NARROW NUGGETS

conducted by
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photos by the author

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The Huntsville & Lake of Bays was a portage line, just over a mile in length built to a 3'-6" gauge. It carried passengers from the Muskoka steamboats over a ridge to the steamboats in another lake because there was no passage for the boats between the two lakes. This unit was built in 1888 by H.K. Porter Co. and was the first of two that pulled a boxcar and converted street railway car over the portage. The engine eventually wound up in the Pioneer Museum in Minden, Neb. I guess this is somebody's idea of what an early American locomotive looked like because it never had a stack like this and it certainly wasn't painted baby blue. Just outside this building is the second locomotive of H&LB (they only ever had two), and it is as it came from the railroad without the fancy paint and camouflaged bodywork—a much more satisfying sight for purists. If any members in the Minden area could provide me with slides of the other engine, I will share them with you.

Ideas for narrow gauge modeling

History of 3-foot narrow gauge railroads—part 2

The narrow gauge railroad movement was booming during the late 1800s. There were many impassioned arguments for and against the narrow gauge railroads. These arguments were conducted through the journals of the time such as the *Railway Age*, which was pro narrow gauge, and the *Railway Gazette*, which was against the narrow gauge movement. There were also narrow gauge railroad conventions, similar to our conventions, where talks were given about the experience of railroads and reports from engineering committees about standards for building railroads (sound familiar?).

The "Committee of Eleven" had been struck to report to the narrow gauge convention in St. Louis in 1872 about the costs of building a narrow gauge railroad. They reported that in mountainous country a narrow gauge railroad could be built for one-fifth the cost of a standard gauge railroad like the Pennsy or B&O in the same terrain. This cost comparison seems hard to believe, but remember that in mountainous terrain a narrow gauge railroad could go up, over and around the mountains while a standard gauge line had more tunneling and filling to do. In rolling country it could be built for half of standard gauge and in the flat plains for under three-fifths of standard gauge. They even suggested that a double-track narrow gauge line could be built for less than a single-track standard gauge one.

The lower capital cost of narrow gauge railroads was based on the assumption that these railroads would use lighter rail because the equipment was lighter. This would require smaller ties spaced farther apart and thus the grading of the right-of-way could be less extensive. Sharper curves and steeper grades would require less movement of earth for embankments and cuts. Lighter bridges could be built and thus there would be a savings in the cost of building the railroads. There were also projections of savings in equipment because it was expected that the smaller narrow gauge equipment would cost less than standard gauge equipment.

One of the purposes of the narrow gauge conventions was to quantify the cost projections of both sides of the question. There was no shortage of railroad men willing to stand up and give their experience on the cost issue. Speaker after speaker spoke of their experience of building narrow gauge railroads, and as these experiences developed a reasonable picture of cost saving emerged. It was commonly believed by the proponents of the movement that a good 3-foot gauge railroad could be built for not over two-thirds the cost of a standard gauge line and that operating costs would be under two-thirds the cost. This was stated in the form of a resolution at the narrow gauge convention of 1878.

The other side of the argument was focused by Mattias Forney who was editor of the *Railroad Gazette*. If the name Forney sounds familiar, it should be. He invented a unique locomotive of 0-4-4 wheel arrangement which was given his name. The Forney locomotive was a fixed-frame type of tank locomotive with a single truck under the tender. Forney wrote about the cost calculations of right-of-way construction and attempted to show that the savings projected by the proponents of narrow gauge were not as great as stated. He published letters from the Baldwin Locomotive Works in which they stated that they would build narrow gauge locomotives for the same cost as standard gauge ones. Rogers Locomotive Works wrote that it would cost more to build a narrow gauge locomotive and the Hinkley Locomotive Works stated that they would rather build only standard gauge locomotives. The general consensus of locomotive builders was that the savings in

weight of material of a narrow gauge locomotive would result in negligible savings in the cost of the locomotive as compared to a standard gauge locomotive of similar capacity. It would seem that the locomotive builders were refuting the argument presented by the proponents that equipment for the narrow gauge railroads would be cheaper than comparable equipment on the standard gauge. It should be remembered, however, that most narrow gauge lines used locomotives of lower capacity than standard gauge, so this might be why they thought that the locomotives would cost less.

Forney also published letters from carbuilders like Wason Manufacturing Company or Barney & Smith Manufacturing Company in which they stated that there would be no difference in cost in building a car for narrow gauge or standard gauge. The assumption was that the car was the same size but anyone who has seen narrow gauge equipment knows that narrow gauge cars are usually about three-quarters the size of standard gauge cars. For example a narrow gauge boxcar is typically 30 feet long while a standard gauge boxcar of the same era was 40 feet.

Forney missed a golden opportunity to score points in the argument against the narrow gauge proponents by failing to exploit the costs associated with the transfer of goods between narrow gauge and standard gauge railroads. Most narrow gauge railroads had, at one place or another, to transfer their goods to standard gauge cars for shipment to a final destination.The few exceptions to this are the lumbering railroads and the mineral railroads that were self-contained and needed only to move product between the area where it was extracted and the processing plant, whether it be a sawmill or stampmill. The narrow gauge proponents believed that the cost of lighter grading and bridges, smaller and lighter cars and locomotives outweighed the extra costs of transshipment to standard gauge lines. This proved not to be true.

Walton W. Evans, an accomplished engineer, received his training at the Rensselaer Polytechnic Institute in Troy, New York. RPI is home to a famous HO model railroad club known as the NEB&W (New England Berkshire & Western), the Berkshire Lines. Evans had extensive experience in Latin America in narrow gauge railroads. He was asked by the government of Australia to recommend a gauge for their railroads. The Victoria railroads were at the time built to a 5'-3" gauge but there was pressure to convert to 3'-6". Evans recommended that the railroad convert to 4'-8½" and presented his recommendations in a detailed cost analysis which included a comparison of narrow gauge and standard gauge costs in 44 different categories where these costs could be realistically compared.

Another famous opponent was Benjamin Latrobe, son of the architect of the US Capitol. Latrobe had been chief engineer of the B&O during the early years of the railroad. He also did a cost analysis comparing narrow and standard gauge, finding the savings offered by the narrow gauge not to be as great as the proponents had estimated. He recommended against the proposed use on narrow gauge lines of 30-pound rail and 15-ton locomotives. His experience on the B&O, when they had 35-pound T rail and 8- to 12-ton engines, was that the rail did not last long unless there were timbers running longways under the rail for support.

When the Texas & Pacific railroad was being planned in 1871 to go from New Orleans to San Diego, they asked General George P. Buell to recommend the gauge to be used by the railroad. Buell recommended 3'-6" gauge as the optimal based on a top speed of between 35 and 95 miles per hour. Silas Seymor wrote a pamphlet disputing Beull's findings and in particular that trains operated at the high speed of 45 mph could be not safe for passengers. It is interesting to note that narrow gauge railroads routinely operated at those speeds with no problem.

During the time that the railroad barons were debating the relative merits of narrow gauge as compared to standard gauge railroads, the railroad engineers were busy building the railroads. As the railroads were being operated, it was possible to put real figures to the arguments being put forth by the proponents and opponents of the narrow gauge. It was therefore possible to settle the argument about which was better.

The General Manager of the Cairo & St. Louis was Lorenzo M. Jognson

The East Broad Top was a 3-foot line which ran in Pennsylvania servicing the coal, limestone and ganister stone mines. The railroad has been preserved with help from government and the enthusiasm of many railfans. The EBT is an example of the monopoly type of railroad which served well into this century. They survived better than the common carriers which had to pay for transshipment of goods between narrow and standard gauge. The EBT did some interchange with the Pennsy but the majority of its hauling was within the railroad itself.

who had a lot of experience in running a narrow gauge railroad because the C&StL had been the second largest narrow gauge railroad during the early years. He found that savings on grading were minor. On western railroads were there could be as many as 500 bridges in 150 miles, the savings in bridge construction were also small. The lumber, pilings and labor cost the same as on a standard gauge road. The iron cost the same. There was a small savings on ties and stringers because of the smaller size. He found that turntables and tanks cost the same as did labor. He felt that the only savings in the shops would come from the fact that the walls could be built about two feet shorter. He found that in the area of rolling stock he could buy three narrow gauge cars for the price of two standard gauge ones. His findings with regard to locomotives was that narrow gauge locomotives were not as efficient as their standard gauge ones. He felt that they could not haul as much tonnage as compared to a similarly priced standard gauge locomotive.

An interesting finding was that an accident on a narrow gauge line was potentially more costly because of the increased number of trains required to carry the same tonnage as a standard gauge line. An accident would therefore hold up more trains and crews thus costing more in wages. The final finding was that narrow gauge shipping costs were increased by the fact that often the narrow gauge cars would have to be unloaded and goods transferred to standard gauge cars for shipment to market.

The result of all of the numerous arguments between railroad men and the subsequent enlightenment with the reality of actual operating railroads was the conclusion that narrow gauge railroads were not really cost effective as a common carrier which interchanged with standard gauge lines. The narrow gauge railroads were good where they were a monopoly, such as those in Colorado that serviced the mines or in Oregon that serviced the lumber stands or in Vermont that serviced the stone quarries or in Pennsylvania that serviced the coal mines or Northern Ontario that shuttled passengers over a portage line. Testament to this is borne by the fact that these railroads lasted so long while the common carriers were mostly converted to standard gauge shortly after the turn of the century.

There are many interesting stories of the railroads during the time that they were being built. We'll take a look at this next time.