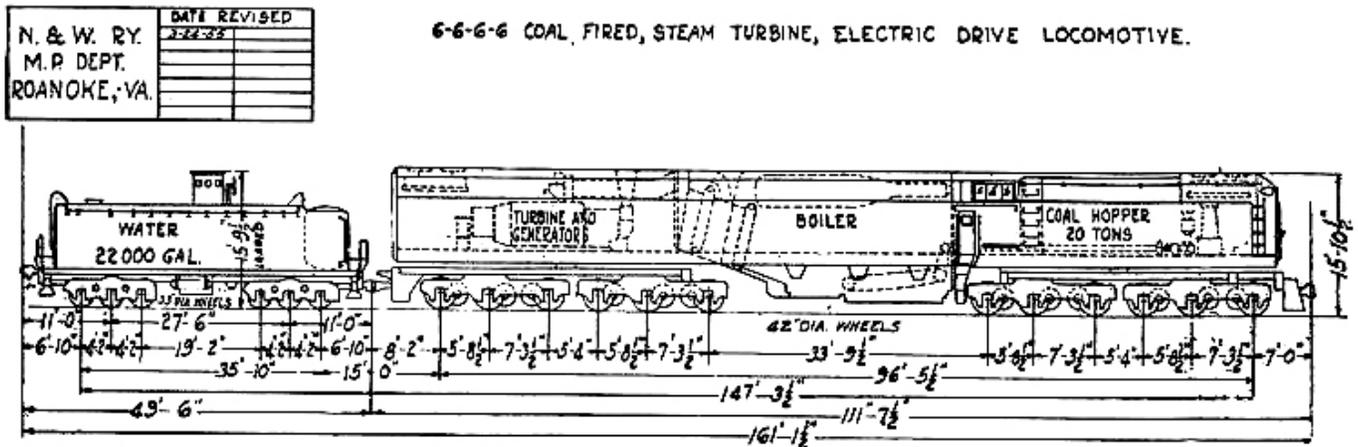
Weight Of  
Engine & Tender 1,182,100 lbs.

Continuous T.E.  
(at 9 m.p.h.) 144,000 lbs.

Boiler  
Pressure 660 psi

Traction  
Motors 12

Driv.  
Diam 42"



## Hobos (Source – Wikipedia)

Tramps and hobos are commonly lumped together, but in their own sight they are sharply differentiated. A hobo or "bo" is simply a migratory laborer; he may take some longish holidays, but sooner or later he returns to work. A tramp never works if it can be avoided; he simply travels. Lower than either is the bum, who neither works nor travels, save when impelled to motion by the police.

It is unclear exactly when hobos first appeared on the American railroading scene. With the end of the American Civil War in the mid 19th Century, many soldiers looking to return home took to hopping freight trains. Others, looking for work on the American frontier, followed railroads westward aboard freight trains in the late 19th Century.

In 1906, Prof. Loyal Shafee, after an exhaustive study, put the number of tramps in America at 500,000 (about 0.6% of the U.S. population). The article citing this figure, "What Tramps Cost Nation", was published by The New York Telegraph in 1911 and estimated the number had surged to 700,000.

The population of hobos increased greatly during the Great Depression era of the 1930s. With no work and no prospects at home, many decided to travel for free via freight trains and try their luck elsewhere.

# Hobo Signs and Symbols

									Free Telephone	There's no use going this way	Ill-tempered man lives here	Go this way	Keep quiet	A Judge lives here	Doctor here won't charge	This is NOT a safe place	Barking Dog here
									An officer of the law lives here	Owners will give to get rid of you	Crime committed here. Not safe	Good place to catch a train	Kind woman lives here. Tell a pitiful story	Trolley stop	There is nothing to be gained here	Bad Water	These people are rich
									The sky's the limit	Good place for a handout	There are thieves about	Road spoiled. Full of other hobos	This owner is in	This is a well guarded house	Man with a gun lives here	Hit the road	You can camp here
									This owner is out	Doubtful	Authorities here are alert	Good road to follow	A kind lady lives here	Alcohol in this town	Halt	Fresh water. Safe campsite	Police here frown on hobos
									Jail or Prison	Dangerous neighborhood	OK, alright	Hold your tongue	Religious talk will get you a meal here	Be ready to defend yourself	Vicious dog here	Courthouse	A kind gentleman lives here

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The Hobos of early 20th Century America, communicated through a basic system of marks and symbols through which they gave information and warnings to their fellow Knights of the Road. Usually, these signs and symbols would be written in chalk or coal on a fence, building, railroad trestle or sidewalk, letting other Hobos know what they could expect in the area of the sign or symbol. Some famous folks who hobo'ed were: author Louis L'Amour; comedian Art Linkletter; billionaire H.L. Hunt; journalist Eric Sevareid; Supreme Court Justice William O. Douglas and poet Carl Sandburg. A popular Hobo song was "Big Rock Candy Mountain".

Life as a hobo was a dangerous one. In addition to the problems of being itinerant, poor, far from home and support, and the hostile attitude of many train crews, the railroads employed their own security staff, often nicknamed bulls, who had a reputation for being rough with trespassers.[citation needed] Also, riding on a freight train is a dangerous enterprise. The British poet W.H. Davies, author of *The Autobiography of a Super-Tramp*, lost a leg falling under the wheels whilst trying to jump a train. One could easily get trapped between cars, or freeze to death in bad weather. When freezer cars were loaded at an ice factory, any hobo inside was likely to be killed.

According to one source, as many as 20,000 people live the hobo lifestyle in North America today. Modern freight trains are much faster and harder to ride than in the 1930s, but can still be boarded in rail yards.

In 1900, the town fathers of Britt, Iowa invited Tourist Union #63 to bring their annual convention to town, and the National Hobo Convention has been held each year in early to mid August ever since. Hobos stay in the "Hobo Jungle" telling stories around campfires at night. A hobo king and queen are named each year and get to ride on special floats in the Hobo Day parade. Following the parade, mulligan stew is served to hundreds of people in the city park. Live entertainment, a carnival, and a flea market are also part of the festivities. They also win money for the parade to help them get food. The first and most important rule of the hobo code was 'decide your own life', which meant 'do what you want to do'.