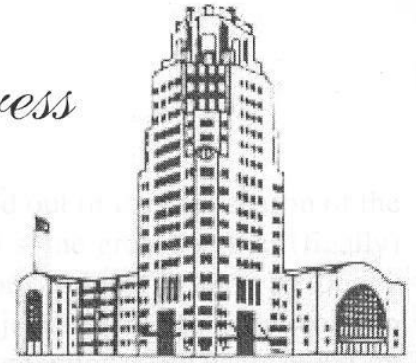


Empire State Express



September 2018

PUBLICATION OF THE NIAGARA FRONTIER CHAPTER NRHS, INC.

Editor: John C. Dahl Email: newsletter@nfcnrhs.com

The meeting of the Chapter will be held on Friday, September 14, 2018 at 8:00 PM at the Degraff Community Center, 139 Division St., North Tonawanda, NY.

AN ECLECTIC OVERVIEW OF WESTERN NEW YORK RAILROADS

A Slide Presentation by Thomas Gascoigne

Tom Gascoigne began taking color slides as a teenager during the 1950s and, over the years, traded slides with many other photographers around the country. In recent years, he has turned his attention to building a collection of vintage slides of railroads from the 1940s and '50s, including an extensive array of red border Kodachromes taken by such notable rail photographers as Willis McCaleb, Jim Buckley, and David Sweetland. Our September program will feature a random selection of slides from Tom's collection that will provide an overview of Western New York railroading, including those roads that served Buffalo in the post-war era.

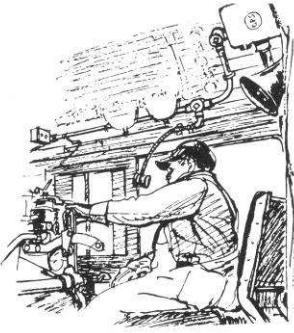
While his education and background was in the graphic arts, Tom's tenure with the Mechanical Department at CP Rail provided him the opportunity and experience to gain a railroader's perspective. A member of more than two dozen rail historical societies (holding charter and life memberships in several), he has also been active in the model train hobby much of his life. A long-time member of the Train Collector's Association (TCA), he was co-founder of the Lionel Collectors Association of Canada in 1978. After leaving CP, Tom established Buffalo Creek Graphics in 1992, a company that pioneered in the field of custom-decorated O-scale model railroad freight equipment.



Tom served as Publisher of *Transit Canada Magazine* for more than a decade. To members of the Chapter, however, Tom may be best known for his many years of service as a Director of the Nickel Plate Road Historical & Technical Society and his recent work as Publisher of that organization's *Nickel Plate Road Magazine* and annual color calendar. Attendees at the Chapter's September slide program will have an opportunity to see the railroads of Western New York from the viewpoint of many different photographers, assembled by an individual with a wealth of knowledge about railroads and photography.

D&H pool train, units 7603 and 5011, MEC 283, and B&M 205. Taken in July 1983, we can see the old Buffalo Color facilities (now demolished) in the background. Tom Gascoigne collection.

MESSAGE FROM THE PRESIDENT



I looked at the calendar just to check. There are the same number of days in the weeks in June, July and August and the same number of weeks in the months as there are in the rest of the year. It sure doesn't seem like it. Here I am writing my column for the September ESX. What? Hey, we're just getting started! OK, enough of that, we all know time flies when you are having fun in the summertime.

We held our June meeting at Central Terminal. It was a beautiful, early June evening. Thanks to Mark Lewandowski and the staff of CTRC for the invitation. They provided a meeting area on the concourse all set up for us with chairs, podium, screen, projection table and a warm welcome. Devan Lawton provided the program, a movie tribute to passenger E units in and around Buffalo. It was a great night. If you were there, I'm sure that you would agree.

We have programs lined up for the rest of 2018, but we need to get busy on 2019.

During the Tuesday of Canal Fest, we parked cars at the Museum as we have for several years. Thanks to Becky Gerstung, Greg Gerstung, Dennis Hurley and Al Le Teste for their help with the event. The Chapter Treasury benefitted to the tune of \$166.

I would like to take this opportunity to thank the members who volunteered to be docents during the 2018 Museum Season. We get visitors from everywhere, some who come looking for us and others just stumble upon us. Earlier this year we had a lady come in who was visiting from Winnipeg. She was on her way to the Carousel Factory Museum and wandered in just because we were there. She said she only had five minutes but stayed forty five, and left grudgingly so as not to miss her actual destination.

Anton Schwarzmeuller has been working on a grant to purchase and erect a pair of historic markers. One will be near the abutment of the suspension bridge in Artpark State Park at Lewiston where the IRC crossed the lower Niagara River. As of this writing, the location has been approved. We will keep you posted on the process.

Restoration consists of many things, and many of us think of sanding and painting right away. We have spent many hours working on a number of things since I wrote last. So much has happened this summer that I dusted off my other column, Milepost 13.2, just to report on that. Thanks to Neal for moving the boxcar. We needed it repositioned so that we could open and close the door without a fight. We will be opening it often this year.

The 2019 Chapter Calendar is at the printer, look for it at the Central Terminal Train Show and at the September Chapter meeting. It makes a great Holiday gift. The Special Introductory Price of \$8.00 for members, will be at the meeting only.

The Central Terminal Train Show is usually on the weekend of the September Chapter Meeting. This year, because of how the dates work out, our meeting will be the week after. I will ask you here for volunteers to help man the Chapters display area at the show on the 8th and 9th. Call Becky at 434 5665 if you can help out. Help us reach out to the world for new members.

Until then, I'll see you at the meeting or at the Train Show, or both.

Jim Ball

Milepost 13.2

Most of you know that the title of this column refers to the location of our museum on the Suspension Bridge and Erie Junction. I use it to talk about what has been going on there when there is not room in my Presidents Page. This is one of those times.

This has absolutely been a watershed year for restoration. Let's recall what has been done this year, and let's start with EL-2.

For many years our ancient sentinel has stood watch over the right of ways of the NYC and the Erie, silently enduring both summer's heat and winter's icy blasts. This year the Iroquois Job Corps. agreed to repoint the brickwork as part of their training program. This was no small task as nothing had been done for all the time that we owned it. They showed up on Tuesdays and Wednesdays as their schedule permitted, about 9:30 am and worked until 2 pm. We provided them lunch. The crew was usually five people and a supervisor. They finished up at the end of July.

We have received a grant that will allow for more work to be done. We intend to replace the plywood covers on as many of the fifteen windows on the second story as we can. These will be storm windows, but what this will do for the appearance of the building will be fantastic. As we are able, we can refurbish, repair and restore the inside windows. They range from just needing some paint to totally nonexistent. There is a lot of work to be done but we are still sorting that out. Stay tuned.

Across the street, at the home office if you will, other things were going on. Let's talk about some of them.

First off, we have a new member, Greg Brodnick, who comes regularly and has been painting. Last fall, Greg Gerstung removed and cut up the signal box that was laying against one of the doors on the west side. Greg Brodnick painted that door, the stairs on the west side of the station, and the door on the north end. The west side of the station is looking much better these days. All of the wooden doors are a uniform Erie green. We also cleaned up the old ties that had been lying there and installed the bumper that was in the equipment compound at the end of the siding. The east side of the station, because it doesn't face Oliver Street, has always been a secondary priority.

On July 21st we rented a Bobcat machine and were able to accomplish a number of things that we had long planned and needed to do around the Station. The machine came equipped with a post hole digger, a bucket and lifting forks. Steve Frey lent his experienced hand to operating it and a lot got done. Thanks to Dennis Hurley, Bob Andrycha, Greg Gerstung, Becky Gerstung, Steve Frey and Al Le Teste for their help. Look in this issue for the pictures that Becky took while we were working.

We set mile posts, whistle posts and speed limit signs in the ground in concrete. We removed the signal relay box from the north end and put it outside. This will allow the archive room expansion to move forward. The next step in that project will be to restore the north most door on the west side so as to receive materials for framing.

We still have September, October and some of November to work. At this rate a great deal will have been accomplished by the time that "the snow flies".

We are there every Saturday, except for September 8th, so come have a look!

Jim Ball

LAST RUN

Renowned rail photographer Jim Shaughnessy died August 7th at the age of 84. His contribution to our collective record of railroading is immense. His photos have been widely published in *Trains* and *Classic Trains* magazine and in many books including several devoted to his own work. He authored the definitive histories of the Delaware & Hudson and the Rutland railroads. The ESX was fortunate to publish an occasional photo of Jim's, and programs by his late friend and Chapter member Craig Woodworth often featured Shaughnessy photos or a connection with Jim. I had the great privilege of hearing his talk on his photography and rail experiences at a New York Central System Historical Society meeting in Albany a few years ago. May he have an eternal 'Green Block' on the track ahead. JCD



THE ONE, THE ONLY...

BIG ENGINE


THE PENNSYLVANIA RAILROAD

S1 6-4-4-6


TONY SCHILL

Technically speaking, the S1 was simply a streamlined 6-4-4-6 duplex steam passenger locomotive built by the Pennsylvania Railroad in the late 1930's at its Juniata Shops in Altoona, Pa. But that dry prose does not even begin to help one gain a proper understanding and appreciation of what was an amazingly advanced, immense, visually overpowering and ultimately legendary locomotive. Nor does it suggest anything of its starring role of promoting the American railroad industry to millions of visitors the 1939-40 New York World's Fair. And finally, it does not give any inkling that this great engine would run in revenue service for a mere five years, and that it would be scrapped just 10 short years after its construction.

In the years 1935-39 it was not yet evident to many in the railroad industry that the day would ever come when the fires would be forever dropped on all but a handful steam locomotives preserved for posterity. Yes, there were some diesels in service even then, but they were mostly just switchers and a few shiny passenger units (mostly in fixed-consist lightweight passenger trains). Some of the largest carriers, including the C&O, N&W, and, of course, the Pennsylvania (all of which carried huge amounts of coal), maintained a seemingly unwavering commitment to steam power. Eventually that would change, but only after one great final battle of steam versus diesel.



WORLD'S LARGEST AND FASTEST COAL BURNING STEAM PASSENGER LOCOMOTIVE

<p>Pennsylvania Class S1</p> <p>Length overall, from coupler face to coupler face, 140 feet, 2.5 inches--Height, 15 feet, six inches</p> <p>Cylinders, 22-inch diameter, 26-inch stroke.</p> <p>Steam pressure 300 pounds per square inc.</p> <p>Driving Wheel diameter, 84 inches.</p>	<p>Four Cylinders</p> 	<p>Wheel Arrangement 6-4-4-6</p> <p>Weight on Driving Wheels, 281,440 pounds.</p> <p>Total weight of Locomotive and Tender in working order, 1,060,010 pounds.</p> <p>Tractive Effort, 71,900 pounds.</p> <p>Capacity of Tender, 52,900 pounds of coal, 24,230 gallons of Water.</p>
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On the Pennsylvania—a road well-known for its extensive steam motive power engineering program-- the commitment to coal and external combustion would lead to a massive program to develop what were hoped to be the most advanced steam locomotives in the world. That program began with the single S1 in 1939 and continued with the T1 (4-4-4-4 passenger, 1942, 52 built), Q1 (4-4-4-4 freight, 1942, one built), S2 (6-8-6 passenger/freight, 1944, one built), and Q2 (4-4-4-4 freight, 1944, 25 built). An additional locomotive, a steam-turbine-electric, was designed by the PRR but never built.

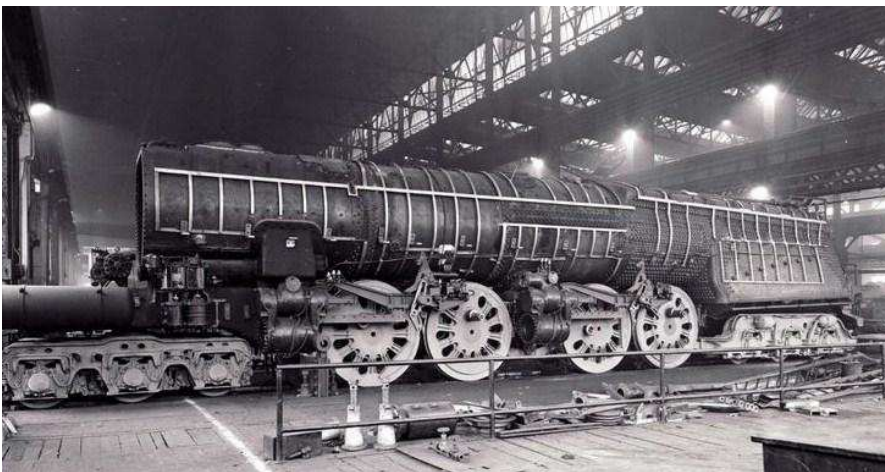
Except for the S2, which was a steam-turbine, all of the built locomotives were reciprocating and duplex drive, meaning that each locomotive had four cylinders, arranged in two sets of two each. Each pair of cylinders drove four driving wheels (two on each side of the locomotive) using rods. The engines were not articulated, as both sets of cylinders and the associated drivers were mounted on a single rigid frame.

A 4-4-4-4 is more or less a four-cylinder version of a 4-8-4. Why have the two “extra” cylinders? The duplexes were intended to be high-power, high-speed locomotives, as were most two-cylinder 4-8-4’s. With a 4-8-4 the two main rods transmit the piston thrust necessary to rotate all eight drivers. Thus the rods and reciprocating machinery must be large and heavy. The immense amount of power transmitted from the piston rods to the main rods and then to the driving rods cannot be entirely counterbalanced on a two-cylinder locomotive, and as a result some of the thrust impacts onto the rails of the track. This is called “dynamic augment”, and in the case of a very large locomotive working fast and hard it may cause serious damage to the track. Duplex drive, with its fewer driven wheels and consequently lighter rods and reciprocating machinery, allows piston thrust to be substantially reduced, resulting in a much lower possibility of track damage from dynamic augment.

Reduced dynamic augment was probably the most significant reason the PRR became interested in duplex drive. However, there were other considerations as well, including the smaller cylinders and shorter piston stroke on a duplex (adequate steam delivery on large, high-speed two-cylinder locomotives had become a recurring issue).

Certainly there were plenty of railroads who successfully operated 4-8-4’s, so it’s clear that the many motive power officers on other roads were not convinced that duplex drive was the wave of the future. Indeed, all the duplex drive locomotives, save one, built for US railroads were owned by the Pennsylvania (the sole exception was the very first duplex, which was built and operated by the B&O).

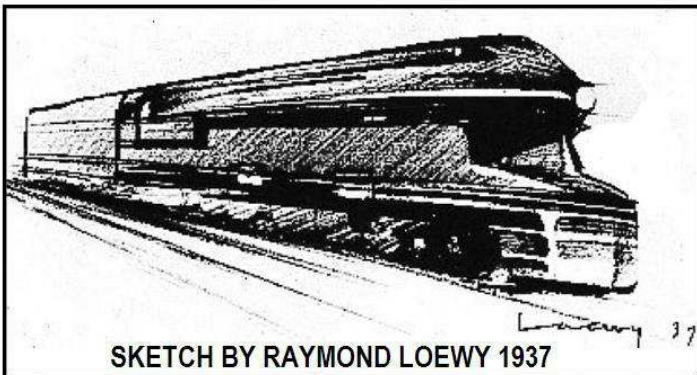
In any case, in 1937 the Pennsy began the design and subsequent construction of its first duplex, the S1, number 6100, forever to be informally known as the “Big Engine.” The S1 was an experimental locomotive, the operation of which was intended to validate the duplex drive concept before the PRR proceeded with the construction of a fleet of duplex drive engines. It was not expected that such engines would necessarily be duplicates of the S1, since the locomotive was not designed for system-wide use.



The Pennsy needed operating experience with the S1 to provide the real-world knowledge needed to create an ideal replacement loco-motive for the K4s. The S1 was primarily de-signed by Baldwin. It was built by the PRR at Altoona, with the participation of Baldwin, Alco and Lima. The S1 had 84-inch drivers and was designed to be capable of hauling a 1200-ton train (about 15 heavyweight cars) at a speed on 100 mph on level track having gentle curves, without double-heading as was often required with the K4s.

A notable feature of the S1 was its huge locomotive bed. A locomotive bed is a massive one-piece steel casting that consists of the locomotive frame, the cylinders and valve chests, steam pipes, and smokebox saddle.

The S1's locomotive bed was cast by the Commonwealth Division of General Steel Castings; at a length of 77' 9.5" it was the longest one-piece steel locomotive bed ever cast.



The most striking feature of the locomotive was its streamlined appearance. The largest streamlined locomotive ever built, its "look" was created by famed industrial designer Raymond Loewy. Although Loewy's first PRR design commission was only for trash receptacles at Penn Station, his work quickly caught the attention of the Pennsy's top brass, and in 1935 Loewy was given the task of sprucing up the GG1. His well-known success with the GG1 led to a commission to streamline K4s 3768 in 1936, and then the interior design of the new lightweight cars for the 1938 Broadway Limited.

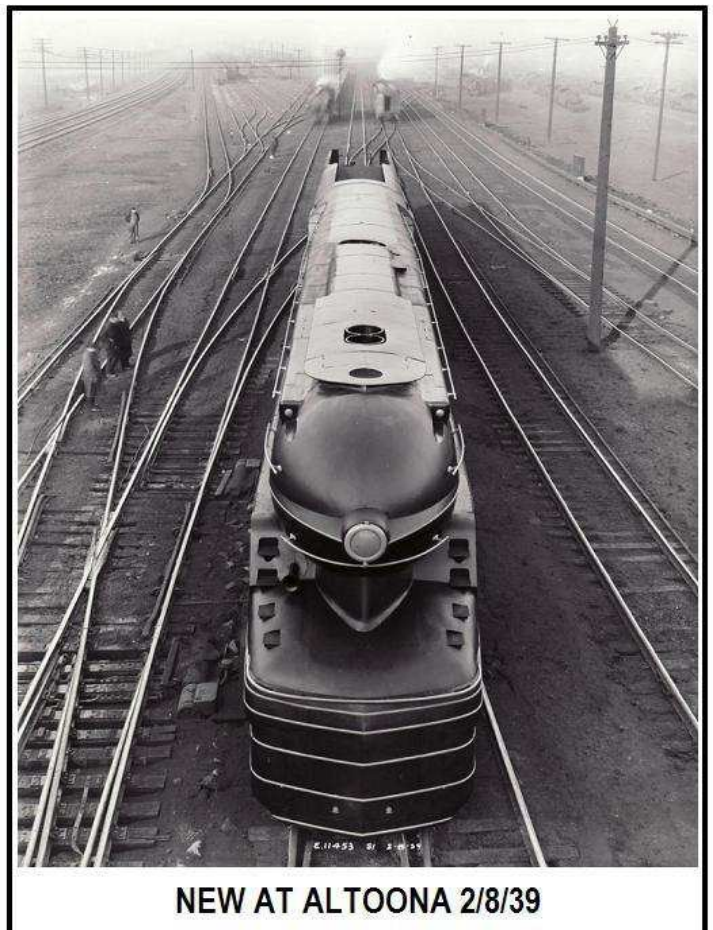
Loewy's design for the S1 6100 was rather similar to what he had done for the 3768, though of course on a much larger scale. There are certainly differences between the two designs, particularly at the front of the locomotives, but the overall appearance is sufficiently similar to cause head-on photos of the 3768 to be misidentified as being views of the 6100.

The S1 was the longest reciprocating steam locomotive tender combination ever constructed. Its length of 140' 2.5" exceeded the length of any Pennsylvania turntable then in use, and it could only be turned on a wye of generous dimensions. Its weight of just over a million pounds exceeded all but the largest freight articulated engines.

The S1 was designed in the full knowledge that its great size would preclude its operation system-wide. The extraordinary length and rigid frame of the engine itself limited regular operation to main lines with no tight curves and generous clearances. But prior to regular operation, the S1 would spend more that a year on a very special assignment.

The 6100 emerged from the erecting shop at Altoona in January, 1939. But the name "Pennsylvania" was nowhere to be seen on the engine and tender. Builder photographs dated February 2, 1939, show the tender lettered "American Railroads" with the letters AR in a circle below. This engine was to have a starring role at the World's Fair coming up in April of 1939, in New York City, where it would be a symbol of progress for an entire industry!

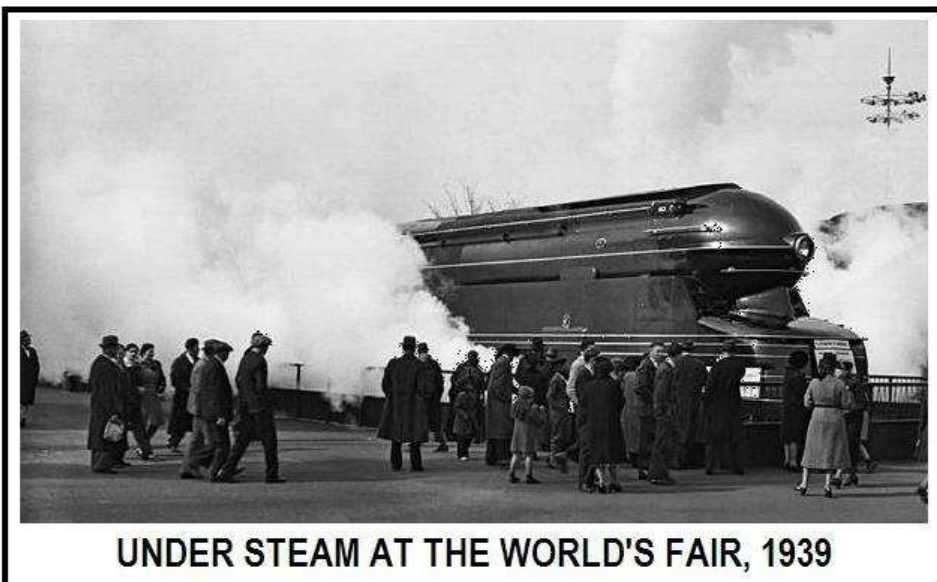
Very soon after completion the S1 was dispatched from Altoona dead-in-train in a special movement that ever so slowly made its way eastward towards New York. The special followed the main line to Harrisburg and on past Lancaster to Glenloch, where it moved onto the Trenton Cutoff in order to bypass Philadelphia.

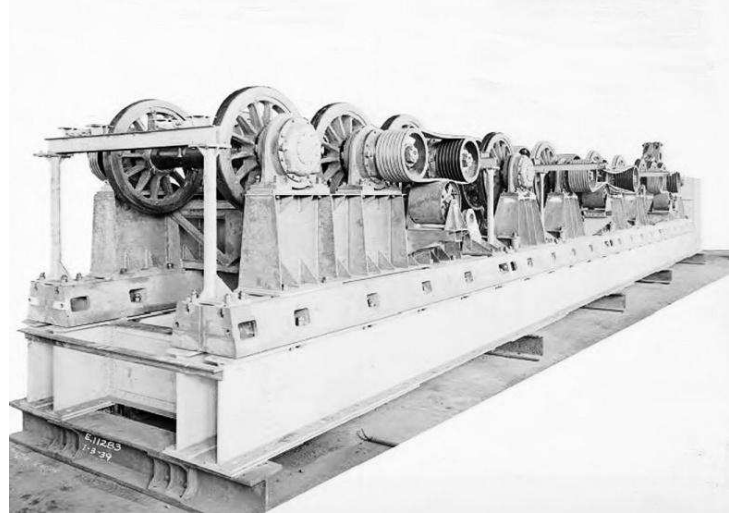


From Trenton the Big Engine was towed north up the bucolic Bel-Del Branch to Belvidere, PA, where it was turned over to the Lehigh & Hudson River. Along the way trackside obstacles had to be removed, while others could only be passed at a walking speed. The L&HR took the engine to Maybrook, NY. From there the New Haven towed it across the spectacular Poughkeepsie Bridge and ultimately south to the New York-Boston main line. That left only the final leg, which was over the Hell Gate Bridge onto Long Island, and then to the Fair site at Flushing Meadows via the Long Island Railroad.



At the Fairgrounds the giant locomotive was nudged onto a display track which was over a long pit, within a fenced area. Very carefully the engine was placed onto rollers the tops of which were slightly above the rails; the rollers would enable it to be “operated” while on display. Exactly how this operation was achieved is somewhat of a mystery today, 75 years later. Some folks maintain that the rollers were motorized, and that they caused the wheels to turn. At least one video shows the wheels on the tender also rotating, which suggests motorized rollers.





On the other hand, pictures of the S1 on display clearly show it being under steam, and one video shows coal being dumped in the tender. Moreover, Fair literature advertised the engine being operated under its own power and at 60 mph! The photo at above right shows belts linking the axles, suggesting that the rollers were indeed motorized, but it may have been possible to operate the locomotive under steam as well.

In any event, the S1 was a very impressive display and it was viewed by millions of Fair visitors. There were many other locomotives, cars and other railroad items on display as well, plus a daily “Railroads on Parade” history pageant involving equipment moving across a stage.

Following the end of the Fair in the fall of 1940 the S1 retraced its path back to Altoona, where it was prepared for actual service. Almost certainly it was then moved dead-in-train to its new home, which was the roundhouse in Crestline, Ohio. From Crestline a double-track speedway with relatively few curves stretched 279 miles to the bumping posts at Chicago Union Station. Here the S1 would have its chance to show what it could do!

The Crestline roundhouse was relatively new, but its stalls and turntable were both only 100’ in length—far too short for the S1’s 140 feet. The PRR extended the length of stall number 30 to accommodate the S1, and the turntable problem was solved by having a new track built into the stall from the other end. Turning the engine was done on a wye just west of the roundhouse.

The S1’s customary daily routine began at Crestline between about 6:00 and 8:00 am with the replacement of one or more K4s’ on a westbound flyer. Most often the train would be either the Broadway Limited, General or the all-coach streamliner the Trail Blazer (all from New York), or the Liberty Limited from Washington. A nameplate appropriate to the train assignment would be placed on the nose of the locomotive. A fast run to Chicago, stopping only at Fort Wayne and Englewood (for the Broadway), took about four hours and 45 minutes to cover the 279-mile distance.

At Chicago Union Station the train would normally arrive on one of the two platform tracks that had the least complicated approaches (it had been found that diverging movements at double-slip switches were best avoided with this locomotive). The cars would be cut off and taken to the 12th St. Coach Yard by a switcher; the S1 would then follow down to the engine-house at 14th St. Several hours were usually available to turn and service the engine. In the mid-afternoon (the time depending on the train assignment) the S1 would back down to the station, couple onto the train, and head east back to Crestline. During the night it would be serviced and any necessary repairs performed. If all went well, this entire process would be repeated the next day.

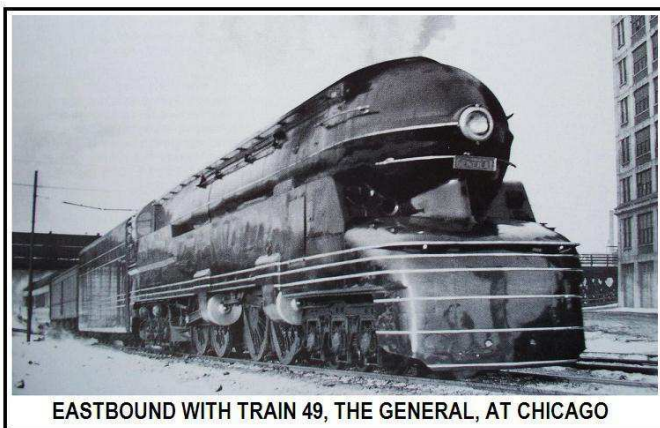
The S1 was a speedster, and the flat, mostly straight Fort Wayne and Chicago Divisions of the Pennsy gave it a chance to really perform. It was regularly operated at speeds above 100 mph, and there is evidence (but not from a planned, formally-documented and instrumented test) that on one particularly fast trip the locomotive reached a speed of 133 mph! Some claims of 140 mph have been made, but experts consider that unlikely. Nevertheless, it's clear that the S1 was indeed an extremely fast engine.

Fast, of course, did not mean "perfect", and as on almost any other experimental machine some problems soon appeared. The major issue was wheel slippage both when starting and at speed. While the S1 was a very heavy engine, it was unusual in that only 40% of its weight was on the drivers, while 60% was on the massive six-wheel unpowered pilot and trailing trucks. This resulted in a low factor of adhesion for a locomotive of great power, and even a skilled engineman was hard-pressed to avoid a slip when starting from a stop. Worse, very slight track or roadbed irregularities that would not even be noticed on a K4s could cause a disastrous and damaging (to the tires, piston rods, etc.) slip on the S1 at speed.

Regardless of any imperfections, the S1 was an amazing locomotive, and for a few years the railroad made sure it received as much public exposure as possible. It was, for example, featured in Penny's famous wall calendar paintings in 1939, 1940 and 1941, and the engine appeared prominently in the railroad's extensive print advertising campaigns.

The S1 served the Pennsylvania well through World War II, when passenger traffic reached unprecedented levels and the locomotive fleet was stretched to the limit. The need for availability and quick turnaround led to the gradual removal of much the streamlining on the 6100, beginning with the front coupler cover and then progressing in stages to the eventual total elimination of all skirting below the running boards. Wartime demands did not allow the luxury of streamlining that made it difficult for shops employees to access critical equipment. However, the locomotive (unlike the Dreyfuss-styled Hudsons on the New York Central) was never fully de-streamlined.

The S1 was pulled from service in 1945, and several it sat forlornly outside its stall at Crestline. The great locomotive was cut up for scrap in 1949.



The duplex drive technology pioneered on the Pennsylvania by the S1 would live on a few more years on the road's T1, Q1 and Q2 engines. These locomotives, based on the experience with the S1 had problems of their own, but in time those problems could have been resolved. What could not be resolved was the fact that out-of-the-box, highly-reliable and easy-to-maintain diesels were so attractive as to effectively end the Pennsylvania Railroad's long commitment to the steam locomotive. By the end of 1952 all of the duplexes were gone, along with the S2 steam turbine. The diesel had won, but the legend of the S1 remains.

Next Month: An S1 Gallery of photos and artwork will conclude Tony Shill's story of the "Big Engine".

ON THE TRACK AHEAD

October's program will be by Mark ("MJ") Lewandowski Jr.. Mark will showcase trains, old and new, all across America in his slide presentation.

CHAPTER CALENDAR

- SEPT Station open Saturdays, 1 PM to 4 PM. Volunteers needed.
- SEP 8-9 Train Show, Buffalo Central Terminal, 10 AM to 4 PM, Adults \$5. Chapter table needs volunteers.
- SEP 14 Regular meeting, at Degraff Community Center, 8 PM. Program by Tom Gascoigne.
- OCT 12 Regular meeting, at Degraff Community Center, 8 PM. Program by MJ Lewandowski

The Niagara Frontier Chapter NRHS, Inc. is a 501 (c) (3) publicly supported organization. Contributions may be deductible for income tax purposes in accordance with the Internal Revenue Service.

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