

Blowing the Snow

By Frank Dewey with Don Wetzel

If you have ever worked on the north side of CSX, you have either taken a snow broom in hand or watched the maintenance-of-way people take the snow brooms to clean the snow out of a switch. For those that have not experienced it, a snow broom looks much like the broom you would use to sweep the kitchen floor except the bristles are much stronger and the handle end is equipped with a metal chisel. The stiff bristles are used to sweep the snow out between the switch points and the chisel is used to break up any ice build-up. They often could be spotted on engines jammed down between the handholds on the front and rear platforms where they were easy to get to in order to sweep the snow off the engine walkways and switches that the engineering department had not yet cleaned.



Technically called a "railroad switch and snow broom, it can sweep with one end and break up ice with the other end.

Big Rock Supply photo

On the old B&O, the brooms were made at the Cumberland Bolt & Forge. Most other railroads probably bought them from suppliers. They are still available and you can get one yourself. Just look them up on the computer.



Cleaning a switch the old way—by hand.

They would be good for removing snow and ice from sidewalks and steps.

Don Wetzel started his railroad career with the New York Central in Cleveland, Ohio, on the south side of Lake Erie. He began in train service and worked his way up to fireman and finally qualified as an engineer on diesel, electric and steam engines. He says he was one of the last engineers on the NYC to be qualified to operate a steam engine. Sometime later, he did not have enough seniority to hold a job and was laid off. When he went to the unemployment office to register, they asked him what other skills he had. He said he was a pilot. In fact, he had served in the United States Marines and had been flying since he was fourteen years old - obtaining his licenses and ratings as a civilian. The employment office told him that the Central was looking for a pilot and he applied and got the job. Among other duties, he flew the NYC's World War II era B-25 that they had purchased to fly personnel and supplies around the system. Don says the cargo was generally carried in the now unused bomb

bay.

Don's official title was as Assistant to The Director of Technical Research. His boss was J. J. Wright, the Director of Technical Research. The research department was charged with the responsibility to find ways to make the railroad operate safer, faster and cheaper. It was based out of Collinwood Yard on the east side of Cleveland.

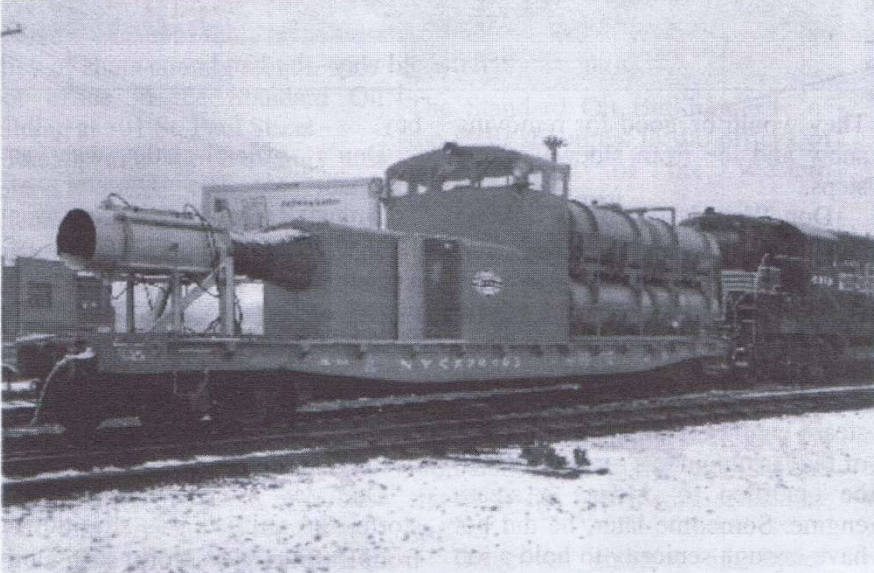
One day after a heavy snow storm, the railroad was shut down from Buffalo, New York, east. Don was out at Cleveland's Hopkins Airport and watched a jet accelerate down the runway. He noticed how the snow blew off the runway as the jet took off. That gave him an idea. He went back to Collinwood and talked to his boss about it.

Mr. Wright had previously been approached by a company selling surplus jet engines from obsolete B-36 bombers. Don convinced his boss to buy one jet engine and try to convert it into the railroad industry's first jet snow blower.

The first Jet Snow Blower was fashioned from a retired caboose using the cupola as the Operator's



One of the early New York Central Jet snow blowers.
New York Central photo from the Don Wetzel collection



A later version of the jet snow blower has the fuel tanks on the flat car with the jet engine eliminating the need for a supporting tank car.
New York Central photo from the Don Wetzel collection

station. A 10,000-gallon standard tank car was used to provide the fuel for the jet engine. He modified the jet engine to be able to use diesel fuel rather than kerosene and used an air-powered pump to feed the fuel into the engine. He designed and built a hydraulically actuated duct to be able to direct the flow of the jet exhaust right and left and up and down – even extending it on some models. He then further modified the blower vehicle by using six used jet engine

shipping containers as fuel tanks to eliminate the tank car .

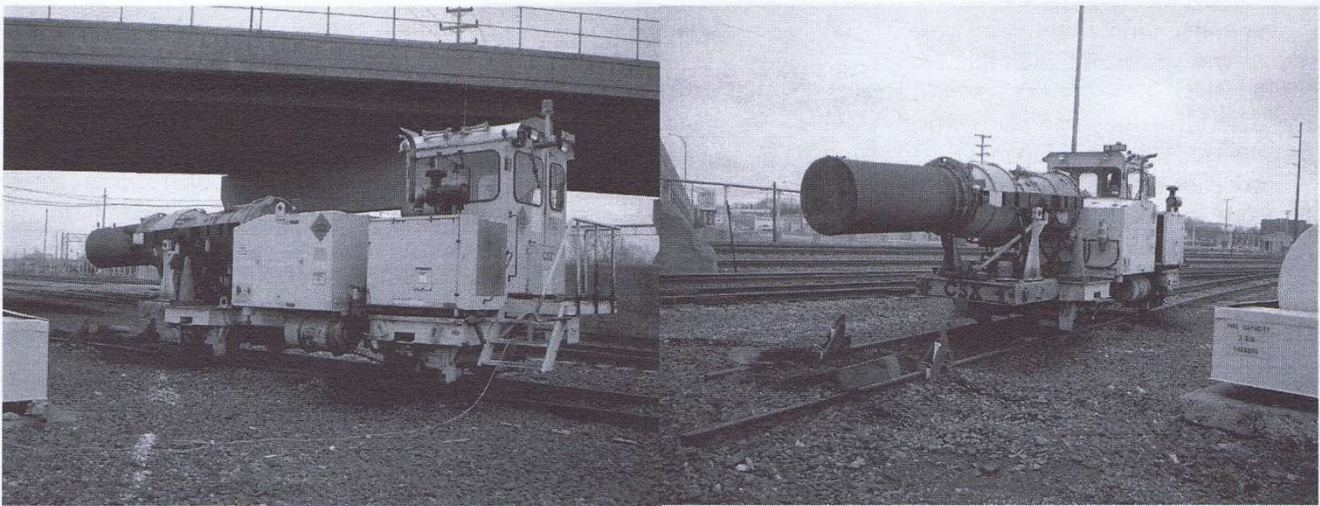
Not everything went smoothly with the early tests. One evening while operating in an urban area, the jet snow blower was close to a neighborhood bar. As it went by, it kicked up enough rocks and debris that it broke out every one of the bar's windows that faced the tracks. After the equipment went back to the yard to tie-down, the men on the blower went back to the bar to aid in boarding up the

windows and enjoyed the rest of the evening with the bar's patrons.

The main purpose of the jet snow blower was not to clear snow from the mainline but to clear out the switches that formerly required a team of workers with snow brooms and took a great deal of time. It was proved by the tests done by Don in the yards around Cleveland that the jet snow blower could do it far faster and with fewer employees.

The Cleveland Technical Center (a wholly owned subsidiary of The New York Central Railroad) filed for a U.S. Patent and also some foreign patents in Don's name. A team of government officials came out to see if his invention qualified for a patent. A team of government officials from the U.S. Army Ice and Permafrost Research Laboratory visited Collinwood. They determined that the duct that Don had added to the jet exhaust nozzle was a venturi (a short tube with a tapering constriction in the middle that causes an increase in the velocity of flow of a fluid and a corresponding decrease in fluid pressure) that increased the exhaust mass flow and reduced the exhaust gas temperature at the same time – similar as to the venturi in the stack of a steam engine that introduces draft to the steam engine's firebox . That venturi then resulted in only 30% of the snow that was lifted from the ground returning to the ground. The remaining 70% of the snow was sublimated (to pass directly from the solid to the vapor state) into water vapor in the atmosphere. *Editor's note: I did not know what all those words that Don used meant so I looked them up and provided them here so you did not have to.*

Don got his patent but like most of us who worked at CSX, he had to sign it over to the New York Central. The papers for that said he was to receive "\$1.00 and other good and due consideration". He says he never got the \$1.00 and



Front and back photos of the jet snow blower currently assigned at CSX's Collinwood Yard in Cleveland, Ohio, the "home of the jet snow blower."
Joe Kurilec photos

when questioning what "other good and due consideration" was, Don was told "continued employment".

The NYC later sold the patent to RMC. The current model is the Portec RMC "Hurricane" jet snow blower. It is mounted on a tamper frame with a small diesel engine to propel it and a 1,300-gallon tank to fuel the jet. CSX has numerous of these units and uses them to clean switches over those portions of the system that are subject to snow storms.

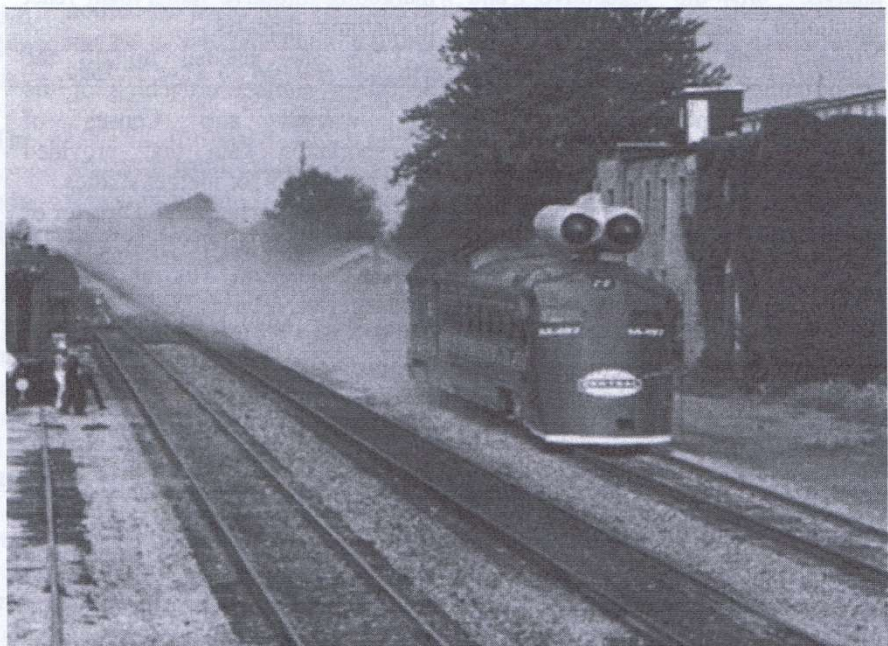
In the New York Central Operating Data Book for 1961 on the Western District, Lake Division, there is the following paragraph in the section about the Collinwood Technical Center:

The lab came up with a "jet snow blower." A jet airplane engine mounted on a car, makes short work of clearing snow from tracks and even from under standing cars. The jet engine was modified to burn regular diesel fuel. Significantly, the Air Force and the Federal Aviation Agency hired the NYC lab as consultant to help in modifying the blower for use on airport runways.

Don was not done with the invention of the jet snow blower. He also took two J-47 jet engines from another B-36 and mounted

them on a Budd Rail Diesel Car commonly known as an RDC. In a test west of Toledo, Ohio, from Butler, Indiana to Stryker, Ohio, he set a rail speed record of 183 MPH. He says that they achieved 196 MPH and were slowing down when they went through the speed recording traps. Don ran the Budd Car during the high-speed tests with President Alfred E. Perlman as his co-pilot. When asked why the Central did the speed run, Don

said "the project was to gather actual operating data on high-speed rail travel using a conventional, but modified vehicle and standard track and roadbed. The Research Department was charged with the responsibility to make trains run safer, faster and more efficiently. High-speed rail was just coming into vogue and the Pennsylvania Railroad was an arch competitor. We thought we could prove the validity of high-speed transport

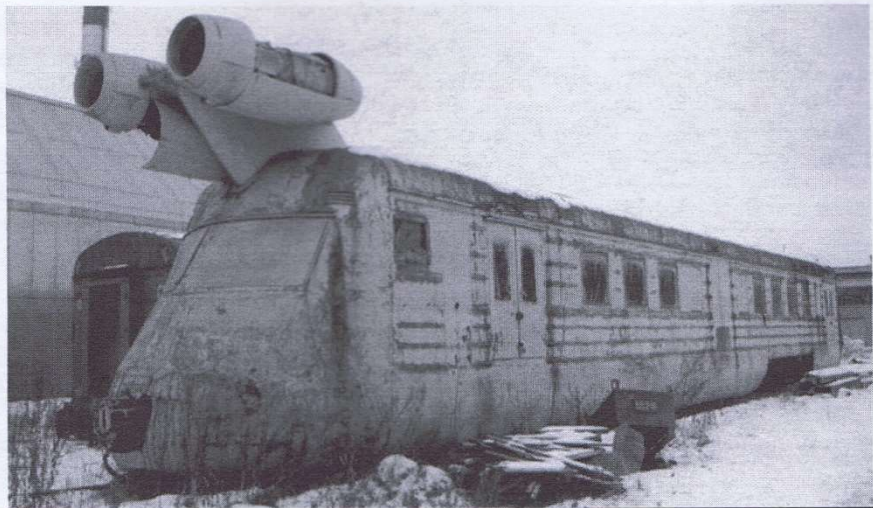


The M-497 setting the United States rail speed record of 183.85 mph on July 23, 1966.
New York Central photo

over conventional rail.”

It was some time later that Don and the New York Central realized that they had set a world speed record. The Japanese and European trains that operate at speeds in excess of two hundred miles an hour are all powered from overhead electric wires. The NYC speed record was a self-contained car that carried its own power source and fuel. The *Guinness Book of World Records* recognized it as a world record in 2011 and the record still stands.

Don later left the NYC and joined the Norfolk & Western. After 20 years in the railroad industry, he started his own company called Quest. Don had the original patent that covered pulsing of the engine’s ditch lights automatically whenever the locomotive engineer sounded the



All good ideas deserve to be copied and here is proof—a Soviet jet railcar!

horn/bell. His son, Kurt, now owns Quest and has made significant technical improvements to the ditch light electronic controllers to accommodate MU’d locomotives

as well as having the ability to mix incandescent and LED lamps.

Don is now retired and living in Strongsville, Ohio.

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