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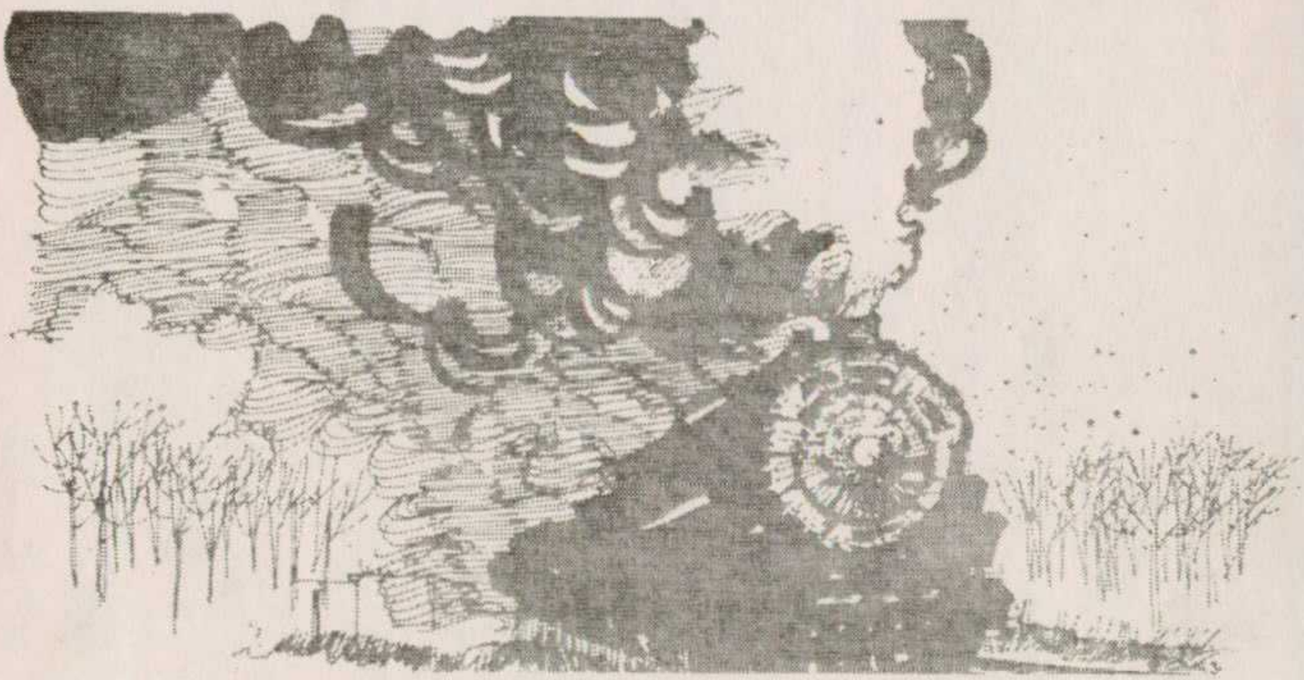
SPECIAL HISTORY STUDY

STEAM OVER SCRANTON: THE LOCOMOTIVES OF STEAMTOWN



STEAMTOWN NATIONAL HISTORIC SITE • PENNSYLVANIA

STEAM OVER SCRANTON: THE LOCOMOTIVES OF STEAMTOWN

BY
GORDON CHAPPELL

1991

SPECIAL HISTORY STUDY
STEAMTOWN NATIONAL HISTORIC SITE

UNITED STATES DEPARTMENT OF THE INTERIOR • NATIONAL PARK SERVICE

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ACKNOWLEDGMENTS

As in the case of any history study, the author of this one is greatly indebted to many who have contributed significant information, illustrations, and other forms of assistance. Perhaps first to be mentioned should be Fred Bailey, formerly an employee of the Steamtown Foundation and now a dispatcher on the Green Mountain Railroad in Vermont. Owing to his long connection with the Steamtown Foundation in New England and in Pennsylvania, his mind contains much of the administrative history of the Steamtown Foundation as well as much of the history, especially the recent history, of its locomotives and cars, its acquisitions and dispositions. As the Steamtown Foundation and its collection were the genesis of Steamtown National Historic Site, Fred possesses much critical knowledge. On a chilly day in February 1987, Fred gave me my first thorough tour of the snow-covered Scranton Yards and the first clues to the identities and histories of the many locomotives and cars in the yard that lacked identifying railroad names, numbers, or reporting marks. The Steamtown Foundation lacked thorough documentation on its many pieces of motive power and rolling stock, so the files in Fred's memory served as a reliable substitute and constituted the starting point of this study.

Next, I am indebted to John Hart, General Manager of the Steamtown Foundation for his courtesy and assistance in the pursuit of this study. It was John Hart who made the key connection in the establishment of Steamtown National Historic Site when he approached Pennsylvania Congressman Joseph McDade in search of financial assistance in the preservation of the Steamtown Foundation collection.

Third, I am indebted to Robert William Richardson, Executive Director of the Colorado Railroad Museum of Golden, Colorado. Bob loaned to me from the museum library, both by mail and in person, books needed for this study, including some quite rare ones, and he and his staff, including Charles Albi, Richard Cooley, and Wally Maxwell, performed, from time to time, small research chores I requested, checking items in sources in the museum's library. Furthermore, Bob Richardson himself served as an unpaid but frequently contacted consultant regarding railroad and locomotive history in the preparation of this study.

Additionally, I am indebted to the California State Railroad Museum, its director, Walter Gray, its chief curator, Stephen Drew, and to librarian Ellen Schwartz and archivist Blaine Lamb for continual assistance. In the California State Railroad Museum, the California State Park System has established pretty much what a railroad museum should be and what practices and standards it should follow, and set a new level of excellence in railroad preservation in the United States which the National Park Service will have to stretch far to match. In its library, Ellen especially helped search the photographic collections of Gerald Best and the Railway and Locomotive Historical Society for many rare photographs of the locomotives of Steamtown when they were in commercial service on their respective railroads. The two libraries, that of the California State Railroad Museum and that of the Colorado Railroad Museum, provided books, magazines, railroad industry references, and railroad investment manuals that contained much useful information.

But many other libraries provided assistance on particular locomotives, too. David Nathanson and Nancy Potts of the National Park Service (NPS) Harpers Ferry Center Library helped arrange interlibrary loan of hard-to-obtain books from the Mount Angel Abbey Library and the Glendale Public Library. In New Hampshire, Beth Dube and Faye Memelo of the Berlin Public Library provided useful material, as did Carol Govoni at the Lincoln Public Library. In Massachusetts, Isabel Durham and a

woman named Johnson at the Alvan Bolster Ricker Memorial Library in Poland provided data on Hiram Ricker and Sons and the Poland Spring Company. Librarian Margery Peffer of the Science and Technology Department of the Carnegie Public Library in Pittsburgh, Pennsylvania, provided electrostatic copies of information crucial to chapters on two locomotives. Susan Burnor of the library, actually a part of the county clerk's office, in Sheldon, Vermont, provided valuable material. Ann Kritemeyer of the New Haven Public Library in Connecticut supplied copies of useful newspaper clippings and brochures that documented part of the history of C.W. Blakeslee & Sons and the New Haven Trap Rock Co. Mark Cedeck of the St. Louis Mercantile Library provided a useful photograph of a Lackawanna electric train from the collection of John W. Barriger, III. Peggy Kingsbury of the Rochelle Public Library in Illinois obtained information regarding one locomotive builder. Agostino D. Mastrogiuseppe dug out photographs in the Otto Perry Collection at the Western History Department of the Denver Public Library that depicted Steamtown locomotives while in use. Thomas G. Baker, Curator of collections at the Florida Agricultural Museum, loaned a copy of a rare typescript that helped to unscramble the tangled web of Florida lumber companies that operated a particular Steamtown locomotive. Julie Campbell of the Central Vermont Public Service Corporation Library was very helpful.

Quite a number of individuals provided crucial assistance. Mallory Hope Ferrell in Georgia dug into his extensive photograph collection to provide images of various Steamtown locomotives when in service, including at least one from his own camera, as well as information on the roster of locomotives of several railroads. Otis J. Bartlett turned up photographs of the locomotives of the Berlin Mills Railway, and even drew a map of their yard to help clarify their complex track system. Railroad historian Richard Kindig of Denver, Colorado, found among his negatives a view of Union Pacific Railroad Locomotive No. 4012, as did John Maxwell, of Wheatridge, Colorado, and both provided copies. Guy L. Dunscomb of Modesto, California, provided a historic photograph of Union Pacific Railroad No. 737 in its last incarnation as Erath Sugar Company No. 216. To his surprise, the author of this study found a view by an unknown photographer of Union Pacific No. 4012 in his own library research files, which contributed significantly to this study.

Harry A. Frye of the Boston & Maine Railroad Historical Society proved a great source of information on the history and locomotive rosters of a number of New England railroads. Neil S. Johnson of The 470 Railroad Club provided essential photographs pertaining to Maine Central Railroad Locomotive No. 519, and various information. D.M. Rice of Granville, Massachusetts, provided photos, rosters, and maps.

Officers and employees of a number of corporations or companies provided essential information and, in some cases, illustrations. Edward J. Lavino, II, of E.J. Lavino & Company, supplied data on his family's fascinating history and that of the company they created. Jim Cornell of the Gettysburg Railroad provided information about the history of a Canadian National locomotive it once had owned. Shirley Macdow and, through her, J.C. Wemyss, Jr., provided some of the history of the Groveton Paper Board Company, now a subsidiary, along with many other paper firms, of the James River Corporation. Christina M. Casey of Mississquoi Products similarly supplied some of the history of her firm, as did Joseph Abate of Tilcon Tomasso, Inc., present operator of the New Haven Trap Rock Company and the Branford Steam Railroad. William J. Flaherty and Maureen Wright of the Massachusetts Electric Company and Ed Robbins of New England Power Company (New England Electric) both solved some puzzles regarding locomotives predecessors of their present firms once had operated. J. Norman Lowe and Connie Romani of Canadian National responded to the author's queries, as did Omer Lavallee, now retired from the corporate archives of the Canadian Pacific, a noted

Canadian railroad industry historian and author. Ken Longe of the Union Pacific provided useful information and illustrations.

Among the many individual's who assisted in research for this study, Rose Ricker (Mrs. George Allen Ricker, Jr.) and Ted Ricker, along with Bob Barley and Ted Walker and Catharine Lennihan, provided much of the story of the Poland Spring Company operated by Hiram Ricker & Sons. Frank C. O'Malley and Jack Armstrong proved especially helpful regarding a number of small New England locomotives. Thomas Lawson, Jr., amazed to received from the West Coast an inquiry about a particularly obscure Georgia locomotive, graciously answered the author's inquiry. Robert Wagner of Norfolk, New York, supplied not merely news clippings but also his personal reminiscence of working for the Norwood and St. Lawrence Railroad. Bob Richardson, already mentioned, recalled as a child watching one of the Steamtown locomotives struggle up a grade in Akron, Ohio, on the Akron, Canton & Youngstown. Edgar T. Mead answered questions about the Steamtown Foundation as well as about some of its locomotives. Railroad historian Robert C. Jones kindly supplied a draft chapter of his history of the Missisquoi Paper Company's railroad, while Fred Bailey, already mentioned, supplied a typescript on the history of the Steamtown Foundation after Nelson Blount's death. Malcolm S. McCarter provided photographs. Dr. Marvin Kendall provided critical information needed to track the origin of one locomotive, while Leon Irving of the Florida Division of Forestry, Steve Kerber, Elizabeth Alexander, Marion Bunney, Monroe Mechling, Mrs. Albert Karpowich, and B. May helped similarly.

Frank Ackerman, Chief of Interpretation for the NPS at Cape Code National Seashore, read and commented on drafts of this report both piecemeal and as a whole, supplied photographs used on several roster pages, supplied historical data on Boston & Maine equipment, photographed the Groveton Paper plant in New Hampshire, and assisted in other ways, bringing his own professional railroad experience to bear.

At Scranton, Robert McCarthy of the Steamtown Foundation guided me on a tour of the old stores building. Of great assistance as a consultant regarding mechanical matters and the condition of locomotives, Steamtown's Chief Mechanical Officer Chris Ahrens served as a regular consultant, kept me abreast of Steamtown Foundation acquisitions and dispositions before the National Park Service established Steamtown National Historic Site, and continuing as an employee of the NPS, has assisted regularly with information and review of draft chapters and eventually of the whole study. Chris is a real asset to Steamtown National Historic Site (NHS) and a key factor in its success.

I must also mention Steve Zuiderveen of the Steamtown Foundation shop force, who proved to be an invaluable source of information regarding equipment in the Scranton yards, serving further as a conduit for information from Bob Sherwood, an authority on New Jersey Transit and its predecessors, Roy Hutchinson of Lowell, Massachusetts, Ted Wichman, and David Briggs.

Superintendent Amos Hawkins of Steamtown National Historic Site proved always helpful, and Denise Guy kept me informed through copies of the news clippings of events involving Steamtown NHS. A. Berle Clemenson, a historian of the NPS Denver Service Center's Eastern Planning Team, consulted regularly on Steamtown issues. I am indebted to Nan Rickey for her briefing on Steamtown at the inception of the planning, to Bill Koning, chief of the planning team for Steamtown NHS, and to other members of the team whom I met in Denver and Scranton.

Most of the photographs on roster pages at the head of each chapter which show the locomotives at Steamtown in Scranton were made by the author of this study early in 1987, but Frank Ackerman of

Cape Cod National Seashore supplied photos of Bullard Company No. 2 and Canadian Pacific Railway No. 2317 and Calvin Hites of Steamtown NHS obtained photos by Steamtown's Ken Ganz of Baldwin Locomotive Works No. 26, Canadian Pacific Railway No. 1293, and Wabash No. 132 in its disguise as "Lackawanna 500."

Among others not already mentioned on the present staff of Steamtown National Historic Site, its second superintendent, John Latschar, read and commented on the study; Chief Interpreter Sue Pridemore and Curator Ella Rayburn, as well as others, proved helpful. At the Denver Service Center, Jerry Greene saw the study through editing and to publication. NPS Chief Historian Ed Bearss, who recommended the author's participation in Steamtown planning, later reviewed the study also.

Finally, I should thank Western Region Directors Howard Chapman and his successor, Stanley Albright, for making my services available to the planning team, and Park Historic Preservation Division Chief Thomas D. Mulhern, Jr., for his patience during the research and writing of this study.

It may be that in the foregoing listing, I have inadvertently omitted listing individuals, libraries, companies, or organizations that should have been included. If so, the fault is that of the author, not of the agency, and abject apologies are offered herewith. Thanks to all, named and unnamed, who have helped with this study.

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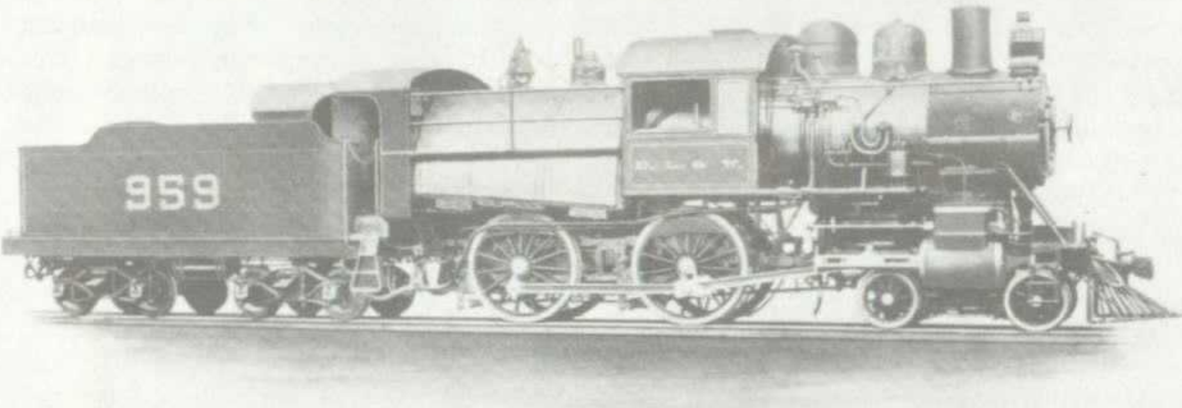
INTRODUCTION



This document contains the results of many months of research conducted in 1987 and 1988 for preparation of a Scope of Collections Statement for Steamtown National Historic Site. During the course of that project, the author accumulated a wealth of important raw data that contributed to a determination of which rolling stock should be acquired from the Steamtown Foundation for preservation at the park.

Because of the perceived management and interpretive value of the research material, it was decided that a special history study be undertaken to incorporate this information and to provide illustrations and bibliographic data. In essence, this report provides the rationale for decisions regarding the acquisition of locomotives for Steamtown National Historic Site; unpublished chapters filed at the park and available to interested parties by purchase of electrostatic copies likewise contain the rationale for non-acquisition of certain locomotives. The sections of this report regarding individual locomotives are mostly brief. On consultation with National Park Service Chief Historian Edwin C. Bearss, it was decided that footnotes would not be used and that each section would have its own bibliography.

The author is the National Park Service Historian for the Western Region, headquartered in San Francisco. Most of the time spent on this project was contributed and voluntary. All extensive research, such as that conducted in such repositories as the libraries of the California State Railroad Museum and the Colorado Railroad Museum, was performed gratuitously on personal time. The author also provided substantive information from his extensive personal library.

It is important that readers appreciate the time and money constraints under which this study proceeded, and that much pertinent data was thus unavailable from sites in the regions wherein the various Steamtown acquisitions originally operated or were located. That research must be left to others undertaking more detailed accountings of these locomotives.

THE LOCOMOTIVES OF STEAMTOWN

The main text of this report consists of individual chapters on each locomotive in the Steamtown National Historic Site collection.

Each chapter contains a brief history of the locomotive and the company or companies that operated it. It is followed by a short assessment of its mechanical condition, some recommendations for further study and treatment, and a bibliography of relevant sources. The chapters are grouped into sections dealing with American steam locomotives, Canadian steam locomotives, American electric locomotives, and American diesel-electric locomotives.

Each section has an introduction followed by a general bibliography of basic sources. As this special history study is intended merely to give a general introduction for purposes of providing some basic information for interpretation, a deliberate decision was made not to include footnotes but to provide separate bibliographies of basic sources on each engine or car.

This special history study is necessarily based primarily on published books and articles. Research in primary sources is reserved for the more thorough future reports. This research should precede any restoration work or intervention into the historic fabric of locomotives. The bibliographies pertaining to individual locomotives have been adapted for the purposes of this study to contain specific page citations where relevant, and a few annotations and comments by the author.

Deciding what heading to use for the sections on each locomotive, seemingly a simple matter, proved to be very complex. The original intention was to begin each section with a sheet of basic statistics common to locomotive "rosters" or lists. Such vital statistics would include a photograph of the piece of equipment discussed as it appeared in 1987 or 1988, over which would appear its designation by railroad name and assigned number. Photographs were deemed necessary because some locomotives had been recently repainted but not relettered, and thus carried no names or numbers.

Unfortunately, this seemingly straightforward approach broke down in a number of instances. Several locomotives turned out to have fictitious railroad names and reporting marks, having been repainted by the Steamtown Foundation to represent the Delaware, Lackawanna & Western locomotives. This had been done to provide a unity of name and color scheme to the locomotives and cars used in the excursion train to the Pocono Mountains. It seemed inadvisable, however, to give such repainting an aura of legitimacy in this report; thus locomotives that have such fictitious lettering and numbering are instead described under the name and number of a railroad on which they historically operated. A locomotive repainted in 1987 in maroon and gray and lettered "Lackawanna" with the number "514" is in this report listed accurately as New York, Chicago & St. Louis Railroad No. 514. Nevertheless, carefully read, this report and its illustrations should still clearly indicate exactly what equipment is under discussion. Indexes by locomotive number and by railroad name appear at the end of this study in a further attempt to clarify the issue.

All locomotives in the Steamtown NHS collection have been studied from the standpoint of technological importance and association with the various railroads that owned them. When the railroad owning a particular locomotive or car, whether short line or major system, is a railroad whose history has been researched and published in books and articles, that association is treated only briefly in the history section. Principal reliance is placed on reference to works cited in the bibliography for more information on corporate history. When a locomotive or car belonged to a company whose history has not been published or is extremely obscure in railroad literature, comparatively more attention has been devoted to researching that basic history from primary source material where available and necessary.

In considering the locomotives from the standpoint of technology and design, all have been viewed first from the standpoint of "power train type," more properly Whyte system type--in other words, the sequence of pilot, driving, and trailing wheel arrangement, a common approach to railroad technology and apparently one of the considerations employed by F. Nelson Blount in building the Steamtown Foundation's collection. But the technology and design of steam locomotives have many other aspects, including rod versus geared power trains; types of: tenders; tanks on tank engines, cabs, valve gear; valves; pilots; headlights; smokeboxes; stacks; reverse or power reverse; drive wheels; type and location of feedwater heater; booster if any; whistles; cylinders; firebox grates; firebox doors; automatic stoker, if any; and other factors. Some but not all of these aspects have been considered in this study and appear in the mention of particular attributes of particular locomotives. A greater degree of emphasis has been placed on Whyte system types and on association with particular companies in this study than on other components of railroad technology, although those have not been entirely ignored.

All of the American steam locomotives in the collection are considered to qualify for the National Register of Historic Places. It must be noted that certain of the National Register criteria realistically do not apply to railroad locomotives and cars just as some do not apply to historic ships. Like historic ships, railroad locomotives and cars are a special case. Steam locomotives have basically been obsolete for common carrier freight and passenger service for a quarter of a century or more, and scrapping of steam locomotives has gone about as far as, or further than, it should go.

Passing mention has been made of the importance of association of a particular locomotive or car with a particular railroad company; in other words, associative significance.

Most railroad museums have been the work of railroad enthusiasts not trained in curatorial or other museum professions or in any aspect of historic preservation. In preserving railroad locomotives and cars, they brought to their activity the perspective of railroad-oriented hobbyists and, in some instances, far more knowledge of the railroad industry than curatorial or other museum professionals would have, which often proved a considerable asset. But as a consequence of this background, emphasis frequently has been more on running trains, or at least locomotives, than on exhibiting them. There has consequently been a considerable bias toward viewing locomotives, in particular, as specimens of technology.

Certainly railroad rolling stock can be viewed from that perspective; a locomotive may have significance because of its wheel arrangement, type of valve gear, type of tender, or any of a number of other technological features. It may have significance as a unique specimen, or as a specimen representative of a type, or perhaps as a unique survivor of some type once common but now rare. Most railroad museums have viewed locomotives from this basically technological perspective, as well as from the standpoint of their operability. This view is not inappropriate. However, in approaching collecting locomotives and cars from that set of biases, it is easy to overlook another aspect of significance.

Apart from any technological significance that may attach to a particular locomotive or car, there is also the question of association--principally with particular railroad companies, though its association might also be one pertaining to a particular locomotive designer or chief mechanical officer, a particular engineer, or other individuals. A museum may have three physically identical locomotives, all built by the same builder to the same specifications in the same year, and when viewed from the standpoint of technology alone, the museum may need only one, the other two essentially being duplicates. But what if each of the three locomotives, though technologically identical, were operated by three entirely separate, distinct, and different railroad companies: perhaps an oilfield railroad whose locomotive moved tank car loads of petroleum products in southern California, a mineral railroad whose locomotive hauled hopper car loads of copper ore to a Utah smelter, and a small Ohio short line that hauled mixed products to and from the towns it served, manufactures from industries along its line, and agricultural products from the rural country through which it passed, using every conceivable type of freight car rather than predominately cars of one type. Although physically identical, each locomotive would represent association with a separate and distinct history whose interpretation its tangible presence would enhance. Then it might be appropriate for the museum to keep all three because of their different associations, as they represent different aspects of railroad history. Even though physically the same, each of course would have been painted and lettered differently to reflect the patterns used by each particular company. This is one reason why it may be appropriate for the Steamtown collection to include more than one locomotive of the 2-8-0 wheel arrangement--the four in the Steamtown collection all represent different railroads.

Another example of associative significance is Nickel Plate Road Locomotive No. 44. It may have significance as the oldest surviving Nickel Plate locomotive. It also served on a New York State short line railroad, the Dansville and Mount Morris. But between those two owners, the locomotive operated on the Akron, Canton and Youngstown Railroad, an Ohio company designed as a "traffic thief" operation, and is the only locomotive surviving of all those that operated on the A.C.& Y. Thus this particular locomotive has associative significance with three railroads. Similarly, Rahway Valley No. 15 was built for Tennessee's Oneida & Western and may be the only surviving locomotive of that Tennessee short line. Technological significance is not the *only* significance by which a locomotive should be judged; it should also be judged by its associative significance with the company or companies that once owned and operated it.

Another factor to be kept in mind when considering the aspect of technological significance is that not every locomotive of identical wheel arrangement is necessarily identical in other aspects. None of the 2-8-0 locomotives in the Steamtown collection is identical to any of the others. Norwood & St. Lawrence 2-6-0 No. 210 has an all-weather cab, probably quite unusual on mogul locomotives. Delaware, Lackawanna & Western 2-6-0 No. 565 does not have an all-weather cab. Similarly, even if it were not the only 4-8-2 locomotive in the Steamtown collection, Grand Trunk Western Railroad No. 6039 would be desirable to retain because is the only locomotive in the collection with a Vanderbilt tender.

Furthermore, not every locomotive in a railroad museum need be operable to be worthy of being retained. Boilers that due to age, lack of strength, lap seam construction, iron fabric, or other aspects may never again operate may still be worthy of preservation as a locomotive that can serve as a static exhibit specimen, restored in appearance so as to represent accurately the appearance of that locomotive at some stage in the history of the railroad.

In interpreting the locomotives and cars at Steamtown, it is important that the National Park Service adopt the broad approach of considering the locomotives and cars from the standpoint of their associations and value as fixed exhibits, as well as from the standpoint of their technological significance and operability. The steam locomotive, by and large, became obsolete more than a third of a century ago, and most have been cut up for scrap. Even with some duplication among surviving specimens (such as, for example, the survival of eight Union Pacific Big Boys at various locations), there is probably not a single surviving steam locomotive in the United States that does not merit preservation in some railroad museum, transportation museum, local history museum, next to a preserved depot, in a city, town or county park, or on some tourist railroad.

A parallel issue is that of authenticity of the representation of historic locomotives and railroad cars in terms of paint, lettering, and numbering schemes. The rolling stock of Steamtown National Historic Site should be thoroughly studied, then accurately restored to its appearance during some important phase of its history. A common practice in excursion service is to adopt some nonhistoric, inaccurate, or wholly fictitious color, lettering, and numbering scheme for the sake of unity of appearance of a train. The Steamtown Foundation adopted a late Delaware, Lackawanna & Western Railroad maroon and gray color, lettering, and numbering scheme for that purpose. Once studied and restored for museum exhibit purposes, locomotives and cars in the Steamtown NHS collection should not be repainted in historically inaccurate or fictitious color, lettering, and numbering schemes.

However, locomotives and cars that operated for more than one carrier during their history without physical change, but with different color, lettering, and numbering schemes while serving each carrier, may in the course of their exhibit service be repainted at different times to represent the different carriers they represented. The practice at some museums of painting a locomotive to represent one carrier in its past on one side, and on the other side painting it to represent an entirely different past carrier is not appropriate.

The steam locomotives in the collection of the Steamtown Foundation in 1987 consisted of, with a single exception, a collection of 20th-century motive power. In addition to 24 American steam locomotives, the collection included 12 Canadian locomotives and four European steam locomotives. The NPS acquired 21 American steam locomotives and eight Canadian steam locomotives for its collection; all the rest were sold at auction by the Steamtown Foundation in October 1988.

Thus the NPS has a smaller, but more coherent and manageable collection than did the Steamtown Foundation. However, the collection lacks certain types of locomotives, and some future addition and expansion of the collection is a necessity, through acquisition of significant locomotive types not now represented.

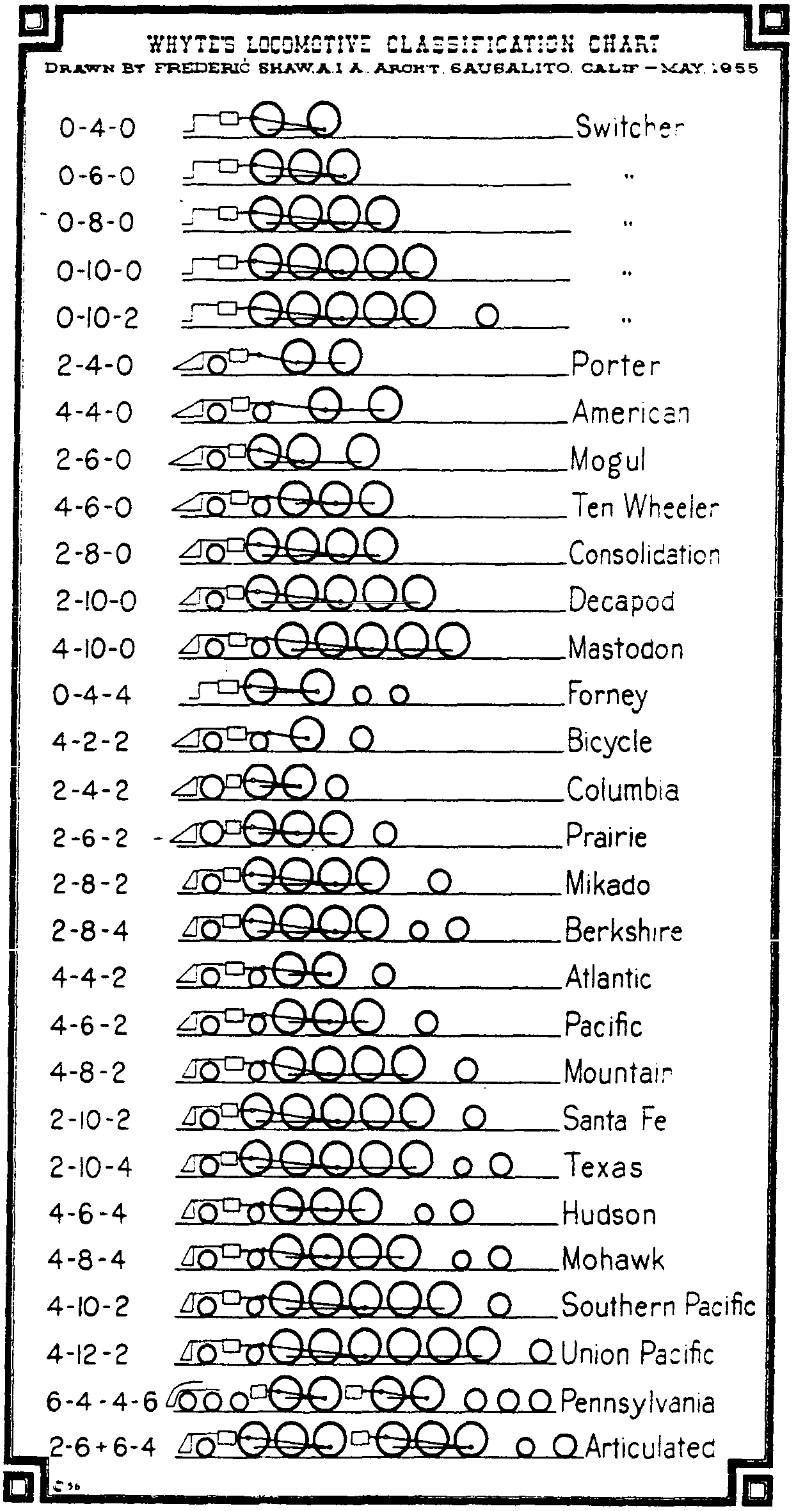
The published literature on the history of steam locomotives in the United States is enormous; so large, in fact, that it is possible to find information and, in most cases, photographs, of almost every American locomotive in the Steamtown Foundation collection in various books, railroad industry references, or in magazines such as *Trains, Railroad, Rail Classics,* and many others that have come and gone over the years. In the cases of some particular classes of locomotives, such as the Union Pacific Big Boy type or the Reading T-1 class, a whole book has even been devoted to the history of a single type of locomotive. While such information does not provide enough data to provide a basis for restoration (further primary source research would be required for that purpose), available published information is sufficient to provide a basis for recommendations regarding interpretation of locomotives by the National Park Service.

It has seemed useful to try to assess how many locomotives of each wheel arrangement, or Whyte system type, survive in the United States, as well as how many that served a particular company, and in certain instances, how many of a particular class have survived. The Whyte system establishes one context of technological significance, while the number of other locomotives of a particular company that have survived relates to the context of associative significance, including association with a particular locality or region of the country. As a source for these statistics, the list of preserved locomotives arranged by states published by Centennial Rail Limited of Denver, Colorado, has been used. It is recognized that other listings are available, that the one selected is not necessarily the most accurate, and that it contains errors, omissions, and duplications. It has been chosen over competing lists, however, because it is computer based, and it proved possible to have it reformatted to list preserved American locomotives by wheel arrangement (Whyte system type) and by owning company. Therefore, while these statistics may not be absolutely authoritative, they provide a general idea of how many locomotives of a certain type or from a certain railroad still exist. There are still a few locomotives--hidden in the brush where abandoned, stored in a dark corner of an obscure building, or otherwise still extant--that have not yet been included in any listing. Perhaps in the future they will be added. Meanwhile, the existing statistics, with a small percentage of error still built in, will suffice to provide some basis for comparison.

However, the fact that roughly 50 of the 2-6-0 Mogul-type locomotives have survived in the United States does not mean that any two of them are identical in design, even if they are identical in wheel arrangement. One may have Stephenson valve gear; another, the Baker type; another, Walschaert valve gear. One may have a wooden pilot; another, a metal bar pilot; another, an elliptical pilot of horizontal angle bars; another, a boiler tube pilot; another, a cast steel pilot; yet another, a switchman's stepboard. One may have a Radley and Hunter balloon stack; another, a Ruston or cabbage stack; another, a beartrap stack; another, a cap stack; yet another, a shotgun stack. One may have a wood frame cab; another, an open steel cab; another, a deckless cab; yet another, an all-weather enclosed cab. The drive wheel design and diameter and spacing may differ from one to the next, as may the cylinder and steam chest design, the headlight type, the headlight platform design, the number plate design, the steam and sand dome design, the whistle type, the type of tender, the design of the pilot deck, design and placement of running boards, number, type and placement of air pumps, type of bell hanger and its placement, and so forth. Were there a thousand surviving 2-6-0 Moguls in the United States, it would probably still be possible for no two of them to be exactly alike. This fact needs to be kept in mind when considering how many other locomotives of a particular wheel arrangement exist beyond the examples in the Steamtown collection. It does not necessarily mean that any of the others exactly duplicate one or more in the Steamtown collection, and even if one is physically an exact duplicate (which, incidentally is not the case in the Steamtown collection), its history of use and association may have been entirely different from that of a twin sister; it may have operated for an entirely different railroad clear across the country.

There are no listings of preserved locomotives by valve gear type, tender type, bell-hanger type, etc. If there were, it would not be feasible to unscramble all the possible variations of locomotives by components into meaningful numbers. Excessive emphasis should not be placed on such variations, but neither should they be overlooked.

It should also be kept in mind that the nation's railroad system consisted of many components, not merely Class I major main line railroad systems. It also consisted of branch lines; wholly owned subsidiary lines; independent short lines; incorporated and named industrial and noncommon carrier roads; unincorporated and unnamed industrial roads and switching operations that simply operated under the name of the industry they served; locomotive and car building firms; manufacturers of the machine tools needed to make railroad components; manufacturers of railroad locomotive and car components; fabricators of railroad bridges and turntables; rolling mills that manufactured rail; manufacturers of spikes, switch stands, and track components; producers of railroad ties and bridge timbers; processors that creosoted or Burnettized railroad ties, and so forth.



WHYTE'S LOCOMOTIVE CLASSIFICATION CHART
DRAWN BY FREDERIC SHAW, A.I.A. ARCH'T. SAUSALITO, CALIF – MAY, 1955
0-4-0 Switcher
0-6-0 "
0-8-0 "
0-10-0 "
0-10-2 "
2-4-0 Porter
4-4-0 American
2-6-0 Mogul
4-6-0 Ten Wheeler
2-8-0 Consolidation
2-10-0 Decapod
4-10-0 Mastodon
0-4-4 Forney
4-2-2 Bicycle
2-4-2 Columbia
2-6-2 Prairie
2-8-2 Mikado
2-8-4 Berkshire
4-4-2 Atlantic
4-6-2 Pacific
4-8-2 Mountain
2-10-2 Santa Fe
2-10-4 Texas
4-6-4 Hudson
4-8-4 Mohawk
4-10-2 Southern Pacific
4-12-2 Union Pacific
6-4-4-6 Pennsylvania
2-6+6-4 Articulated

Specifically with respect to locomotives, it is important to keep in mind that the main line locomotives of one decade might become the branch line or short line locomotives of a later era, and even an industrial locomotive or industrial plant switcher of a still later era. Furthermore, even the locomotive built expressly for seemingly menial and insignificant service on industrial switching trackage is not to be despised for its comparatively lowly origins, for each made its contribution, however great or small, to the larger history of the railroad industry in America.

The history of some of the industrial companies that operated either small railroads or operated switching locomotives on industrial plant trackage can be fascinating and significant. Indeed, many of the most significant industries in the United States had them. Railroad history, through such associations, opens doors to all sorts of interesting and important facets of American history--it is woven into the fabric of this nation and its place in the 20th-century world.

As a starting point for understanding the development of the technology of the steam locomotive in the United States, John H. White's *American Locomotives: An Engineering History, 1830-1880* is essential. While it deals with locomotive engineering during the 19th century, this period greatly affected all that came after, and an understanding of 19th-century locomotives with which the American railroad industry began the 20th century is essential. Then the student of locomotive technology must turn to the *Locomotive Cyclopedia of American Practice* and study in its many editions the evolution of the steam locomotive. Following that are the various publications and catalogs put out by locomotive building firms themselves, as well as the histories of those firms, such as Baldwin, American, Lima, Heisler, Climax, and others. Finally, a large number of books address the history of motive power development on a railroad-by-railroad basis, as do many issues of the *Bulletin of the Railway and Locomotive Historical Society* (recently renamed *Railroad History*).

Further investigations of railroad technology have appeared in the issues of *Trains* and *Railroad* magazines and their contemporaries and competitors over the years. Indeed, the volume of published information regarding the history of steam locomotives in the United States is huge. This special history study relies principally on the body of published literature and does not involve research into the fabric of locomotives or primary source material. Much more thorough research needs to be done before any restoration work on these locomotives and cars commences.

AMERICAN STEAM LOCOMOTIVES

In October 1942, a young Ohio railroad enthusiast named Robert Richardson, who had been drafted into the United States Army, returned from furlough at his home in Akron by way of the Southern Railway to the army's Camp Forest near Tullahoma, Tennessee. Seated next to Richardson in the coach, as it turned out, was a professor of history from the University of Kentucky at Lexington. In casual conversation, the professor learned that young Richardson had an abiding interest in railroads and railroad history.

The professor had been researching the life of a man who had died of alcoholism in a log cabin in Kentucky in 1799, he told Richardson. This man had invented a steam locomotive. Had Richardson ever heard of a John Fitch or of the locomotive he had built, a small working model, the professor inquired?

"Oh yes," said Richardson, "I've seen it."

"YOU KNOW WHERE IT IS?!?!" the professor leaped to his feet and shouted in a voice that turned heads the length of the car.

Yes, Richardson assured him, in the Ohio State Archeological and Historical Society Museum in Columbus, a stairway led down to the basement, and on a landing halfway down this stairway rested the little Fitch steam locomotive gathering dust. It had passed down through the family to the hands of a son-in-law of Fitch's who had settled in Worthington, Ohio. Somehow interested parties had learned in the 1850s that he had this historic little working model steam locomotive in his Worthington home and acquired it for the museum.

The professor became so excited he nearly left the train and reversed direction to go to Columbus to see the little engine, but eventually calmed down and continued his trip. Then he became angry because he recalled that he had written that Ohio museum, among many others, inquiring about the Fitch locomotive, and they professed to know nothing about it.

John Fitch invented the steam railroad locomotive during the 1780s and demonstrated his little working model of it before President George Washington and his cabinet in Philadelphia. His idea was to use a full-scale version of his little engine to haul wagons--freight cars, actually--across the Allegheny Mountains where the United States faced an almost insuperable problem of supplying, through a nearly roadless wilderness, Major General Arthur St. Clair's campaign against hostile British-supplied Indians of the Old Northwest.

Fitch's little locomotive operated on track made of wooden beams held in place by wheels with flanges on the outside of the wood rails, rather than inside as later became standard railroad practice. It featured a copper boiler mounted sideways on the frame and employed a sort of grasshopper lever motion to transmit power to the wheels. Fitch also invented a steam pump, a steam dredge for use in and around Philadelphia, and a steamboat that he demonstrated on the Schuykill River. He and a man named Rumsey who had invented a steamboat about the same time argued about who had been first, but both preceded Robert Fulton by many years. Fulton married into a wealthy and powerful family and managed to seize fame as the inventor of the steamboat while the much earlier Fitch and Rumsey had been forgotten.

Only a couple of feet wide and long, John Fitch's steam locomotive is the oldest such machine in the world. The steam railroad locomotive was an American, not a British, invention. But the United States of the 1790s remained primarily an agricultural society unappreciative of machinery and invention. Fitch was a man who lived ahead of his time, and his pioneering locomotive, as well as his pioneering steamboat, led to no further development of the invention. Soon both had been forgotten.

Early in the 19th century, an Englishman named Richard Trevithick also invented a steam locomotive, and within a short time the British invention led to the development of well-engineered railways. Americans, then ignorant of Fitch's pioneering inventions a quarter of a century earlier, began importing English locomotives until American foundries could meet the demand. The Delaware and Hudson Canal Company brought the first four steam locomotives into the United States from England, and it and other companies sent civil engineers abroad to study British railroad lines.

The first railroad locomotive built in the United States that actually served on a railroad was built in 1830 by the West Point Foundry Association of New York City for the South Carolina Railroad at Charleston, South Carolina. It bore the name "Best Friend." In those early years of the industry, almost any small foundry and machine shop had the capability of building a steam locomotive, and many did.

Meanwhile, English precedents did not work well in the United States. Built in well-developed and comparatively densely populated England, the English railways proved not to be well suited for American geography. Americans soon found the track over-engineered and too expensive to construct in the sparsely settled and little-developed American environs. Americans soon would devise their own cheaper systems of track construction. Starting with English prototypes, Americans also modified the locomotives with the addition of pilot trucks to help the locomotives around curves, "cowcatchers"--now known as "pilots"--cabs of different designs, headlights, and other features, so that by the 1850s American locomotives generally appeared distinctly different from English and other European locomotives. That divergence in design would continue.

From the late 1820s through the 1860s, American locomotive design progressed through a sequence of wheel arrangements, expressed by the Whyte system of classification. This system assigns a first number to a nonpowered pair of pilot wheels on a single axle, or four wheels on two axles, followed by a dash, then a figure denoting by the pair the wheels connected to a drive mechanism, followed by a dash, then a figure denoting the wheels supporting the rear end of the locomotive, again paired by the axle and generally two or four. Many locomotives lacked a trailing truck so that figure would be zero, while switch engines characteristically lacked a pilot truck, so that figure likewise would be zero in such instances.

Among the earliest locomotives, the 4-2-0 wheel arrangement proved popular, only one wheel on each side of the locomotive being powered by drive rods. Soon, however, American practice developed the 4-4-0, which became so characteristically an American locomotive type during the mid-19th century that it became known as the "American" type or the "American Standard." However, as the need for more powerful locomotives developed, it was not long before locomotive designers added another axle with a pair of powered drive wheels to create the 4-6-0 and also the 2-6-0. The next step would lead to the 2-8-0. Prior to 1900, as John White pointed out, it was generally possible to increase locomotive capacity satisfactorily simply by increasing boiler and cylinder size or by raising the steam pressure the locomotive used. Thereafter, more complex developments such as superheaters, boosters, mechanical stokers, feedwater heaters, and other appliances became necessary to increase capacity while maintaining weight and other limitations. The 20th century began with the development of myriad additional wheel arrangements of locomotives. From the 4-4-0, the Atlantic type 4-4-2 developed. The "consolidation" or "consolidated" type 2-8-0 freight locomotive in time led to the Mikado type 2-8-2. The old "ten-wheeler" 4-6-0, so readily usable for freight, passenger, or mixed trains, would evolve into a larger 4-6-2. Ultimately locomotive design would embrace huge articulated locomotives as large as a 4-8-8-4 and duplex drive locomotives such as the 4-4-4-4.

For the 19th century (at least to 1880), John White's seminal *American Locomotives: An Engineering History, 1830-1880* provides the best overview, although Gustavus Weissenborn's *American Locomotive Engineering* published in 1871 also provides some excellent information. Alfred Bruce's *The Steam Locomotive in America* provides an excellent history of American locomotives after 1900. The bibliography accompanying this narrative, coupled with the bibliography in White's work, guides the interested reader to the extensive literature on the subject.

The Steamtown NHS collection includes 16 different wheel arrangements of locomotives and one geared locomotive, a Shay. The collection includes two saddle tank engines of the 0-4-0T type, one 0-6-0T, one 0-6-0F or "fireless" locomotive, one 0-6-0 with sloped tender, and one 2-4-2T. These mostly had served as industrial switchers. Of the road locomotives, the collection includes one 4-4-0, the only 19th-century engine in the collection, dating from 1887. Two 2-6-0 locomotives are in the collection, one with an all-weather cab for use along the Canadian border in upstate New York, the other one of only two Delaware, Lackawanna & Western steam locomotives to survive, and thus the only locomotive in Scranton on tracks of what had been its own railroad. The collection has one Prairie type 2-6-2, similar to the two-truck geared Shay from a logging company. Four classic 2-8-0 freight locomotives, each of a different design and different history, are in the Scranton yards. The Steamtown NHS collection of heavier duty, main line 20th-century steam motive power includes one American (and three Canadian) 4-6-2 Pacific types, one 4-8-2 Mountain type, one 2-8-4 fast Berkshire type, a 4-8-4 Northern type, and one massive 4-8-8-4 Union Pacific Big Boy. Four of the wheel types in the park's collection are represented only by Canadian locomotives; two 2-8-2 Mikado types, one 4-4-4 Jubilee type, one 4-6-4 Hudson type, and one 4-6-4T Baltic Tank.

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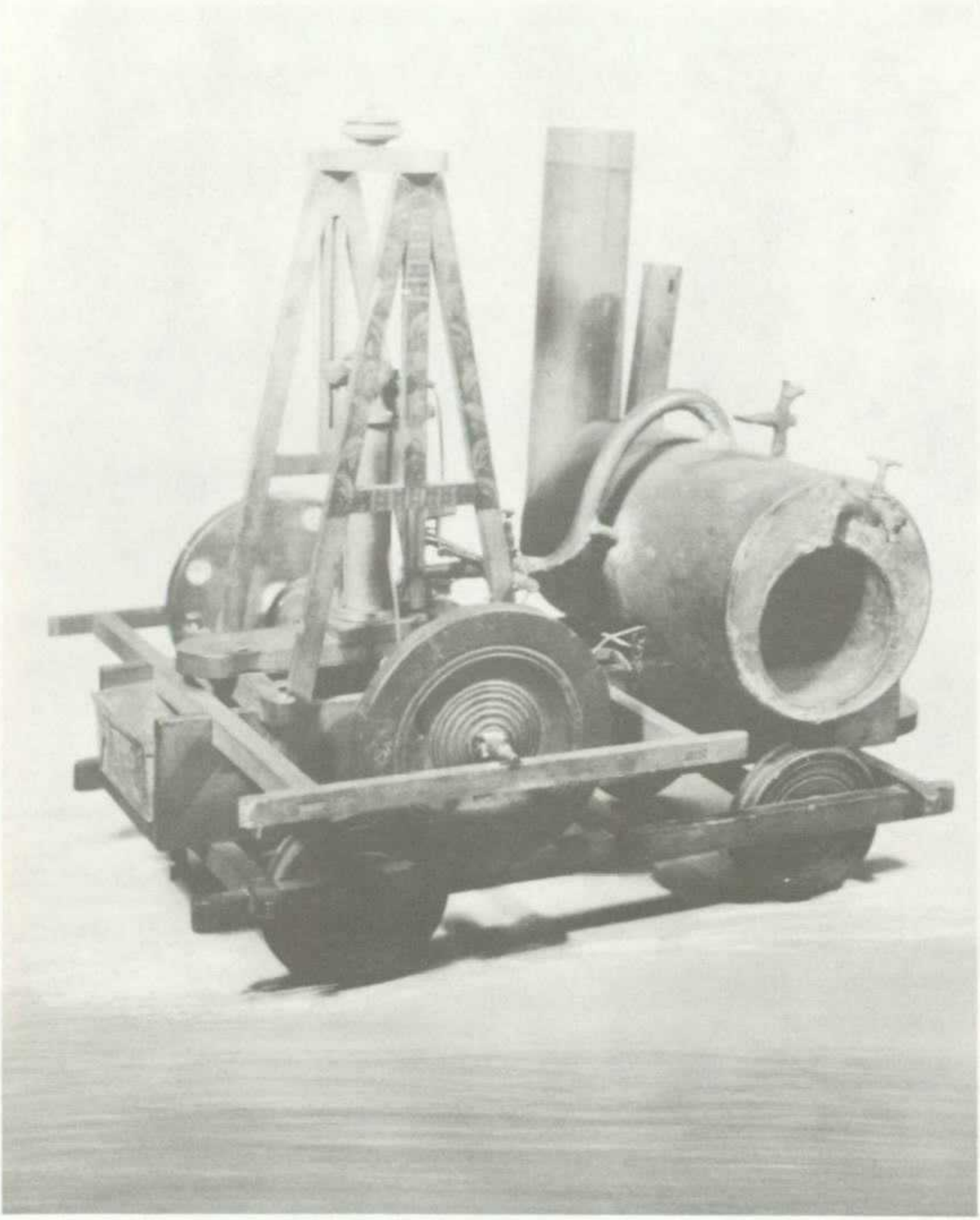


The American inventor John Fitch of Philadelphia made this model of a steam locomotive probably during the 1780s or 1790s. It now rests in the Ohio Historical Society Museum.

Collection of Robert W. Richardson

BALDWIN LOCOMOTIVE WORKS NO. 26

Owner(s): Baldwin Locomotive Works (Eddystone)
Jackson Iron & Steel Company

Road Number(s): 26
3

Whyte System Type: 0-6-0 Switch engine

Class:

Builder: Baldwin Locomotive Works

Date Built: March 1929

Builder's Number: 60733

Cylinders (diameter x stroke in inches): 20 x 24

Boiler Pressure (in lbs. per square inch): 180

Diameter of Drive Wheels (in inches): 50

Tractive Effort (in lbs.): 29,375

Tender Capacity: **Coal (in tons):**
Oil (in gallons):

Water (in gallons):

Weight on Drivers (in lbs.): 124,000

Remarks: This is a typical switch engine or switcher with a sloped back tender.

Baldwin Locomotive Works, 0-6-0 Switcher No. 26

History: The only typical switch engine in the Steamtown collection, equipped with the only sloped tender in the collection, Jackson Iron and Steel Company 0-6-0 No. 3 rolled out of the Baldwin Locomotive Works in March 1929, but instead of selling it to some railroad or industry, the Baldwin company retained the locomotive for switching duties at the massive Eddystone Plant. Baldwin had built many locomotives at the Eddystone plant since 1910, but it was not until October 1929 that the company moved all locomotive production there from its cramped Philadelphia shops. One may surmise that the little 0-6-0 was retained by the company for work in enlarging the Eddystone plant for its absorption 7 months later of all of Baldwin's locomotive production.

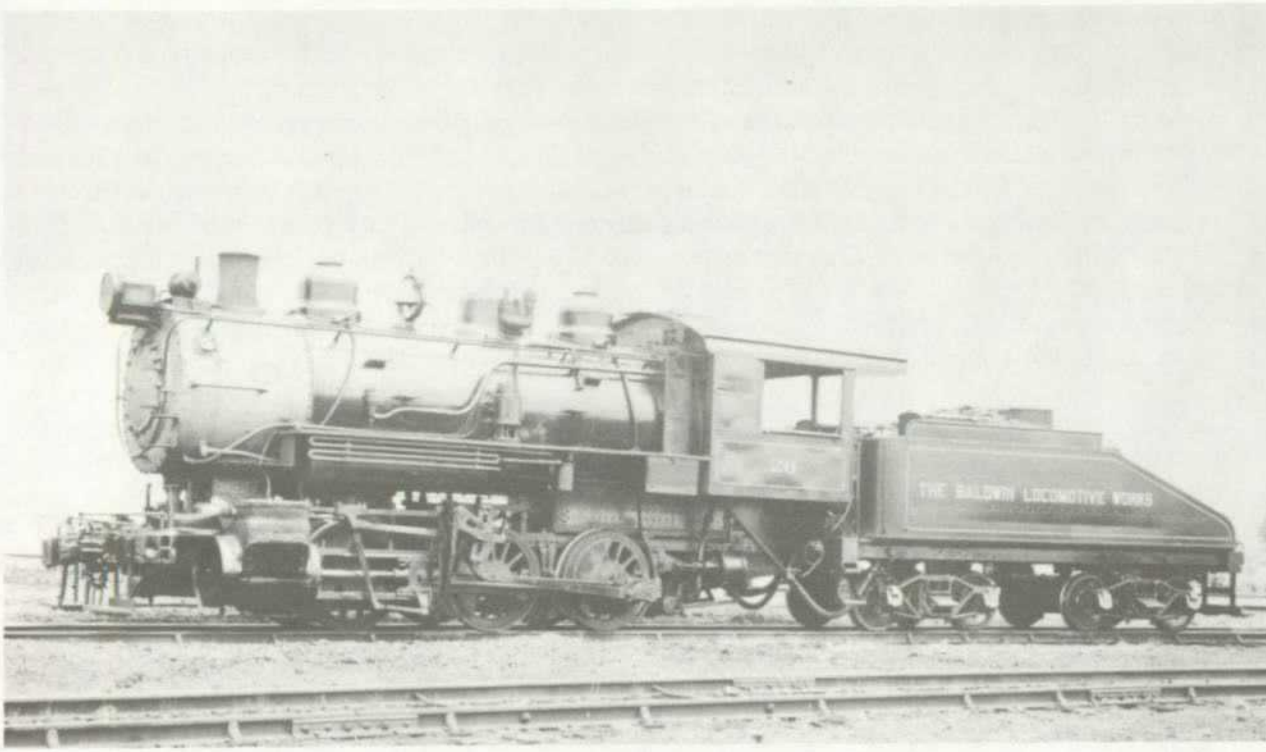
Ironically October 1929, the month of Eddystone's ascendency, also featured the stock market crash of Black Friday. With the onset of the Great Depression, Eddystone's locomotive-building business nearly vanished overnight.

In 1939, Baldwin offered its first standard line of diesel locomotives, all designed for yard service. Two years later, American entry into World War II destroyed Baldwin's diesel development program when the War Production Board dictated that Alco and Baldwin produce only limited numbers of diesel yard switch engines while the Electro-Motive Division of General Motors Corporation won the assignment to produce road freight diesels, which gave the latter an advantage over its competitors in that line in the years that followed World War II.

Business declined drastically in the postwar years as Alco (American Locomotive Company) and E.M.D. seized the bulk of the diesel market from Baldwin, Lima-Hamilton Corporation, and Fairbanks-Morse. Baldwin also misjudged the market, concentrating on products of little interest to railroads. In July 1948, Westinghouse Electric, which had teamed with Baldwin to build diesel and electric carbodies, purchased 500,000 shares, or 21 percent, of Baldwin stock, becoming the largest shareholder. Baldwin used the money to cover various debts. Westinghouse Vice President Marvin W. Smith became Baldwin's president.

Whether this corporate shuffle had anything to do with it, or whether Baldwin, moving to develop an improved line of diesel locomotives, wanted to project a more modern image, in 1948 the company sold one of its own switch engines, No. 26, to the Jackson Iron and Steel Company of Jackson, Ohio, where the locomotive became the steel company's No. 26.

Jackson Iron and Steel Company was a fairly old firm. In 1906, Moses Morgan, John F. Morgan, David D. Davis, John J. Thomas, and Henry H. Hossman combined their resources to finance construction of a new pig iron furnace in Jackson, Ohio. First they purchased the mine and equipment of the Jackson and Muncie Coal Company and then, on August 6, 1906, incorporated the Jackson Iron and Steel Company.



Baldwin Locomotive Works switch engine No. 26 exhibited its original paint and lettering at the Eddystone Works in Pennsylvania where the company retained the locomotive as its own shop switcher.

Collection of Thomas Lawson, Jr.

Two miles west of Jackson on the banks of a small creek known as Givens Run, near the coal mine, which was known for its production of fine Sharon No. 1 coal, the new company commenced construction of its new furnace. Construction proceeded throughout 1907, but slowed with the impact of the sharp little depression that hit mines and industries especially hard that year, and the furnace was not blown in until October 6, 1908. It was the twenty-third, and probably the last, pig iron furnace to be built in Jackson County. The stack was hand filled and auxiliary equipment included three boilers, three hot blast stoves, and one blowing engine. Furnace capacity was 40 tons per day, all of which was cast in sand beds. The product was known as "JISCO [from the initials of the company] Silvery Pig Iron."

As the years passed the company made many improvements. In 1914 the firm adopted a stock bin system, larry car, and skip hoist and built two more boilers and one more stove. In 1917, with America entering World War I, the firm added a fifth stove and a sixth boiler, but still cast the pig iron in a sand bed. More extensive remodeling took place in 1923, and a larger expansion, in 1928, was just in time for the Depression. However, even in the depths of the Depression the furnace received one more remodeling, with three Cottrell Precipitators being added to clean the furnace gas.

World War II followed, along with yet another remodeling in 1942, which included dismantling the old stack and construction of a new one. The company at that time made many other improvements, including construction of a sixth hot blast stove, remodeling of the engine house, extension of the ore trestle, purchase of two new diesel-electric cranes, installation of Carrier air conditioning to dehumidify the hot blast, construction of another battery of boilers, and purchase of a diesel-electric switch engine.

It remains a mystery why, having used a diesel-electric switcher, in 1948 the Jackson Iron and Steel Company purchased secondhand from Baldwin a recently overhauled coal-burning 0-6-0 steam switch engine with a slope-backed tender. Possibly it was a matter of fuel economy, since the Jackson company owned a coal mine but not oil wells and refinery. Whatever the reasons, the company acquired Locomotive No. 26, which had switched Baldwin's Eddystone plant. Some time between 1945 and its sale in 1948, Baldwin had apparently given the locomotive a thorough overhaul. Eventually, Jackson Iron and Steel Company renumbered the locomotive 3.

While the history of the use of the switcher by Jackson Iron and Steel Company is unknown, presumably it switched empty cars into the plant and loaded cars out to the two railroads that served the plant, the Baltimore and Ohio Railroad and the Detroit, Toledo and Ironton Railroad. When it last operated for the steel company is unknown, but it apparently remained there for nearly 31 years. In 1979, Jerry Jacobson purchased the locomotive. It remained in Jackson until June 1983, when it moved to Grand Rapids, Ohio, then in July 1983 to the Mad River and N.K.P. Railroad Museum at Bellevue, Ohio. It remained there until January 1986, when that museum traded the locomotive to the Steamtown Foundation for Canadian National Railways 4-6-0 Locomotive No. 1551. However, the locomotive remained in Ohio while the Steamtown Foundation transferred its collection to the National Park Service and went out of business, and it was not until January 1990 that the locomotive arrived in Scranton.

A total of about 112 0-6-0 type switch engines with tenders survive in the United States. Typically, they have a brakemen's footboard across the front of the locomotive instead of a pilot, and a similar footboard across the rear of the tender. Generally they featured one of three types of tenders: a standard rectangular tender, a slope-backed tender, or a Vanderbilt tender with its cylindrical tank. The 0-6-0 was probably the most typical of all switch engines; the next most typical was the larger 0-8-0 type. Usually, such locomotives switched freight and passenger cars at major terminals and yards.

Condition: While stored in Bellevue, Ohio, and up to the time it moved to Scranton, this locomotive reportedly was serviceable. In January 1990, it entered the shop at Steamtown National Historic Site for minor work preparatory to assigning it to hauling yard tours during the summer season of 1990.

Recommendation: As the only typical switch engine in the Steamtown collection, the locomotive is recommended for restoration to operable condition. As the Steamtown collection has other locomotives that represent trackside industrial concerns such as a steel works, it is desirable to restore this particular locomotive to represent its role as a switch engine at Baldwin's Eddystone Plant, an association that will lead into interpretation of the locomotive-building industry and especially the history of the Baldwin firm, probably for much of its history the most prominent of all American locomotive-building firms.

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BERLIN MILLS RAILWAY NO. 7

Owner(s): Berlin Mills Railway
Groveton Papers Company
Woodsville, Blackmount & Haverhill Railroad

Road Number(s): 7
7
7

Whyte System Type: 2-4-2T "Saddle tank"

Class: (Builder's) I-15-S

Builder: Vulcan Iron Works, Wilkes-Barre, Pennsylvania

Date Built: January 1911

Builder's Number: 1679

Cylinders (diameter x stroke in inches): 17 x 24

Boiler Pressure (in lbs. per square inch): 140

Diameter of Drive Wheels (in inches): 44 (possibly reduced to 38)

Tractive Effort (in lbs.): 21,720

Tender Capacity: **Coal (in tons):** 2
Oil (in gallons): not applicable

Water (in gallons): 1,500

Weight on Drivers (in lbs.): 85,000

Remarks: Engine is a hand-fired coal burner in near-operable condition.

Berlin Mills Railway 2-4-2T Locomotive No. 7

History: Railroads played an important role in opening up to industry and development not only the Western frontier but also the more remote areas of long-established states. Berlin Falls, New Hampshire, is an example. Thomas Green had attempted to use this obvious source of water power on the Androscoggin River as early as 1826, but without success because his location was too far from market in an era of animal-powered transportation. Such development had to wait until groups of businessmen in Montreal, Canada, and Portland, Maine, organized to bring the new form of transportation to Berlin Falls.

After many trials and tribulations, Maine governor Hugh Anderson signed a charter of the Atlantic & St. Lawrence Railroad on February 10, 1845. Cooperating Montreal businessmen obtained a charter for the St. Lawrence & Atlantic Railroad on March 17, 1845. Together, the two companies proposed to construct a railroad between Montreal and Portland across the province of Quebec and the states of Vermont, New Hampshire, and Maine. Of course, the companies now had to sell stock, send out surveyors and civil engineers, select routes, hire construction forces, arrange to have cross-ties cut, order and purchase rail, locomotives and cars, and perform all the other myriad tasks necessary to turn a railroad from a creation on paper to a functioning system of wood and iron, steel and steam.

Directors of the Atlantic & St. Lawrence Railroad broke ground in Portland on July 4, 1846. It took until July 22, 1851, for construction to allow the first train to enter Gorhan, New Hampshire--over 91 miles of track. Construction resumed and reached Northumberland (today's Groveton) on July 12, 1852, passing through Berlin Station en route. Meanwhile, the St. Lawrence & Atlantic built southeastward from Montreal, and the two companies had agreed on August 4, 1851, to join at the town of Island Pond, Vermont. The first regularly scheduled through train between Montreal and Portland operated on April 4, 1853. Meanwhile, the directors had negotiated the joining of the two railroads between Portland and Montreal into the Grand Trunk Railway Company of Canada, which they accomplished through a 999-year lease dated August 5, 1853, but retroactive to July 1, 1853, roughly three months after completion of the through railway. Thus Berlin, New Hampshire, took its place on the map of railroad stations in the United States, for the first several months as part of the Atlantic & St. Lawrence and thereafter as a stop on the Grand Trunk Railway.

While all this occurred, a group of Portland businessmen formed a partnership under the name H. Winslow & Company in 1852 to purchase land on the west bank of the Androscoggin River at Berlin, New Hampshire, where they built a dam and erected a saw mill containing a gang saw and two single saws with a total daily capacity of 25,000 board feet of lumber. In 1853 the company built a store and a large boarding house for loggers and mill workers. Most significant, in 1854, with business booming, the company extended a short rail branch from the Grand Trunk to the sawmill plant. Apparently the lumber firm relied on the Grand Trunk's locomotives to switch cars in and out of the new industrial spur, but when Grand Trunk engines were unavailable, the firm employed oxen to move empty and loaded cars on the spur to the Grand Trunk. Later the company built its own private railway around the plant consisting of wooden rails covered with iron straps, with timber cars powered by horses and mules. This primitive little plant railway proved dangerous to operate, regularly sending employees to the company hospital, until the company replaced it with an ordinary railroad.

Eventually Nathan and Hezekial Winslow, who had lent his name to the enterprise, sold their interests to J.B. Brown, and Josiah Little died, leaving of the original partners only J.B. Brown and Little's widow. They took in men named Clemens, Bingham, and Warren in 1866 to form a new partnership--the Berlin Mills Company. Whether formally or informally, the railroad spur came to be called the Berlin Mills Railway, and eventually the plant trackage also came under that name. In 1868, William Wentworth Brown and Lewis T. Brown bought out not only J.B. Brown but also Clemens, Bingham, and Warren, establishing a family-owned firm that would survive for over a century.

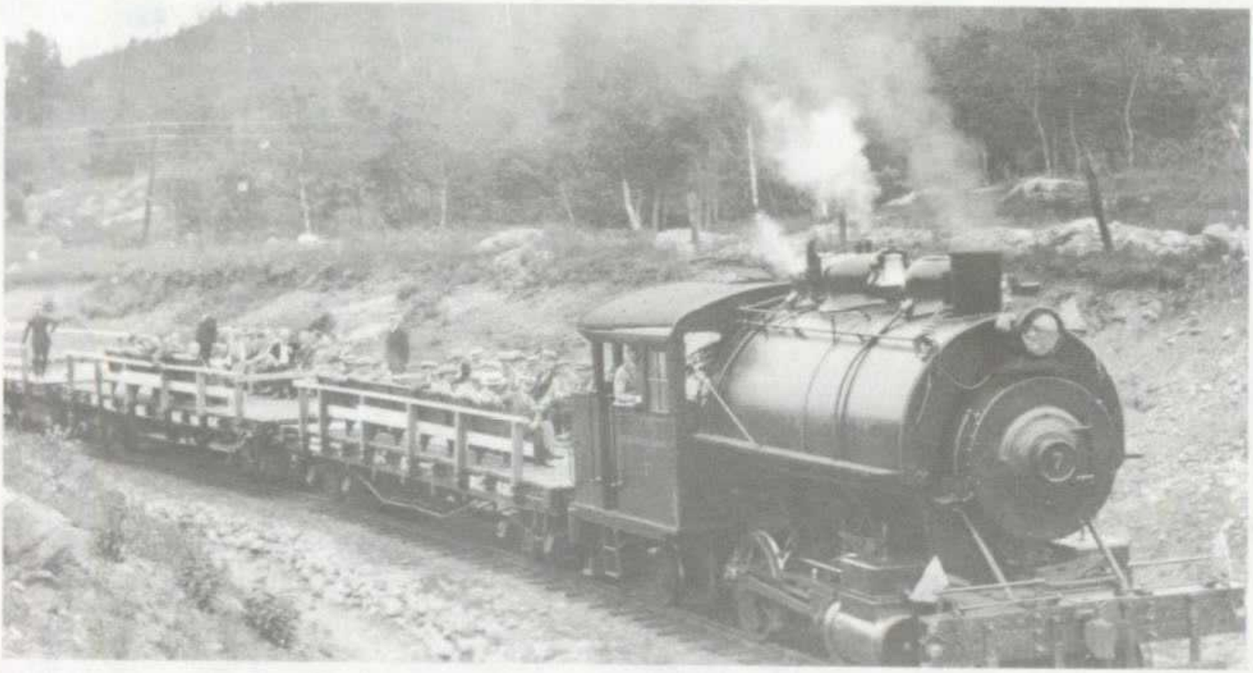
By 1875 the Berlin Mills Company alone was daily sending a special lumber train of 22 cars to Portland, Maine. In 1888 the firm added a kyanizing plant to treat spruce lumber. By that time, in March 1888, the partnership arrangement that operated the company could no longer keep up with its growth, and the partners found it necessary to incorporate the Berlin Mills Company under the laws of Maine. That year the company also built the Riverside Groundwood Mill, whose 18 grinders rapidly ground wood into pulp. In 1891, downriver and across the stream, the company built the Riverside Paper Mill equipped with two machines that could produce 42 tons of newsprint daily. At the same time the Brown-family-controlled Burgess Sulphite Fiber Company built a plant on the east bank of the river to turn out wood fiber. In 1892 the Berlin Mills Company produced its first newsprint from pulp from the pulp mill.

Sometime amid all this progress, the Berlin Mills Railway acquired its first small steam locomotive, a switcher the company referred to as a "shifter" locomotive. The exact identity of what must have been the Berlin Mills Railway's first Locomotive No. 1 has become lost in the slash piles of the past, but in October 1891, the railway purchased its Locomotive No. 2, a Baldwin 0-4-0T with 44-inch drivers. The company added No. 3, another Baldwin 0-4-0T, in June 1893, this one about half the size of No. 2.

The original lumber mill burned in 1897, but the company replaced it with a mill capable of turning out 200,000 board feet of lumber per day. In 1898 the Berlin Mills Company built an electrochemical plant, as well as the Cascade Mill with four 164-inch paper-rolling machines. In December 1899, its railway division replaced the mysterious Locomotive No. 1 with a second Locomotive No. 1, an 0-4-0T built by the Pittsburg Locomotive Works. Presumably the company retired its original Locomotive No. 1 to the scrap pile upon receiving the new engine of the same number.

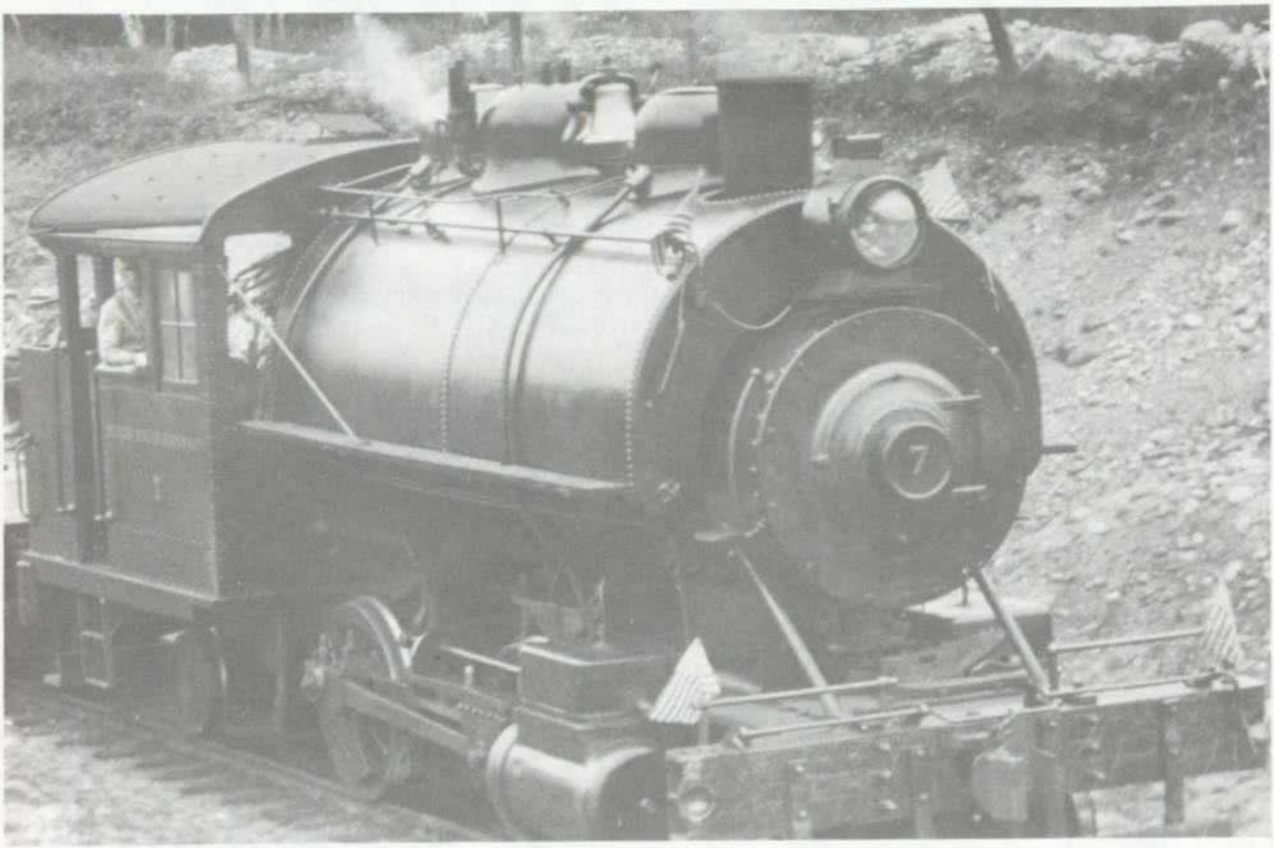
The Berlin Mills Railway celebrated the new century by purchasing its Locomotive No. 4, another Baldwin 0-4-0T in 1901. This and the three other locomotives seemed adequate to handle the business until 1904, when the Berlin Mills Company erected a window frame mill capable of turning out 2,000 window frames per day, and enlarged the Cascade Mill in capacity by 200 tons of paper. As a consenquence of this expansion, that same year the company purchased second-hand from the Hastings Lumber Company at Bethel, Maine, its first 2-4-2T locomotive, a Baldwin product of February 1900, that became Berlin Mills Railway Locomotive No. 5.

It should be noted that although the Berlin Mills Railway's first 2-4-2T was its sixth locomotive, that particular Whyte system type dominated the logging railroads of the White Mountains of New Hampshire and Maine. C. Francis Belcher, who wrote the history of those railroads, described the 2-4-2T type as "the most popular and durable engine used in the mountains . . ." but was wrong in assuming all were Baldwin products.



Harvey Brown of the Brown Company, owner and operator of paper mills at Berlin, New Hampshire, personally took the throttle of Berlin Mills Railway Engine No. 7, a 2-4-2T Vulcan, hauling several flatcars with the "BCX" reporting marks of the Brown Company, converted temporarily into excursion cars for a chemical conference whose members were visiting the plant on June 22, 1926. The photographer caught the locomotive between Berlin and Cascade from a highway overpass. Trainmen wore borrowed Boston & Maine Railroad uniforms for the occasion, since the Berlin Mills Railway normally hauled no passengers.

Collection of Otis J. Bartlett



An enlargement of Berlin Mills Railway Locomotive No. 7 shows the little locomotive lettered, probably in gold or mustard color on both the cab and the saddle tank, "BERLIN MILLS RAILWAY." The little 2-4-2T looked spic and span, decorated with four American flags.

Collection of Otis J. Bartlett

Second-hand 2-4-2T No. 5 must have impressed management and employees of the Berlin Mills Railway as a great improvement over the 0-4-0T type, for the company was destined to purchase four more of them. It purchased No. 6, its first newly built 2-4-2T, from the Baldwin Locomotive Works in January 1906. In March 1907 they bought another, the third to be designated No. 1. Upon its delivery the company probably scrapped the 0-4-0T that had been the second No. 1. But for reasons unknown, the Berlin Mills Railway purchased its final three 2-4-2T engines from the Vulcan Iron Works in Wilkes-Barre, Pennsylvania.

Berlin Mills Railway Locomotive No. 7 rolled out of the Vulcan Iron Works' erecting shop in January 1911 with builder's number 1679, featuring cylinders 17 inches in diameter with a 24-inch stroke and 44-inch-diameter drive wheels. (The Steamtown Foundation reported its builder's number was 1500, its cylinders 14 by 20, and its drivers 36 inches; Randolph Kean reported its builder's number to be either 1779 or 1500. All of these figures are believed to be in error.) Photographs made during the 1920s suggest that the company lettering on the sides of the saddle tank and below the cab windows on each side of the cab, which spelled out "BERLIN MILLS RAILWAY," may have been in gold leaf or in a mustard yellow imitating gold leaf. By that date, the locomotive bore no obvious trace of striping. Below the lettering, the sides of the cab also carried the locomotive's road number, apparently in the same color as the lettering.

In 1913, Locomotive No. 7 and its sisters were silent witnesses to the burning of the second sawmill plant at the Berlin Mills. The company chose this time to build as a replacement a "fireproof" plant of concrete with a slightly smaller capacity--150,000 board feet of lumber per day--milled by a single bandsaw instead of the previous pair. Apparently one reason for this retrenchment lay in the decline of the lumber industry, that, as far as the Berlin Mills Company was concerned, was far offset by growth of the paper business. The management of the Berlin Mills Company had gradually adopted a policy of producing itself the secondary raw materials the company needed. It produced not only lumber but the paper pulp needed to make paper. It eventually produced chemical byproducts, built its own plant at the Cascade Mill to produce aluminum sulphate used in sizing paper, built a press plant to make the steel ends for its fiber cores, and generally tried to be as self-sufficient as possible. By 1910 Scandinavian countries were producing kraft paper, and the Berlin Mills Company soon began producing it from pulp that came from a mill the company had built near La Tuque, Quebec, in 1909. In the process, the company gradually shifted away from its original emphasis on producing lumber to producing paper pulp from which it manufactured newsprint. Around 1917 it shifted away from newsprint production in favor of kraft papers and began also producing fine-quality bond papers.

It was during this 1917 expansion that the company purchased its second new 2-4-2T locomotive, its third of the type. It became a second No. 3. At this time the company probably scrapped the original No. 3, an 0-4-0T. That same year, World War I, which had begun in 1914, finally involved the United States. American as well as certain foreign customers of the Berlin Mills Company became increasingly anti-German, and when the United States entered the war, a wave of anti-German hysteria swept the nation. In that frantic atmosphere, self-proclaimed super-patriots attacked anything that seemed Germanic in character. They began to associate the name of the company, Berlin Mills Company, with the capital of Imperial Germany, and began to turn their business away from the company because of the innocent coincidence of the names; after all, the company had taken its name from the railroad station, which in turn was named for the Berlin Falls of the Androscoggin River. In response to this hysteria over anything even remotely Germanic, the directors on November 30, 1917, changed the name of the firm from the Berlin Mills Company to the Brown Company from the name of the family that owned it. The Berlin Mills Railway operated thereafter as a department of the Brown Company

VULCAN IRON WORKS—Locomotive Record.

Date August 26, 1910 *Loco. No.* 1679 *Order No.* 4180.

Name ~~Berlin Mills Company~~ Brown Co. (Sold by N.Y.Office)

Address Portland, Maine. GROVETON PAPERS CO., GROVETON, N.H.

Ship to ~~BERLIN MILLS COMPANY~~, Berlin, New Hampshire.

Route

Delivery November 4, 1910 *Freight* prepaid, including mechanic

Class	I-15-S doulbe ender	*Similar to*	Syracuse & Milford Ry. in design, Spec. 2816		
Cylinders	17" x 24"	*Smoke Stack*	straight taper	*Size Fire Box*	60 *long* 54 *wide.*
Gauge	4'8-1/2"	*Spark Arrester*	in smoke box	*No. Tubes*	186
Service	switching	*Injectors—~~two~~* Two	7-1/2 *Sellers.*	*Diam. Tubes*	2" #12 BWG
No. Drivers	four(4)	*Safety Valves—~~one~~*	3" *Kunkle.*	*Length Tubes*	148"
Diam. Drivers	44"	*Frames of cast steel—Dwg. No.*		*Blow-off Cock*	1-1/4" *Belfield,* #529
Diam. Centers	38"	*Top bar*	4" x 4"	*Lubricator—*	Nathan Bull's eye triple feed
Thickness Tires	3"	*Bottom bar*	4" x 3"	*Whistle*	*Fig. No.* *Lunkenheimer*
Diam. Axles	8-1/2"	*Depth Frames*	------------	*Injector Checks—*	*Sellers.*
Length Journals	11"	*Cab of*	steel, ~~wood~~, lined	*Driving Springs*	*Leaves*
No. Truck Wheels	2 *Dwg. No.*	*Brake—Steam—Dwg. No.*		*Steel—Dwg. No.*	
Diam. Truck Wheels	26"	*Bell*	yes	*Truck Springs*	*Leaves*
Diam. Truck Axles	4-3/8"	*Headlight*	front and rear	*Steel—Dwg. No.*	
Length Journals	8"	*Ashpan*	with door at end	*Guides*	*Sq.* *Long.*
No. ~~Tender~~ Wheels	2 *Dwg. No.*	*Cab Lamp*	yes	*Piston Rods*	*Dia.* *Long.*
Diam. Tender Wheels	26"	*Coal Bunker*	at rear, 2 tons capa.	*Steam Gauge—5" Ashcroft.*	
Diam. Tender Axles	4-3/8"	*Style Tank*	saddle *Dwg. No.*	*Steam Brake Valve—"Vulcan."*	
Length Journals	8"	*Capacity Tank*	1500 *Gals.*	*Cyl. Cocks—Long Short Levers.*	
Fuel Capacity, Coal	2 tons	*Wood*	------------	~~*Three Hole Bumper Casting.*~~	Tower M.C.B. front and rear, with long shanks
Grates—shaking, for	coal	*Boiler—Dwg. No.*	Butt-joint 190 lbs. pressure	*From top of rail to centre hole.*	
		Diam. Front Head	54"		

Extras Drilled staybolts. U.S.Metallic Packing. Steel Crossheads. Cast steel driving wheel centers. Solid end parallel rods. Laird guides. Bulls eye lubricator. Cast steel bumper beams, with push pole pockets, and poles.

Driving Wheel Base 7'0" *Total Wheel Base* 22'7" *Total Wheel Base, Engine and Tender*

Weight in Working Order 113000 *Lbs.* 85000 *Lbs. on Drivers.* *Shipping Weight* 95000#

On Leading Trucks ~~13000~~ 12850 *Lbs.* *On Trailers* ~~15000~~ 14300 *Lbs.*

Weight of Tender in Working Order --------- *Lbs.* *Weight of Tender Empty*

Height 13'10 *Width* 9'10" *Length Engine Over All* 30'9" *Length Engine and Tender Over All*

Painting - BERLIN MILLS RR. Co.

#7

RETURN TO VULCAN OFFICE WITH ANY CHANGES NOTED.

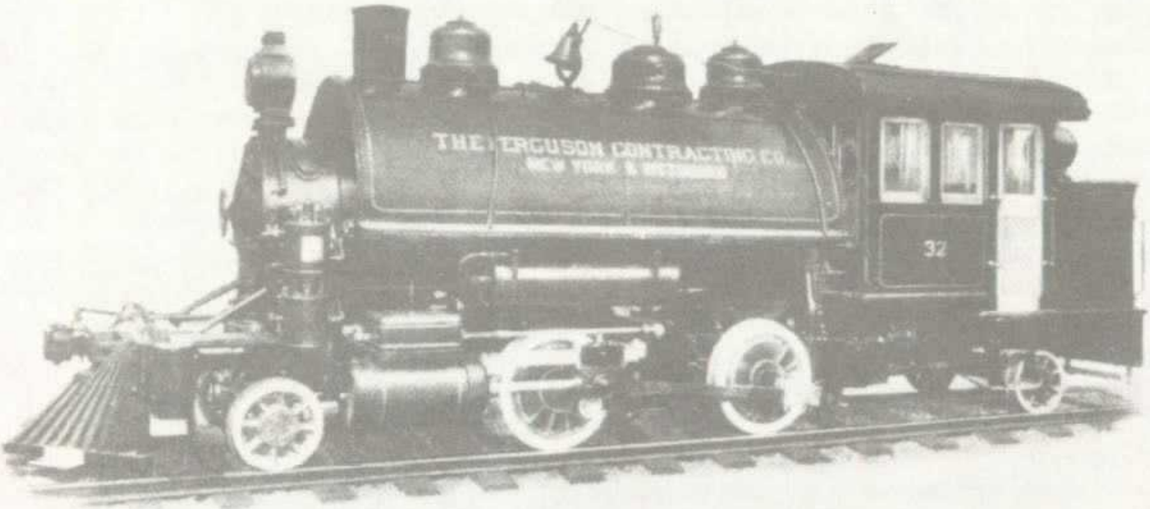
but retained its distinctive original name (under which it still operated in 1991). After the war, the Brown Company continued under its new name.

Eventual postwar prosperity led to the Berlin Mills Railway's purchase of its third Vulcan locomotive, 2-4-2T No. 8, built in May 1920. By this time the company produced many chemical products. As a byproduct, the electrolytic plant that produced chlorine used in bleaching papers also produced caustic soda. In 1908 the company ceased dumping waste caustic soda into the river and instead began marketing it as White Mountain Brand Caustic Soda. As another use for chlorine, the company began producing chloroform, much in demand as an anaesthetic in military surgery during World War I, and chlorides used in making military poison gas; vulcanizing rubber by a cold process; making artificial rubber; and beginning in 1918, making carbon tetrachloride. In 1921 the company began turning out liquid chlorine, used principally in water purification, bleaching, and sewage disposal. In 1924, it started producing calcium arsenate, used by cotton producers to kill the boll weevil. Until 1914 the company had allowed the byproduct hydrogen to bleed off into the air, but beginning that year the firm used it to hydrogenate vegetable oils into the consistency of lard for use as shortening or as a frying agent in domestic cooking. A competitor halted that marketing with a patent-infringement lawsuit. During the war the company had built a plant to manufacture fiber powder containers for 6-inch guns. After the war the Brown Company used this plant to produce fiber-conduit to wrap underground electric cables. The market for this product spread rapidly throughout the United States and to Europe, and the company soon had to ship a full trainload of fiber conduit to Spain.

The list of new products being introduced seemed endless, and it was these that Berlin Mills Railway Locomotive No. 7 and her sisters switched around the plant trackage and down the spur line for shipment out over the Grand Trunk Railway. The Berlin Mills Railway's roster of motive power reached its peak during the 1920s--*Moody's Manual of Investments* for 1926 reported nine locomotives on the property to operate 3.75 miles of "main line" track (the spur to the Grand Trunk) and 13.75 miles of plant trackage, for a total track mileage of 17.50. The track consisted of a mixture of 65- and 70-pound (per yard) rail.

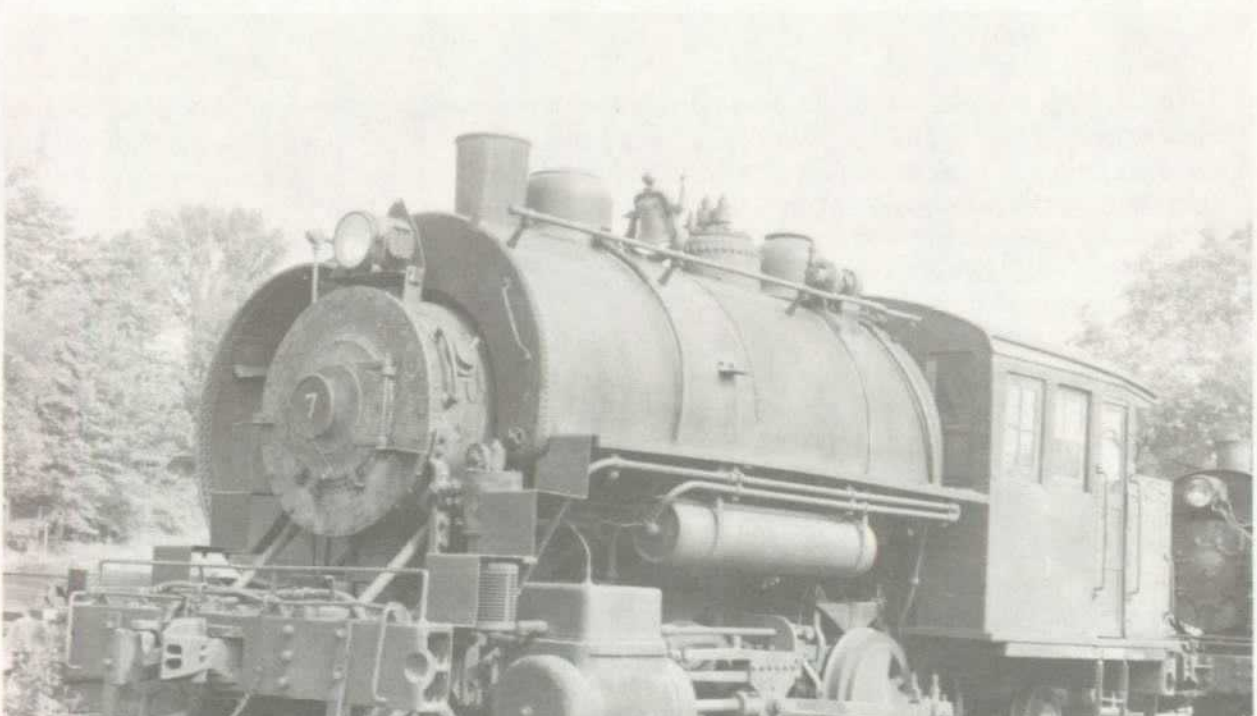
By 1929, the Brown Company had so expanded production that the railway division needed more motive power. The 2-4-2T type such as No. 7 finally had outlived its usefulness--the type was simply too small for the work now demanded of a locomotive, and the company sought heavier motive power from the Baldwin Locomotive Works. Locomotive No. 9, purchased in June 1929, and No. 10, bought after the beginning of the Great Depression in July 1930, featured the 2-6-2T wheel arrangement. They were, in effect, saddle tank "Prairie" locomotives. These engines apparently proved too heavy for the track of the Berlin Mills Railway, which as a consequence by 1932 had installed 72-pound rail and by 1933 had replaced it with 80-pound rail. Otherwise the 1930s were a decade of decline: The number of freight cars owned by the line dropped steadily from the 250 in 1932 throughout the rest of the 1930s, 1940s, and 1950s; yard trackage peaked at 16.11 miles in 1932, 1933, and 1934 (for a total mileage of 19.86), but dropped steadily thereafter until the mid-1950s. As a separate division of the Brown Company, the Berlin Mills Railway generally employed between 62 and 77 people during those decades.

Some of the earlier 2-4-2T engines continued to work alongside the heavier 2-6-2Ts, but one by one the company retired or sold them. From a total of nine locomotives on hand in 1926, the number had dropped to seven by 1929, six by 1936, to five in 1942. The time came for Locomotive No. 7 during World War II, for in November 1944, the Brown Company sold this locomotive to the Groveton Papers Company at nearby Groveton, New Hampshire.



Groveton Papers Company saddletank 2-4-2T industrial switcher No. 7 had several owners and probably appeared similar originally to the 2-4-2T built by the Vulcan Iron Works in Wilkes-Barre, Pennsylvania, for The Ferguon Contracting Company. If so, later it suffered replacement of her hardwood pilot with a switchman's stepboard, the addition of steps from her pilot deck to her running boards, and a lowering of the deck of her cab beneath the engineer's and fireman's seats. The photo above is from a Vulcan catalog.

Above, Colorado Railroad Museum Library
Below, collection of Gerald Best, California State Railroad Museum



The Groveton Papers Company originated as the Odell Manufacturing Company, which built a pulp mill with two digesters in Groveton, New Hampshire, in 1891. The company installed its first paper machine in 1893 (destined to be replaced in 1912), and a second in 1895 (destined to remain in production, incredibly, until 1975).

By 1901 the Groveton plant had sufficient yard trackage connecting with the Grand Trunk Railway to require a company locomotive, so to switch that yard trackage the Odell Manufacturing Company purchased from the Boston and Maine Railroad, on March 30, 1901, a third-hand 0-4-0 switch engine built in March 1884 as Eastern Railroad No. 15, which in 1890 had become Boston and Maine Railroad No. 115, named *Binney*. In November 1904, the Odell firm bought two more engines, second-hand Boston & Maine No. 83, the *Somerville*, which became its No. 2; and on November 30, Boston & Maine No. 279, a genuine antique built by Hinkley & Drury in 1847 as Northern Railroad 4-4-0 No. 6, the *Shaker*, rebuilt in 1880 to an 0-4-0, sold to the Boston & Lowell Railroad in 1884 as No. 124, then sold back to the Northern Railroad in 1887 as No. 6, and later that year to the Boston & Maine as No. 279. This ancient piece of metal became Odell Manufacturing Company Locomotive No. 3.

In 1907 and 1908 Odell added a third paper machine, two more pulp digesters, and Hynie boilers. Paper machine No. 3 ranked at the time as one of the largest in the world. Business expanded accordingly, and in March 1912 the company, having scrapped engines No. 2 and 3 in 1910, purchased thirdhand its first 2-4-2T, a Baldwin product outshopped in January 1893 as Concord & Montreal second No. 25, which in 1895 had become Boston & Maine No. 725. This became Odell No. 4.

In 1913, the company built a bleach plant in order to enter the highly competitive market for white paper and bleached sulphite pulp.

In 1916, Odell company employees went out on a strike against the firm, and by the time the strike ended the company had been crippled and the town had lost most of its labor force; neither were to recover for nearly a quarter of a century. At the end of World War I the company did buy its only new engine, 0-4-0T No. 5, produced by American Locomotive Company at its Cooke Works in August 1918. Apparently management envisioned a postwar recovery which, as events turned out, failed to occur.

Beginning in 1919, the Brompton Pulp and Paper Company managed the Groveton plant, continuing to operate it at a minimal level until 1928. During that period, in 1921, the company scrapped its first locomotive, leaving it with only Nos. 4 and 5.

In 1928, the mill reverted to management of the Odell company, now owned by the Monroe family of Lewiston, Maine. The Monroes reorganized the Groveton plant as the Groveton Papers Company that same year. But the Great Depression began during the following year, and it became difficult to find enough business to keep paper machine No. 3 in service. After a decade of struggle, in 1939 the Monroes sold out to a family named Wemyss. Whether the new owners were merely lucky or prescient is unknown, but they put the long idle paper machine No. 3 back on line in 1940 and began turning out tons of paper products for which no market existed, storing the output in every available building in the town of Groveton. Of course, on December 7, 1941, the United States suddenly entered World War II, which created an instant market for the Groveton Paper Company's stored tons of paper products. Not only did military and government bureaucracy expand geometrically, but wartime priorities shut down much paper production or turned it to other military-related products. In November 1944, the Groveton Papers Company, in need of another 2-4-2T locomotive to replace its worn-out No. 4, built in 1893, purchased the Berlin Mills Railway's 2-4-2T No. 7. The company scrapped No. 4 in

1945, which left it with Nos. 5 and 7. Groveton Papers Company did not renumber the No. 7 as its No. 6, so it apparently never had a locomotive No. 6.

After World War II, the Groveton mill experienced a short labor strike in 1946, but soon went back into production. During the early 1950s, while war raged in Korea, the company built a Semi-Chemical Plant that enabled the mill to use hardwood in the manufacture of pulp, which greatly boosted the economy of the area. A fourth paper machine installed in 1948 produced paper that the company converted to facial tissue and toilet tissue, as well as, eventually, napkins and towels. The paper business continued to change and evolve.

Groveton Papers Company retired Locomotive No. 4 on February 19, 1953, which left only No. 7 to switch the yard, and the latter clearly was nearing the end of its useful career. The company finally retired No. 7 on January 25, 1956, replacing it on April 17, with a secondhand 300-horsepower 45-ton General Electric diesel-electric locomotive built in September 1941.

The two surviving engines did not experience the burn of a scrapper's cutting torch. Eventually the company donated No. 5 to the town of Groveton, where it rests today in a small park.

In the summer of 1961, Francis Lamotte of West Lebanon, New Hampshire, organized a small steam tourist railroad called the Woodsville, Blackmount and Haverhill Steam Railroad. With Randolph Perkins and Donald McDonald, he spent two years planning the enterprise and on August 24, 1961, received permission of the New Hampshire State Public Utilities Commission to incorporate. The company issued stock to the amount of $100,000. It acquired abandoned right-of-way from the Boston and Maine Railroad extending from the end of the latter's operation in Blackmount to a place called Haverhill Station. This consisted of a stretch of about three miles of the old Woodsville-to-Plymouth main line of the Boston and Maine, in the heart of the White Mountains.

The Woodsville, Blackmount & Haverhill Steam Railroad then leased Groveton Papers Company No. 7, and by the spring of 1962 the new company had invested $2,000 in overhauling the engine. A retired railroader of Woodsville, Clyde O'Malley, became her engineer. The company also acquired a combination car from the Delaware & Hudson Railroad at Albany, New York, and a caboose from the Rutland Railroad, but due to a labor strike on the latter line, apparently never moved the caboose to the new trackage.

The new railroad was dedicated on Memorial Day, 1962, the featured speaker being F. Nelson Blount from Steamtown USA. That summer the Woodsville, Blackmount and Haverhill Steam Railroad operated its single locomotive and single car in round trips over three-quarters of a mile of track on Saturdays and Sundays during the summer months. The railroad operated again during the summer of 1963, but apparently that was the end of it.

The arched-roof Delaware & Hudson coach ended up on the Conway Scenic Railroad. Locomotive No. 7 remained idle for a number of years, though its owner did not move it back to Groveton. Then in 1969, the Groveton Papers Company delivered Locomotive No. 7 to the Steamtown Foundation at Bellows Falls, Vermont, as a donation to the foundation.

The two major corporations that once owned this locomotive went on to prosper after each had disposed of it. The Brown Company eventually was acquired by the James River Corporation, which continues to operate the paper mills at Berlin, New Hampshire, as of 1988; as one of its departments, the Berlin Mills Railway still functions. In fact, the railway took over additional trackage and acquired a large fleet of freight cars, as well as a number of diesel-electric locomotives. With this equipment, the Berlin Mills Railway reached its centennial year in 1990 (unless one considers 1954 to have been its true centennial).

The Groveton Papers Company also continued to produce paper. In 1968, Diamond International acquired the company and in turn was acquired by Sir James Goldsmith and associates, who sold out to the James River Corporation in 1983. This successor of the Odell Manufacturing Company also approached its centennial year, 1991.

The old 2-4-2T Locomotive No. 7, which served these corporations so well, survives as one of only four standard gauge 2-4-2T locomotives in the United States, a type once common on logging railroads. The National Railway Historical Society chapter in Atlanta, Georgia, owned one such engine that had belonged to a brick manufacturing company; a marine museum at Pensacola, Florida, exhibited another; and East Branch & Lincoln Railroad No. 5 rested in retirement at a ski area at Loon Mountain, New Hampshire.

Condition: Mechanical condition of this locomotive is unknown, but it is believed restorable to operating condition. A group of Steamtown Foundation volunteers cleaned and painted the locomotive in 1987.

Recommendation: Berlin Mills Railway Locomotive No. 7 is a fairly rare survivor of a once common type of locomotive used on logging railroads and industrial plant trackage, and it represents two New Hampshire paper manufacturing companies. The Berlin Mills Railway, still active nearly a hundred years after acquiring its first steam locomotive, and 134 years after its first rail was laid, has a long and unusual history for an industrial plant railroad. Researchers should prepare a report on the locomotive and should thoroughly investigate sources of Brown Company photographs of the engine in service, as well as other steam engines on the railroad. Researchers seek local sources of history to develop a more thorough understanding of the Berlin Mills Railway's history and of the Berlin Mills paper plant's history. The report should include the results of a thorough physical investigation of the engine, as well as of its various layers of paint, striping, lettering, numbers, and other decorations (unless it was stripped to bare metal before its last painting), equivalent to the physical history in a historic structure report. The report should also thoroughly investigate the history of the locomotive while in service for the Groveton Papers Company, and in particular ascertain whether or not the locomotive ever carried lettering of that company. Photographs of the locomotive on the Woodsville, Blackmount and Haverhill Steam Railroad indicate that the locomotive may have been repainted but was not lettered for that operation, and that fact needs to be confirmed, as well as whether or not the engine operated after 1963 on that line, and what happened to it thereafter until the Steamtown Foundation acquired it. The historian assigned to research and write this report should also seek out former engineers of the Berlin Mills Railway and the Groveton Papers Company to obtain oral history regarding operation of the locomotive. Upon completion of this report, the locomotive should be restored as Berlin Mills Railway No. 7, repainted, lettered and numbered in a historically accurate fashion for that railroad, with whatever color lettering and decoration documentary research and physical research determines was in use during the 1920s or earlier on engines of the Berlin Mills Railway.

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BOSTON AND MAINE RAILROAD NO. 3713

Owner(s): Boston and Maine Railroad

Road Number(s): 3713

Whyte System Type: 4-6-2 Pacific

Class: P-4a
Series 3710-3714

Builder: Lima Locomotive Works

Date Built: December 1934

Builder's Number: 7625

Cylinders (diameter x stroke in inches): 23 x 28

Boiler Pressure (in lbs. per square inch): 260

Diameter of Drive Wheels (in inches): 80

Tractive Effort (in lbs.): 40,900; with booster, 52,800

Tender Capacity: **Coal (in tons):** 18
Oil (in gallons): not applicable

Water (in gallons): 12,000

Weight on Drivers (in lbs.): 209,800

Remarks: After delivery, engine was the subject of a New England wide name contest that resulted in it being named *The Constitution*. Engine has a superheater and a steam booster on the trailing truck.

Boston and Maine Railroad 4-6-2 Locomotive No. 3713

History: Created by a consolidation in 1842 of earlier railroads, including one dating back to 1835, the Boston and Maine Railroad by 1920 owned 1,704 miles of track in Massachusetts, Maine, Vermont, New York, and New Hampshire and leased an additional 527 miles of track of other railroads. As of 1917, it owned 1,131 locomotives, 1,900 passenger cars, and 22,887 freight cars, and would continue to serve as an important regional rail system.

The Baldwin Locomotive Works produced the first 4-6-2 type of locomotive in 1901, allegedly as an improvement on the 4-4-2 or Atlantic type, and because of that, plus the fact that Baldwin's first 4-6-2 was erected for export to New Zealand Railways on an island in the Pacific, the new type of locomotive came to be called a Pacific type. (Another point of view would have the 4-4-2 an improvement over the 4-4-0, and the 4-6-2 an improvement over the "10-wheeler" type 4-6-0.)

The Boston and Maine Railroad purchased its first 4-6-2 type locomotives in 1910, ordering a dozen of these locomotives from Schenectady. The company assigned these to the class P-1. In 1911 the company purchased another 40 of these Schenectady engines with some minor changes that resulted in their being classified as P-2-a types. In 1913 the company purchased another 20, with further variations that led to their being classified as the P-2-b. In 1916 came another 10 of a still different class, the P-2-c. In 1923 the company acquired a final 10 from Schenectady, these classified as the P-3-a, making a total of 92 Pacifics purchased from the American Locomotive Company's Schenectady Works.

On the Boston and Maine, the Pacifics became the mainstay of passenger service from 1910 until dieselization, replacing little 2-6-0 Moguls and 4-6-0 10-wheelers on the main lines and shunting them aside to branch line traffic. Some were modernized over the years with either Elesco or Worthington feedwater heaters and power reverse levers.

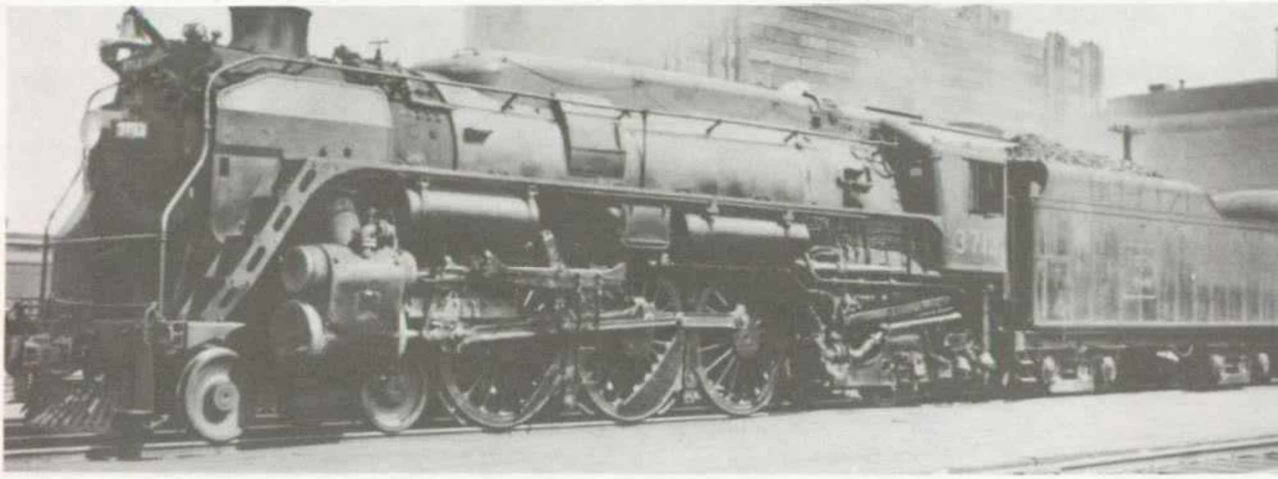
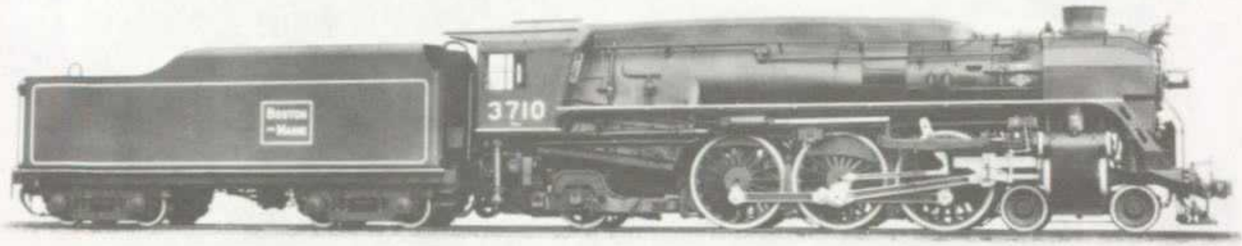


Photo courtesy Boston & Maine Railroad Historical Society

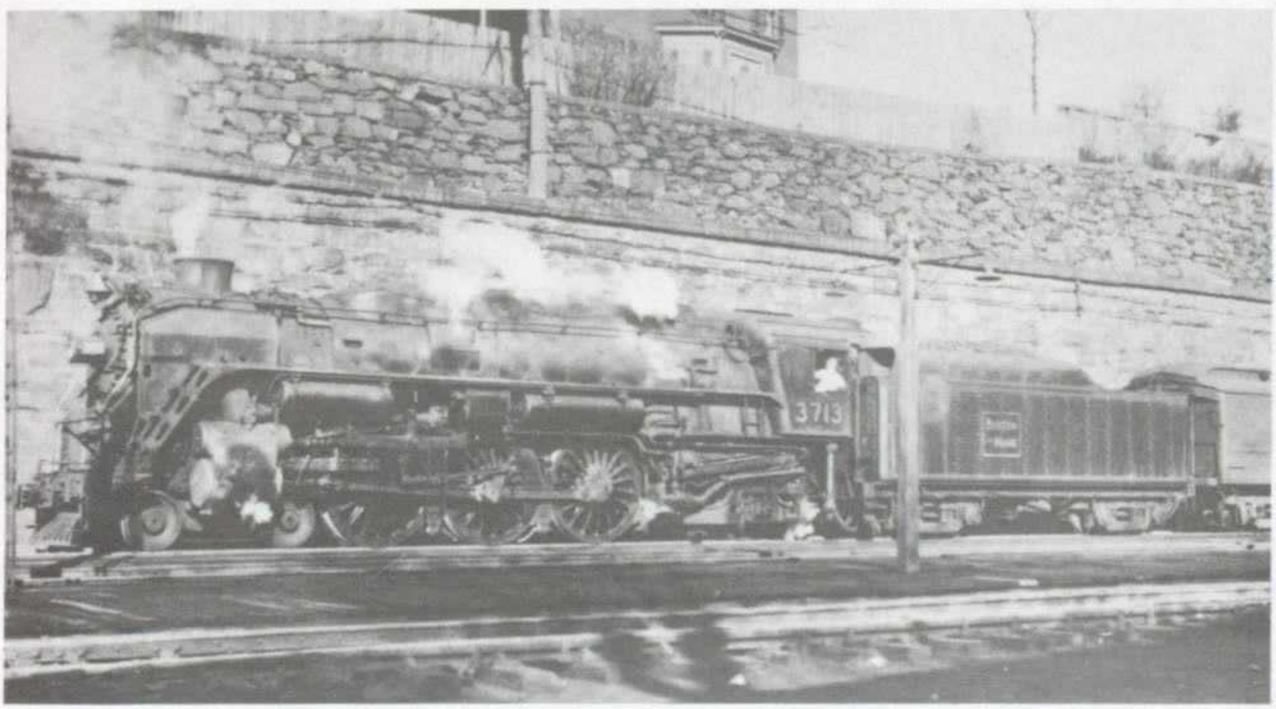
Meanwhile, the Lima Locomotive Works was developing a reputation for manufacture of exceptionally powerful main line steam motive power equipped with the latest improvements such as high-pressure boilers, feedwater heaters, and other mechanical innovations that led to their being called "super power" steam locomotives. In 1934, the Boston and Maine Railroad contracted with Lima for construction of five locomotives of the 4-6-2 Pacific type, to be numbered in the series 3710 through 3714. Lima delivered these locomotives in December 1934. These first five Lima engines, which the Boston and Maine classified as their P-4-a type, worked so well that the company ordered another five from Lima in 1936. These, delivered in March 1937, proved to be the last Pacifics that Lima would ever build. The last five Pacifics acquired by the Boston and Maine varied slightly from the earlier ones and became the P-4-b class, Nos. 3715 through 3719.



The Lima Locomotive Works photographed the engineer's side of Boston & Maine Locomotive No. 3710 as representative of all of the engines in the series 3710-3714. This builder's photograph illustrated the original streamlining features of this class such as the smoke deflectors alongside the smokebox and the casing that concealed the steam and sand domes and whistle. Shortly after its construction, the railroad gave No. 3713 the name *The Constitution*, which it carried on a pair of name plates mounted just below the running boards and above the third pair of drive wheels. This beautiful machine, well designed aesthetically as well as mechanically, is shown below, on her home railroad after the railroad had removed the streamlining of engines of this class. In this view the locomotive is temporarily out of service, with her stack sealed to keep out the weather.

Above, Steamtown National Historic Site
Below, collection of Gerald Best, California State Railroad Museum

Collection of Andy Kinicki



C.P. Atherton photo, collection of John C. Hutchins,
courtesy Boston & Maine Railroad Historical Society

Locomotive No. 3713 is, of course, one of that first group of Lima Pacifics, a P-4-a that cost the company $100,000. She was inspected by C. W. Bruening at the Lima plant on December 21, 1934. As originally delivered, the locomotive had a metal shroud concealing her sand and steam domes and had smoke deflectors alongside the smokebox (some varieties of which were colloquially referred to as "elephant ears"), and a single, deck-mounted air pump on the pilot deck. As thus delivered, the engine had a semi-streamlined appearance.

Locomotive No. 3713 and her sisters went into service hauling the most important passenger trains on the Boston & Maine, eventually serving between Boston, Massachusetts, and Bangor, Maine; between White River Junction and Troy, New York; between Worcester, Massachusetts, and Portland, Maine; and between Springfield, Massachusetts, and White River Junction, Vermont. She was designed to operate at a normal speed of 70 miles per hour. She carried sufficient coal to pull and heat a 14-car train about 250 miles, and enough water to last about 125 miles.

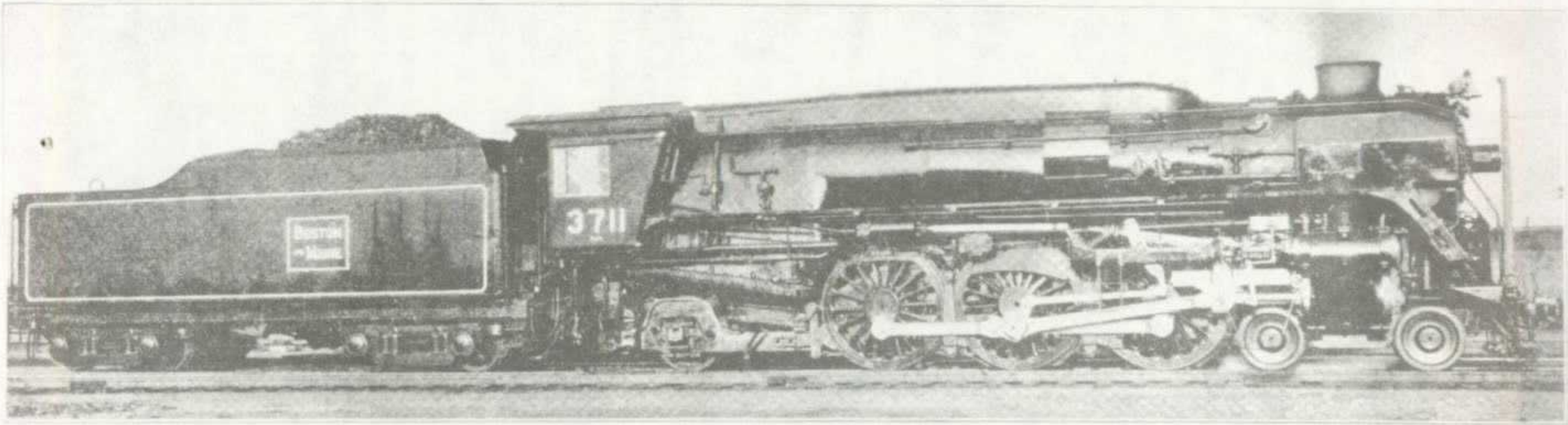
When the Boston and Maine took delivery of its second order of Lima Pacifics in 1937, it sponsored a contest among New England schoolchildren to name those 10 engines and 10 other passenger engines. The contest was open to any pupil in any community along the railroad and included students from kindergarten to the final year of junior high school. The railroad promised to paint the names on the sides of the locomotive and to attach to the locomotive a plate with the name of the boy or girl who suggested the name, as well as the name of his or her school. The contest elicited more than 10,000 names for the 20 engines. A 14-year-old named J. Schumann Moore of Lynn, Massachusetts, a student at Lynn's Eastern High School, suggested the winning name for No. 3713: *The Constitution.* Other winning names for the 10 Lima Pacifics were for No. 3710, *Peter Cooper*; No. 3711, *Allagash*; No. 3712, *East Wind*; No. 3714, *Greylock*; No. 3715, *Kwasind*; No. 3716, *Rogers' Rangers*; No. 3717, *Old North Bridge*; No. 3718, *Ye Salem Witch*; and No. 3719, *Camel's Hump*.

Certainly *The Constitution* was among the more dignified names. Moore said he selected the name because it signified "the backbone of our country. Appropriate especially in that the railroads are the backbone of our transportation system." On December 11, 1937, the railroad held a christening ceremony in Boston's North Station. The railroad would hold two more such contests, one in 1940 and one in 1941, to name eight additional engines. For all 31 named engines, the engine name and the name of the contest winner were inscribed on a pair of large name plates mounted on the running boards on both sides of each engine above the drive wheels. Thus engine No. 3713 and her sisters acquired names, a practice more typical of the 19th than the 20th century in railroad operation.

After the country entered World War II in 1941, No. 3713 pulled many a 15- to 20-car troop train during the next four years. It was apparently during these wartime years that, for reasons unknown at present, the Boston and Maine removed both the shroud atop the boiler of these five locomotives, and the smoke deflectors alongside the smokeboxes. They may simply have been removed for routine servicing and, in the press of wartime conditions, were left off to avoid the time and labor of putting them back. About 1944 or 1945, the company added a second air pump on the pilot deck.

It was probably after the war that No. 3713 and her sisters were repainted and relettered in a racy style sometimes referred to as "speed" lettering because its slanted script gave an impression of speed. The "speed" lettering replaced the standard rectangular herald adopted by the Boston & Maine in 1927.

WANT YOUR NAME ON THIS LOCOMOTIVE?



AN OPPORTUNITY FOR THE YOUTH OF NEW ENGLAND!

THIS is one of the 20 huge locomotives which the BOSTON and MAINE RAILROAD is going to allow the school children of New England to name. Engines of this sort haul the fast through passenger trains and the long through freight trains of the Boston and Maine through Massachusetts, New Hampshire, Vermont, Maine and New York states.

The names, which will be selected by a board of judges from those you suggest, will be painted on the sides of the locomotives and, in addition, a plate bearing the name of the boy or girl whose suggestion is selected as the name for the engine and the name of the school which he or she attends will be made a permanent part of the locomotive.

This is your chance to "own" a huge locomotive. Imagine the thrill of being able to point out an engine of this size and say "That is 'MY locomotive'. I named it."

The competition is open to any pupil in any school in any community along the lines of the BOSTON and MAINE RAILROAD, up to and including those in the final year of Junior High School.

Select your name now and write the BOSTON and MAINE RAILROAD, telling of your suggestion and why you made it. Be sure and write your name and the name of the school which you attend plainly.

The competition will close on October 15.

All names must be written and may be mailed direct to H. L. Baldwin, BOSTON and MAINE RAILROAD, North Station, Boston, Mass., or they may be handed to any station agent or train service employee, who will be glad to forward them.

Scores of names have already been suggested. Send your suggestion in now. Perhaps you may be among the 20 fortunate children, who on November 1 will learn that the names they suggested have been chosen for the big engines, and that their personal names will be included on the name plates of the engines.

The Boston and Maine Railroad published this undated single-sheet flyer during the mid 1930s to announce the contest to select names for its Lima-built 4-6-2 locomotives. The flyer illustrated No. 3711, a sister to Steamtown's No. 3713, which exhibited the smoke deflectors alongside the smokebox and the streamlined casing over the domes, features removed from all locomotives of this class, probably during World War II.

Steamtown Foundation collection

Following the war, No. 3713 and her sisters returned to handling the regular passenger traffic. Among their patrons were young campers headed for an outing in the northern woods. Toward the end of her working life, No. 3713 was equipped with special steam pipes and used to melt snow in the yards of North Station, and still later as a stationary steam power plant. She was last called into service during a flood. Whereas floods shorted out the axle-mounted traction motors of diesel-electric locomotives, the fireboxes of many steam locomotives rode high enough to be above flood waters so that steam locomotives could push through flood waters that diesels dared not enter. No. 3713 made her last run in 1958.

When F. Nelson Blount acquired No. 3713, he exhibited her first at South Carver, then Pleasure Island at Wakefield, Massachusetts, in 1960 and 1961. From 1962 through 1969, the engine rested on exhibit first at North Walpole, New Hampshire, then at Bellows Falls, Vermont, after which Steamtown loaned the engine to Boston's Museum of Science. The Boston and Maine's Billerica Shop overhauled the locomotive in 1969, repainting her in the original 1934 herald (pattern of 1927). Eventually, after some years in Boston, the engine returned to Steamtown during the mid-1970s.

The 4-6-2 Pacific-type locomotive is the type most common in the Steamtown collection, which in addition to this engine included one Canadian National Railways 4-6-2, No. 5288, and two Canadian Pacific Railway Pacifics, Nos. 1293 and 2317.

However, Boston and Maine Railroad No. 3713 is the only American-built engine among the Pacifics in the Steamtown collection. It is one of about fifty-six 4-6-2 Pacific-type locomotives preserved in the United States. Although the type is well represented among preserved locomotives in the United States and 12 more are preserved in Canada this particular locomotive is further significant because it is one of only three steam road engines of the Boston and Maine Railroad that have survived, the others being 4-4-0 No. 494, at White River Junction, Vermont, and 2-6-0, No. 1455, at Edaville, Massachusetts. Two Boston and Maine 0-6-0 switch engines, Numbers 410 and 444, also survive.

Condition: In terms of appearance, the locomotive is in reasonably good condition. Mechanically, the locomotive is believed to be nearly operable. It could be made operable with suitable overhaul.

Recommendation: This is exactly the type of heavy-duty, main line motive power, in this instance specifically passenger motive power, that the Steamtown collection should emphasize. The NPS should document in much more detail the operational history of this locomotive, and through photographs and Boston and Maine Mechanical Department records, should thoroughly explore changes made in the locomotive during its history. Extensive search for photographs of this particular locomotive in service should be a part of the study. The study should include a complete assessment by mechanical authorities of the locomotive's mechanical condition. The report should recommend the period to which the locomotive should be restored and repainted, and based on mechanical condition, whether to restore it to operable condition and to operate it for excursion trains or special movements. It should ascertain whether the locomotive ever received the red and mustard/gold striping and speedlining documented on sister locomotives Nos. 3712 and 3714. It should be restored to operation if feasible. When not in service, it should be exhibited indoors, protected from the weather.

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"Boston and Maine 4-6-2 [measured drawing of No. 3712]." *Model Railroader*, Vol. 13, No. 4 (Apr. 1946): 266-268.

"Boston and Maine No. 3712 [measured drawing]." *Model Railroader*, Vol. 17, No. 5 (May 1950): 60.

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Frye, Harry A. *Minuteman Steam: Boston & Maine Steam Locomotives, 1911-1958*. Littleton: Boston & Maine Railroad Historical Society, Inc., 1982: 124-142, 158, and especially 125, 140-142. [This excellent motive power history is a principal source on this locomotive.]

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Harlow, Alvin F. *Steelways of New England*. New York: Creative Age Press, 1946.

Hastings, Philip Ross. *The Boston and Maine: A Photographic Essay*. n.p.: Locomotive and Railway Preservation, 1989. [Disappointingly, although Hastings photographed No. 3713, not one of his photographs of that locomotive appears in this book.]

"High Green" column, *Boston and Maine Railroad Magazine*, Vol. 26, No. 3 (May-June-July 1958). [Item on upcoming move of Locomotive No. 3713 to Edaville.]

Johnson, Ron. *The Best of Maine Railroads*. South Portland: Author, 1985: 120.

Jones, Robert Willoughby. *Boston and Maine; Three Colorful Decades of New England Railroading*. Glendale: Trans-Anglo Books, 1991: No data on Locomotive No. 3713, but on pp. 50 and 86 color photos of No. 3712 and on p. 51 of 3714 all with colorful red and mustard-gold lettering and striping which may have been used on No. 3713 also.

Kyper, Frank. "Yes, It Was 'The Constitution.'" *The Railroad Enthusiast* (Winter-Spring 1971): 27-28.

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Lima Locomotive Works. Builder's photo card of Locomotive No. 3710, with specifications for series 3710-3714 on reverse. In Steamtown collections.

Lima Locomotive Works. "Specification Card for Locomotive No. 3713." Dec. 21, 1934. In the Steamtown Foundation files.

Locomotive Cyclopedia of American Practice. 12th ed. New York: Simmons-Boardman Publishing Corp., 1944: 171. [Builder's photograph of No. 3710 with specifications.]

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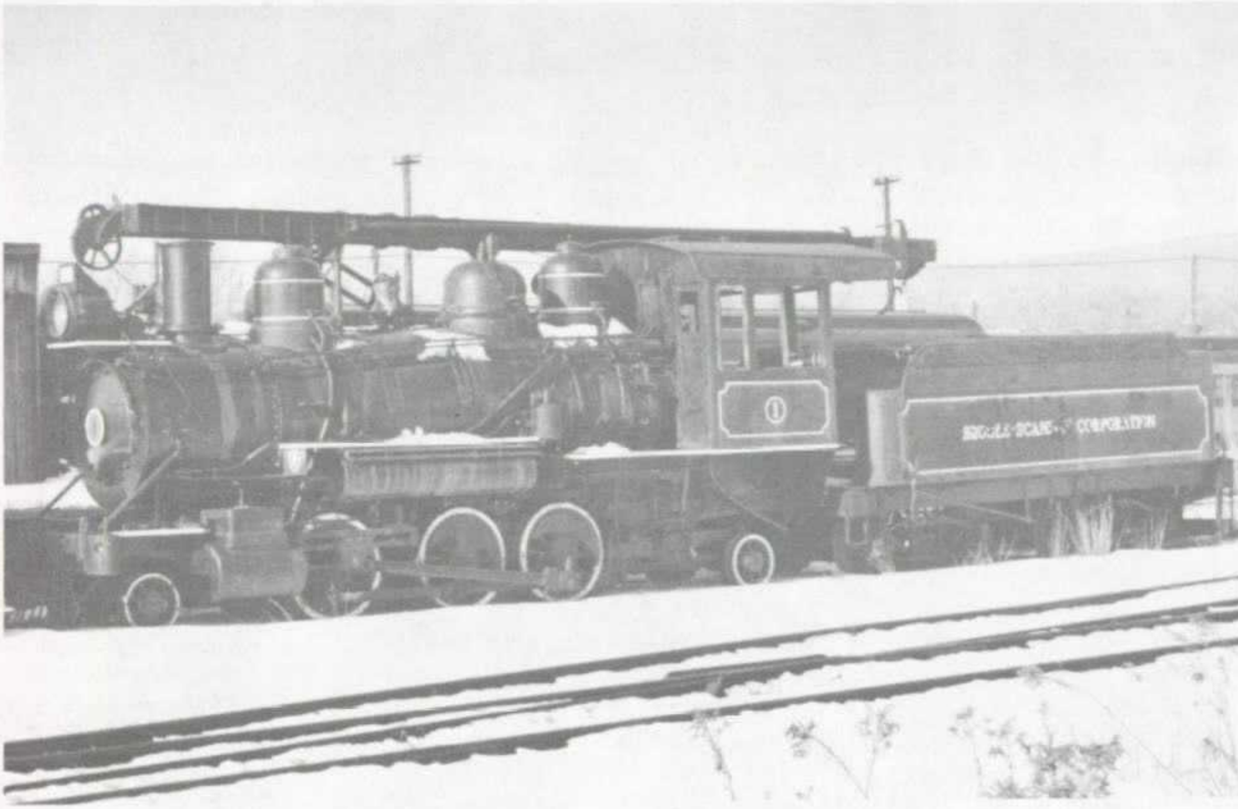
Neal, Robert Miller. *High Green and the Bark Peelers: The Story of Engineman Henry A. Beaulieu and his Boston and Maine Railroad.* New York: Duell, Sloan and Pearce, 1950: 161-165. [A description of a trip on P-4-b No. 3715 in service on a suburban (commuter) train of wooden coaches.]

"Retired Boston and Maine Equipment on Exhibit at 'Pleasure Island.'" *Boston and Maine Railroad Magazine,* Vol. 27, No. 4 (July-Aug. 1959): 16, 17.

3713, the Pacific Locomotive exhibited at the Museum of Science, Boston. Boston: Museum of Science, n.d. [A six-panel folder about the locomotive.]

Twombly, L. Stewart, and Robert E. Chaffin. "Post-1911 B&M Steam Roster--Part XI." *B&M Bulletin,* Vol. 6, No. 1 (Fall 1976): 34.

BROOKS-SCANLON CORPORATION NO. 1



Owner(s): Carpenter-O'Brien Lumber Company
Brooks-Scanlon Corporation
Lee Tidewater Cypress Company
J.C. Turner Lumber Company

Road Number(s): 1
1
1
1

Whyte System Type: 2-6-2 Prairie

Class: (unknown)

Builder: Baldwin Locomotive Works

Date Built: August 1914

Builder's Number: 41649

Cylinders (diameter x stroke in inches): 16 x 24

Boiler Pressure (in lbs. per square inch): 175

Diameter of Drive Wheels (in inches): 42

Tractive Effort (in lbs.): 20,800

Tender Capacity: **Coal (in tons):**

Water (in gallons):

Weight on Drivers (in lbs.):

Remarks: Engine could burn either coal or wood; engine has a second sand dome behind the steam dome, ahead of the cab. This locomotive may have had a Rushton or cabbage stack, especially under its second owner. This is a tired, worn-out locomotive.

Brooks-Scanlon Corporation 2-6-2 Locomotive No. 1

History: The 2-6-2 Prairie-type locomotive took its name and initial popularity from its use in relatively flat prairie country such as the Great Plains in Kansas and surrounding states. About 50 locomotives of this type have survived nationwide, 15 of them veterans of the Atchison, Topeka & Santa Fe Railway, a company that made particularly extensive use of the type. But as time passed, Prairie locomotives also developed popularity among lumber companies operating in relatively flat forest country. The only example in the Steamtown collection of an engine with this wheel arrangement underwent the latter use; it was built for a lumber company's logging railroad and eventually passed through the hands of several Florida lumber firms during its active career. So it was essentially an industrial locomotive, though many engines of this type served on common carrier railroads.

Controlled by the William J. O'Brien family of St. Paul, Minnesota, the Carpenter-O'Brien Lumber Company was incorporated under the laws of Delaware in May 1913 but with operations in Florida, and apparently ordered this locomotive as its No. 1, which Baldwin Locomotive Works outshopped in 1914.

Carpenter-O'Brien built a fine sawmill plant Eastport, Florida, to mill pine logs, and even had a ship built to haul 2 million board feet of lumber per trip to its yard on Staten Island, New York. American entry into World War I in 1917 resulted in the sale of the S.S. *William J. O'Brien*, which in turn may have triggered sale of the Florida mill plant and timber holdings to the Brooks-Scanlon Corporation.

In 1896 the Brooks and Scanlon families, also of Minnesota, consisting of Dwight F. Brooks, M.D., Lester R. Brooks, Anson S. Brooks, and M.J. Scanlon, went into business together in Minneapolis, operating sawmills first at Nickerson, then at Cass Lake, Minnesota, and incorporating the Brooks-Scanlon Lumber Company in 1901 to operate a large plant the firm erected in Scanlon, Minnesota, served by the subsidiary Minnesota and North Wisconsin Railroad.

In 1905, the founders of the firm scouted timber in the Pacific Northwest, purchasing two large blocks of Ponderosa pine timberlands in Deschutes County, Oregon. In 1910 the plant at Scanlon, Minnesota, ran out of timber to mill, so the company moved to Oregon, with the headquarters remaining in Minneapolis.

In 1905, the firm also purchased tracts of Southern pine near Kentwood, Louisiana, where it erected another sawmill plant, served by the subsidiary Kentwood and Eastern Railroad.

By 1917 it was apparent to Brooks-Scanlon management that its Louisiana plant eventually would run out of timber (which it did in 1923). The company bought out Carpenter-O'Brien's holdings and its Eastport, Florida, mill, in the process acquiring Locomotive No. 1. Brooks-Scanlon took over at Eastport on December 31, 1917. By 1928 the company owned or controlled approximately 400,000 acres of timberlands located in Lafayette, Taylor, Madison, and Jefferson counties, Florida. At that time the firm had sawmills with a capacity of turning out 100 million board feet of lumber per year, as well as a planing mill, dry kilns, storage sheds, warehouses, and headquarters for a logging railroad at Eastport, 13 miles from Jacksonville on Florida's St. Johns River, with deep-water decking facilities to accommodate ocean-going vessels. Officers included M.J. Scanlon, president, with offices in Minneapolis, Minnesota; J.S. Foley, vice president, located at Eastport; A.S. Brooks, treasurer, and P.A. Brooks, secretary, the latter two officers also headquartered in Minneapolis.

Whether Carpenter-O'Brien and Brooks-Scanlon used Locomotive No. 1 to haul logs in to the mill from the woods or used it to switch the yard around the Eastport plant, or both, is unclear. It should be noted that Brooks-Scanlon locomotives characteristically sported Rushton or cabbage cinder-catching stacks, a type of stack used on wood-burning locomotives such as No. 1. It is likely that Brooks-Scanlon No. 1 had that type of stack applied whether or not it had been built with the Rushton stack for Carpenter-O'Brien. If so, a later owner apparently replaced the Rushton stack with the "shotgun" stack now on the locomotive.

Unprecedented increases in freight rates forced Brooks-Scanlon to move to a location more central to their timber supply, causing the closure of the Eastport plant in 1929 and construction of a new plant at Foley, Florida, named for the company's general manager, J.S. Foley. It is possible locomotive No. 1 moved to the new plant. In subsequent years, the little Prairie locomotive passed into the ownership of several other firms, which leads into some rather complex corporate history, although all four or five of her owners were interconnected in one way or another.

In Louisiana about 1875, Captain William Lafayette Burton operated a floating sawmill on barges on the Mississippi River, a plant that milled logs for plantation owners. Burton eventually bought a plantation of his own in St. James Parish, 50 miles north of New Orleans on the west bank of the Mississippi, whose lands included some ten or twelve thousand acres in the swamp adjoining the river. Burton built a sawmill on land to produce cypress lumber there, hiring Edward G. Swartz, who claimed to be the first white child born in Montana, to manage it. Swartz's father, a Union Army veteran, had migrated to Montana after the Civil War, but the family subsequently moved to Kansas City. Swartz, while still a teenager, had struck out on his own, cutting short-leaf pine timber profitably near Monroe, Louisiana, which led to his acquiring 10 percent interest in Burton's cypress mill, which in turn led to the establishment of the Burton & Swartz Cypress Company.

When they began to run out of Louisiana cypress, Burton & Swartz learned that Carpenter-O'Brien had never cut any of the cypress the firm owned in Taylor and Lafayette counties, Florida, and that the pine lumber manufacturer doubted its own qualifications to handle cypress, its sawmill plant being designed for milling pine. So Burton & Swartz bought the cypress on Carpenter-O'Brien land with a large cash payment, but Carpenter-O'Brien in turn held about 48 percent of the stock in the Burton & Swartz company thereafter, an interest that presumably passed to Brooks-Scanlon in 1917.

Initially, Burton & Swartz milled the cypress from these lands at Perry, Florida, while Carpenter-O'Brien milled the yellow pine at Eastport. Increases in rail freight rates made this arrangement uneconomical, so the firms established a joint logging camp, the largest in Florida, housing a thousand men, 18 miles south of Perry on the Atlantic Coast Line Railroad. The firms named this town Carbur from the first three letters each of Carpenter and Burton. From Carbur, train loads of pine logs went east to Eastport and cypress logs went north to Perry.

Some years earlier, about 1907 or 1908, a Michigan corporation had bought from men named Butterworth and Kenney about 150,000 acres of virgin cypress timber in a totally inaccessible region known as the Big Cypress Swamp amid the Everglades in Lee County, Florida. The timber was so remote that the company had done nothing with it. J.C. Turner learned of this timber and in 1913 met with Captain Burton in New Orleans, from whom he had in the past purchased much cypress. Both men knew that marketable old-growth stands of cypress were fast vanishing into the hungry sawmills. Turner believed that the Big Cypress Swamp held a resource of great potential profit. Burton agreed, and within 30 days, arranged to buy the Big Cypress Swamp timber from the Michigan firm, Burton & Swartz putting up 60 percent of the purchase price, and J.C. Turner contributing 40 percent.

J.C. Turner was no newcomer to the lumber industry. Born in Albany, New York, shortly after the Civil War, he had moved with his family to Michigan while still a child, eventually graduating from Hillsdale

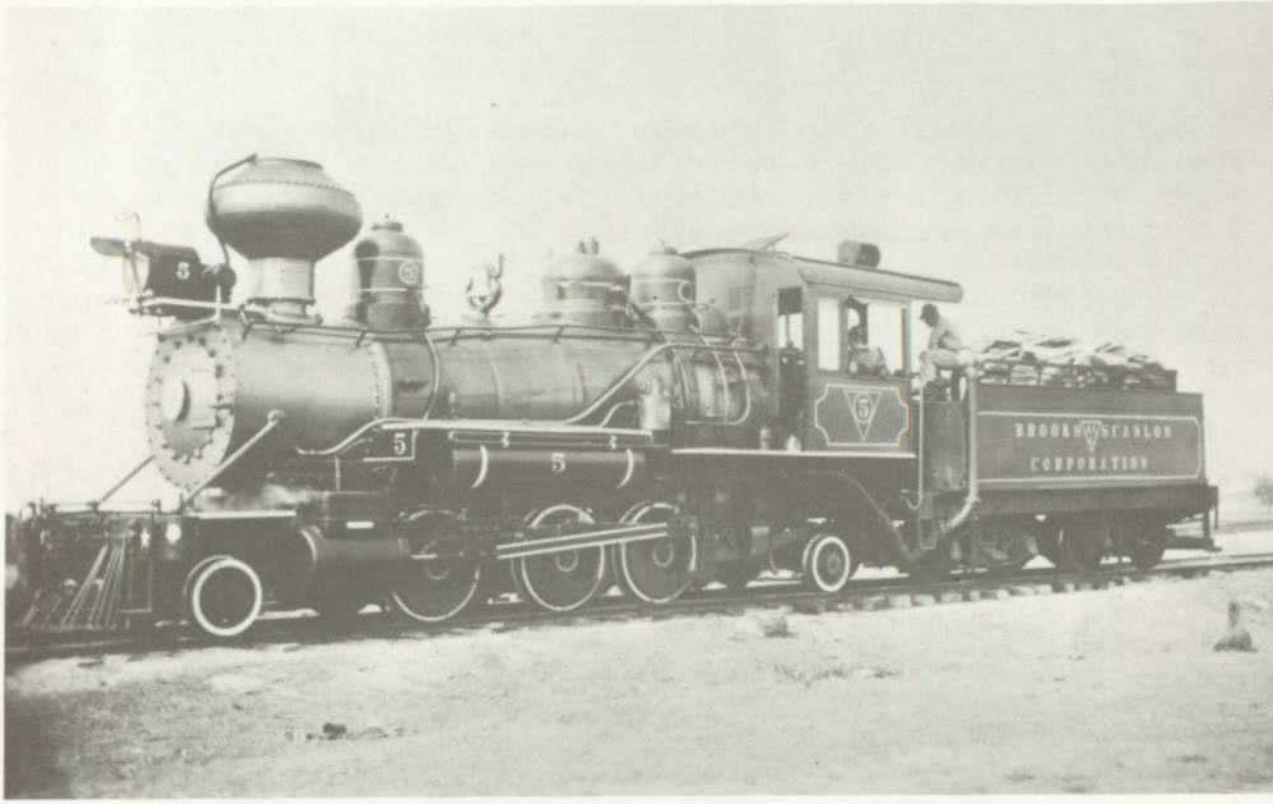
College. Turner then entered the sales department of the firm of Joseph Rathbone, a wholesale white pine distributor with facilities in Chicago. One day while selling in East St. Louis, Turner encountered a barge loaded with cypress shingles, became greatly impressed with the quality of cypress wood, and persuaded Rathbone to send him to Louisiana to investigate further.

Soon he and Rathbone had built a cypress mill at Harvey, across the Mississippi from New Orleans, which eventually became the Louisiana Cypress Lumber Company. Turner pioneered in successfully marketing cypress in northern states. Around 1895, he organized the J.C. Turner Cypress Lumber Company and built a wholesale distributing cypress lumber yard at Irvington on the Hudson River in New York.

At first he shipped cypress up from Louisiana. Then, discovering cheaper schooner rates from Florida ports, Turner began to search out Florida sources of tidewater cypress, and by 1910 bought cypress from about a half dozen or more Florida sawmills. In 1910 he built a double band-saw mill at Centralia, Florida. Thus Turner had considerable lumber, and specifically cypress lumber, business experience before joining Burton & Swartz in buying Big Cypress Swamp timber.

Having bought Big Cypress Swamp timber, the J.C. Turner Lumber Company and the Burton & Swartz Cypress Company formed the Lee Cypress Company, named after Lee County, Florida, to hold the newly acquired timber. Turner died in 1923, Burton in 1926. Meanwhile, the Burton & Swartz Company continued milling out timber in Taylor and Lafayette counties until about 1937 or 1938, thereafter selling off the firm's inventory of milled cypress until it was exhausted about 1941. Their Perry mill continued to operate until 1943 under the Burton & Swartz name, at which time the J.C. Turner Lumber Company bought 54 percent interest from the Burton estate and 6 percent from Swartz, who died a year later. It should be recalled that Turner had always owned 40 percent of the Perry plant, and thus now had complete ownership. That same year, 1943, the J.C. Turner firm started milling cypress from the Big Cypress Swamp. In 1944 the Lee Cypress Company took over operation of the Perry plant, and the firm changed its name in 1947 to Lee Tidewater Cypress Company.

Somewhere in this shifting of interconnected lumber interests, ownership of Brooks-Scanlon Corporation Locomotive No. 1 passed to either the Lee Cypress Company or still later to the Lee Tidewater Cypress Company. While the company built a new logging railroad out of Copeland, Florida, and used similar 2-6-2 locomotives there, it apparently retained No. 1 at Perry, Florida, for use in switching at the mill plant. The logging railroad that had once served the Perry plant may have been torn up for use out of Copeland by the time Lee Cypress or Lee Tidewater Cypress acquired Locomotive No. 1.



The Rushton (cabbage-style) spark-arrester, lettering, and striping patterns exhibited by Brooks-Scanlon Corporation Locomotive No. 5 (above) may reflect the appearance of Locomotive No. 1 when Brooks-Scanlon owned it.

Collection of Dr. Howard T. Letcher

At right, No. 1, resting in the engine shed of the Lee Tidewater Cypress Lumber Company at Live Oak, Florida, on September 4, 1956, featured fancy brass flag stanchions on the headlight platform.

Photo by Mallory Hope Ferrell

Actually, the Big Cypress Swamp, north of Copeland in South Collier County, Florida, was far from Perry, but the company struck a deal with the Atlantic Coast Line Railroad to haul 40 gondola-car trainloads of logs from its logging railroad at Copeland, which extend some 45 miles into the swamp, to the big mill at Perry, so Locomotives Nos. 1 and 2 at Perry had plenty of switching to do, what with 40-car train loads of logs coming in and cypress lumber being loaded to be shipped out. Between 1943 and 1957 the Atlantic Coast Line Railroad hauled 915 40-car trains loaded with cypress logs those 400 miles from Copeland to Perry, 25 million board feet or more per year for 14 years, or roughly 350 million board feet of red cypress, until the Big Cypress Swamp had been logged out. Locomotive No. 1 was last fired up in the fall of 1959, after which she was "stored--serviceable" by the company at Perry. In 1962, probably because the company had run out of timber to mill, the controlling J.C. Turner company dissolved its subsidiary Lee Tidewater Cypress Company and assumed direct ownership of its remaining properties, including Locomotive No. 1. The J.C. Turner company then sold the five surviving locomotives (first No. 2 at Perry having been scrapped in 1955) to F. Nelson Blount's Edaville Railroad, but because the railroad into Copeland had been scrapped, only Locomotive No. 1 at Perry was moved, first to North Walpole, New Hampshire, later to Bellows Falls, Vermont, and finally to Scranton, Pennsylvania. The locomotive thus never operated under the J.C. Turner Lumber Company name.

Thus Brooks-Scanlon Locomotive No. 1 was essentially an industrial locomotive, although many engines of this type served on common carrier railroads. Despite its history of industrial use, it represents a type of locomotive once common on main lines of major railroad systems, and later on their branch lines, as well as on short line railroads.

Condition: Brooks-Scanlon Corporation 2-8-2 Locomotive No. 1 is mechanically a tired, worn-out locomotive, probably suitable only for static exhibit and not for restoration to operable condition.

Recommendations: While a Prairie-type 2-6-2 of a common-carrier railroad might be preferable to represent that type in the Steamtown collection, as this is the only locomotive of the type in the collection, the NPS should restore it "cosmetically" but not mechanically to operable condition, and should exhibit it in a roundhouse. As with each locomotive acquired, a report should be prepared prior to restoration, and that document should include the decision regarding which of three ownerships to restore the locomotive to represent: Carpenter-O'Brien, Brooks-Scanlon, or Lee Tidewater Cypress. That document should include intensive research in Florida and elsewhere as needed to obtain documents and photographs relating to the history of the locomotive and illustrating its appearance while working for its three owning firms. That report, furthermore, should specifically investigate whether the locomotive ever had a Rushton stack and determine whether it is desirable or possible to either obtain and install a genuine Rushton stack or replicate one if the locomotive did once have one. It should also locate for replication brass flag stanchions, visible in various photographs, now missing from the headlight platform of the locomotive.

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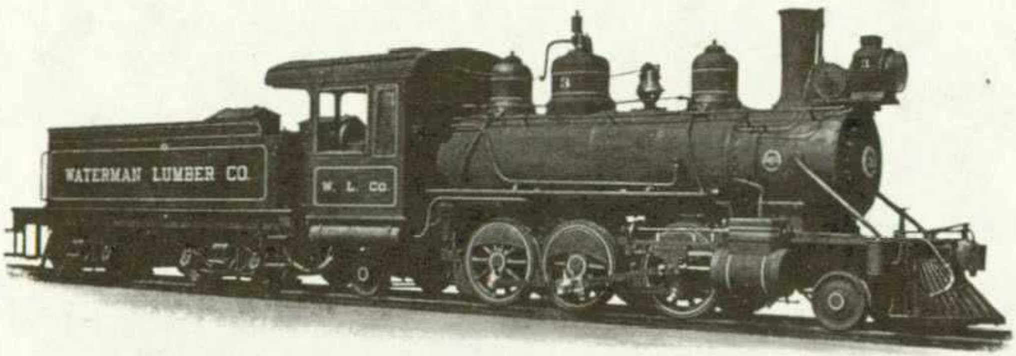


Six-Coupled Double-Ender Locomotive for the Waterman Lumber Co., Marshall, Texas

Class 10-24¼-D, 94 **Code Word, REDADORES**

GENERAL DIMENSIONS

GAUGE	4' 8½"
CYLINDERS	15" x 20"
BOILER—Diameter	50"
Working Pressure	180 lbs.
Fuel	Soft Coal
FIREBOX—Length	59 5/16"
Width	34⅝"
TUBES—Number	147
Diameter	2"
Length	11' 10½"

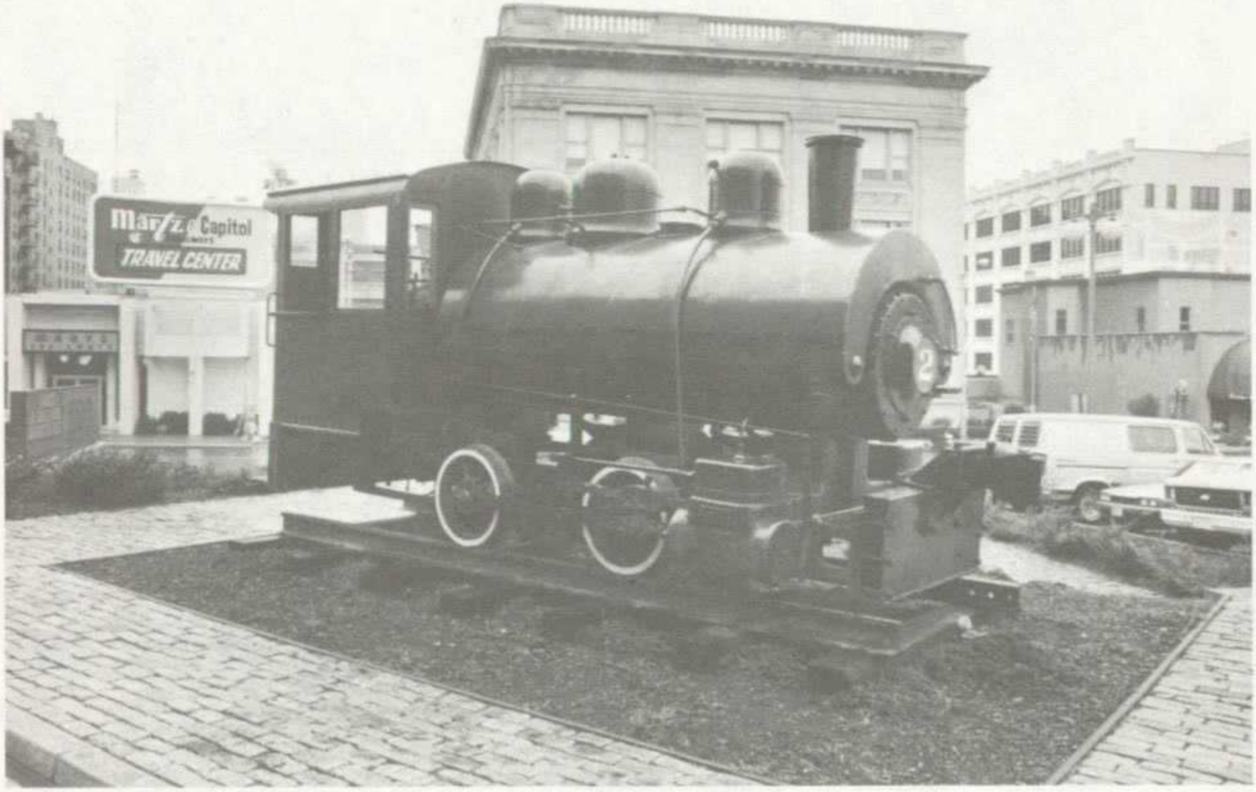
HEATING SURFACE—Firebox	82 sq. ft.
Tubes	909 sq. ft.
Total	991 sq. ft.
Grate Area	14 sq. ft.
DRIVING WHEELS—Diameter	46"
TRUCK WHEELS—Front, Diameter	26"
Back, Diameter	26"
WHEEL BASE—Driving	9' 2"
Total Engine	23' 9"
Total Engine and Tender	46' 8½"
WEIGHT, ESTIMATED—	
On Driving Wheels	61,000 lbs.
Total Engine	83,500 lbs.
Total Engine and Tender	152,000 lbs.

TANK CAPACITY	3,000 gals.
FUEL CAPACITY	4 tons
Hauling Capacity in tons of 2,000 pounds, exclusive of Engine and Tender:	
On a Level	1,550 tons
" ½ per cent. grade	720 tons
" 1 " " "	435 tons
" 2 " " "	220 tons
" 3 " " "	135 tons
" 4 " " "	85 tons
" 5 " " "	55 tons
" 6 " " "	35 tons

Baldwin Locomotive Works catalogs featured many locomotives similar to Brooks-Scanlon No. 1, including Waterman Lumber Company No. 3, which operated in Texas.

Colorado Railroad Museum Library

BULLARD COMPANY NO. 2



Owner(s): Bullard Company

Road Number(s): 2

Whyte System Type: 0-4-0T

Class:

Building: H.K. Porter

Date Built: October 1937

Builder's Number: 7250

Cylinders (diameter x stroke in inches): 9 x 14

Boiler Pressure (in lbs. per square inch): 170

Diameter of Drive Wheels (in inches): 26-1/2

Tractive Effort (in lbs.): 6,180

Tender Capacity: **Coal (in tons):** Not applicable
Oil (in gallons):

Water (in gallons):

Weight on Drivers (in lbs.):

Remarks: This oil burner is in pretty good condition.

Bullard Company 0-4-0T Locomotive No. 2

History: Incorporated in Connecticut on September 4, 1894, as the Bullard Machine Tool Company, the firm had actually been established in 1880 by a family of the same name. As its initial name suggested, it manufactured machine tools of various kinds. Over the next century it continued to manufacture ever-new generations of machine tools, many of which were intended for use by the railroad industry in manufacturing and repairing locomotives and railroad cars. The company changed its name to the Bullard Company on January 4, 1929. As of 1930, the firm manufactured such machinery as vertical turret lathes, boring mills, and mult-au-matic and contin-u-matic machines used in manufacture of railroad equipment, trucks, automobiles, electrical equipment, etc. The 1941 edition of the *Locomotive Cyclopedia* carried an advertisement for "The Bullard Cut Master Vertical Turret Lathe," which touted the machine as "a modern tool designed to put shop schedules on par with train schedules." It is interesting to note that a century after its founding, the Bullard Company still listed men of the Bullard family among its officers.

As was the case with many industrial concerns, the Bullard plant in Bridgeport, Connecticut, apparently had sufficient sidings and loading tracks for the firm to require its own small switching locomotive to switch cars to and from the loading tracks and line up loaded cars for pickup by a freight train.

In the Steamtown Foundation files rests a 1913 catalog of *Steam Locomotive Repair Parts* issued by the H.K. Porter Company of Pittsburgh, Pennsylvania. While it lists and illustrates mostly locomotive components, at the beginning of the catalog are a number of pages of photographs of typical whole locomotives produced by Porter. On page 6 is an illustration of a small 0-4-0T Locomotive No. 118 of The Drake and Stratton Company, Contractors. Added above the locomotive on that page with a fountain pen is the script "Bullard # 1273," and below the illustration of the locomotive, the eight specification figures given for No. 118 have been crossed out, again with a fountain pen. Substitute figures for an even smaller 0-4-0T, though of the same pattern, have been inked in. Where No. 118 had 12- by 16-inch cylinders, those of the Bullard engine were to be 9 by 14. No. 118 carried a saddle tank with a capacity of 700 gallons, whereas the Bullard engine was to carry only 450 gallons. Instead of a 5-foot wheel base, that of the Bullard engine was to be 4 feet, 6 inches. Instead of carrying 600 pounds of coal, the Bullard engine was to be an oil burner with a 100-gallon tank. Instead of 35-inch drive wheels, the Bullard engine was to have 27-inch wheels. Instead of 42,000 pounds, the Bullard engine was to weigh 30,000. Instead of a tractive force of 9,200 pounds, the Bullard locomotive was to feature 6,070. Only one specification of the Bullard engine was to match or exceed those of the Stratton model: It was to have safety valves set to pop at 170 pounds per square inch of boiler pressure, rather than the 155 pounds of the Stratton engine.

On its title page, this Porter catalog had five lines penciled in red: "MT # 1273," a designation whose meaning is unclear at present; "Class B-S-I," apparently a builder's class, since it is doubtful that the Bullard Company had established its own classes of engines, this being only its second locomotive; "Serial No. 7250," which is the H.K. Porter shop number for the locomotive; "P.O. 24547," believed to be the Bullard Company's purchase order to Porter for the locomotive; and "R'C'D.--Oct. 25, 1937," believed to mean that Bullard took delivery of the locomotive on that date. The inference is that the Bullard Company used this very catalog in 1937, perhaps with the assistance either in person or by telephone of an H.K. Porter Company representative, to order its Locomotive No. 2. The changes in specifications entered with a fountain pen probably were written by a Porter sales representative, but the red-penciled notations that included the purchase order number were more likely done by a Bullard employee.

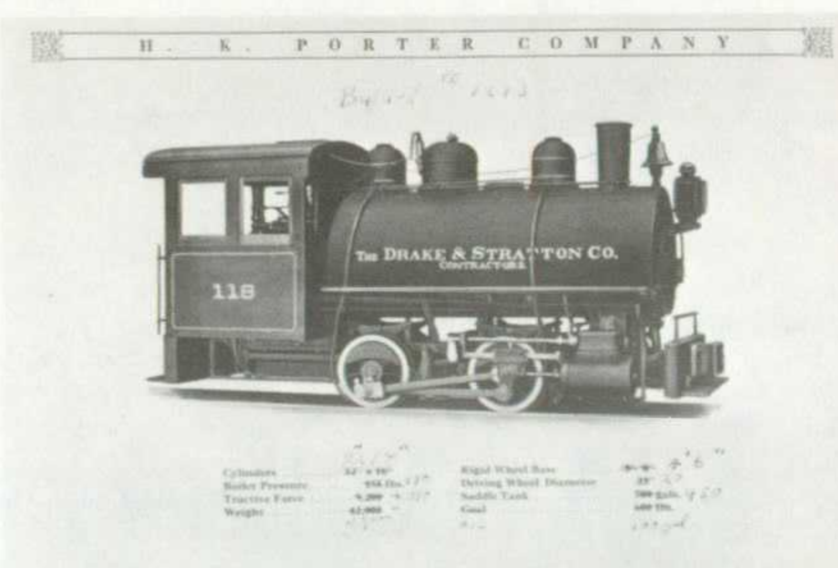
In any event, the H.K. Porter Company turned out Bullard Company No. 2 in October 1937, a Porter inspector named William F. Lintner filled out the engine's first *Annual Locomotive Inspection and Repair Report* on October 20, and the Bullard Company took delivery of its extremely small Locomotive No. 2 at Bridgeport on October 27.

The subsequent operational history of Bullard Company Locomotive No. 2 awaits further research. Apparently intended to be operated by a single engineer-fireman, the locomotive undoubtedly switched cars around the Bridgeport, Connecticut, plant for about 15 or 20 years prior to being acquired by Steamtown.

At an unknown date, probably in the late 1950s or early 1960s, the Bullard Company sold Locomotive No. 2 to a used locomotive dealer, the American Machinery Corporation of Bridgeport, Connecticut. F. Nelson Blount's Monadnock, Steamtown and Northern Amusements Corporation at North Walpole, New Hampshire, purchased the engine in June 1963.

Condition: Mechanical condition of this locomotive is unknown; its external appearance is reasonably good although at present it is not lettered for its historic owner.

Recommendations: A researched report should be completed on this locomotive. A particular objective of such research would be to ascertain the historic painting and lettering scheme of this locomotive so that its appearance can be accurately restored. This should involve a thorough search for photographs of the locomotive at work at the Bullard plant. Additionally, an effort should be made to locate, and interview on tape or videotape, employees of the Bullard Company who can provide information about the locomotive and its operation--including, if possible, men who served as an engineer-fireman on the engine. The report should also incorporate information on predecessor and successor locomotives to place Bullard Locomotive No. 2 in context, including photographs of predecessor and successor locomotives. To the extent possible, the report should document any physical changes in the locomotive since its construction and include a thorough assessment of its current condition, after which it should deal with the question of whether this locomotive should be restored to operable condition. The report should also contain a more thorough background history of the Bullard Company and its relation to the railroad industry in general.



A Bullard Company employee, or possibly a representative of the H.K. Porter Company, or both working together, used this page from a 1913 Porter catalog to draw up the order for their 0-4-0T Locomotive No. 2. Changes to the specifications of this Drake & Stratton Co. locomotive, marked in with a fountain pen, resulted in the Bullard locomotive being an even smaller locomotive than the one illustrated here. Only the boiler pressure represented an increase; in every other measurement, the locomotive was smaller.

Steamtown Foundation Collection

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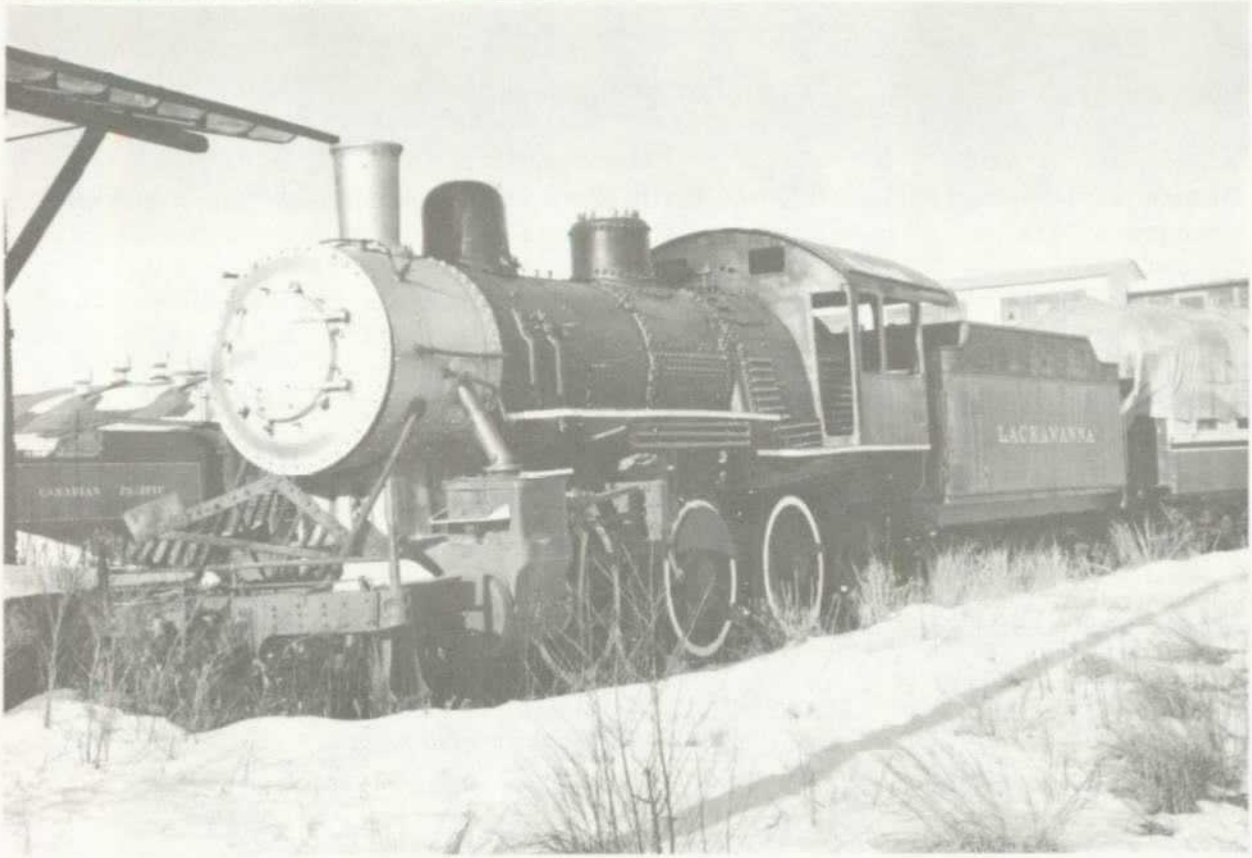
DELAWARE, LACKAWANNA & WESTERN RAILROAD NO. 565



Owner(s): Delaware, Lackawanna & Western R.R. — **Road Number(s):** 565
Dansville & Mount Morris Railroad — 565

Whyte System Type: 2-6-0 Mogul — **Class:** 10c

Builder: American Locomotive Company (Schenectady Works)

Date Built: 1908 — **Builder's Number:** 45528

Cylinders (diameter x stroke in inches): 20-1/2 x 26

Boiler Pressure (in lbs. per square inch): 200

Diameter of Drive Wheels (in inches): 63

Tractive Effort (in lbs.): 29,484

Tender Capacity: **Coal (in tons):** 10 — **Water (in gallons):** 6,000
Oil (in gallons): Not applicable

Weight on Drivers (in lbs.): 140,000; Total Weight: 161,000

Remarks: Engine has Walschaert valve gear. A tired engine, it is missing its right and left oversheath, ash pan, and some small parts. It is one of only two D.L.&W. engines surviving.

Delaware, Lackawanna & Western Railroad 2-6-0 Locomotive No. 565

History: For Steamtown NHS, the railroad company of the greatest historical importance is Scranton's home-grown Delaware, Lackawanna & Western Railroad. Like most sizable railroad systems, its long and complex history involved the absorption of numerous small predecessors. It began in its infancy as the Ligetts Gap Railroad, organized as early as March 19, 1849. That firm changed its name on April 14, 1851, to the Lackawanna & Western Railroad. A little over 2-1/2 years later on December 10, 1853, the Lackawanna & Western consolidated with the Delaware & Cobbs Gap Railroad, a company chartered on December 26, 1850, thus forming the Delaware, Lackawanna & Western Railroad. The track already extended from Scranton to Great Bend, and on May 27, 1856, the line reached from Scranton to the Delaware River. Lease of the Warren Railroad gave the D.L.&W. a junction with the Central Railroad of New Jersey, which provided a connection to the Hudson River.

In the years that followed, the Delaware, Lackawanna & Western leased, bought controlling interest in the stock of, consolidated with, or otherwise acquired a plethora of short lines (some of them the D.L.&W.'s creations), including the Morris & Essex Railroad; the Cayuga and Susquehanna Railroad; the Syracuse & Binghamton Railroad; the Valley Railroad; the Syracuse, Binghamton and New York Railroad; the Bloomsburg Railroad; the Sussex Railroad; the Passaic & Delaware Railroad; the New York, Lackawanna & Western Railway; and others. By January 1, 1883, it operated 930.58 miles of line, had 436 locomotives; 313 passenger, mail, baggage, and express cars; 30,855 freight cars (21,299 of them coal cars); and 821 work cars.

As suggested by the number of coal cars owned that early, coal comprised the bulk of the freight carried by the railroad, which itself owned extensive coal mines, and naturally it used coal-burning locomotives. Furthermore, by the turn of the century, its locomotives came to rely on hard coal--anthracite--for fuel, which burned cleanly, producing no soot, cinders, or ash. Early in 1899, Samuel Langhorne Clemens, better known as Mark Twain, wrote the company after a trip to Elmira that he had worn a white duck suit and it was still white when he reached his destination. Advertising agent Wendle P. Colton, general passenger agent Thomas W. Lee, and president Willie Truesdale seized upon the idea of taking advantage of the line's clean-burning coal in advertising for passenger traffic and adopted the slogan for the Lackawanna Road as "The Road of Anthracite." As a symbol, probably for the first time in 1901, the railroad seized upon the image of a demure "Gibson girl" dressed head to toe in sparkling white, and published a seemingly endless series of jingles or poems:

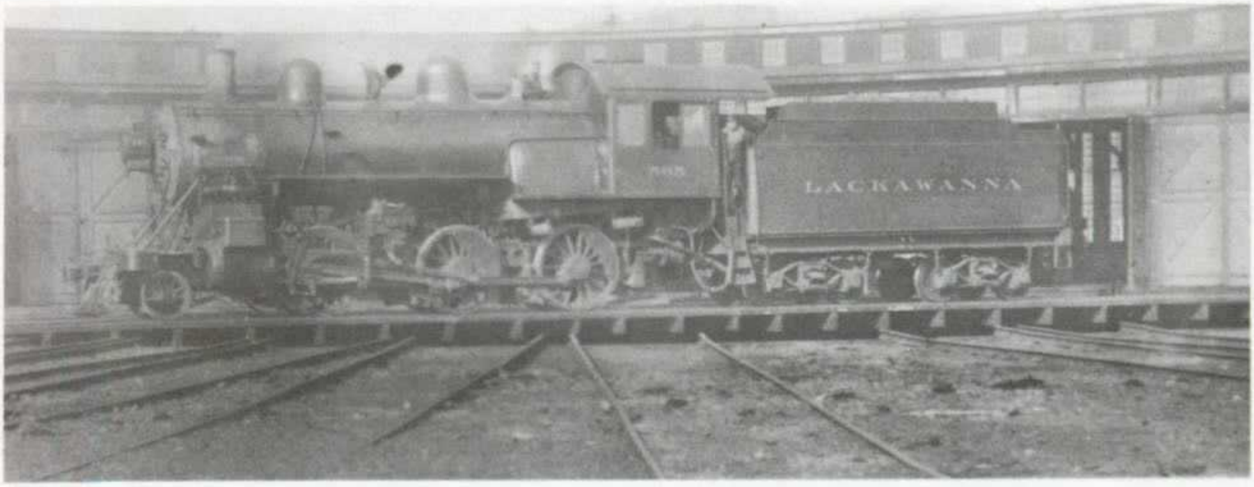
Says Phoebe Snow,
About to go
Upon a trip
To Buffalo:
"My gown stays white
from morn till night
Upon the Road of Anthracite"

Another:

Phoebe says
And Phoebe knows
That smoke and cinders
Spoil good Clothes –
'Tis thus a pleasure
And Delight
To take the Road
Of Anthracite

If the truth be known, the Lackawanna Road burned hard coal not because of its cleanliness or for passenger convenience, but because its mines yielded an abundant supply of hard coal for which, before the invention of automatic furnace stokers, no market existed. During the 1880s, the Reading Railroad had devised a method of burning this waste coal, technically called culm, by using a firebox that was unusually wide and shallow. Thus the Lackawanna managed to economize by turning a waste product into locomotive fuel, and then further capitalized on the practice by advertising it as a virtue that would benefit the traveling public. Eventually "Phoebe Snow" advertising extended to safety and other aspects of the railroad, and continued well after diesel locomotives began replacing coal-burning locomotives; ultimately the road's chief "name" train in the diesel era would be--one could easily guess--*The Phoebe Snow*.

Meanwhile, in 1903, the Lackawanna Road purchased the New York and Hoboken Ferry Company and two years later added to its stable the Harlem Transfer Company. It acquired with these purchases a valuable terminal on the Harlem River in New York City as well as ferryboats to serve it. In 1906 the Delaware, Lackawanna & Western bought the Brooklyn Dock and Terminal Company.



Delaware, Lackawanna & Western Railroad Mogul (2-6-0 type) Locomotive No. 565 posed on a turntable at an unidentified location on its home railroad, probably during the 1920s or 1930s.

Collection of the Railway and Locomotive Historical Society,
California State Railroad Museum Library

Though operating extensive main line trackage, the Delaware, Lackawanna & Western also had branch lines. It is believed that it was for service on these that in 1908 the railroad purchased 2-6-0 Locomotive No. 565 from the Schenectady Locomotive Works, equipped by its builder with Walschaert valve gear. Actually, it was part of a series of 2-6-0 locomotives apparently purchased to replace earlier locomotives that the company was scrapping.

By December 31, 1913, No. 565 operated as one of 770 locomotives on the railroad, which had 925 passenger train cars, 28,711 freight cars (a smaller number than the 1883 figure), and 836 work cars, to roll over 985.06 miles of railroad, 542.55 miles of which were double tracked. Therein lies a story of major modernization, work that was then in progress, for early in the 20th century the Delaware, Lackawanna & Western Railroad sought efficiency, profitability, and excellence by attempting and achieving 100 percent grade separation--that is, *all* city and town streets and country roads and highways would cross the railroad by either overpass or underpass totally eliminating grade crossings, costly grade crossing accidents, and many costly train-delaying slow orders.

Additionally, the company improved handling of traffic--principally freight traffic--on heavily traveled portions of the system by double-tracking much of the line, and even triple-tracking or quadruple-tracking some portions of it. It also followed the practice common among other railroad companies around the early years of the 20th century of reducing curvature and grades and by building cutoffs where suitable. Then too, the company sought to replace all old frame depots with modern brick, stone, or concrete ones. In Scranton, it enlarged and remodeled its roundhouse into a modern brick structure and erected a vast modern erecting shop complex and a huge new depot and general office building. The work of William Haynes Truesdale (president 1899-1925), this modernization program also expanded the Lackawanna from a coal carrier to a carrier of mixed and diversified commodities. When Truesdale retired in 1925, he left his successor a thoroughly modern, efficient railroad.

At an unknown date, the Delaware, Lackawanna & Western shopped Locomotive No. 565 and replaced its slide valves with a piston valve conversion and gave it a superheater. It served the Lackawanna for 28 years. Finally, in 1936, the company sold the locomotive to the Dansville & Mount Morris Railroad, a 9-mile short line railroad operating between Dansville and Groveland in New York State.

Incorporated on January 4, 1868, as the Erie & Genesee Valley Railroad to build a line from Mount Morris to Dansville, the company completed construction in 1871 at a cost of $191,302 and was immediately leased to Jay Gould's Erie Railroad. After about 20 years, the company ended up in bankruptcy, but was reorganized on October 21, 1891 as an independent locally owned road under the names of its termini, Dansville and Mount Morris. The new company was too weak to survive and entered into receivership on June 8, 1894--a receivership that continued for 31 years. The line experienced few profitable years, and in 1912 the surplus at the end of the year amounted to one dollar!

E.M. Harter and Clifford Hubbell became receivers on May 19, 1925, and through their aggressive approach to business sought to end the receivership, which they succeeded in doing on September 30, 1927. Despite the Depression, finances improved, and in 1936, the road cleared $10,632 even though hampered by a heavy snow in January, a damaging flood in March, and the purchase of Delaware, Lackawanna & Western Locomotive No. 565.

The Dansville & Mount Morris Railroad continued to operate its little Mogul from the Lackawanna for nearly a quarter-century. David P. Morgan, writing for *Trains* in 1956, described the company as having two locomotives, two stockholders, and 15 employees, and entitled his article "A story of small, elderly engines." At that time the D.&M.M. used each of its two engines (the other being No. 304, formerly Nickel Plate Road No. 44) for a single year, repairing and overhauling the one not in use. No. 565 was repaired in 1956, so Morgan did not see it operate, but he reported that both D.&M.M. locomotives had a reputation for steaming well on a very light fire, which accounted for the railroad not yet having acquired a diesel.

By 1961, however, the company had apparently acquired a diesel, and William Whitehead purchased the locomotive for the Black River & Western Railroad, a small tourist railroad operating between Ringoes and Flemington, New Jersey. John Maris bought the locomotive in June 1968 and in July sold it to Tony Citro at Wayne, New Jersey. In 1982 Citro sold it to John Meyers at New Hope, Pennsylvania. In 1983, Don Ball, the railroad photographer and author, bought the locomotive and moved it to Scranton, Pennsylvania, where he sold it to Horst Müller. In December 1985, Müller sold No. 565 to the Steamtown Foundation at Scranton.

Ultimately acquired by the Steamtown Foundation, Locomotive No. 565 is the only motive power at Scranton that is on its "home railroad," the Delaware, Lackawanna & Western. It is one of only two D.L.&W. locomotives to survive, the other being "Camelback" 4-4-0C No. 952, now preserved at the National Museum of Transport in St. Louis, Missouri. The only surviving Lackawanna 2-6-0, No. 565 is one of two Moguls in the Steamtown collection, and one of only about 50 specimens of the type that survive nationwide. The 2-6-0 Mogul class of locomotive became popular as freight, and sometimes passenger or mixed train, engines during the late 19th century. Manufacture and use of the type continued well into the 20th century, during which they appeared especially on branch lines and short line railroads. Thousands of locomotives of this type once operated in the United States.

Condition: Locomotive No. 565 is in terrible condition, missing its road number plate, builder's plate, air pump, and many small parts. It has apparently been converted from a coal burner to an oil burner. Mechanically it is a very tired, worn-out engine, not suitable for restoration to operable condition. It is probably suitable only for static exhibit as a museum engine.

Recommendation: This engine is of exceptional importance to Steamtown NHS because it is the only locomotive in the Steamtown collection that is on its home ground--a yard of the Delaware, Lackawanna & Western Railroad.

The NPS should commission a report on this locomotive. This report should recommend a decision on what period prior to 1936 during its career on the Lackawanna the Park Service should restore the locomotive to for indoor and occasional outdoor exhibit. Because of the conversion from Walschaert valve gear to piston valves by the Lackawanna, restoring the engine to its "as built" condition may not be feasible, but it should certainly be possible to restore it to its appearance during the early 1930s after the installation of the piston valves but before its sale to the Dansville and Mount Morris Railroad.

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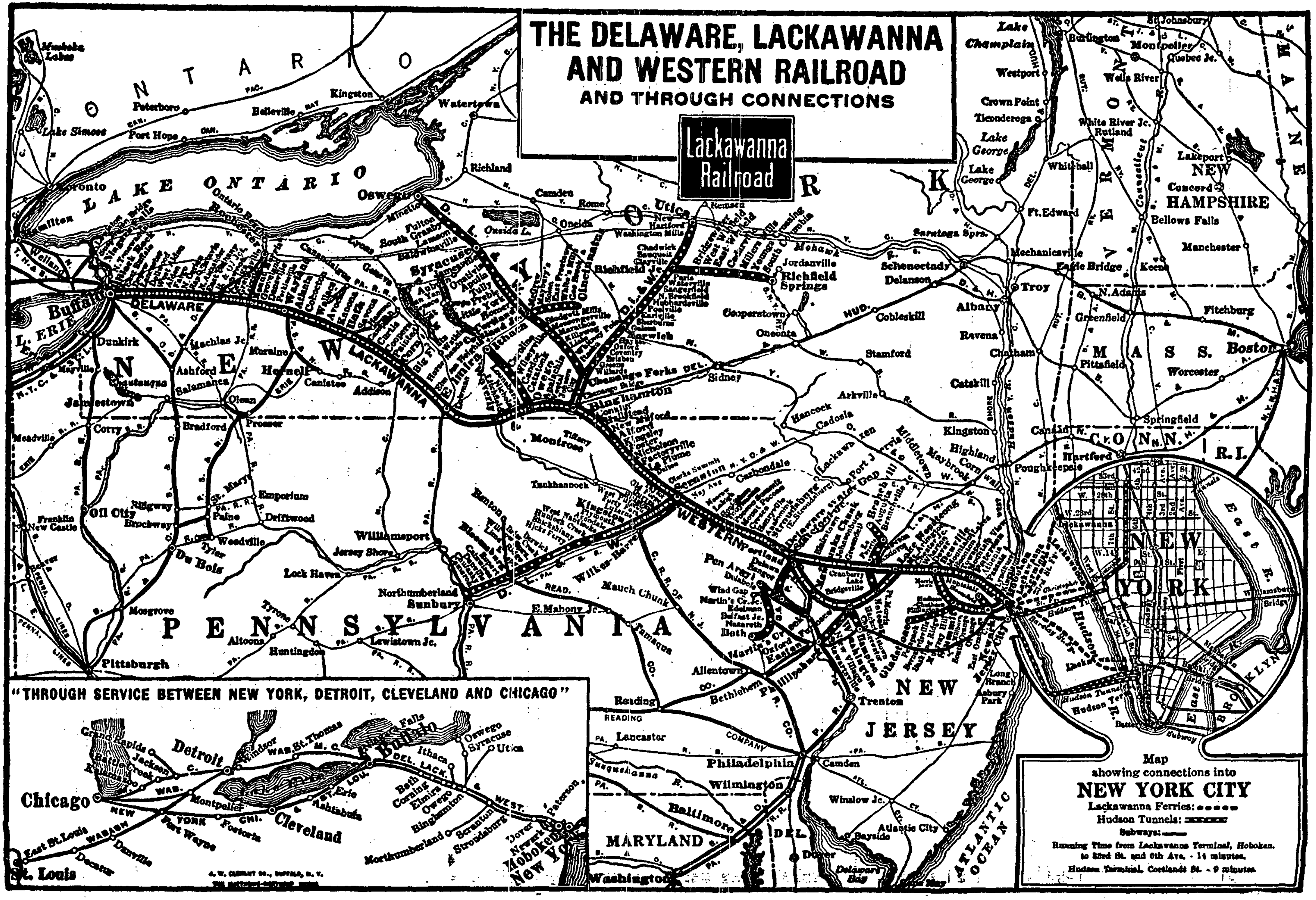
THE DELAWARE, LACKAWANNA AND WESTERN RAILROAD
AND THROUGH CONNECTIONS
Lackawanna Railroad
"THROUGH SERVICE BETWEEN NEW YORK, DETROIT, CLEVELAND AND CHICAGO"
Map
showing connections into
NEW YORK CITY
Lackawanna Ferries:
Hudson Tunnels:
Subways:
Running Time from Lackawanna Terminal, Hoboken, to 23rd St. and 6th Ave. - 14 minutes.
Hudson Terminal, Cortlandt St. - 9 minutes.
ONTARIO
LAKE ONTARIO
NEW YORK
PENNSYLVANIA
NEW JERSEY
MARYLAND
NEW HAMPSHIRE
MASS.
CONN.
R.I.
ATLANTIC OCEAN
Buffalo
Binghamton
Scranton
Syracuse
Utica
Oswego
Ithaca
Elmira
Hoboken
Philadelphia
Pittsburgh
Boston
Albany
Detroit
Cleveland
Chicago
St. Louis

E.J. LAVINO AND COMPANY NO. 3

Owner(s): Poland Spring Company (Hiram Ricker & Sons) — Road Number(s): 2
E.J. Lavino & Company — 3

Whyte System Type: 0-6-0T Saddle tank **Class:**

Builder: American Locomotive Company, Schenectady Works

Date Built: April 1927 **Builder's Number:** 67536

Cylinders (diameter x stroke in inches): 16 x 24

Boiler Pressure (in lbs. per square inch): 180

Diameter of Drive Wheels (in inches): 44

Tractive Effort (in lbs.): 21,400 (also reported as 21,720)

Tender Capacity: **Coal (in tons):** 1 **Water (in gallons):** 1,500
Oil (in gallons): Not applicable

Weight on Drivers (in lbs.): 107,000

Remarks: Locomotive has Stephenson valve gear, rigid wheel base of 10 feet, 2 inches.

E.J. Lavino and Company 0-6-0T Locomotive No. 3

History: Under specifications dated October 28, 1927, the American Locomotive Company outshopped an 0-6-0T industrial switching locomotive with the road number 2 on the sides of its cab, on the rear of the coal bunker, and on the front number plate. The engine featured the builder's standard striping, probably in white, for industrial locomotives, and on each side of its saddle tank appeared the words "Poland Spring." Behind those two words lay 173 years of Maine history.

On April 14, 1761, Jabez Ricker, then 19 years of age, descendent of a family in Saxony that spelled its name Riccar, married 18-year-old Molly Wentworth of Berwick, Maine. His father, Joseph Ricker, gave him roughly 50 acres of land near Great Falls, and after the father's death about 1771, Jabez inherited another 107 acres. In 1775 he sold all this land for $3,000, with which he purchased land in Alfred, Maine, that included a stream that he could harness. There he built a water-powered sawmill and a water-powered grist mill. In 1793, Jabez visited what was to become the Poland area in Maine, and became entranced with a particular hill owned by the religious sect known as the Shakers. In 1794 he traded his land and mills in Alfred to the Shakers for the 300 acres that included that hill and, incidentally, a spring.

When Jabez brought Mary and their 10 children to their new property, it had a single frame house with one chimney and no hearth. No roads reached the vicinity and Jabez had no neighbors. The family arrived at night and the daughters cried out of homesickness. The next morning two strangers appeared and sought to purchase breakfast; Molly served them a hot meal, initiating a Ricker hospitality which in the next century would blossom and become institutionalized.

In 1794, Jabez Ricker and his sons, Wentworth, Samuel, and Joseph, began construction of a large, two-story gable-roofed house with a large attic, two high chimneys laid up of brick made on the shore of a pond or lake a mile away. With two fireplaces per chimney per floor, those on the ground floor were so large they could burn logs six feet long. Completed in 1797, this house, named the "Wentworth Ricker," served as an inn on the stage line between Montreal and Portland, Maine. The Rickers built a 30-by-32-foot, five-stall stable near the house. Their property became a relay station for the stagecoach line and its fame grew. The men added a woodshed and cider house behind the inn. With profits Wentworth earned teaming supplies for the U.S. Army during the War of 1812, Samuel framed a large barn in 1813. In 1825 the Ricker sons erected a much larger stable, said to have been the best hotel stable in the state of Maine. Wentworth retired in 1834 and turned the business over to his 25-year-old son, Hiram. Wentworth died in 1837.

Construction of railroads in the 1840s diverted much patronage away from the inn and slowed its business. Hiram Ricker branched out into buying and selling sheep, making wool cloth, and handling lumber. By this time Hiram suffered from stomach trouble, possibly an ulcer, which physicians pronounced incurable. While haying in 1854, Hiram drank water from the mineral spring Wentworth had once used, which issued from a fissure in a ledge of rock near the summit of the Ricker hill. Usually people drank the water with molasses and ginger to make it more palatable, in view of its mineral content, but Hiram Ricker had no molasses or ginger with him while haying, so drank it pure and unadulterated. After a number of days, his stomach trouble diminished and cleared up, though he did not then associate his cure with the spring. Eventually Hiram remembered Wentworth being cured in 1827, and that even earlier, in 1800, Joseph Ricker had had a fever and asked for water, and the doctor, whose prognosis was that Ricker would be dead by morning, said he could have all he wanted. Of course, by morning, Joseph's fever had dropped, and he was to live another 52 years.

Eventually recalling this earlier family experience with the spring, Hiram began talking about the Ricker's mineral spring as a medicinal cure. Of course, many scoffed at his claims. In 1859, a skeptical neighbor, William Schellinger, turned a dying ox loose in the field, which included the spring. The poor animal had been failing for some months, and had become so weak that from time to time it would fall over while simply walking. After some time in the pasture, drinking water of the spring, the ox began to gain strength and weight and before summer ended, proved to be heavier and healthier than ever before. When eventually Schellinger slaughtered it, the butcher found evidence that it had had a kidney disease that had been cured.

Schellinger himself had little faith in Hiram Ricker's claims of the spring's medicinal properties until the episode of the ox, but himself suffered from kidney trouble, so he began drinking the mineral water, and soon began to recover.

That same year, 1859, Hiram Ricker built a crude log spring house over the water source, and made his first commercial sale of a container of the water, a 3-gallon demijohn he put on the Portland stage for 15 cents.

Subsequently a father brought his supposedly incurably ill daughter to drink from the spring. Twelve-year-old E.P. Ricker brought her a 3-quart pail of mineral water direct from the spring, and the following day she was well enough to return to Portland. Dr. Elephelet Clark continued having her drink water from the Poland Spring, and the girl was to live more than 40 years longer. The doctor became convinced of the mineral water's medicinal value. In 1860, Hiram set up resident sales agents in Boston, and as the fame of Poland Spring water spread, orders came from as far away as the South and the Pacific Coast.

In two years, sales increased to 1,000 barrels. Hiram turned the property over to his eldest son, Edward P. Ricker, then 22, in 1869, and the latter immediately began to develop it. Many people came to the spring itself for a cure, and in 1869-1870, the Rickers had to enlarge the old inn, adding another nine-room story to the building. In 1870, they shipped 5,000 barrels of Poland Water.

Originally the Rickers had dipped water from a 5- or 6-quart basin carved out of the rock. In 1872, they enlarged the stone basin to a 30-gallon capacity and bailed water out with a pail. In 1872, increasing patronage forced them to demolish the woodshed and cider house behind the old inn and build a seven-room addition to the building in their place. The inn came to be called the Mansion House.

Alvan Ricker, the second son, joined the firm in 1875, and in 1876 a man named Albert Young, of Auburn, became a partner. The firm built at the crest of the hill a large four-story frame hotel called the Poland Spring House, which featured a six-story tower at one corner. The building extended 200 feet wide across the front and had 100 rooms. It superseded the old Mansion House, but the latter continued to operate as an economy hotel compared with the elegant, first-class Poland House. Hiram Wentworth Ricker, a third son, joined the firm in 1880, and in 1881 the Rickers bought out Young, established the firm of Hiram Ricker and Sons, Inc., and spent $20,000 improving both the interior and the exterior of the posh Poland House. Within 3 more years receipts had doubled, and sale of spring water increased about a thousand barrels per year, grossing $3,000 in 1883. In 1883 and 1884 the Rickers enlarged the Poland House by 64 rooms and a music hall, and the Mansion House to a total of 66 rooms. In 1887, they built an annex to the Poland Spring House featuring a billiard hall and another 24 rooms, made other miscellaneous improvements, and enlarged the stable built in 1825. In

1889 the company added yet another 50 guest rooms to the Poland House, again remodeled the rest of the building, and relandscaped the grounds.

The year 1893 proved a banner year for the Ricker firm--for Poland Water won the Grand Prize for mineral waters at the Columbian Exposition in Chicago, and in Poland, Maine, the firm added a south wing to the Poland House featuring 20 bathroom suites. In 1894, the firm built a southwest wing that included a photographic studio and darkrooms available to guests who were amateur photographers. More notable, that year the company purchased the Maine State Building from the Chicago Fair for $30,000 and paid $3,000 to have it disassembled, loaded, and moved by a 16-car train to Poland, Maine. There workmen reassembled it in front of an oak grove beside the hotel to serve as a library, museum, and art gallery, where it still stood in 1988.

On the debit side of the ledger, on August 21, 1894, the stable burned to the ground, killing 27 horses and destroying all the harness, robes, coach equipment, and other tack. The Ricker firm scraped together enough equipment to haul 70 people the next day, and in four days had replaced all the horses and equipment lost in the disastrous fire. In 1894 and 1895, the Rickers erected over the site of the burned stable a 152-foot-wide new stable with two wings, a steel roof, and a carriage house with sleeping rooms above.

By the end of the century, the Rickers had added a nine-hole golf course, later extended to 18 holes. Devotees of tennis found a tennis court on which to play. The hotel added one of the first automatic sprinkler systems in a New England summer resort. Soon it featured telephones in every room. Some rooms had bathtubs with three faucets: hot water, cold water, and Poland Spring mineral water, for those who wished to bathe in it. A firing range accommodated guests who liked to shoot. A 500-acre farm and a 125-acre kitchen garden supplied produce to the hotel. Peas alone occupied 5 acres, and the farm and garden also had 3,000 tomato plants and grew cucumbers, cabbage, beets, lettuce, Swiss chard, and radishes by the ton. A hotel dairy farm kept 100 milk cows as well as other herds. Additionally, the hotel purchased produce from Shaker farms in the vicinity. The Shakers kept Rhode Island Red hens, which supplied eggs and poultry, and they also raised 250 hogs for the hotel. At the resort itself, meanwhile, Hiram Ricker and Sons further enlarged the Mansion House and added a bathhouse. In 1912, a stone All-Souls Chapel was erected near the Maine State Building. The resort continued to prosper in the Edwardian Age in America as it had in the Victorian.

Poland Spring and its bottling facilities had experienced a parallel development. In 1862, the Rickers demolished the original log springhouse built in 1859 and replaced it with a larger frame structure. That lasted until 1876 or 1877, when it was necessary to build a special building to house the filling of barrels. This new structure measured 30 by 60 feet and was designed so that water ran directly into the barrel being filled. Soon the firm had to add a cooperage to manufacture barrels, since by 1880 it was selling 5,000 barrels of Poland Water annually. In 1882, the firm enlarged both of the buildings at the spring. In 1883 the firm opened a New York City outlet. By 1885 demand for Poland Water had so increased and technology so advanced that bottling had largely taken the place of barreling, and the firm again enlarged the barreling house and added machinery for bottling and packaging.

A major overhaul of the process for packaging Poland Water took place in 1906 and 1907 when the firm erected a new springhouse and bottling plant. The springhouse, of Spanish design, featured interior walls and columns in Italian Pavonazzo marble and mosaic floors. The company encased the original spring itself in Carrara marble and plate glass with a solid bronze grille. Silver and glass pipes carried the water from the spring into highly polished granite tanks sealed with plate glass. The springhouse featured filtered air.

Near the springhouse was a large building that contained the bottling and labeling and packaging rooms, connected by a conveyor belt. The company bottled Poland Water in bottles reminiscent of those used for champagne, featuring mainly green labels, stopped with branded corks and sealed with a paper tape. Encased in boxes, the Poland Water went into a large storehouse.

Two railroads served the vicinity of Poland Spring by that time, the Maine Central at Danville Junction and the Grand Trunk at Lewiston Junction. Carriages from the hotel met guests, generally at Danville Junction, for the 5-mile ride to the Poland Spring House, or at Lewiston Junction if they came in on the Grand Trunk from northern Vermont or New Hampshire or Canada. Drayage wagons, meanwhile, hauled the barrels and later, boxes of bottles of Poland Water from the warehouse near the spring to Danville Junction for shipment to market. The one further step of modernization was to build a branch railroad from the bottling plant to one of the railroads, but in the majority of promotional literature on the history of the Poland Spring Resort and of Poland Water, this aspect of the operation has been largely ignored. Even the date of construction remains a puzzle. It seems likely that a railroad, whose unknown length has been speculated as ranging from 3 to perhaps 7 miles, was constructed as part of the 1906-1907 modernization of the bottling, packaging, and shipping plant at Poland Spring, in which case the company must have rented or leased a locomotive from the Maine Central or some other nearby railroad. Or the firm may have built the railroad as late as 1910, when the company purchased its first locomotive.

On April 12, 1910, the company purchased a small, coal-burning 0-4-0 locomotive with a sloped tender from the Maine Central Railroad. It was not a new engine, having been outshopped by the Manchester Locomotive Works on May 29, 1893, as Locomotive No. 6 of the Portland and Rumford Falls Railroad. It had become the Maine Central's second No. 12 on April 26, 1907. Almost as soon as the Poland Water company acquired it, the firm converted the locomotive to burn oil on May 25, 1910. A painter lettered its tender "Poland Spring R.R." Thereafter, the little locomotive trundled boxcar loads of shipments of Poland Water from the bottling plant down to a junction with the Maine Central known as Riccars, after the original spelling of the Ricker family name, and brought back empty boxcars to be filled. No evidence has been found that the Poland Spring Railroad ever carried passengers to the resort, though on occasion a child or two managed to wangle a ride in the locomotive cab with an obliging engineer. Evidence as to whether the company owned any of its own cars is conflicting. One man recalled that the company owned some of its own boxcars. Examination of several issues of the *Official Railway Equipment Register* of different dates revealed no listing of cars owned either by a Poland Spring Railroad or Hiram Ricker and Sons, but the question has not been settled conclusively. A man named Ralph Clark served as engineer on the Poland Spring Railroad for many years.

In 1927, the firm of Hiram Ricker and Sons ordered from the American Locomotive Company a second locomotive for the Poland Spring Railroad, for by that time No. 1 was 34 years old and probably needed work. It is also possible that in the Roaring Twenties, sales of Poland Water had so increased that at times the railroad needed two locomotives to handle switching at both ends of the line and traffic between.

The Poland Spring Company (Hiram Ricker & Sons) purchased its first plant switcher on April 12, 1910, an old 0-6-0 with a sloped tender built by the Manchester Locomotive Works in 1893 for the Portland & Rumford Falls Railroad. The Poland Spring Company bought it from the Maine Central Railroad, who had owned it since 1907. It served until 1927, when the company ordered from the American Locomotive Company its second locomotive, 0-6-0T No. 2, which later worked for E.J. Lavino & Co. before ending up at Steamtown.

Above, collection of Catherine Lennihan
Below, collection of H.T. Letcher

The American Locomotive Company reportedly outshopped Poland Spring Railroad No. 2 from its works at Schenectady, New York, in August 1927, though the builder's specification sheet No. A-12412 carried the date of October 28, 1927. The new locomotive featured 16-by-24-inch cylinders (16 inches in diameter with a 24-inch stroke) and 44-inch-diameter drive wheels, six coupled. It was, in other words, an 0-6-0T, a switch engine with a saddle tank over the boiler for 1,500 gallons of water and a bunker behind the cab for 1 ton of soft coal. Its firebox measured 62-1/8 inches long by 42-1/4 inches wide. The boiler carried an operating pressure of 180 pounds per square inch and contained 157 seamless steel tubes or flues, each 2 inches in diameter 11 feet long. It had a rigid wheelbase of 10 feet 2 inches. The firebox grate area was 18.2 square feet, and the engine provided a maximum tractive effort of 21,400 pounds. The locomotive weighed 107,000 pounds. It had a straight top boiler and a steel plate cab, and featured Richardson balanced steam chest valves and Stephenson valve motion. A modern triple-feed bullseye lubricator fed oil to its moving parts. Westinghouse-American combined automatic air brakes applied on all driving wheels, and the system served train connections at both ends of the engine; it featured M.C.B. (Master Car Builder's standard) automatic couplers that met Interstate Commerce Commission height requirements. The locomotive's bumpers were painted red and stenciled "Safety First."

After Hiram Ricker and Sons, Inc., ordered this locomotive, there is some doubt that the company ever used it. Whether it ever left the Schenectady Works, whether the firm took delivery in Maine and simply stored it unused for unknown reasons, or whether the firm used it for some years is unclear. Similarly, when either they or the American Locomotive Company sold it to a second owner is unknown at present. What is known is that the second owner of the locomotive was the firm of E.J. Lavino and Company, which operated a manganese blast furnace at Sheridan, Pennsylvania, and needed a locomotive to switch plant trackage.

Edward J. Lavino founded the company named after him in 1887. A native of Holland, he had served in the 1870s and probably early 1880s as Dutch consul in Turkey (and had a brother who served concurrently as Dutch consul in Singapore). While in Turkey, Lavino founded an exporting business that shipped licorice root that was used in the processing of tobacco, and opium that was used in manufacturing pharmaceuticals. Much of this business was with firms in the United States, and after experience in dealing with American firms, he decided to move his family to the United States to take advantage of the economic opportunity he perceived there. He settled in Philadelphia. From being an exporter of licorice root from Turkey, he became an importer of licorice root to the United States.

Soon Lavino had branched out into the importing of manganese ore from Imperial Russia. The young but rapidly growing steel industry in the United States needed raw materials from which to make steel, and Russians had pioneered a process using manganese in the production of steel. The ore first had to be reduced and combined with iron and carbon in a blast furnace to manufacture an alloy called ferromanganese, which was about 85 percent manganese, 15 percent iron, and 5 percent carbon. On the eve of World War I, Lavino acquired four small blast furnaces that his company converted from the manufacture of pig iron to the manufacture of ferromanganese. These operated at Sheridan and Marietta, Pennsylvania; Reusens, near Lynchburg, Virginia; and near Buffalo, New York. The company disposed of the plants at Marietta and near Buffalo after World War I, but continued to operate the Sheridan and Reusens furnaces, both of which had small steam locomotives. Acquired by E.J. Lavino and Company about 1914, the Sheridan, Pennsylvania, plant continued to operate until about 1970, when due to its obsolescence, the company shut it down and sold it for scrap.

Just when the Lavino company acquired the Poland Spring Railroad engine that became their No. 3 at the Sheridan, Pennsylvania, plant, is unknown. It may have been as early as 1927 or 1928 or as late as 1949, but by the latter date it clearly was at work at the Sheridan plant. At this time a Lavino inspector remarked that "the above locomotive is in good operating condition."

The Lavino company had other locomotives, but a complete roster of its motive power remains to be researched. By the 1950s it had an 0-6-0T side-tank switcher used to switch and dump cars of incandescent molten waste slag at its plant at Reusens, Virginia. The Lavino company painted that locomotive royal blue with yellow trim, and it carried the number 34. The Sheridan plant is known to have had another 0-6-0T with a saddle tank, No. 10, one that had only a single sand dome rather than the two on Lavino No. 3, and with wider spacing between the first two sets of drivers than between the second and third axles. The two surviving Sheridan plant locomotives featured black paint with white lettering and symbol, and today Lavino No. 3 at Steamtown may have the same paint and lettering it had when acquired by Steamtown in May 1966, though the lettering on Locomotive No. 10 was in yellow, not white. Lavino Locomotives Nos. 3 and 34 carried a script "L" in a circle supposedly inspired by the similar symbol used by Lionel, the manufacturer of electric toy trains that reached the height of their popularity in the 1940s and 1950s. Indeed, the symbol is remarkably similar, though not absolutely identical, to two slightly different versions of the Lionel symbol found in toy train catalogs published by that firm.

With the phasing down of its ferromanganese furnaces, the Lavino company shipped its Locomotive No. 3 to Bellows Falls, Vermont, on May 18, 1966. At that time, from its offices at Three Penn Center Plaza in Philadelphia, the Lavino company still constituted a family-owned concern dealing in ores, minerals, and ferroalloys, and presided over subsidiaries as far flung as London, England, and Johannesburg, South Africa, and an affiliate in Amsterdam in the Netherlands.

With the decline of the steel industry, the Lavino firm began to diversify into other areas of enterprise. As already mentioned, the firm dismantled and scrapped the Sheridan plant about 1970, and the Reusens plant at about the same time. During the 1970s the firm acquired the old Baldwin-Lima-Hamilton Corporation, the locomotive firm that had grown out of the old Baldwin Locomotive Works and out of the Lima Locomotive Works when the two major locomotive builders merged. By the 1970s, Baldwin-Lima-Hamilton participated only in the locomotive replacement parts business. Still later, the Lavino company disposed of its interest in Baldwin-Lima-Hamilton to the firm's employees in a leveraged buy-out, after which Baldwin-Lima-Hamilton acquired Joy Manufacturing, a huge enterprise that manufactured underground coal-mining machinery. It reorganized as Joy Technologies of Pittsburgh, which today has the remnant of Baldwin-Lima-Hamilton's replacement part business.

As for E.J. Lavino and Company, it remained a family-owned business that celebrated its centennial in 1987 under the management of Edward J. Lavino, II. In 1988 the firm controlled Geothermal Resources, International, which operated the geothermal wells that produced steam power in Sonoma County, California. The firm also had investments in an equipment leasing firm and in a fiber optic telecommunication system in Philadelphia.

In Maine, the Poland Spring Resort fell on hard times during the Depression. In 1938, Hiram Ricker and Sons, Inc., sold the hotel business to a consortium that included a man named Lane associated with American Firearms, a Daniel Needham of Boston, and the Babbitt Steam Supply Company of New Bedford. The resort struggled on. In 1962 a man named Sol Feldman of Pittsburgh, Pennsylvania, bought the hotels. He donated the Maine State Building and the All Souls Chapel to the Poland Preservation Society in 1976. In 1966 he leased the Poland Spring House and some of the other buildings to the federal government, which contracted with the Avco Corporation to rehabilitate them for use as a Job Corps training center. On July 4, 1975, the Poland Spring House caught fire and burned to the ground. The Mansion House was gutted by fire in 1978, and the ruins then demolished.

Poland Water continued to be a popular mineral water, especially in the eastern part of the United States, and Hiram Ricker and Sons continued to bottle and ship it. The author of this study found it for sale in a small-town grocery in Colorado about 1970. He tried a bottle of it because it had once been carried in the narrow gauge buffet diners of the Denver & Rio Grande Railroad, which at that time he was studying. In 1973, the Perrier Company bought the spring and the bottling plant and in 1977 sold it to a son-in-law of the firm's owner, Paul de Haeue. As of 1988, the bottling plant still bottled and shipped Poland Water, which at that time ranked fifth in mineral water sales in the United States. The firm no longer shipped by its own railroad; however, when it tore out the tracks is unknown.

It is a commentary on the nature of American business that neither the Poland Water firm nor E.J. Lavino and Company seemed to retain records documenting much of their history. As family-owned firms, they did not receive the regular attention of the investment manuals published under the names Poor's and Moody's, which usually provide a rich source of information on American corporate and business history, and in whose annual volumes a historian can trace a company's history from one year to another and obtain year-by-year history of a firm's corporate development, growth, decline, and profits.

Fortunately Edward J. Lavino, II, could recall some of the history of his family's firm, even though the company today cannot provide a roster of all the locomotives it had owned at one time or another. Scattered descendants of Hiram Ricker could recall 20th-century aspects of that firm's history, though no one now associated with the company bottling Poland Water seems to know any of the history of their firm or even to be aware that it once operated its own small railroad. Similarly, no one associated with the Vulcan Iron Works in Wilkes-Barre, Pennsylvania, knows any of that firm's long history of locomotive building. It professes to retain no records of that activity, and the same was true for employees of the H.K. Porter Company, who knew nothing of their firm's locomotive-building past. One may suspect that present-day employees of Joy Technologies have little awareness that their company grew, in part, out of two of the greatest locomotive-building firms in the western hemisphere.

As for E.J. Lavino & Company Locomotive No. 3, it is one of about 19 0-6-0T locomotives that survive in the United States in museums, parks, or fairgrounds, including E.J. Lavino & Company 0-6-0T No. 10 (which the company shipped to the Orange Empire Railroad Museum in Perris, California, but which later moved to a railroad museum at Campo, California, in San Diego County) and E.J. Lavino No. 34, the 0-6-0 side-tank engine from Reusens, Virginia, now in a railroad museum at Roanoke, Virginia.

Condition: E.J. Lavino and Company Locomotive No. 3 is in reasonably good condition on the exterior, probably with the same paint and lettering it had when it left the Sheridan plant in 1966. Its mechanical condition is unknown.

Recommendation: As a technological representative of the 0-6-0T type and because of its historical associations, E.J. Lavino and Company Locomotive No. 3 should be preserved by the National Park Service. Its historical associations with firms established by emigrants from Saxony and Holland (via Turkey) or their descendants provide a tie with the interpretation of the history of immigrants in America. Not all immigrants were Irish or Greek section hands or Chinese or Irish track builders or Japanese railroad laborers. Some, indeed, founded and presided over major companies, as did Hiram

Ricker and his sons of Saxon extraction, though it was Hiram's great-great-grandfather who had emigrated from Saxony. Each of these families came to own industrial or plant railroads. The National Park Service should commission a report comparable to a historic structure report on the subject of this engine, with effort directed especially toward obtaining photographs and reminiscences of the locomotive's service at Sheridan, Pennsylvania, and more information regarding the Poland Spring Railroad and whether or not this locomotive ever actually operated on that line. The report should include the results of a thorough mechanical inspection and evaluation of the locomotive; should recommend which period it should be restored to represent; should document various color and lettering schemes the locomotive had; and should recommend whether or not to restore the locomotive to operable condition and whether or not to operate it for interpretive purposes on occasion. If in fact the locomotive never operated on the Poland Spring Railroad, it should probably be preserved as E.J. Lavino No. 3. Furthermore, because the locomotive appears to have its last paint and lettering scheme for E.J. Lavino and Company preserved intact, this study leans toward carefully cleaning the locomotive and stripping any rust, but otherwise not repainting the locomotive unless that is required for preservation, and instead preserving its existing paint scheme. However, companion Locomotive No. 10 had *yellow* rather than white lettering, and research is needed to determine which color is correct for No. 3. It is not desirable that every locomotive in the Steamtown collection appear to have been freshly painted and outshopped. This locomotive may offer an opportunity to preserve a locomotive as it was at the time it left the railroad industry rather than applying fresh new paint and lettering, however accurately. In other words, it may be possible to preserve its historic paint job rather than to repaint it, if in fact the white lettering *is* a historic lettering.

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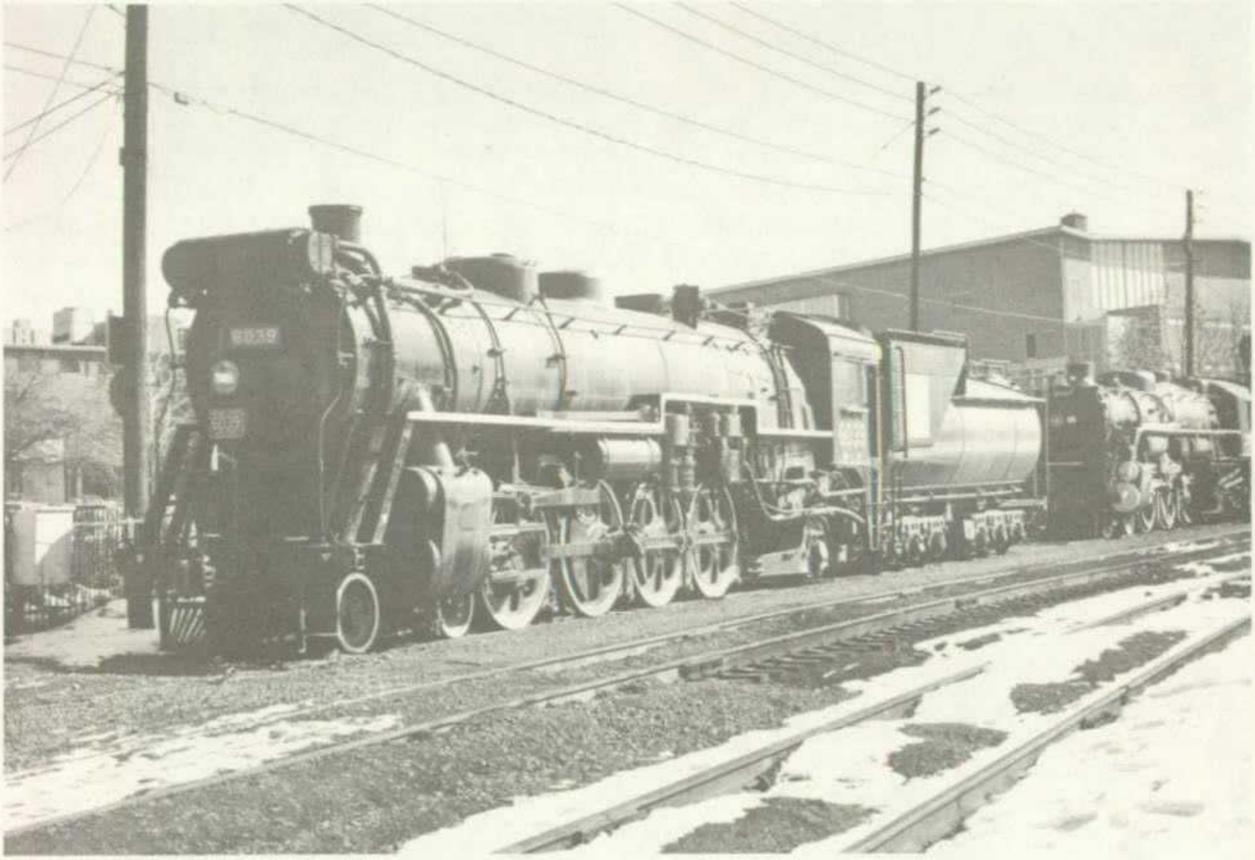
GRAND TRUNK WESTERN RAILROAD NO. 6039



Owner(s): Grand Trunk Western Railway
Grand Trunk Western Railroad

Road Number(s): 6039
6039

Whyte System Type: 4-8-2 Mountain

Class: U-1-c

Builder: Baldwin Locomotive Works

Date Built: June 1925

Builder's Number: 58463

Cylinders (diameter x stroke in inches): 26 x 30

Boiler Pressure (in lbs. per square inch): 210

Diameter of Drive Wheels (in inches): 73

Tractive Effort (in lbs.): 65,000 (also reported as 49,590)

Tender Capacity: **Coal (in tons):** 18
Oil (in gallons): Not applicable

Water (in gallons): 13,575

Weight on Drivers (in lbs.): 231,370

Remarks: Engine has duplex mechanical stoker, vanadium steel main frames, boxpok drive wheels, and a Vanderbilt tender. It has bad cylinder castings.

Grand Trunk Western Railroad 4-8-2 Locomotive No. 6039

History: Incorporated in 1900 in Indiana and Michigan and controlled by the Grand Trunk Railroad of Canada, by 1920 the Grand Trunk Western Railway owned 331 miles of track in Michigan and Illinois and was in its later years the only railroad that provided commuter rail service in and around Detroit. The Grand Trunk Railroad, of course, subsequently was absorbed into the government-owned Canadian National Railways, which thereafter controlled the Grand Trunk Western Railway in the United States. Thus commuters riding to their jobs in Detroit on Grand Trunk Western trains were in fact being hauled by an American railroad owned by the government of Canada.

Three factors influenced the Grand Trunk Western Railway to acquire heavy passenger (and freight) locomotives of the 4-8-2 Mountain type during the 1920s. First, the type became popular in the United States as a result of the great success of an engine of that class designed by the U.S. Railroad Administration in its short-lived attempt to standardize designs of all American steam locomotives when the railroads were briefly nationalized during and just after World War I. Second, the parent Canadian National Railways had purchased 16 of this type of locomotive in 1923 that had also proved to be very successful, to the extent that Canadian National bought another 21 in 1924. Third, during the Roaring Twenties passenger traffic on the Grand Trunk Western, especially on its Chicago Division, had increased to the extent that the company's 4-6-2 Pacifics increasingly had to be double-headed to abide by the timetables, a costly practice that required an extra engine crew, not to mention the additional engine, so that a heavier engine was essential to eliminate the practice.

Accordingly, in 1925 that the Grand Trunk Western Railway took delivery from the Baldwin Locomotive Works on five 4-8-2 locomotives, numbered 6037 through 6041, which it assigned to Class U-1-c. Mechanical Engineer Thomas H. Walker signed the Specification Card on No. 6039 at the Baldwin Locomotive Works on June 26, 1925. These locomotives featured feedwater heaters, power reverse gear, and automatic or mechanical stokers, and they were the first locomotives on the Grand Trunk Western to feature both Vanderbilt tenders and enclosed, vestibuled or all-weather cabs. Although they were purchased for passenger service, the Grand Trunk Western soon learned how successfully they could move hotshot fast freight trains, so that by the early 1930s they could be found, in the words of the railroad's historian, "as often ripping the quiet Michigan and Indiana countrysides apart with fast freight as they could heading up the *Maple Leaf* or the *International.*"

In January 1929, the Grand Trunk Western Rail*road* succeeded the Grand Trunk Western Railway.

During their careers, these engines received a number of modifications. They were manufactured with friction bearings on all tender and engine axles, but during the mid-1930s the Grand Trunk Western equipped them all with more modern and efficient roller bearings on leading and trailing trucks on the locomotive itself. In 1940 and 1941, the railroad installed cowls or smoke deflectors of various designs around the stacks of these engines, following the popularity of the practice on the Canadian National in an attempt to keep the smoke from dropping down and obscuring the vision of the engineer and fireman. The smoke deflectors failed to accomplish much, so the railroad removed all of them in the late 1940s.

The Grand Trunk Western made two other notable modifications of these locomotives. During the 1940s, No. 6039 was reported to have received vanadium steel main frames and "boxpok" drive wheels. Technically called "box-spoke," these drivers had fewer spokes and were of box-section type, Boiler Form No 4

14 46 1/4 E 3

THE BALDWIN LOCOMOTIVE WORKS

Specification Card for Locomotive No. 6039

U/C

Owned by .... Canadian National Railways .... ~~Railroad Company~~.

Operated by .... Grand Trunk Western System .... ~~Railroad Company~~.

Builder, The Baldwin Locomotive Works.

Builder's No. of Boiler 58468

When built .... June, 1925

Where built .... Eddystone, Penna.

Type of boiler .... Inv. Wag. Top, Rad. Stayed

Material of boiler shell sheets ... Steel

Material of rivets. Steel

Dome, where located ..... On 2nd Course

Grate area in sq. ft. 66.7

Height of lowest reading of gauge glass above crown sheet .... 3½"

Height of lowest gauge cock above crown sheet ... 3½"

Water bar tubes, O. diam ..... --- ..... thickness. ---

Arch tubes, O. diam ..... 3" ..... thickness. #7

Fire tubes, number 188 - 40

Fires tubes O. diam. 2¼" - 5½" ..... length. 267"

Safety valves: 184

No.	Size	Make	Style
1	3" ~~3½"~~	~~Consolidated~~ Ashton	Muffled
2	3" ~~3½"~~	Ashton	Open

Firebox stay bolts, O. diam. 1" ..... spaced 4.02" x 4.09"

Combustion chamber stay bolts, O. diam. ..... 1"

Combustion chamber stay bolts, spaced 4.75" x 3.88"

Crown stays, O. diam., 1-1/8"

Crown stays, spaced ..... 4-1/8" x 4-1/16"

Crown-bar rivets, O. diam., top --- ... bottom ---

Crown-bar rivets, spaced ..... --- x ---

Water space at firebox ring, sides ..... 5"

back ..... 5" ..... front ..... 6"

Width of water space at sides of firebox measured at center line of boiler, front ... 6½" ..... back .. 6"

Shell sheets:

Front tube ... 5/8" in ..... thick.

1st course. 25/32 in ..... thick .. 80-7/8" I. diam

2d course. 13/16 in ..... thick. 82⅞-86⅞" I. diam

3d course. 27/32 in ..... thick .. 88-5/16" I. diam

4th course ... --- in ..... thick ..... --- ..... I. diam

Mem.: When courses are not cylindrical give inside diameter at each end.

Firebox: Thickness of sheets—

Tube. 1/2 .. in ... Crown .... and ... Sides ... 3/8 .. in

Door. 3/8 .. in ... Combustion chamber ..... 3/8 .. in.

Inside throat if tube sheet is in two pieces 1/2" ...

External firebox:

Thickness of sheets—throat 13/16 ... in ... back head 9/16 ... in.

Roof ..... and ..... sides .. 5/8" .....

Dome inside diam. ..... 32 .. inches.

Thickness of sheet ..... 3/4" ..... base ... 1" ... liner 1 & 1½"

Were you furnished with authenic records of the tests of materials used in boiler? ..... Yes

Records on file in the office of the Test Department of The Baldwin Locomotive Works show that the lowest tensile strength of the sheets in shell of this boiler is:

1st course ..... 59500 ..... pounds per sq. in.

2d course ..... 63100 ..... pounds per sq. in.

3d course ..... 55730 ..... pounds per sq. in.

4th course ..... ----- ..... pounds per sq. in.

Dome ..... 55630 ..... pounds per sq. in.

Dome liner ..... 61260 ..... pounds per sq. in.

Is boiler shell circular at all points? ..... Yes

If shell is flattened, state location and amount. --

Are all parts thoroughly stayed? ..... Yes

Are dome and other openings sufficiently reinforced? ..... Yes

Is boiler equipped with fusible plugs ... No

Make working sketch here or attach drawing of longitudinal and circumferential seams used in shell of boiler, indicating on which courses used, and give calculated efficiency of weakest longitudinal seam.

U. S. STandard
* form, 12 threads per inch.

The maximum stresses at the allowed working pressure were found by calculation to be as follows:

* Stay bolts at root of thread...5524....lbs. per sq. in.	Round braces..8910....lbs. per sq. in.
Stay bolts at reduced section..-----....lbs. per sq. in.	Gusset braces..........----.........lbs. per sq. in.
* Crown stays smallest section, ...4480....lbs. per sq. in.	Shearing stress on rivets......6160...lbs. per sq. in.
Crown stays or crown-bar rivets at root of thread or smallest section ,bottom....-----....lbs. per sq. in.	Tension on net section of plate in longitudinal seam of lowest efficiency, pounds per sq. in...11870......

Dimensions and data taken from locomotive were furnished by..........................

Data upon which above calculations were made was obtained from drawing No...15691 and 15692.........

dated..................................furnished by The Baldwin Locomotive Works.

.....Thomas H. Walker..........

Mechanical Engineer

STATE OF PENNSYLVANIA }
COUNTY OF PHILADELPHIA, } SS.:

..................Thomas H. Walker....................being duly sworn says that he is the officer who signed the foregoing specification, that he has satisfied himself of the correctness of the drawings and data used, and verified all of the calculations, and has examined the record of present condition of boiler dated................ ...June 26th, 1925........and sworn to by inspectors..H. P. Spain and W. H. Wright... and believes that the design, construction, and condition of boiler No.....58463.......renders it safe for a working pressure of ....210.............pounds per square inch.

.....Thomas H. Walker.....

(Name of Affiant)

Suscribed and sworn to before me

this day of.....July 17th —........1925

Irvin M. Pfeiffer.............

Notary Public

Approved:

NOTARY PUBLIC,
My Commission Expires Jan 23, 1929.

....

like the wheel rim, a design that provided greatly improved lateral strength and rim stiffness. Viewed from the side, the opening between the spokes was circular, rather than wedge-shaped.

The boxpok drivers proved an important modification in high-speed service. Oddly, these modern drive wheels were not all applied at the same time even to a single locomotive. A photographer named Eilenberger recorded Engine No. 6039 at Elsdon engine terminal in March 1939 with boxpok drivers only on the second driver axle, while on September 21, 1941, it had the boxpok drivers on at least the second and third axles (and possibly the first, which is obscured in the photograph), but not on the fourth. By that date, the engine had acquired a rather ugly shielding around the stack which, fortunately, the railroad later removed.

Although engine crews reportedly liked these 4-8-2s, acquisition of still heavier steam power, and later, diesel locomotives, resulted in the railroad downgrading use of the "Mountains," and they served on passenger runs between Detroit and Muskegon.

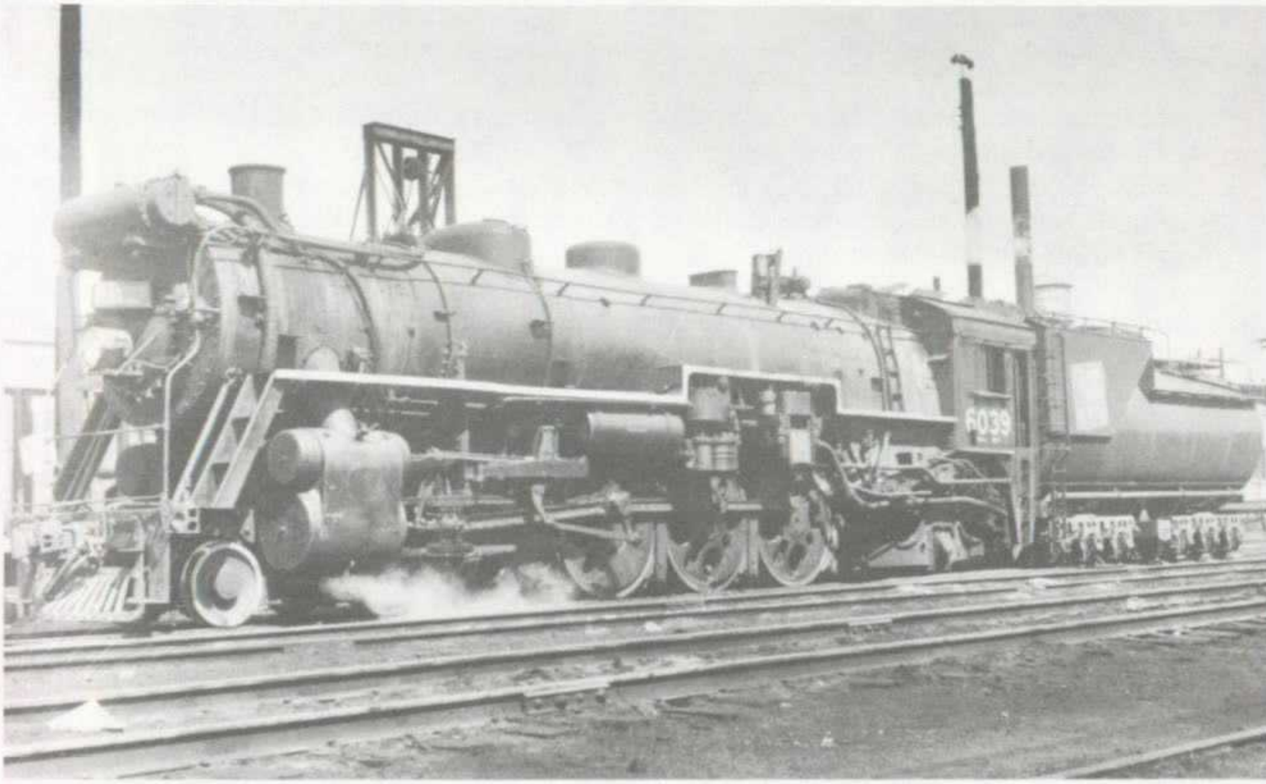
At the end of its career in the 1950s, the Grand Trunk Western Railway leased No. 6039 to the Central Vermont Railway, and it proved to be one of the last steam locomotives in normal common carrier service in the state of Vermont, and the last to survive.

F. Nelson Blount purchased Grand Trunk Western Railroad No. 6039 from the Canadian National Railway Company for his Edaville Railroad at South Carver, Massachusetts, on Sales Order No. S-19802 from the railway's Purchasing Department in Montreal, Quebec, on June 17, 1959, undoubtedly with plans to use it elsewhere than at South Carver. Initially, it was to be shipped to Wakefield, Massachusetts, for exhibit at the Pleasure Island amusement park. Blount paid $7,425 for the engine, which at the time was stored in St. Albans, Vermont. Subsequently the engine was exhibited at Blount's Steamtown located at Riverside, Vermont, just north of Bellows Falls.

Locomotive No. 6039 is one of about 17 Grand Trunk Western Railroad engines that have survived in the United States, of which 10 are 0-8-0 switch engines, so that No. 6039 is one of only seven Grand Trunk Western *road* engines, and the only 4-8-2 of the railroad to survive. No. 6039 is the only 4-8-2 Mountain-type engine in the Steamtown collection, and one of only 14 "Mountains" preserved in the United States, six of which were engines of the St. Louis and San Francisco Railway.

Condition: Although ostensibly in good condition, this engine reportedly has bad cylinder castings, which means that its restoration for operation may not be fiscally within reason, although enough money will buy any type of repair. As with many locomotives in the collection, this engine had its drive rods removed for the move from Bellows Falls to Scranton, and those need to be reinstalled.

Recommendation: This engine is exactly the kind of modern, heavy-duty, main line motive power that should become the primary focus of the Steamtown collection. NPS should commission a report to document the use and physical history of the locomotive. At the very least, it should be restored for use as a static exhibit; however, before undertaking such restoration, the locomotive's mechanical condition should be thoroughly assessed and a decision made regarding whether it can be reasonably restored to operability. If it can be restored to run, it should be so restored for interpretive use and special excursions; if it cannot be restored mechanically, it should be restored cosmetically to serve as a static exhibit engine in the roundhouse.



With a full load of coal in her Vanderbilt tender, Grand Trunk Western No. 6039 awaited a call at Detroit, Michigan, on July 11, 1953.

Photo by Peter Cox, Steamtown Foundation Collection

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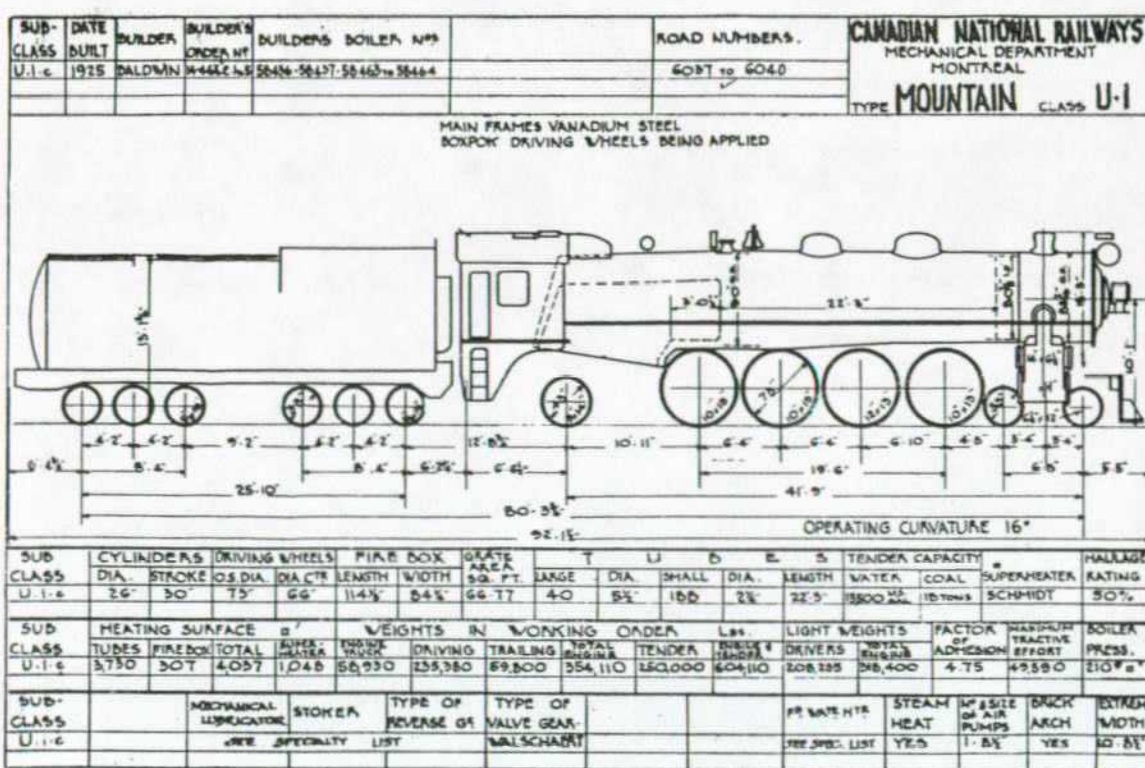
National Railway Historical Society Bulletin, Vol. 32, No. 1 (1967): 36. [Photograph of No. 6039 at Steamtown, Bellows Falls, Vermont.]

Scribbins, Jim. "Grand Trunk Western Keeps its Word." *Trains,* Vol. 16 (Dec. 1955): 18-20. [Article includes photograph of sister Locomotive No. 6038 in commuter service.]

The distinctive cylindrical tank of a Vanderbilt tender graced Grand Trunk Western Locomotive No. 6039, the only tender of this type in the Steamtown Foundation collection.

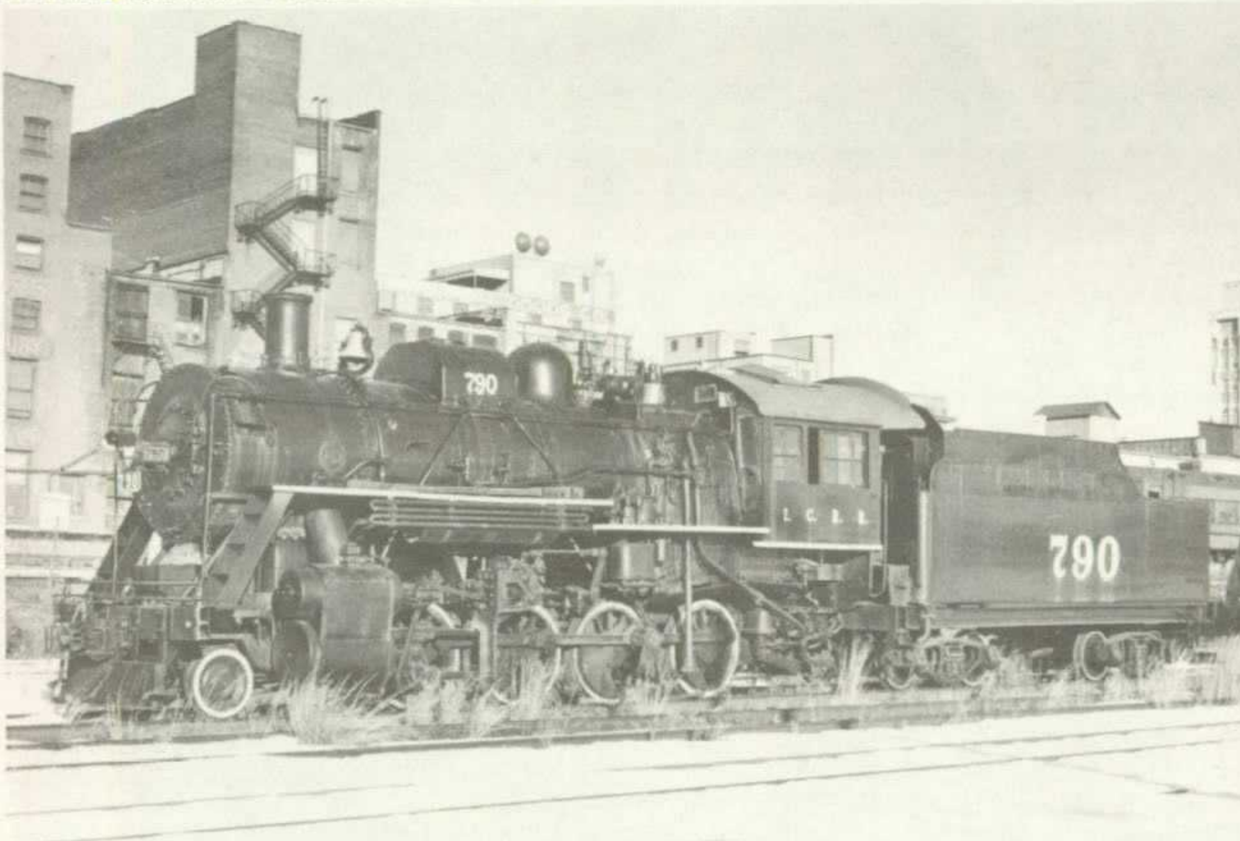
Photo by Gordon Chappell



A Canadian National Railways folio locomotive diagram sheet documented the vital statistics of Grand Trunk Western Locomotive No. 6039, which operated on Canadian National's American subsidiary in Michigan.

Canadian National Railways

ILLINOIS CENTRAL RAILROAD NO. 790



Owner(s): Chicago Union Transfer Railway
Illinois Central Railroad
Illinois Central Railroad

Road Number(s): 100
641
Renumbered: 790

Whyte System Type: 2-8-0 Consolidation

Class:

Builder: American Locomotive Company

Date Built: November 1903; rebuilt: 1918

Builder's Number: 28686

Cylinders (diameter x stroke in inches): 22 x 26

Boiler Pressure (in lbs. per square inch): 190

Diameter of Drive Wheels (in inches): 44

Tractive Effort (in lbs.): 42,000

Tender Capacity: **Coal (in tons):** 8
Oil (in gallons): Not applicable

Water (in gallons): 6,500

Weight on Drivers (in lbs.): 161,000

Remarks: Engine is manually fired, has superheater and Baker valve gear. Locomotive is in fair condition; some work on its machinery is needed to make it operable.

Illinois Central Railroad 2-8-0 Locomotive No. 790

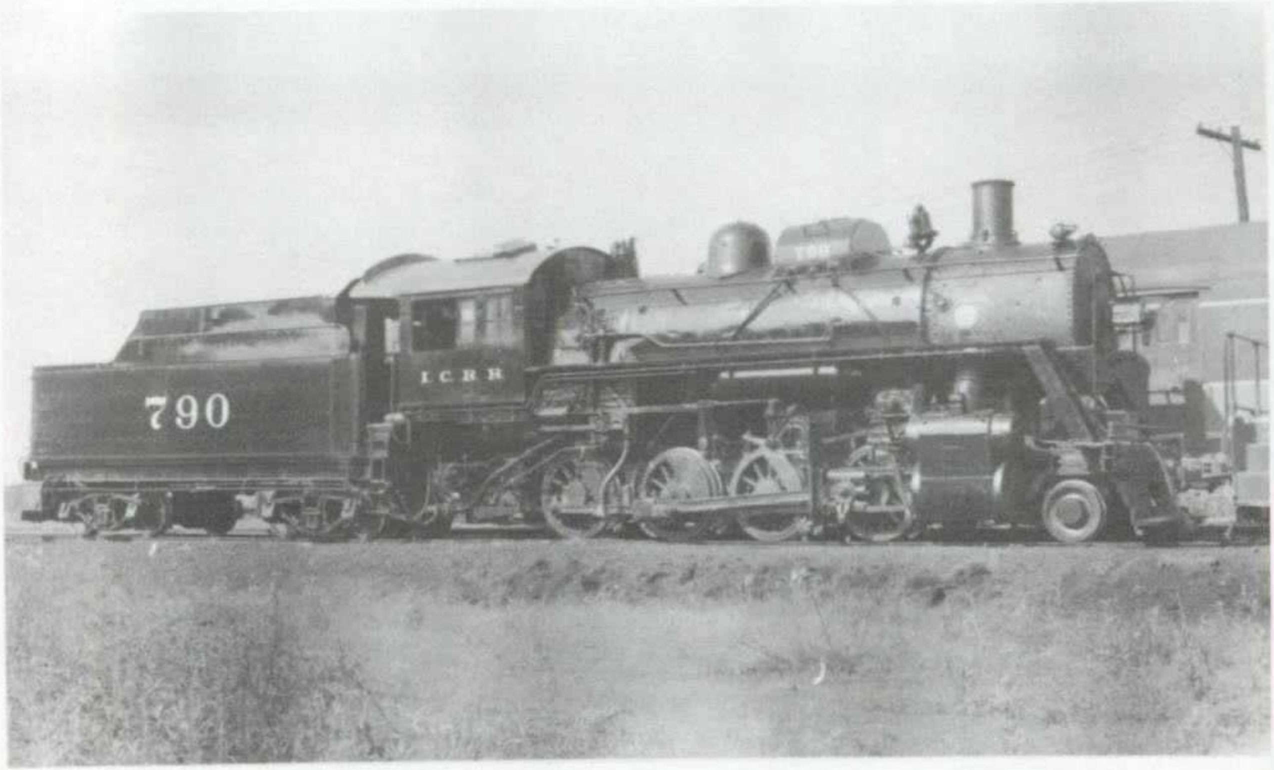
History: Locomotive No. 790 steamed for most of its career on rails of the Illinois Central, but began life with a very brief period of work for another carrier. Chartered on October 31, 1888, by 1900 the Chicago Union Transfer Railway Company had 5.35 miles of line, but with second, third, and fourth tracks counted, as well as 25 miles of sidings, the company reported a total of 34.39 miles of track. In the next 2 years, the company nearly tripled its trackage to 100 miles. It was probably this phenomenal growth that spurred the Chicago Union Transfer Railway to order a group of new 2-8-0 locomotives, among them No. 100, outshopped by the American Locomotive Company in September 1903 at its Cooke Works in Paterson, New Jersey.

The Chicago Union Transfer Railway served as a switching line connecting the trackage of various trunk lines that entered Chicago, and served a number of industries as well. It is likely that a majority of its stock was in the hands of the various major railroads with which it connected. Among its directors, for example, were E.P. Ripley, then president of the Atchison, Topeka & Santa Fe Railway System, and J.T. Harahan, a second vice president of the Illinois Central; a perusal of the biographies of the other directors probably would identify corporate officers of other major Chicago-area railroads.

For reasons unknown, in 1904 the Chicago Union Transfer Railway sold four of its new Consolidations to the Illinois Central Railroad Company, which renumbered them 641 through 644, C.U.T.Ry. No. 100 now becoming Illinois Central No. 641.

As of 1900, the Illinois Central Railroad extended 912 miles from Chicago via Cairo, Illinois, to New Orleans, Louisiana, but if one added in the other main, branch, and leased lines, as of 1902 the company operated 4,265½ miles of track. A comparatively old railroad, chartered February 10, 1851, the Illinois Central had built first to Dubuque, Iowa, which it reached on June 11, 1855, then to Cairo, which it reached on September 27, 1856. It reached New Orleans from Cairo by controlling the Chicago, St. Louis and New Orleans Railroad, whose 547.79 miles of main line between those two points, and 117.2 miles of branch line, comprised a major part of the Illinois Central System.

This was the company that now operated 2-8-0 No. 641, probably principally for freight service, the typical use of Consolidation-type locomotives. The engine reportedly hauled freight trains in Tennessee for many years. The engine must have seen hard service, for reportedly the Illinois Central rebuilt it in 1918, modernizing it with a superheater, and possibly replacing the boiler and firebox. The engine then continued in heavy freight service. In January 1943 the Illinois Central renumbered the four engines in this series 790 through 793, and thus No. 641 became No. 790. The Consolidation remained on the company's roster until virtually the end of steam power on the Illinois Central. Near the end of her use, when she was virtually retired to storage by diesel-electric locomotives, the railroad nevertheless had to fire No. 790 up in the spring to assist Illinois Central trains through track inundated by flood waters near Cedar Rapids, because diesel-electric locomotives with their electric motors shorted out in any water, whereas even the bottom of the firebox in a steam locomotive was much higher above the rail, hence above flood waters. Finally in May 1959, the Illinois Central sold No. 790 to Louis S. Keller of Cedar Rapids, Iowa.



Illinois Central Railroad Consolidation No. 790 showed a "well-groomed" appearance in this photograph from the collection of Gerald M. Best.

California State Railroad Museum Library

Keller had hoped to run Illinois Central No. 790 on railfan excursions between Cedar Rapids and Manchester, Iowa, a round trip of some 84 miles. Whether he succeeded in running any trips at all is not known. In April 1965, Keller apparently sold or leased the locomotive for more flood duty, and the Chicago & North Western towed the engine to Clinton, Iowa, where it plowed through overflow from the Mississippi River for the Clinton Corn Processing Company. Later, in September 1965, the locomotive was sold to David de Camp of New York State, who hoped to operate it near Lake Placid. He moved No. 790 to Lake Placid but never operated it. F. Nelson Blount purchased the locomotive in January 1966. Eventually the Steamtown Foundation acquired the locomotive from Blount's estate in August 1967.

Locomotive No. 790 is the only surviving locomotive of the Chicago Union Transfer Railway, and one of about nine Illinois Central Railroad steam locomotives to survive scrapping. Of those nine engines, one other, No. 764, is a 2-8-0 Consolidation type, though of a different class and series than No. 790. About 146 standard gauge 2-8-0s survive in the United States, including Illinois Central No. 790.

Condition: Locomotive No. 790 is believed to be in reasonably good condition, and with some work could be restored mechanically to operable condition.

Recommendations: While the Steamtown collection has other Consolidations, none are duplicates in aspects other than wheel arrangement, and No. 790, with its Baker valve gear and its unusual sand dome, is a good example of a heavy-duty 2-8-0 of the early years of the 20th century. The National Park Service should commission a report, equivalent to a historic structure report, that should include intensive research into photographic history, particularly attempting to find photographs of this engine or engines of its class on the Chicago Union Transfer Railway and under its first number on the Illinois Central prior to the remodeling of 1918. The report should also supply more detail than presently available on the operating history of this engine and engines of its class. The report should make recommendations on which period the locomotive should be restored to represent--at present, it seems preferable for the locomotive to be restored to represent the final era in its common carrier history, from 1941 to 1959, though it may also be possible to restore it to the 1918 to 1941 period. It is not believed at present feasible or desirable to restore the locomotive to appearance prior to the 1918 rebuilding. The report should explore fully the history of paint, lettering, and numbering schemes applied to this locomotive. If it is feasible to restore No. 790 to operable condition, it should be so restored, and used for interpretation, special occasions, and special excursions.

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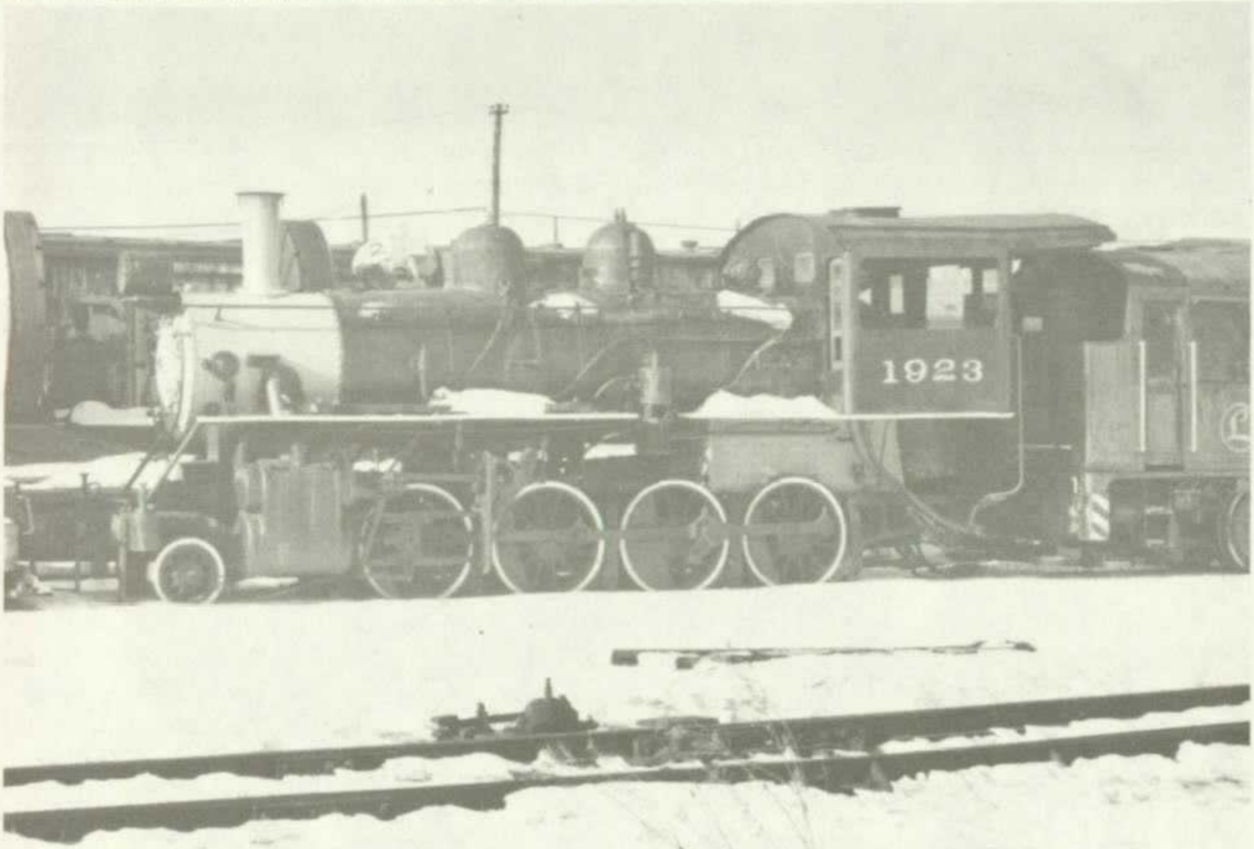
ILLINOIS CENTRAL

LOWVILLE AND BEAVER RIVER RAILROAD NO. 1923



Owner(s): Compañía Azucarera Central Reforma
Lowville and Beaver River Railroad

Road Number(s): 8
1923

Whyte System Type: 2-8-0 Consolidation

Class:

Builder: American Locomotive Company, Cooke Works, Patersen, New Jersey

Date Built: October 1920, resold March 1923

Builder's Number: 62623

Cylinders (diameter x stroke in inches): 18 x 22

Boiler Pressure (in lbs. per square inch): 178

Diameter of Drive Wheels (in inches): 50

Tractive Effort (in lbs.): 23,800 (also reported as 28,400)

Tender Capacity: **Coal (in tons):** Not applicable
Oil (in gallons): 1,800

Water (in gallons): 5,000

Weight on Drivers (in lbs.): 106,500 (also reported as 106,000)

Remarks: Locomotive has parts missing; with repairs, it could be operated.

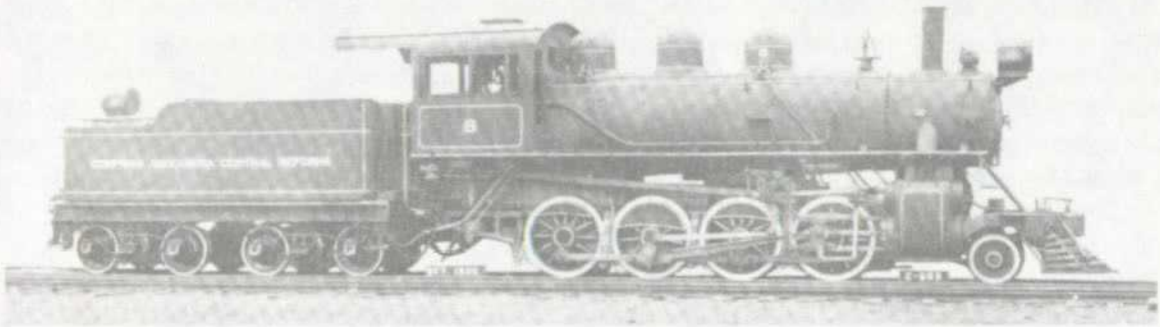
Lowville and Beaver River Railroad 2-8-0 Locomotive No. 1923

History: American railroad locomotive builders had by the turn of the century obtained a sizable share of the export market for locomotives in certain parts of the world, although they faced stiff competition from various English, French, and German firms. American locomotives dominated Latin America, with notable exceptions of Argentina, Brazil, and to some extent Chile, and went to locations as diverse as Japan, Formosa, China, Manchuria, Russia, and Australia.

On October 5, 1920, the American Locomotive Company prepared a set of specifications for a 2-8-0 Consolidation-type Locomotive No. 8 for a Cuban sugar plantation railroad, that of the *Compañía Azucarera Central Reforma*. It was a pretty little engine with clean lines equipped with a Pyle-National headlight, a steel, horizontal slat pilot, a steel cab, and a second sand dome behind the steam dome to feed sand to the rear drivers. The little standard gauge engine had piston valves and Walschaert valve motion. Unfortunately, after the company had completed the locomotive and photographed it in its new builder's paint job, the deal fell through. Failure to ship the locomotive to Cuba has been attributed to a Cuban revolution. Perhaps. But the February Revolution in which the Liberal Party tried to overthrow President Mario Garcia Menocal had occurred in 1917, and all that took place in 1920 was a disputed election from which the Liberal candidate, Jose Miguel Gomez, withdrew, prematurely, some thought. The period following World War I in fact encompassed prosperity and rapid growth in the Cuban sugar industry. So the reasons that Locomotive No. 8 never went to Cuba to roll over the rails of the *Compañía Azucarera Central Reforma* remain far from clear. Nevertheless, the little engine intended for Cuba gathered dust for the next two and a half years awaiting a home.

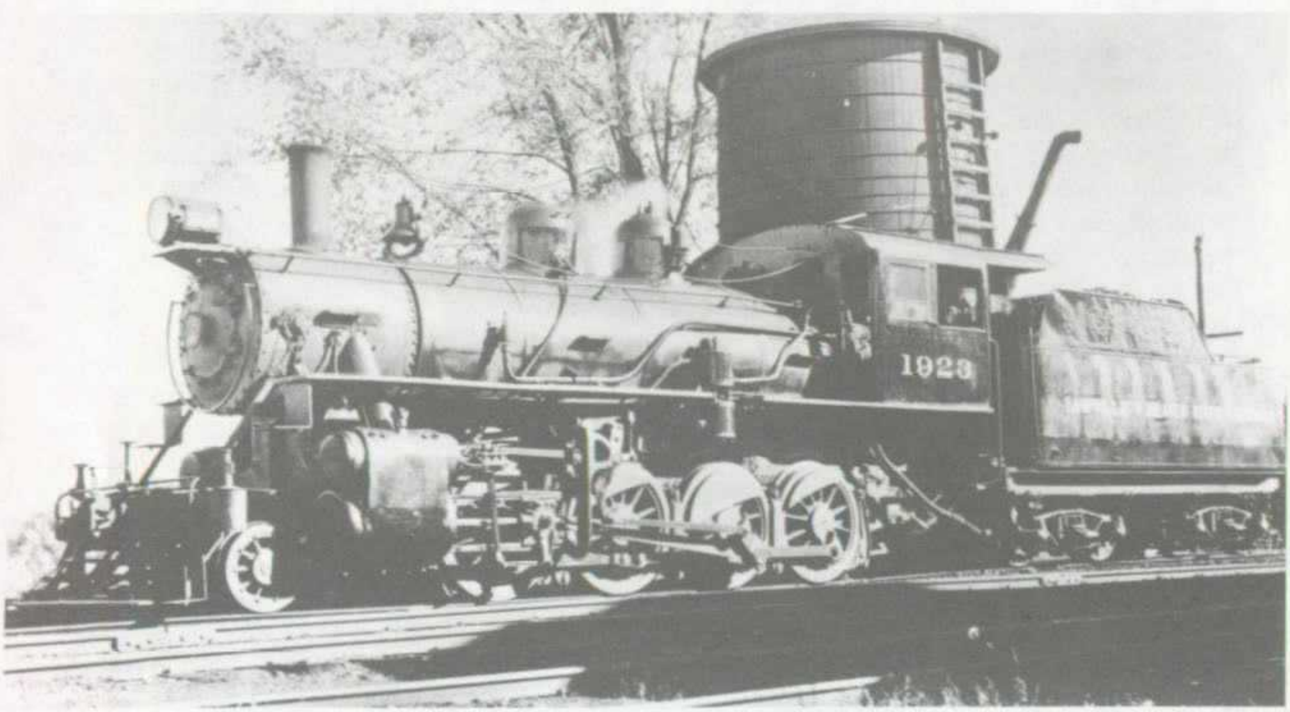
Home for the orphan turned out to be only one state away from her place of birth at the Cooke Works in Paterson, New Jersey. In 1923, the Lowville and Beaver River Railroad, a short line in New York State's North Country just west of the Adirondacks, from which the Beaver River drained, sought a new locomotive as a result of the same postwar economic boom that made the failure of the Cuban company to complete purchase of its locomotive so inexplicable. American Locomotive had to remove the oil burner from the firebox and the oil tank from the tender and convert the grates to burn coal fuel, but once the company had completed that work the New York short line had adopted a spiffy little engine that would serve until the end of steam.

There seemed little rhyme or reason to the railroad's numbering of its first three engines, Nos. 10, 12, and 51, which were all second hand; the Lowville and Beaver River may simply have continued to use the numbers the engines had acquired while operating for previous owners. In 1912, however, the Lowville and Beaver River ordered its first brand new locomotive, a 4-6-0, from the American Locomotive Company's works in Schenectady, New York, and at this time management made a decision that the year of purchase would henceforth be the locomotive's road number, so the new 4-6-0 became Locomotive No. 1912. In 1923, when the company decided to purchase the orphaned *Compañía Azucarera Central Reforma* Locomotive No. 8, management decided it would become Lowville and Beaver River Locomotive No. 1923. The company would subsequently follow the same practice with its two 44-ton General Electric diesel-electric locomotives in 1947 and 1950. (The latter, though built in 1950, was not actually acquired until 1963.)



Compañía Azucarera Central Reforma ordered its Consolidation No. 8 from the American Locomotive Company, which was prepared to deliver it at the time it made the above photograph in 1920. For reasons unknown, the Cuban sugar plantation that had ordered it either failed to pay for the locomotive, or for other reasons failed to accept it. Three years later, the Lowville & Beaver River Railroad, a short line in the Adirondack region of upper New York State, purchased the locomotive, and as the company had done in 1912 with an earlier engine, gave its new motive power as a road number the number of the year they had acquired it--No. 1923. Note the spoked wheels that the new owner eventually substituted in the view below.

Steamtown Foundation Collection



Locomotive No. 1923 would have few more miles over which to operate in New York than on a Cuban plantation, perhaps less, for its new owner possessed only 10.44 miles of main track, plus the usual proportion of sidings, in this case 3.19 miles in the aggregate. Supposedly the idea for the railroad occurred in the local businessmen's club, the Lowville Club, either over a card game in the back room or simply in a discussion. Some unknown gentleman raised the issue of a railroad to connect Lowville with Croghan, New York, where it would connect with the New York Central and Hudson River Railroad. One thing led to another, and soon all present agreed that a railroad was just the ticket. Most prominent among them, coal dealer G.A. Blackmon, who incidentally had built the Lowville Club in which they were meeting, took the business in hand and on August 3, 1903, formed the Lowville and Beaver River Railroad Company.

First he collected an investment of $11,000 from a few friends and business colleagues. Then he went out by horse and buggy into the farm country north of the Black River, where he told farmers that the railroad would make shipping milk to New York City easier and increase their milk receipts. "Why, it'll haul all your produce and cattle out, and any goods you buy practically to your doorstep. The price is $100 per share. How much shall I put you down for?" After several weeks of this, Blackmon had $60,000 in subscriptions to stock. Then he went after and obtained another $50,000 from businessmen and townspeople in Lowville and vicinity. By February 24, 1924, the initial offer of capital stock had all been taken, though the company would later have to increase the capitalization to cover construction costs.

That spring, C.E. Brownell surveyed two routes and that summer James T. Campbell won the contract for construction of the line. Despite labor troubles, the need to construct a long trestle over the Black River flats, and the subsequent death of Campbell, the building of the railroad continued through 1904 and 1905 until the construction crews completed it in January 1906. The railroad had the usual ups and downs, but began paying dividends on common stock in 1925 and supposedly continued with a lapse of but one year until the late 1950s. A possibly apocryphal tale has it that during one of the years of the Great Depression, the Lowville and Beaver River was the only railroad in the country to pay a dividend. That meant that except during her first two years of service on the road, and one year during the Depression, Locomotive No. 1923 had the pleasure of working for a profitable little company.

It was not a company without misfortune, however, and the Lowville and Beaver River suffered its share of derailments and accidents. More serious, around 1938 during a bitter cold North Country winter, the railroad's engine house burned down with No. 1923 in it, the fire undoubtedly melting babbitt metal and possibly some of the brass and other parts. With much welding, sheet metal work, and new brass, the company was able to reclaim the scorched locomotive, though four years later a visitor would remark about the Consolidation "still bearing heat marks on her tender-plate from a fire which nearly destroyed her years ago."

No. 1923 continued to haul passengers until January 10, 1947, when the railroad discontinued the service, but the locomotive continued to haul freight for farmers, and to serve paper mills and a block factory at Croghan.

In May 1947 the railroad took delivery of a maroon and yellow center-cab 44-ton diesel-electric locomotive built in the General Electric Company's shops in Erie, Pennsylvania, and in tried and true Lowville and Beaver River tradition, given the road number 1947. The arrival of the diesel meant the sale for scrap of Locomotive No. 1912 and the retiring of 2-8-0 No. 1923 to standby service. For four months in 1954 the new diesel received a major overhaul, during which time No. 1923 again hauled freight trains up and down the Lowville and Beaver River Railroad on a daily basis. The railroad's historian, Keith F. Maloney, reminisced about that summer interlude:

> It is pleasant to recall the 1923 as it stood with air pumps hissing and clunking, and with steam issuing from various odd places, in front of the depots in Croghan or Beaver Falls on those hot July and August days. A typical consist of the L&BR . . . would have been: the venerable Alco and its tender (still sporting marks from that near-disastrous fire in the 1930s) . . . a gondola of coal for the boilers of a paper mill at Beaver Falls . . . a milk car for the Croghan dairy plant . . . a boxcar which had carried feed to Farney's mill or the Croghan G.L.F. . . . or a GATX tank car filled with liquid rubber for Latex Fiber Industries, Inc., another Beaver Falls industry.
>
> At the rear of this modest string of cars would come a piece of rolling stock which is still [as of 1978] stored serviceable at the Lowville roundhouse – a former Lehigh Valley R.R. caboose, painted the inimitable barn red, having a bit of yellow trim and featuring arch-bar trucks. . . .

After being rebuilt by General Electric, Diesel No. 1947 resumed handling the Lowville and Beaver River's freight business, and Steam Locomotive No. 1923 returned to the engine house, stored serviceable again until further need.

That came two and a half years later. Keith Maloney recalled:

> Steam's last stand on the Lowville line came in the cold and savage winter of 1957. On a sub-zero January morning it was found that the diesel would not respond. So with, one supposes, appropriately warm comments to suit the extremely cold weather, the veteran railroaders of the L&BR managed to fire up the rusty boiler of the 2-8-0.
>
> With squeaks, moans, chuffs and rattles befitting a dowager being asked to dance--and arising from a wheelchair to do it--the old steamer, with billowing clouds of vapor issuing from practically every pore, made the trip to Croghan and return for several days. Because of its understandably temperamental and cranky behavior the crew doubtlessly was grateful when the warm cab of the GE 44-tonner (with its wrap-around view and windshield wipers) was restored to them.

That was the steam locomotive's last appearance on this New York State short line. Retired again to standby service, in June 1964 the locomotive was sold to F. Nelson Blount for his Steamtown Foundation for the Preservation of Steam and Railroad Americana for $2,000 f.o.b. Lowville, New York, plus $250 for a number of spare parts and $12.00 for the rental of a scoop to load the parts in the tender. The locomotive apparently moved to Bellows Falls, Vermont, in October of that year.

This little postwar Consolidation represents a fairly common wheel arrangement of freight locomotive during the latter decades of the 19th century and down to the end of the era of steam locomotives in the 20th century. Nearly 150 of them survive in the United States (not counting narrow gauge variations), far more than any other single type of locomotive. It is, in that sense, the most common wheel type of locomotive to survive. Appropriately and proportionately, Steamtown has several of this type in its collection, including Illinois Central Locomotive No. 790, Maine Central Locomotive No. 519, Rahway Valley No. 15, and Lowville and Beaver River Railroad No. 1923. None of these four locomotives is a duplicate of the others except in terms of wheel arrangement, for each has unique and distinctive features. Technologically, Lowville and Beaver River Railroad No. 1923 is probably the least interesting; however, its unique history provides an opening to interpret the export trade in American-built locomotives, so the locomotive is not without importance to the Steamtown collection.

Condition: Lowville and Beaver River Railroad Locomotive No. 1923 reportedly is a worn-out locomotive not suitable for restoration to operable condition. It is, however, appropriate for "cosmetic" restoration to its historic appearance.

Recommendations: A small report should be completed on the locomotive. The report should attempt to ascertain the history of the *Compañía Azucarera Central Reforma*, a little bit about its railroad, and why it failed to complete purchase of the locomotive. The rest of the report should deal with the history and physical history of Locomotive No. 1923, including an attempt to find a contemporary account of the roundhouse fire, circa 1938, that damaged the engine. The report should then recommend steps needed to restore the locomotive as an exhibit engine. The engine should in part be interpreted to represent the export trade in locomotives practiced by major American locomotive-building firms.

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Printed in U.S.A.

ANNUAL LOCOMOTIVE INSPECTION AND REPAIR REPORT

ICC-3

October, 1955

THE LOWVILLE & BEAVER RIVER R. R. CO.

Locomotive { Number 1923 / Initial L. & B. R. R.

In accordance with the act of Congress approved February 17, 1911, as amended March 4, 1915, and the rules and instructions issued in pursuance thereof and approved by the Interstate Commerce Commission, all parts of Locomotive No. 1923, including the boiler and its appurtenances, were inspected on October 21, 1955 193 , at Lowville N Y, and all defects disclosed by said inspection have been repaired, except as noted on the back of this report.

1. Date of previous hydrostatic test, November 11, 1954 193 .
2. Date of previous removal of caps from flexible stay bolts, Not used 193 .
3. Date of previous removal of flues, November 13, 1947 193 .
4. Date of previous removal of all lagging, November 13, 1947 193 .
5. Hydrostatic test pressure of 230 pounds was applied.
6. Were caps removed from all flexible stay bolts? Not used
7. Were all flues removed? No Number removed None
8. Condition of interior of barrel, Good
9. Was all lagging removed? Yes
10. Condition of exterior of barrel, Good
11. Was boiler entered and inspected? Yes
12. Was boiler washed? Water glass cocks and gauge cocks cleaned? Yes Yes
13. Condition of crown stays and staybolts, Good Good
14. Condition of sling stays and crown bars, Not used
15. Condition of firebox sheets and flues, Good Good
16. Condition of arch tubes None Water-bar tubes None
17. Condition of throat braces, Good
18. Condition of back head braces, Good
19. Condition of front flue sheet braces, Good
20. Were fusible plugs removed and cleaned? Yes
21. Were steam leaks repaired? Yes

I certify that the above report is correct. .... *Inspector.* .... *Inspector.*

22. Were steam gauges tested and left in good condition? Yes Good
23. Safety valves set to pop at 180 pounds, 183 pounds, ... pounds.
24. Were both injectors tested and left in good condition? Yes
25. Were steam leaks repaired? Yes
26. Hydrostatic test of 140 pounds applied to main reservoirs.
27. Condition of brake and signal equipment, Good None
28. Were drawbar and drawbar pins removed and inspected? Yes
29. Condition of draft gear and draw gear, Good Good
30. Condition of driving gear, Good
31. Condition of running gear, Good
32. Condition of tender, Good

I certify that the above report is correct. R. Earl Rennie *Inspector.* R. Earl Rennie *Inspector.*

State of New York }
County of Lewis } ss.:

Subscribed And Sworn To before me this 25th day of October, 1955 193 , by inspectors of THE LOWVILLE & BEAVER RIVER RAILROAD COMPANY.

THELMA R. WELLER
Notary Public, State of New York
No. 25 - 9605600
Qualified in Lewis County
Term expires March 30, 1956

Thelma R. Weller *Notary Public*

My Commission Expires .... 193 ....

The above work has been performed and the report is approved. M E Burham *Officer in Charge*

A locomotive inspector certified Lowville and Beaver River Railroad No. 1923 as operable in October 1955.

Steamtown Foundation Collection

Owner(s): Maine Central Railroad **Road Number(s):** 519

Whyte System Type: 2-8-0 Consolidation **Class:** W-1

Builder: American Locomotive Company (Schenectady Works)

Date Built: February 1913 **Builder's Number:** 52991

Cylinders (diameter x stroke in inches): 22 x 28 (23 x 28 ?)

Boiler Pressure (in lbs. per square inch): 185

Diameter of Drive Wheels (in inches): 63

Tractive Effort (in lbs.): 37,000

Tender Capacity: **Coal (in tons):** 11 **Water (in gallons):** 7,000
Oil (in gallons): Not applicable

Weight on Drivers (in lbs.): "engine weight": 171,600; also reported as 172,500

Remarks: Engine is a manually fired coal burner, one of the last two steam locomotives on the Maine Central. It is not in bad condition and could be made operable.

Maine Central Railroad 2-8-0 Locomotive No. 519

History: Like many other regional railroad systems, the Maine Central grew by accretion and consolidation with numerous smaller roads. The Maine Central Railroad itself appeared on October 28, 1862, out of consolidation of the earlier Androscoggin and Kennebec Railroad and the Penobscot and Kennebec Railroad. In 1874 the company went on to absorb the Leeds and Farmington Railroad, the Portland and Kennebec Railroad, and the Somerset and Kennebec Railroad. In 1888 it took over the Maine Shore Line Railroad. In 1901 it swallowed the Knox and Lincoln Railway. In 1911 it gobbled the Washington County Railway, the Somerset Railway, the Sebasticook and Moosehead Railroad, and the Androscoggin Railroad.

By October 1, 1882, the Maine Central operated 126.6 miles of track from Portland to Bangor, Maine, plus four branches totalling 155.5 miles of track and four leased companies that operated another 161.30 miles, for a total of 464.5 miles of railroad. It had 59 locomotives; 94 passenger, baggage, mail, and express cars; 1,140 freight cars; 36 work cars, 17 snowplows; and 10 flangers.

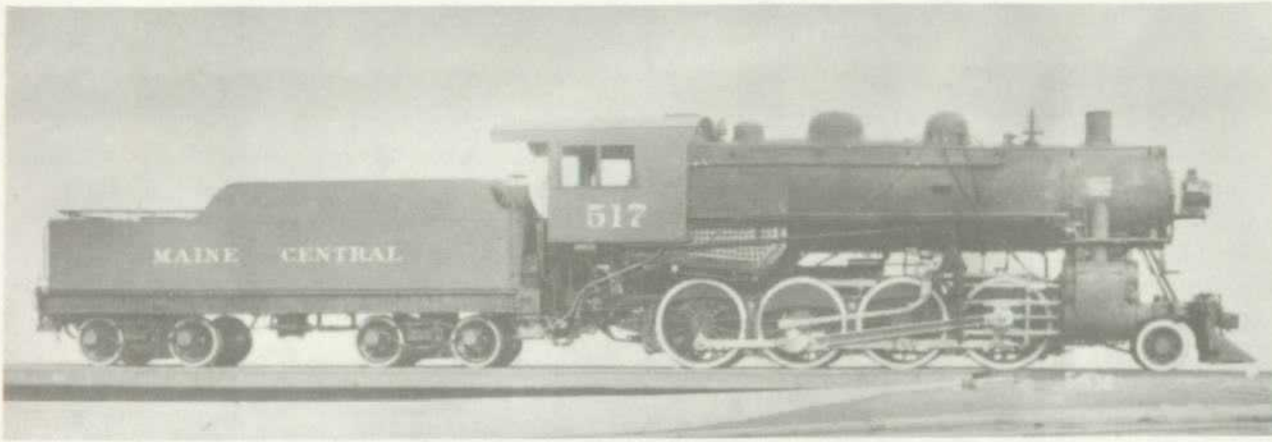
In 1910, the Maine Central began purchasing a series of new high-boilered, low-tender 2-8-0 freight Consolidations, acquiring nine that year, Nos. 501 through 509; seven more in 1912, Nos. 510 through 516, and eight in 1913, Nos. 517 through 524: The railroad called these Class W, and acquired more later. The American Locomotive Company's Schenectady Works photographed No. 517 for a builder's photo representing Nos. 517 through 524. This photo, nevertheless, depicts the appearance of No. 519 "as built."

By June 30, 1914, not long after this Consolidation went into service, the company owned 221 locomotives, 311 passenger train cars, 9,640 freight cars, 660 work cars, as well as two ferryboats and seven steamboats. By December 31, 1919, the company and its leased lines operated 1,201.58 miles of track, reaching principally north, northwest, and northeast from Portland, Maine, throughout the states of Maine and New Hampshire, stretching as far east as Eastport, Maine, as far north as Kineo Station on Moosehead Lake, and as far west as St. Johnsbury, Vermont, with a network of branches covering much of the intervening country.

The operational history of Maine Central Railroad Locomotive No. 519 awaits research in local sources, but it is known to have taken a freight out of Portland on August 16, 1937, and appeared in Rigby on June 2, 1950.

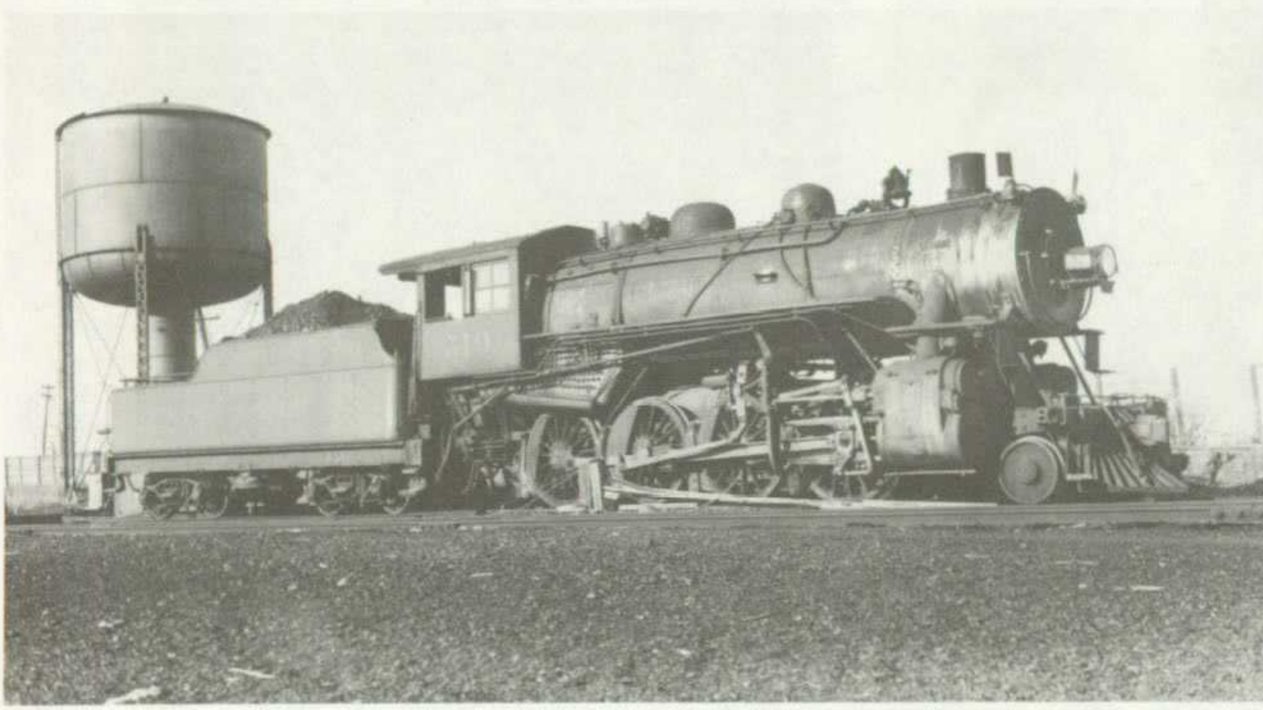
Maine Central No. 519 is the second most powerful 2-8-0 among the four locomotives of that type in the Steamtown Foundation collection and is a good example of a high-boilered, main line 2-8-0. In appearance, it differs from Illinois Central Engine No. 790 in having larger drive wheels, a more typical sand dome, and a much lower tender with a longer wheelbase.

Condition: This locomotive reportedly is not in bad condition and could be made operable with some overhaul. It was a hand-fired coal burner, which meant that a fireman shoveled coal from tender into firebox as needed; it had no mechanical stoker.



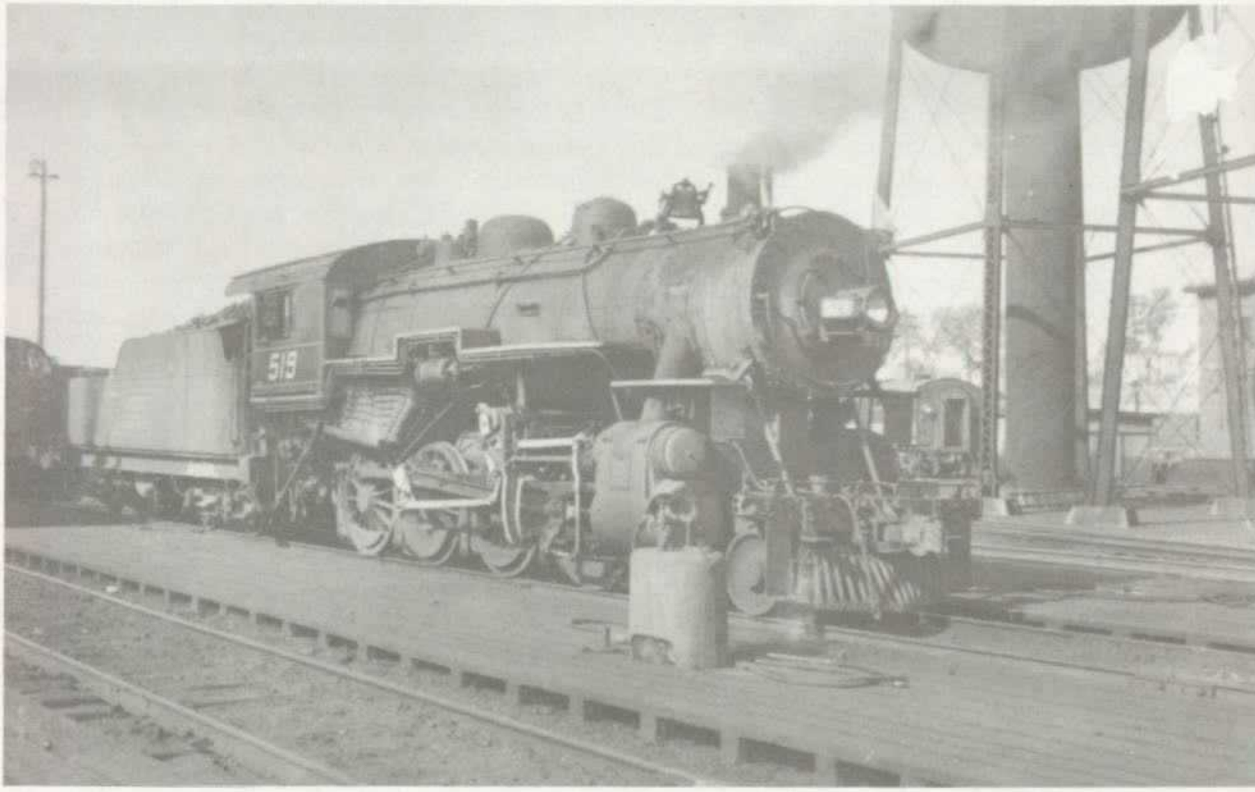
The American Locomotive Company builder's photo of Maine Central Railroad Locomotive No. 517 represented all in the series 517 through 524 and showed the initial appearance of No. 519.

The 470 Railroad Club



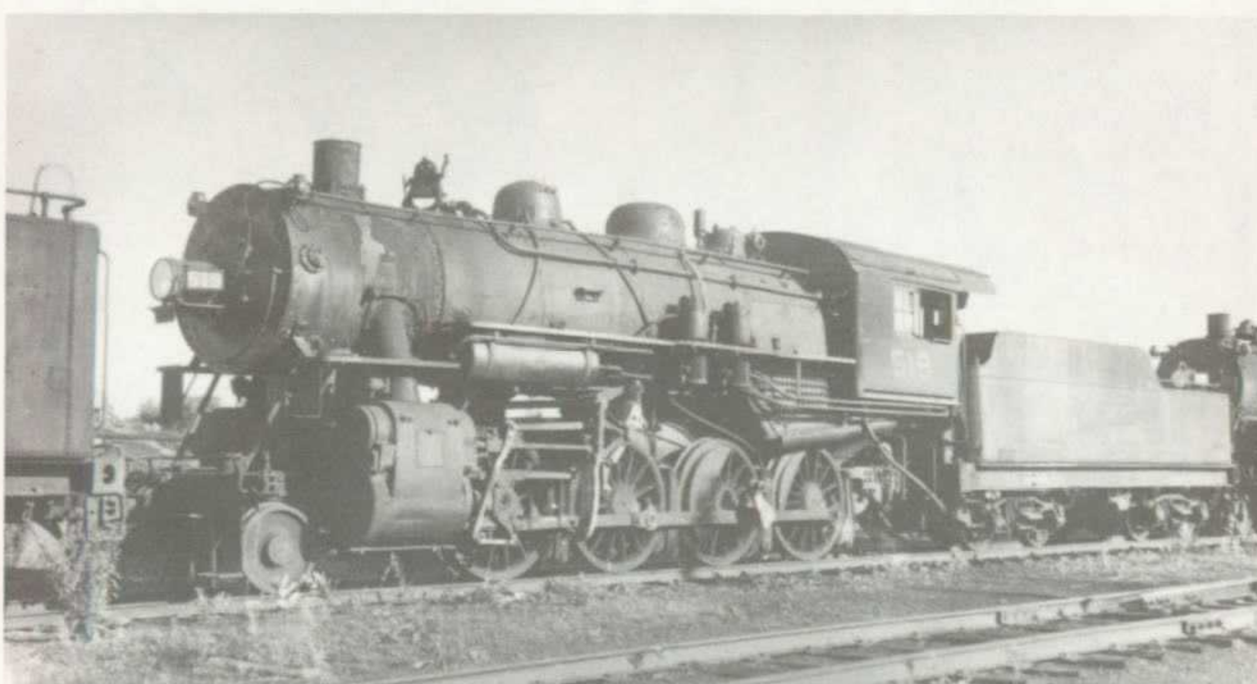
Maine Central Railroad Locomotive No. 519 appears in this view under steam on her home railroad.

Collection of Gerald Best, California State Railroad Museum Library



On June 1, 1950, sporting a later lettering and numbering style, Maine Central No. 519 was in service under steam with a full load of coal in her tender, above. On June 3, she appeared out of service, on a storage track in Rigby, Maine, with the drive rod on her fireman's side removed.

Both, The 470 Railroad Club



Recommendation: The National Park Service should commission a report on the engine. The history section of the report should fully explore the engine's operational history, based on research in local archives and sources in Maine, New Hampshire, and Vermont. Upon completion of this research, the locomotive should be restored "cosmetically" to its appearance as a freight locomotive of the Maine Central, and the report should recommend the period to which it should be restored, as the engine has had at least two distinctly different lettering schemes in its history. The mechanical condition of the locomotive should be carefully assessed, and if feasible, the locomotive should be restored to operable condition to be used in interpretation and for special events. The locomotive is probably not appropriate for use on a regular excursion train, and should be used for other, less demanding interpretive purposes, but this does not rule out some operation.

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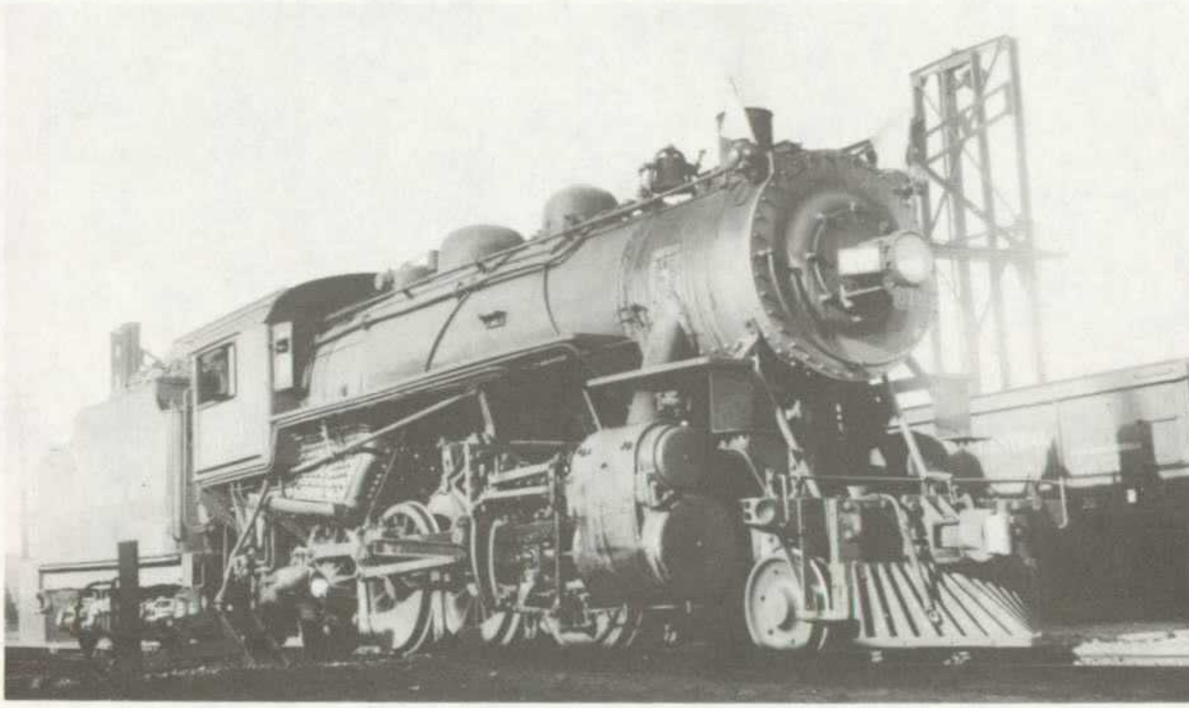
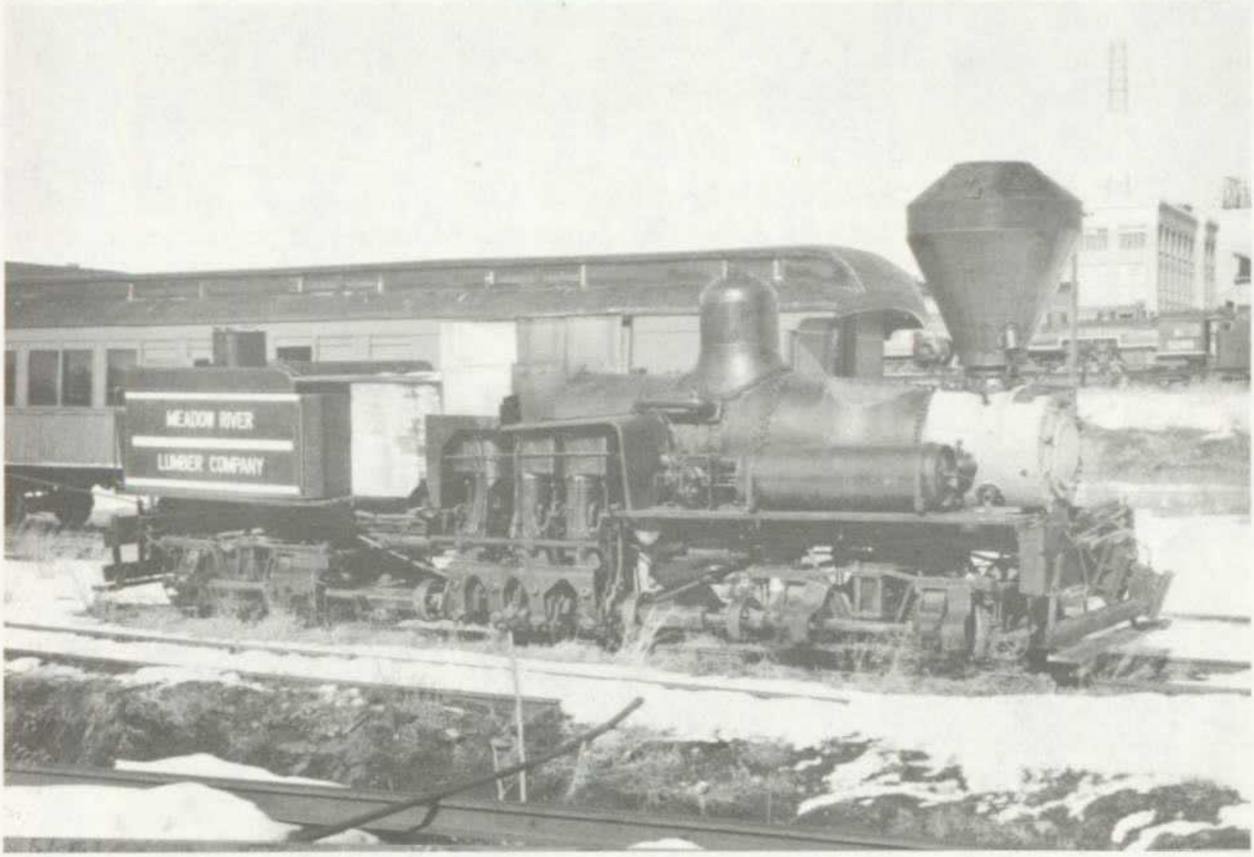


Otto Perry photographed Maine Central No. 519 in Portland, Maine, on August 16, 1937.

Denver Public Library Western History Department

MEADOW RIVER LUMBER COMPANY NO. 1



Owner(s): Sewell Valley Railroad
Meadow River Lumber Company

Road Number(s): 1 (2nd)
1

Whyte System Type: 2-truck Shay-geared

Class: 42-2

Builder: Lima Locomotive Works, Lima, Ohio

Date Built: May 1910

Builder's Number: 2317

Cylinders (diameter x stroke in inches): 10 x 12

Boiler Pressure (in lbs. per square inch): 180

Diameter of Drive Wheels (in inches): 29.5

Tractive Effort (in lbs.): 16,900

Tender Capacity: **Coal (in tons):**
Oil (in gallons): Not applicable

Water (in gallons):

Weight on Drivers (in lbs.): 86,000; also reported as 84,000

Remarks: Collapse of a building on this engine at Bellows Falls, Vermont, destroyed its cab and did other damage. This is a tired, worn-out engine.

Meadow River Lumber Company Two-Truck Shay Geared Locomotive No. 1

History: Meadow River Lumber Company Locomotive No. 1 is a two-truck Shay-patent geared locomotive typical of engines used by many lumber, mining, and quarry company railroads, other industrial railroads, and a few common carrier short lines and major railroad systems. About 77 Shays survive in the United States, 12 in Canada, and 17 overseas.

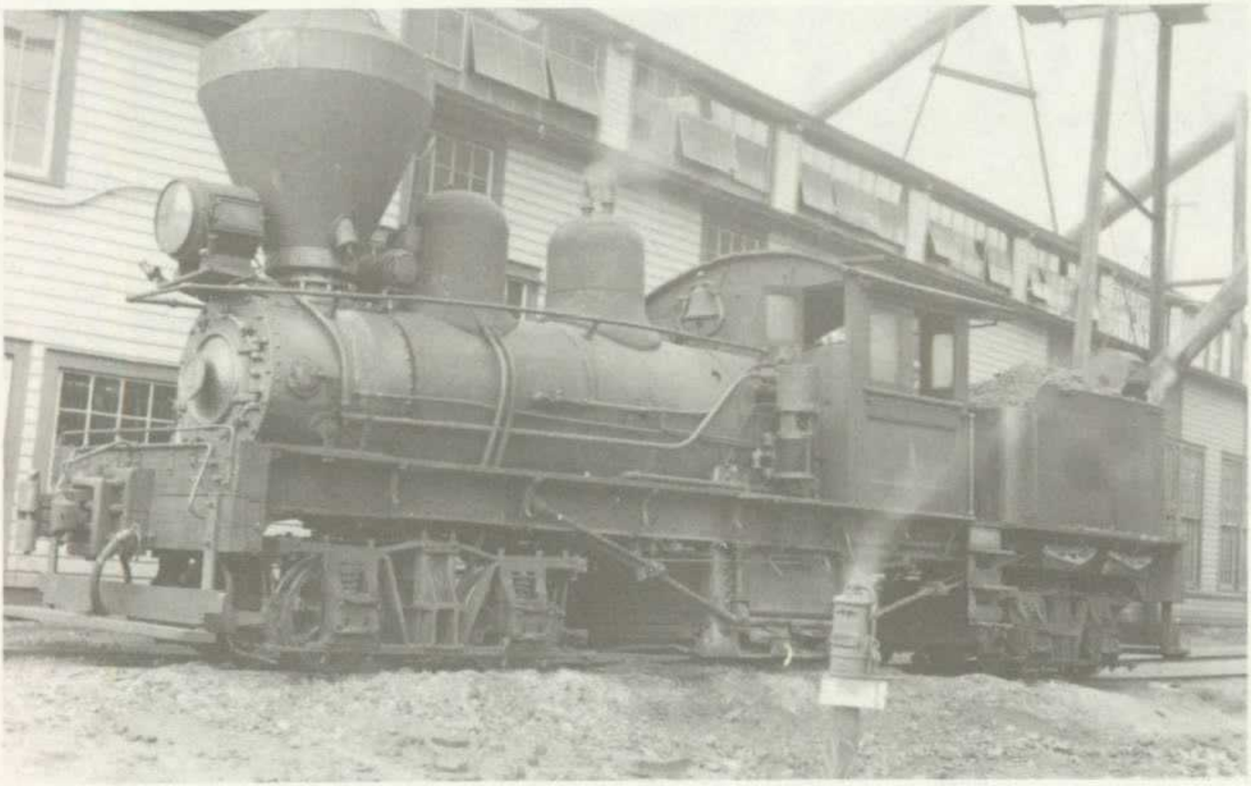
An Ohioan named John Raine was ultimately responsible for founding the Meadow River Lumber Company. Born in Ironton, Ohio, in 1863, he went to work at the age of 13 as a choreboy in a lumber camp. Later he entered the grocery business in Ironton, but at the age of 30, impelled by his experience in the lumber industry while a teenager, he joined his brother T.W. Raine to form the lumber firm of Raine and Raine in Empire, Pennsylvania. Around the turn of the century, when this firm exhausted its holdings of timber, the brothers began searching for new stands to cut in West Virginia, and in 1903 John became vice president of the Raine-Andrews Lumber Company at Evenwood in Randolph County. Subsequently the Raine-Andrews firm purchased in 1906 three tracts of timber on the Meadow River in Greenbrier County. Further purchases expanded their holdings to more than 75,000 acres.

As there was no access for transportation of this timber, on November 22, 1907, management of the firm incorporated the Sewell Valley Railroad, which was to build 20 miles of standard gauge track from the Chesapeake and Ohio Railroad at Meadow Creek to the site of a new lumber mill at the mouth of Sewell Creek. The Raine brothers then organized the Meadow River Lumber Company to construct the mill. By the time construction crews completed the railroad, the mill was ready to go to work, and sawed the first board in September 1910.

Meanwhile, to operate the railroad, the company had purchased its first new locomotive from the Lima Locomotive Works, in Lima, Ohio, a two-truck Class B Shay locomotive that became Sewell Valley Railroad No. 1, replacing an earlier No. 1 which was probably a secondhand engine. By June 30, 1912, the Sewell Valley Railroad had three locomotives, a combination baggage/coach, a box car, and four flat cars.

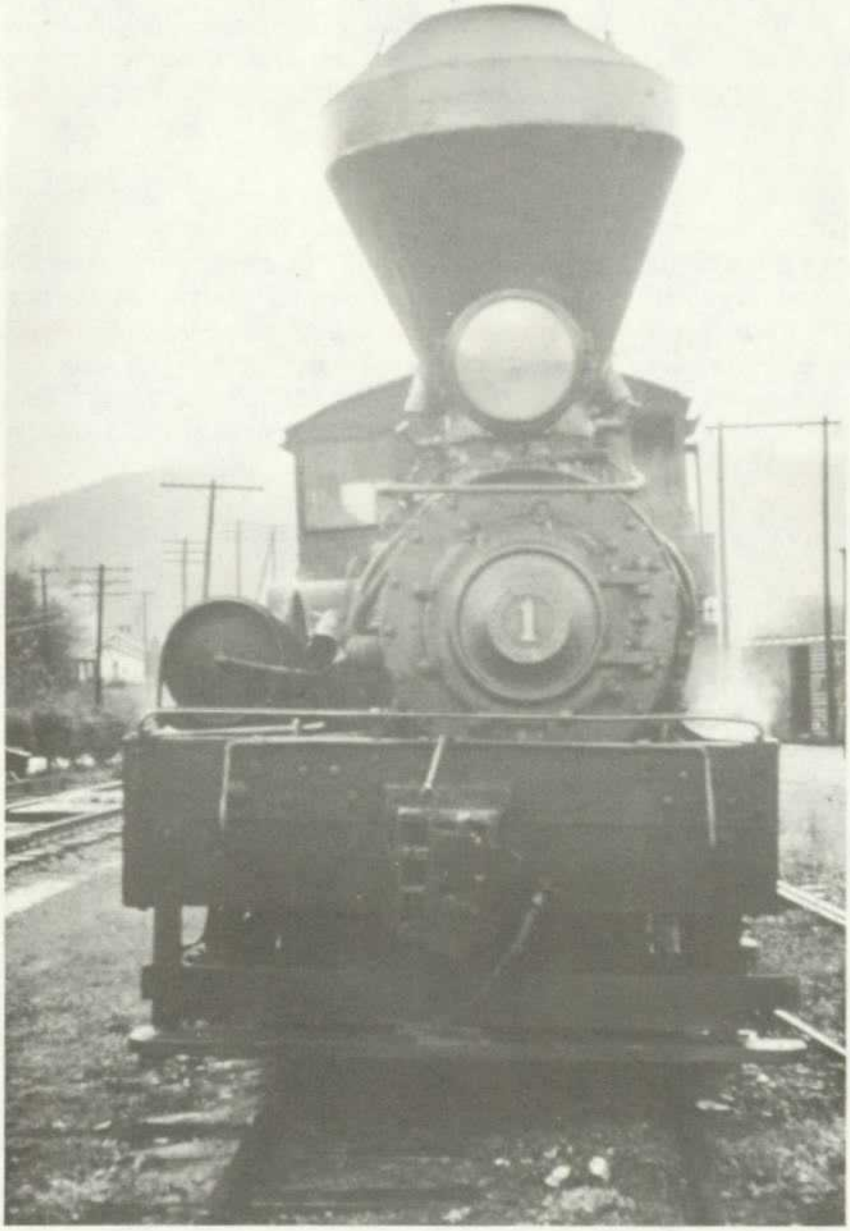
The mill served by the Sewell Valley Railroad developed into the largest strictly hardwood manufacturing plant in the world. A triple band mill, it was capable of cutting an average of 110,000 board feet of lumber in a 10-hour day, with a recorded maximum of 205,666 board feet in a single day. During its first year of operation, the Meadow River Lumber Company mill turned out about 3 million feet of lumber, and the company later increased annual production to over 30 million feet, requiring the cutting of almost 3,000 acres of virgin timber a year.

On April 25, 1913, the town of Rainelle, named for the Raine brothers, was established near the mill, housing the employees of the company. It gained the reputation of being one of the best hardwood sawmill towns in the country. The firm erected frame houses, plastered and papered inside and painted white outside, designed for comfort and sanitation. They featured running water, modern bathroom facilities, and electricity, and each was surrounded by its own lawn and garden.



Meadow River Lumber Company Shay-geared Locomotive No. 1, under steam, rested at the mill plant at East Rainelle, West Virginia, near the end of its career as a coal-burning logging and lumber company locomotive. This view of the less-often photographed left side of the Shay emphasizes its huge Radley and Hunter patent balloon stack, designed to catch sparks and cinders, and shows some parts that have since been removed as well as the cab, which was later destroyed by the collapse of a building on it at Bellows Falls, Vermont.

Collection of Gerald Best, California State Railroad Museum Library



A head-on view of Meadow River Lumber Company Locomotive No. 1 under steam at Rainelle, West Virginia, illustrated the offset boiler characteristic of Shay locomotives, which gave them an ungainly, unbalanced appearance from this perspective.

Steamtown Foundation Collection

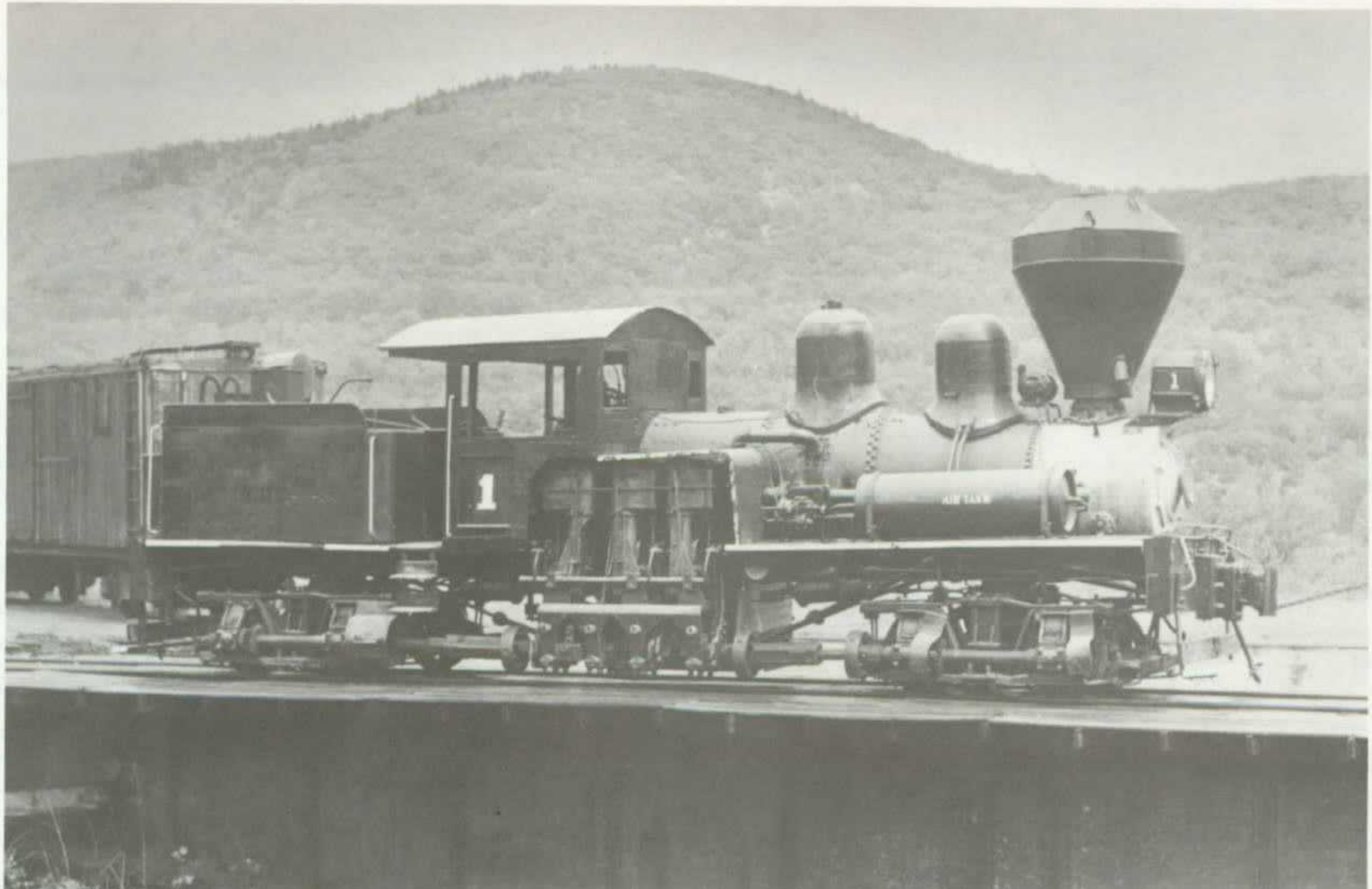
The mill plant included a planing mill with a capacity of turning out over a million feet of flooring, ceiling, siding, and trim lumber, and six large dry kilns to dry lumber for processing in the planers. Ten lumber docks, each 1,300 feet long, provided space for nearly three miles of lumber piles, some of which grew to nearly 40 feet high. Railroad spurs passed between each dock for ease in loading cars.

It was common at that time for lumber companies to incorporate their wholly owned railroad subsidiaries separately from the lumber firm. As a common carrier railroad, a lumber line offered its owners the prestige of serving as railroad officers, as well as the very practical benefit of exchanging annual passes with major systems. As the 20th century progressed, however, common carrier equipment was sometimes taxed at higher rates than industrial railroad equipment, the practice became less common and abuse of free passes came increasingly under restrictive regulations. So it was common for many lumber companies eventually to take over their once-common carrier railroads and operate them wholly as industrial or lumber/logging railroads. Eventually the Sewell Valley Railroad locomotives became Meadow River Lumber Company railroad locomotives. Meadow River Lumber Company No. 1, therefore, spent her entire career as the property of this single lumber enterprise at East Rainelle, West Virginia, even though she operated there under two different names.

Outshopped by the Lima Locomotive Works on May 13, 1910, Meadow River Lumber Company Shay No. 1 subsequently was sold to Steamtown and moved to Bellows Falls, Vermont, where on February 4, 1982, at 7:45 a.m., the building in which it was stored collapsed on it due to excessive snow load on the roof, causing considerable damage to the locomotive.

Condition: Mechanically, Meadow River Lumber Company Shay No. 1 is a tired, worn-out engine. The building collapse destroyed the locomotive's wooden cab and did some other damage. The engine is missing its sand dome, its headlight, its front number plate, its bell and bell hanger, whistle, and other components, though some of them may be stored at Steamtown. The pilot beam is entirely rotten, and the front draft gear has torn loose. The engine is in terrible condition.

Recommendation: As the only Shay-geared locomotive, or geared locomotive of any kind, in the Steamtown collection, this locomotive is recommended for static exhibit indoors. The NPS should commission a report on the subject of this engine, which should, in addition to researching its history thoroughly, recommend whether to restore this locomotive as Sewell Valley Railroad No. 1 or the later Meadow River Lumber Company No. 1. In view of the main thrust of Steamtown's recommended Scope of Collection for locomotives, it makes sense to incline toward restoring it as the locomotive of a common carrier, the Sewell Valley Railroad. Restoration should include replacing all missing parts and rebuilding from scratch the wooden cab of the locomotive. The pilot beam, and perhaps also the tender beam, should be replaced in kind. The engine is important for what it represents in railroad technology, and because it features an apparently original cinder-catching Radley and Hunter balloon stack, the only one of that type in the collection. The balloon stack indicates, furthermore, that this locomotive was a wood burner, an additional useful facet of its contribution to the Steamtown collection.



Meadow River Lumber Company's Shay Locomotive No. 1 posed on the Steamtown turntable at Bellows Falls, Vermont, exhibiting its original wooden cab, heavily patched and reinforced with steel plates, prior to the disastrous collapse of the building in which it was stored. The collapse destroyed the Shay's wooden cab, though most of its components were saved. In this photo, the engine lacks its boiler jacket, bell, whistle, and other features, missing before the building collapse damaged the locomotive.

Steamtown Foundation Collection

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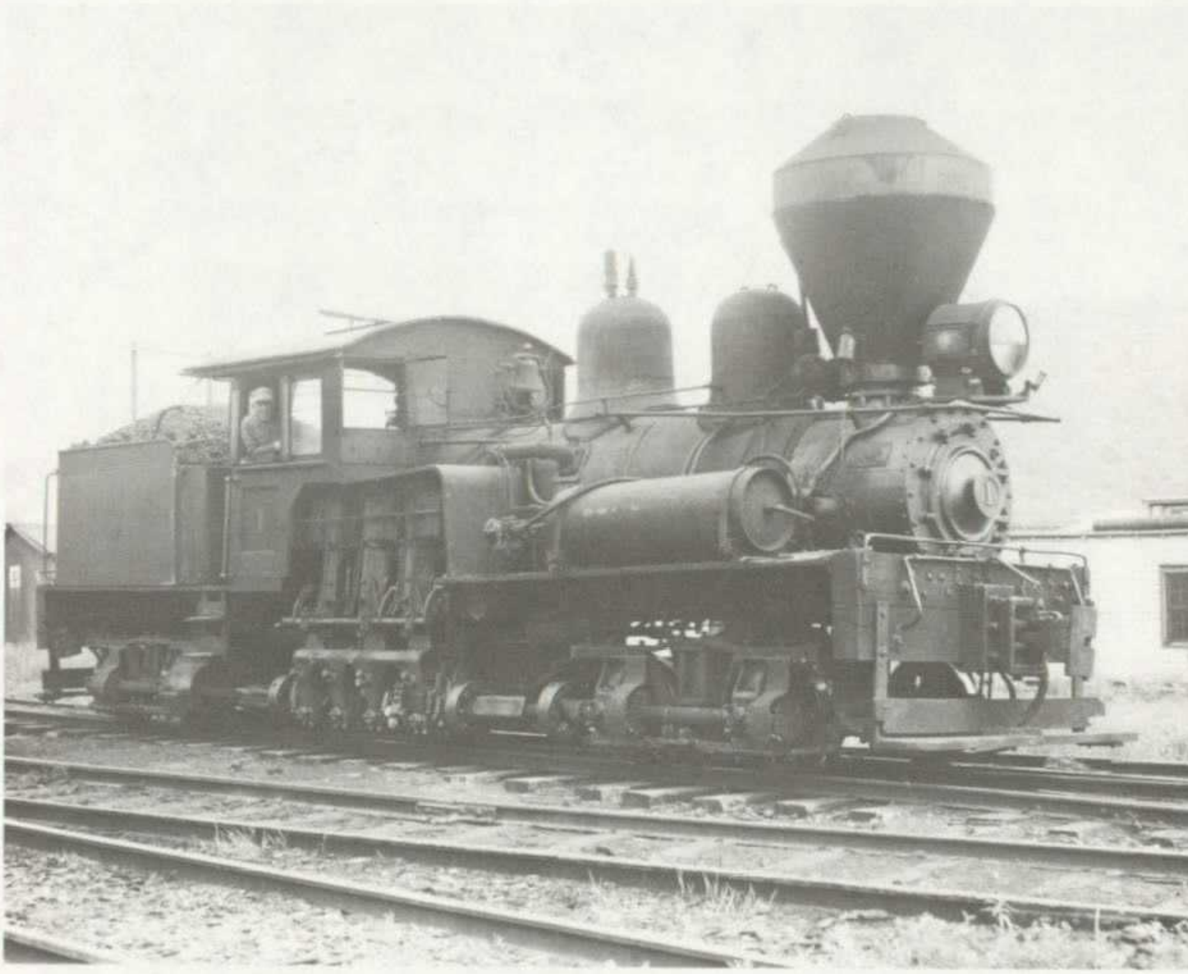


Operating at Rainelle, West Virginia, on May 26, 1956, Meadow River Lumber Company Shay Locomotive No. 1 no longer even had lettering visible on her tender.

Collection of Malcom D. McCarter

NEW HAVEN TRAP ROCK COMPANY NO. 43

Owner(s): New Haven Trap Rock Company (Branford Steam Railroad) **Road Number(s):** 43

Whyte System Type: 0-4-0T Saddletank **Class:**

Builder: Vulcan Iron Works, Wilkes-Barre, Pennsylvania

Date Built: December 1919 **Builder's Number:** 2888

Cylinders (diameter x stroke in inches): 14 x 20

Boiler Pressure (in lbs. per square inch): 150

Diameter of Drive Wheels (in inches): 37

Tractive Effort (in lbs.): 13,450

Tender Capacity: **Coal (in tons):** **Water (in gallons):** 1,250
Oil (in gallons): Not applicable

Weight on Drivers (in lbs.): 80,000

Remarks: Built in Wilkes-Barre, Pennsylvania

New Haven Trap Rock Company 0-4-0T Saddletank Locomotive No. 43

History: Employees of the New Haven Trap Rock Company and its Branford Steam Railroad like to say that the story of their operation began about 200,000,000 years ago when a volcanic extrusion of hot basalt created what the local Indians would eventually call Totoket Mountain. But that is a matter more of geology than of history.

There seem instead to have been several over threads of history which, once interwoven, created the Branford Steam Railroad. An entrepreneur named Louis Fisk had built, probably in the 1890s, a trotting park for horses called the Branford Driving Park in Branford, Connecticut. To connect it with the tracks of the Shore Line Division of the New York, New Haven and Hartford Railroad, Fisk built the three-mile-long Damascus Railway. Meanwhile, creation of the Palisades Interstate Park Commission of New York and New Jersey forced the closing of basalt quarries along the Hudson River, creating an increased market from Connecticut quarries. This same Louis Fisk decided to get into the quarrying business by opening a quarry on Totoket Mountain in North Branford.

On March 19, 1903, Fisk got the Connecticut State House of Representatives to authorize incorporation of the Branford Steam Railroad to take over the property of and succeed the Damascus Railway. In the 1980s the name "Branford Steam Railroad" suggested some short tourist-carrying railroad featuring the use of an antique steam engine, because the use of the term "steam" in a railroad's corporate title generally appears in that context, but this railroad's owners' inclusion of the term steam in 1903 allowed them to use the name Branford and yet distinguish their firm from the Branford Electric Railway, a streetcar system operating in that vicinity.

Fisk, meanwhile, began acquiring what would add up to 319.5 acres of Totoket Mountain and capital with which to establish his quarry. On April 29, 1909, he secured authority from the Connecticut House for the Branford Steam Railroad to construct trackage southward to a dock he owned at Juniper Point on Long Island Sound, where his railroad would also reach the tracks of the New York, New Haven and Hartford Railroad over the three miles of track built by the Damascus Railway.

It would also be necessary to build a rock crusher plant at the quarry and a quarry railroad, and for these purposes Fisk obtained financial backing for further development from Hayden and Stone of Boston. To build the rock crusher plant, Fisk apparently obtained the services of a well-established New Haven construction firm, C.W. Blakeslee and Sons, and the Blakeslee firm seems to have become a virtual partner of Fisk's in the development of the quarry.

Charles Wells Blakeslee reportedly established a construction business in New Haven, Connecticut, in 1844. In 1872, he took one son into the firm as a partner, renaming the company C.W. Blakeslee and Son, and in 1890, when another son, Dwight W. Blakeslee, became a partner, the firm became C.W. Blakeslee and Sons, a name it would retain until it was taken over by the Westinghouse Electric Corporation in 1969.

C.W. Blakeslee and Sons operated a heavy construction and general contracting business throughout southern New England, but it grew out of origins in New Haven, Connecticut. The firm built railroads, bridges, dams, foundations, highways, conduits, sewers, docks, and tunnels, and paved city streets. It also took on projects in other states such as Pennsylvania and Indiana. In 1873 the firm opened a basalt quarry at West Rock in Westville, Connecticut, where it built the first rock crusher in the country, producing paving rock. Later, New Haven municipal officials wanted the quarry site and what remained of West Rock for a park, and C.W. Blakeslee and Sons began to quarry at Pine Rock, where they produced hand-cut stone blocks for foundations and buildings as well as crushed rock for paving.

Exactly how the Blakeslee firm came to displace Louis Fisk is not known at present; possibly Fisk defaulted on payments to the construction firm and it took over the quarry property. But it is clear that C.W. Blakeslee and Sons constructed the crushing house and screen house at the North Branford quarry, as well as the railroad and yards, the storage trestles, and dock and terminal at Pine Orchard, and the harbor and channel in Long Island Sound. In 1914, owners of the property incorporated the New Haven Trap Rock Company and opened the quarry for business. As of April 1917, officers of the company included D.A. Blakeslee, president; Clarence Blakeslee, treasurer; T.R. Blakeslee, first vice president; George E. Hall, secretary, and W. Scott Eames, general manager. Louis Fisk no longer appeared in any obvious capacity among them.

The firm of C.W. Blakeslee and Sons used small industrial railroads in various capacities over the years, and the two surviving locomotives of the New Haven Trap Rock Company both were ordered by and built for C.W. Blakeslee and Sons, rather than for the New Haven Trap Rock Company. Whether these locomotives served the Blakeslee firm in its own Pine Rock quarry, or in some other capacity, or whether the Blakeslee firm simply was acting as agent for the New Haven Trap Rock Company in acquiring these locomotives remains unclear.

At this point it should be explained that the product carried by the railroad, "trap rock," obtained its name from German quarry workers because it broke into steplike blocks, the German word for step being *treppen,* which became corrupted to "trap." Trap rock, a dark steel-gray in color and very dense and fine grained, featured a peculiar interlocking crystalline structure that caused it to fracture in a manner which created an angular gravel that, when used for paving purposes, tended to interlock in such a way that it made an exceptionally stable paving material. It also proved to be a very tough rock, not easily pulverized, and its strength also made it an outstanding material for use in foundation blocks for buildings.

When the North Branford Quarry first opened in 1914, it produced 2,000 tons of crushed trap rock daily, and the quarry face rapidly lengthened until it extended over a mile. There, railroad steam shovels operating over the quarry trackage loaded rock into side-dub gondola cars with arch bar brucks which had a capacity of five cubic yards of stone each. Small 15-ton 0-4-0T saddletank locomotives switched the gondolas around the quarry trackage, supplying the steam shovels with empty cars and moving loaded ones to the crusher into which the rock was dumped. The company used a pair of heavier 40-ton 0-4-0T saddletank locomotives to move the loads of crushed rock down the 6.2 miles of railroad to Juniper Point for loading into barges.

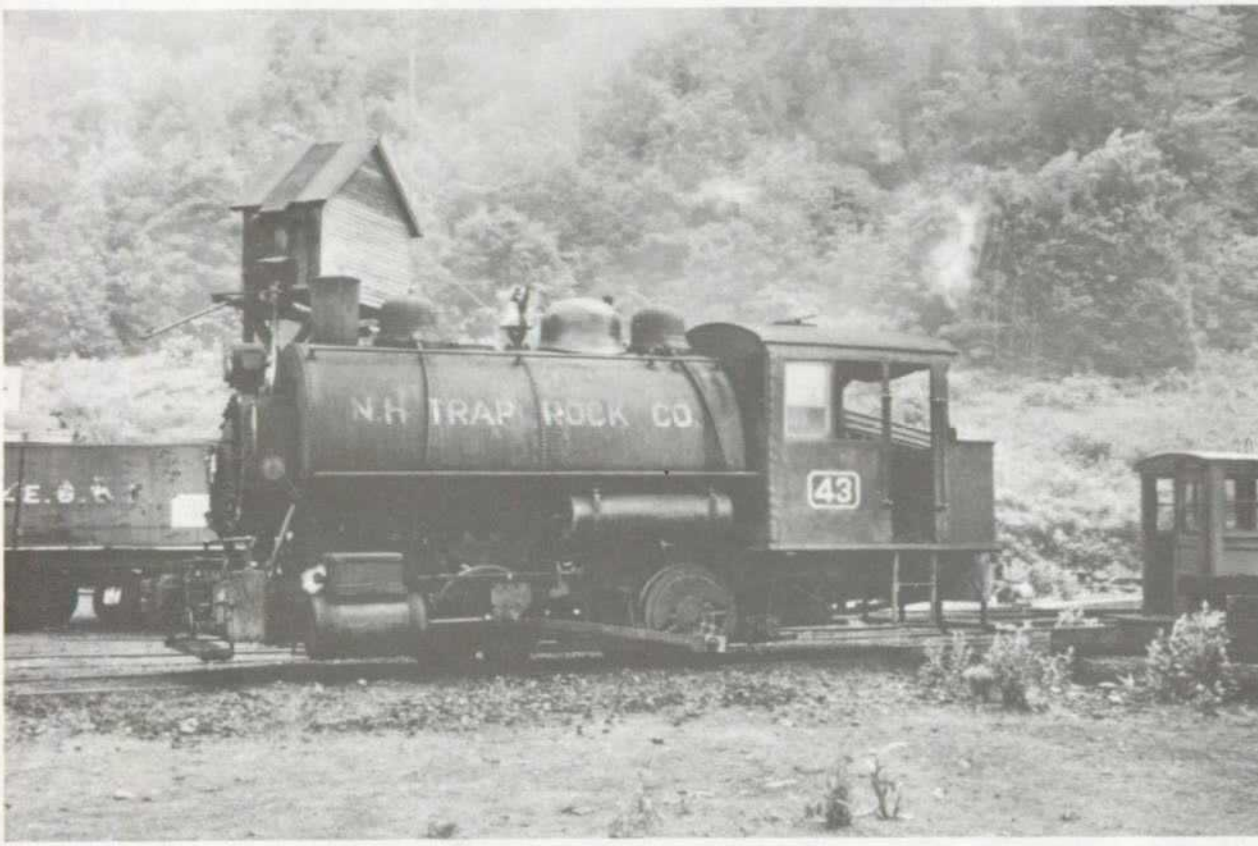
The firm of C.W. Blakeslee and Sons ordered in 1918 from the Vulcan Iron Works in Wilkes-Barre, Pennsylvania, 0-4-0T saddle-tank switch Locomotive No. 43. The road numbers of this locomotive may have represented a Blakeslee roster number rather than a New Haven Trap Rock Company (or Branford Steam Railroad) roster number. The little saddle-tanker has cylinders 14 inches in diameter with a 20-inch stroke, with 37-inch drivers.

In addition to this locomotive, at one time or another the New Haven Trap Rock Company operated 0-4-0T engines numbered 5, 27, 32, 35, 36, 37, and 38, probably all originally as quarry locomotives. To operate the Branford Steam Railroad from quarry to interchange, the company acquired as Branford Steam Railroad No. 1 a 4-6-0 built originally for the Lake Shore & Michigan Southern, and later sold to the parent New York Central to become No. 5120 before coming to Branford, and No. 2, a Mogul-type 2-6-0 with small drive wheels and a high boiler manufactured by H.K. Porter in 1927. The firm retired No. 1 in the early 1930s, but No. 2 lasted until the 1950s, apparently until the company purchased its first diesel in 1951--No. 3, a 44-ton centercab General Electric locomotive-- secondhand from the Winona Railroad of Warsaw, Indiana. Saddle tanker No. 43, a 40-ton locomotive much heavier than the 15-ton 0-4-0Ts used originally in the quarry, seem to have served in later years on the Branford Steam Railroad to Juniper Point as needed. The fact that No. 43 clearly carried on its saddle tank the name of the New Haven Trap Rock Company seemingly lacks significance in terms of any distinction between quarry locomotives and those used on the Branford Steam Railroad, for old 4-6-0 No. 1 carried New Haven Trap Rock Company lettering on its tender as well.

Members of the Blakeslee family still controlled the New Haven Trap Rock Company when in 1935 it merged with the Connecticut Quarries Company, and in February of that year the management reincorporated the company under the same name, New Haven Trap Rock Company. As a result of that merger, the company operated not one but six Connecticut quarries, located in Cheshire, Granby, Middlefield, New Britain, and Rocky Hill, as well as at North Branford. At North Branford, meanwhile, the company removed its quarry trackage and replaced the railroad steam shovels used to load rock into gondolas for movement to the crusher with fully revolving electric shovels mounted on caterpillar tracks. It was probably about this time that the company disposed of its small 15-ton quarry locomotives.

Over the years the uses of trap rock evolved. The industry grew up with modernization of railroads and the construction of the highway system in New England, with much of the crushed trap rock going into paving of roads and ballasting of railroad roadbeds. Even the ways roads were paved evolved, and trap rock could be used both in asphalt paving and as an aggregate in concrete. In 1940 the company developed asphaltic concrete plants and commenced manufacturing a paving material known as Blue Diamond Mix, which in turn became a whole variety of mixes. By 1952 the company was producing more than a million tons of crushed stone per year, and it was Locomotives Nos. 38 and 43 that handled the traffic from the North Branford crusher down to the Pine Orchard loading terminal near Juniper Point. By 1960, the North Branford Quarry alone had turned out 28 million tons of trap rock, and the company estimated that it contained sufficient trap rock for another 250 years of operation.

In 1956, the New Haven Trap Rock Company purchased two General Electric center-cab diesel switchers, which replaced the steam locomotives on the run from the crusher at North Branford to the Pine Orchard terminal. The company apparently kept Locomotive No. 43 around as switch engine at the crusher and the terminal for several more years, until it retired the old steam engine in 1959. Another source reported the New Haven Trap Rock Company retired Locomotives Nos. 38 and 43 in January 1960 upon arrival of the company's third diesel, No. 5, a 44-tonner that was originally New York, New Haven & Hartford No. 0813. Just as steam locomotives gave way to diesel motive power on the Branford Steam Railroad, the side-dump gondola cars gave way to triple-bay hopper cars lettered for the New Haven Trap Rock Company. Whereas the steam locomotives had been lettered for the same company (No. 43, at least, carried the words "N.H. Trap Rock Co." on her saddle tank), some of the new diesels ironically carried the lettering of "The Branford Steam Railroad," despite the fact that it no longer was a steam railroad. As for the steam locomotives, Nos. 38 and 43 apparently rested in retirement in North Branford until 1962, when the Steamtown Foundation acquired them.



Edgar T. Mead's photo of No. 43 illustrated its "New Haven Trap Rock Co." lettering and the number on the side of the cab (above). New Haven Trap Rock Company 0-4-0T Locomotive No. 43 (below).

Above, Steamtown Foundation Collection
Below, Railway & Locomotive Historical Society collection, California State Railroad Museum

As for the New Haven Trap Rock Company, in 1971 it merged with the firm of Angelo Tomasso, Inc., losing its historic name in the process. The Tomasso firm was a more recent company, founded during the 1930s, but that did not prevent the older name from being scrapped, and eventually the firm adopted the name of Tilcon Tomasso Inc., when it became a subsidiary of Tilcon, Inc. Thus the Branford Steam Railroad, which antedated the creation of the New Haven Trap Rock Company, also outlived the quarrying firm, continuing to operate under a name now meaningless in the era of the diesel locomotive.

About 48 0-4-0T locomotives survive in the United States, including the New Haven Trap Rock Company engine No. 43. They are scattered rather widely around the country in railroad museums and on tourist railroads and are also exhibited in small parks. Typically they served industries as plant switchers, or in a few instances operated on an industry-associated railroad as at North Branford, and a few served as shop switchers at the railroad shops of major railroad companies. Wherever they worked, the little 0-4-0T saddle tankers made a small contribution to the operation of the railroad industry in the United States, as well as to other industries that shipped by rail, and are a part of its overall history.

Condition: Mechanical condition of the locomotive is unknown, although No. 43 is known to have operated at Bellows Falls, Vermont, after being acquired by the Steamtown Foundation.

Recommendation: The National Park Service should preserve New Haven Trap Rock Company Locomotive No. 43, which was built in Wilkes-Barre, Pennsylvania, near Scranton. The NPS should commission a historic railroad locomotive report on No. 43, during the preparation of which its mechanical condition should be investigated and evaluated. The report should include a complete history and physical history of the locomotive, and ascertain whether it was ever lettered for either the Branford Steam Railroad, C.W. Blakeslee & Sons, or both, and what color(s) the locomotive was painted and lettered during its history. The report should also settle the question of how and why Louis Fisk dropped out of the company and the Blakeslees got in. Intensive research into these matters in the New Haven, Connecticut, area is necessary to answer these questions. A thorough photographic history of the locomotive should be included as a part of the report, including acquisition of all historic photographs of this particular locomotive that can be obtained, as well as some that illustrate the general history of the Branford Steam Railroad and its terminals and the New Haven Trap Rock Company and its North Branford quarry.

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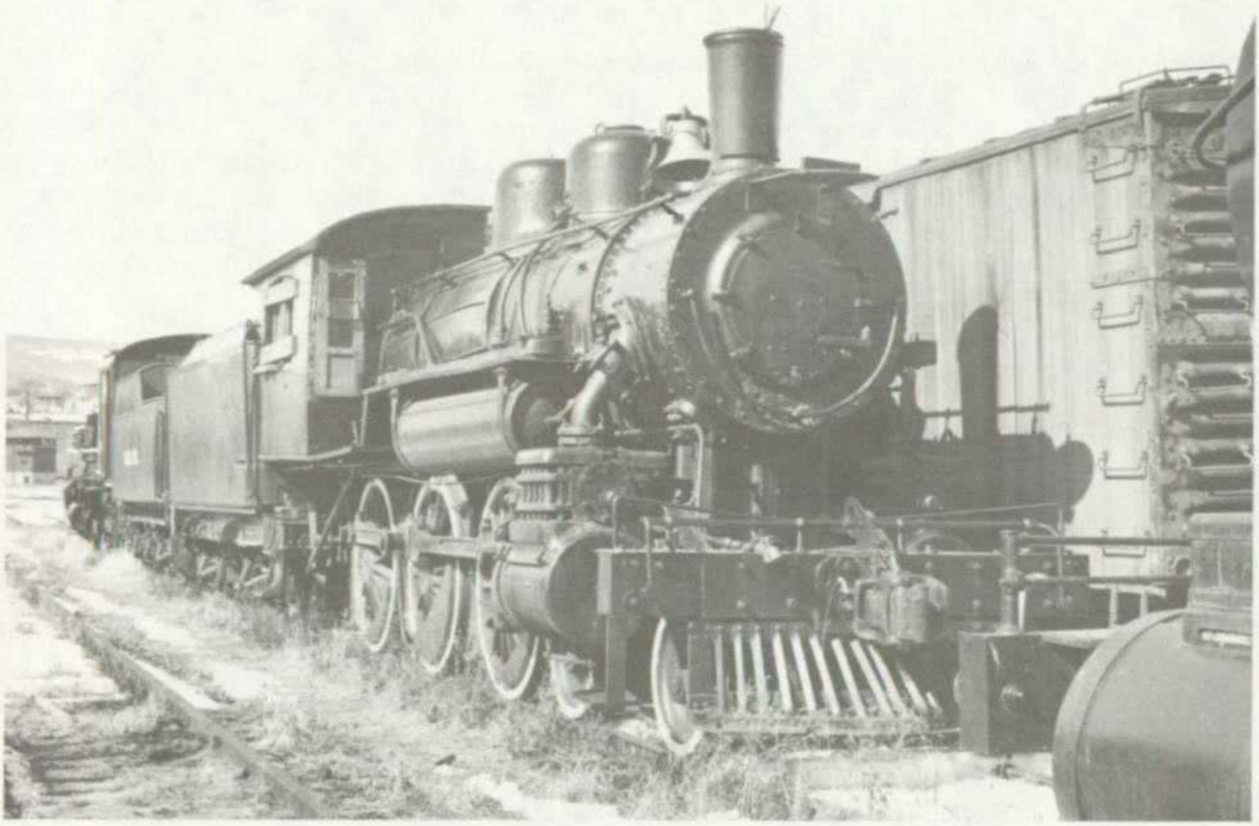
Some of the newspaper and magazine items cited above are in the Steamtown locomotive files under "New Haven Trap Rock Co. Locomotive No. 43." They were originally collected in the New Haven Public Library, under "New Haven Industries" in that library's vertical files.

NICKEL PLATE ROAD (NEW YORK, CHICAGO AND ST. LOUIS) NO. 44



Owner(s): New York, Chicago & St. Louis Railroad ("Nickel Plate Road") — **Road Number(s):** 44 (2nd); Renumbered in 1910: 304
Akron, Canton & Youngstown Railroad — 304
Dansville & Mount Morris Railroad — 304

Whyte System Type: 4-6-0 Ten-wheeler — **Class:** P

Builder: American Locomotive Company, Brooks Works

Date Built: December 1905 — **Builder's Number:** 38831

Cylinders (diameter x stroke in inches): 21 x 24 (also reported as 19 x 24)

Boiler Pressure (in lbs. per square inch): 180

Diameter of Drive Wheels (in inches): 62 (other sources say 63)

Tractive Effort (in lbs.): 21,040

Tender Capacity: **Coal (in tons):** — **Water (in gallons):**
Oil (in gallons): Not applicable

Weight on Drivers (in lbs.): 105,600 — **Total Weight:** 136,500

Remarks: Mechanically, locomotive is reportedly in very poor condition, and probably suitable only for exhibit purposes.

Nickel Plate Road (New York, Chicago & St. Louis Railroad) 4-6-0 Locomotive No. 44

History: As of 1900, the New York, Chicago and St. Louis Railroad, which came to be known by the nickname the "Nickel Plate Road," owned 494.72 miles of main track, leased two short line railroads which owned 17.8 miles, and had 10.5 miles of trackage rights on other systems, for a total length of lines operated, as of January 1, 1900, of 523.02 miles, extending basically between Chicago, Illinois, and Buffalo, New York.

At that same time, the Nickel Plate was controlled by the Lake Shore and Michigan Southern Railway Company, which also operated trackage between Buffalo, New York, and Chicago, Illinois, essentially in duplication of the Nickel Plate. But to get to the icing on the cake, the Lake Shore and Michigan Southern was in turn controlled by the New York Central and Hudson River Railroad, eventually to be known as the New York Central System.

Actually, the history of the line began with organization in New York State on April 13, 1881, of the New York, Chicago & St. Louis Railway, which completed construction and opened for traffic on October 23, 1882. But that company had soon entered bankruptcy and was sold at a foreclosure sale in May 1887, and its new owners reorganized it in September 1887 as the New York, Chicago and St. Louis Railroad.

It was this company which in December 1905, took delivery from the Brooks Locomotive Works in Dunkirk, New York, of 10 new 4-6-0 "ten-wheeler" type locomotives numbered 40 through 49 and given the railroad class of P. In October 1906, Brooks delivered another five, numbered 50 through 54. At that time the railroad had not yet become as widely known by its nickname, "Nickel Plate Road," as would later become the case, so these locomotives, No. 44 among them, received the initials of the railroad on the flange of their tenders: N.Y.,C. & ST.L. Centered in the panel below the windows on each side of the cab was the number of the engine, which did not appear on the sand dome. Intended for fast freight duty, these engines had 62-inch drive wheels, Richardson balanced steam chest valves, and Stephenson link motion. Their tenders carried 14 tons of coal and 5,500 gallons of water. The locomotives had wooden pilots, a semi-rectangular number plate with rounded ends centered on the smokebox front, and a box headlight. The new ten-wheelers must have performed well, for in 1908 and 1909, the railroad purchased from the Brooks Works 20 similar but slightly heavier versions of the same locomotives, classed P-1. In 1910, in a general reorganization of motive power typical of major railroads, the New York, Chicago & St. Louis Railroad renumbered the Class P 4-6-0s from 40 through 54 to 300 through 315; No. 44 became No. 304.

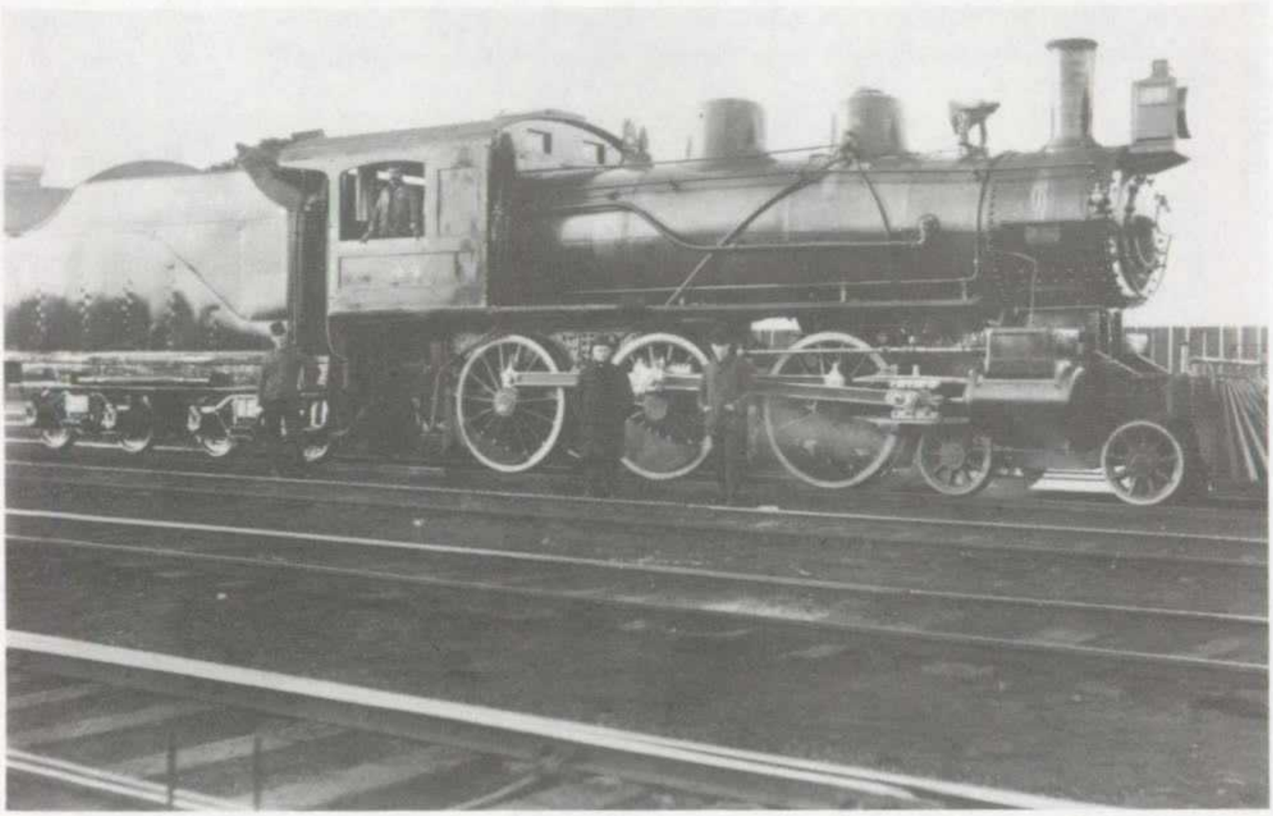
Meanwhile, the railroad itself was about to experience some momentous changes. As already mentioned, this component of the New York Central System essentially duplicated another component of that system geographically. Perhaps for this reason, although probably for fiscal reasons as well, the New York Central System, on July 6, 1916, unloaded its controlling interest in the New York, Chicago & St. Louis for what in retrospect seems to have been a song. The New York Central sold a controlling interest consisting of $6,240,000 shares of common stock, $6,275,000 of second preferred stock, and $2,503,000 shares of first preferred stock to Cleveland financial interests headed by the brothers O.P. and M.J. Van Sweringen for a mere $8,500,000, of which the Van Sweringen interests paid $2,000,000 in cash and $6,500,000 in notes secured by a pledge of the stock. The Van Sweringens and their associates hoped to build a railroad system of their own, and acquisition of the New York, Chicago & St. Louis Railroad proved a large step in that direction. However, World War I had already been in progress in Europe for two years, and in 1917, the United States was dragged into the war. In 1918 the United States government took over most of the nation's railroads--an unprecedented wartime measure--operating them under the U.S. Railroad

Administration throughout 1919 and the first two months of 1920. It was not until March 1920 that the Van Sweringens regained control of the railroad they had so recently bought.

Two steps the Van Sweringens undertook in 1920 were to affect the Class P 4-6-0 locomotives. First, to expand their railroad system, the Van Sweringens acquired control of the Lake Erie and Western. But in order to do so they had to agree to the Lake Erie and Western selling off a subsidiary of its own, the Northern Ohio Railway, the Lake Erie and Western selling the latter to a small, local 9.57-mile-long Akron, Ohio, switching railroad known as the Akron, Canton and Youngstown Railway. As the principal motive power of the Northern Ohio, the A.C.& Y. thus acquired a number of small, worn-out Brooks Moguls and obviously needed more powerful motive power. At the same time, the prosperity of the postwar decade of the 1920s brought with it a need on the part of the New York, Chicago & St. Louis for heavier motive power. Accordingly, on May 19, 1920, the New York, Chicago & St. Louis unloaded some of its earlier, smaller power by selling 12 of its 15 Class P 4-6-0s to the Akron, Canton & Youngstown Railway, retaining only Nos. 302, 306, and 311. The Akron, Canton & Youngstown reportedly paid $10,250 per locomotive. The A.C.& Y. retained the same engine numbers for these locomotives.

A latecomer to the Ohio railway scene, the Akron, Canton & Youngstown Railway was incorporated by a number of Akron businessmen on June 17, 1907, and completed its 9.57 miles from Akron to Mogadore in 1913. It was the type of railroad that the rest of the industry referred to as a "traffic thief." Instead of being built into a region devoid of railroads and creating industries that could grow only with rail transportation, while taking existing traffic away from teamsters, drayage firms, and river or canal boats, the A.C.& Y. built through a territory already well served by existing railroads. It was routed in such a way as to cross them at key points and divert traffic from them. It could acquire traffic only at the cost of other railroads in its region. It was a cannibal of railroads.

On March 1, 1920, fortune smiled on the A.C.& Y., and it was able to acquire the 152.33 miles of the Northern Ohio Railway extending from Delphos to Copley, Ohio, and aside from controlling that line, purchased from it and transferred into the A.C.& Y. itself the 9.41 miles from Akron to Copley Junction. By this time the A.C.& Y. operated a total of 171 miles of track, and from a traffic thief of a switching road, had become a respectable short line railroad, "Akron's own railroad" as it called itself. With the growth of the automobile industry, Akron prospered, for its burgeoning rubber industry supplied many of the tires for America's automobiles, and the A.C.& Y. carried them. But the original 9.57-mile A.C.& Y. operated with five 0-6-0 switchers, and acquisition of the Northern Ohio Railway brought only "ten elderly and worn-out Brooks Moguls." The Northern Ohio also featured two light bridges built probably in the 1890s, and its new A.C.& Y. owner had to replace them with new, heavier duty bridges. Meanwhile, it purchased the dozen New York, Chicago & St. Louis ten-wheelers, which soon took over most of the A.C.& Y. operations, including the six day per week mixed train to Delphos and extra freights. By the end of 1922, the A.C.& Y. had sold off the ten old Brooks moguls, either to industry or to scrap dealers.



Built in December 1905, Nickel Plate Road Locomotive No. 44 later became Akron, Canton and Youngstown Locomotive No. 304, and is the only surviving locomotive of those that operated on that Ohio carrier, even if only a secondhand engine there. Subsequently, it went to a third owner, the Dansville and Mount Morris Railroad in New York. The view above shows the locomotive early in its career, still equipped with a box headlight, still featuring a hardwood pilot, and lettered with the full initials of the New York, Chicago & St. Louis Railroad, without the slogan "Nickel Plate Road" (a nickname that only later came into wide use) emblazoned on its tender.

Collection of the Railway and Locomotive Historical Society,
California State Railroad Museum Library

In Akron during the 1920s, two small kids about knee-high to a grasshopper in size would watch the A.C.& Y. 4-6-0s, including No. 304, as they worked freight trains through town. One of them, Bob Richardson, recalled:

> The ex-Nickel Plate engines provided a fascinating late afternoon show for a couple of juveniles who lived "up the hill" about six blocks from the little AC&Y/NO depot on Main St. About 4:30 or so we would sometimes hear the long station blast of [the whistle of] the mixed as it approached just below the west rim of the Cuyahoga River valley, a couple miles from the station. The sound carried clearly as we were at a higher elevation and there was nothing in between to absorb the pleasant whistle. We knew we had a good ten minutes to hurry across the park, ending any baseball or other pursuit, down the steep Perkins street hill and perch ourselves on a wall conveniently a block and a half from Main St. giving us a good view of the depot area, and the steep grade commencing at Main St. which made a curve past us, continuing on another block and a half until the track leveled out as it approached a small yard of the AC&Y.
>
> The crossing watchman would stride out to the middle of Main St. holding aloft his sign as the important-sounding 300 [class] would after crawling across the trestle a block and a half from Main St. . . . immediately respond to a widened throttle and storm across Main St. hitting and immediately slowing on the grade, trundling perhaps 15 box cars behind it and when the mail-express car and coach were about to reach the depot it would slow and stop, blocking both Main St. and a somewhat less busy High St. Uncoupled from the two passenger cars. . .the engineer with considerable sanding would just barely get going, practically in front of us, and move the train, showering us with smoke and cinders. Of course if it happened to be rainy (and we wouldn't have thought of missing such a show as would ensue, no matter how wet we may get) he might be able to only get part of the freight cars up the hill, a portent of the show to come!

At this point the engineer would have left some freight cars between Main and High streets while he moved part of his train up the hill to the freight yard. Then he would have to return for the freight cars left behind on the first hill climb, as well as the passenger equipment.

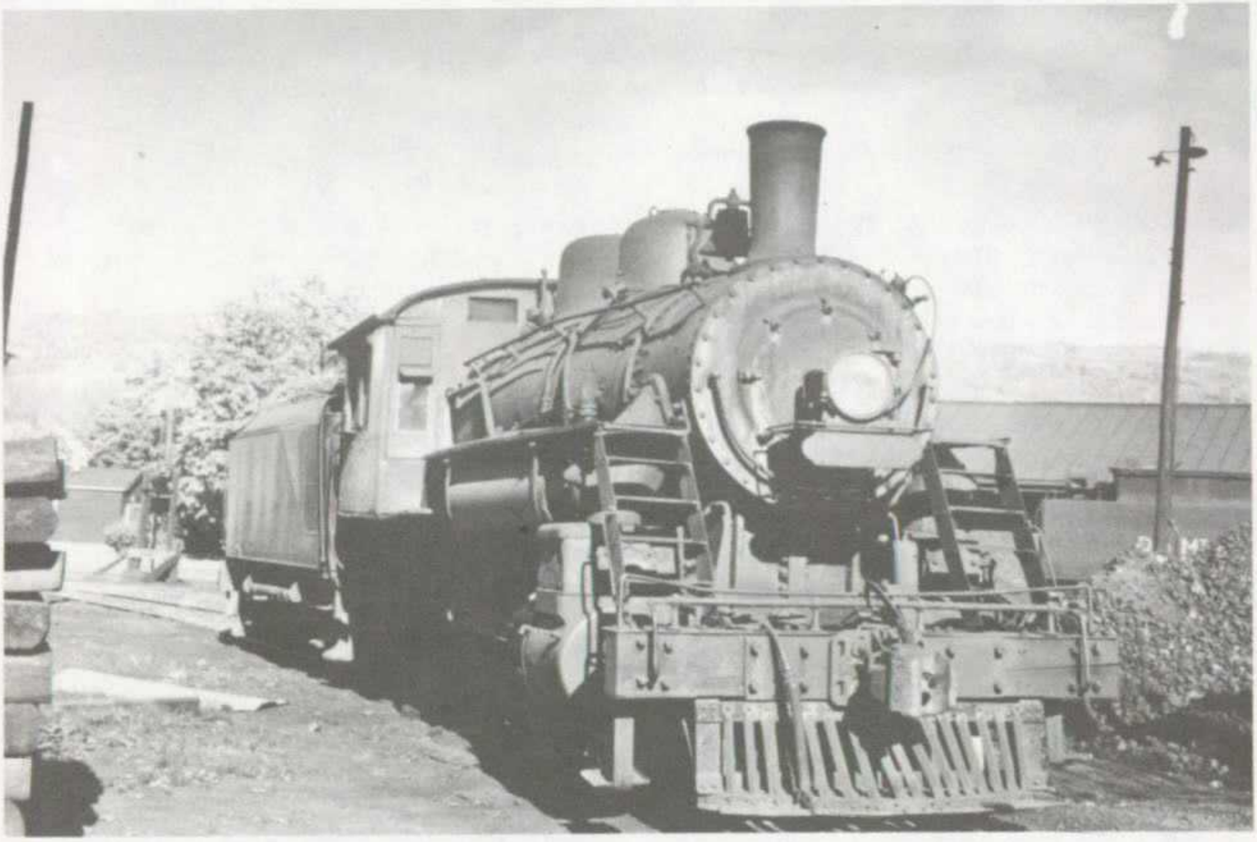
> It didn't take long to unload the few passengers, but sometimes the express and mail took quite a while as the "Akron & Delphos R.P.O." served many mail routes and small offices. Now the ten-wheeler would back down with the freight cars, once more blocking Main St. while the coupling was made, then as traffic of Model Ts, streetcars and interurbans backed up, would back the train out to the bridge, to give the fireman a few minutes to build up a full head of steam. This accomplished, it would whistle off, the watchman would once again bring traffic to a halt, as with throttle wide and bell clanging, it would roar over Main St. and hit the grade. By the time it reached our "bleachers" it would sometimes be down to a walk, and SOMETIMES it was all too much for the skill of the engineer and the wheels would spin and the train would stop. Would they back down and try again? Would the brakeman go back and cut the train so they could double up to the small yard? They might do either, but if the track was wet (as wet as the two junior spectators determined to stick it out), half the train would be backed to clear Main St. and the other half would make it to the yard. With the ancient coach receding from our view into the yard, we'd start back up the hill for

home, probably late for supper, to be chided by parents who just could not understand what was such an attraction as watching a smoky old freight train tie up traffic in the rush hour. For we seemed to be the only persons who had any enjoyment out of it, the engineer never looked at us, nobody waved, and we suspected the crew didn't like our enjoyment of their problems at the end of a long day from Delphos.

Some years later a friend introduced Richardson to a retiring A.C.& Y. engineer who peered intently at him and then exclaimed, "Say, you look very much like one of those kids who used to watch us try to get the mixed up the hill from Main Street." Richardson admitted that indeed he had been one of the two kids who used to watch. The engineer said something, unsmilingly, to the effect that they were the only ones enjoying it. Richardson and other young railroad buffs had a hobby of recording the numbers of engines they watched, just as birdwatchers collect species of birds, and he knew that No. 304 was one of the engines he had seen climbing the hill above Main Street in Akron during the 1920s.

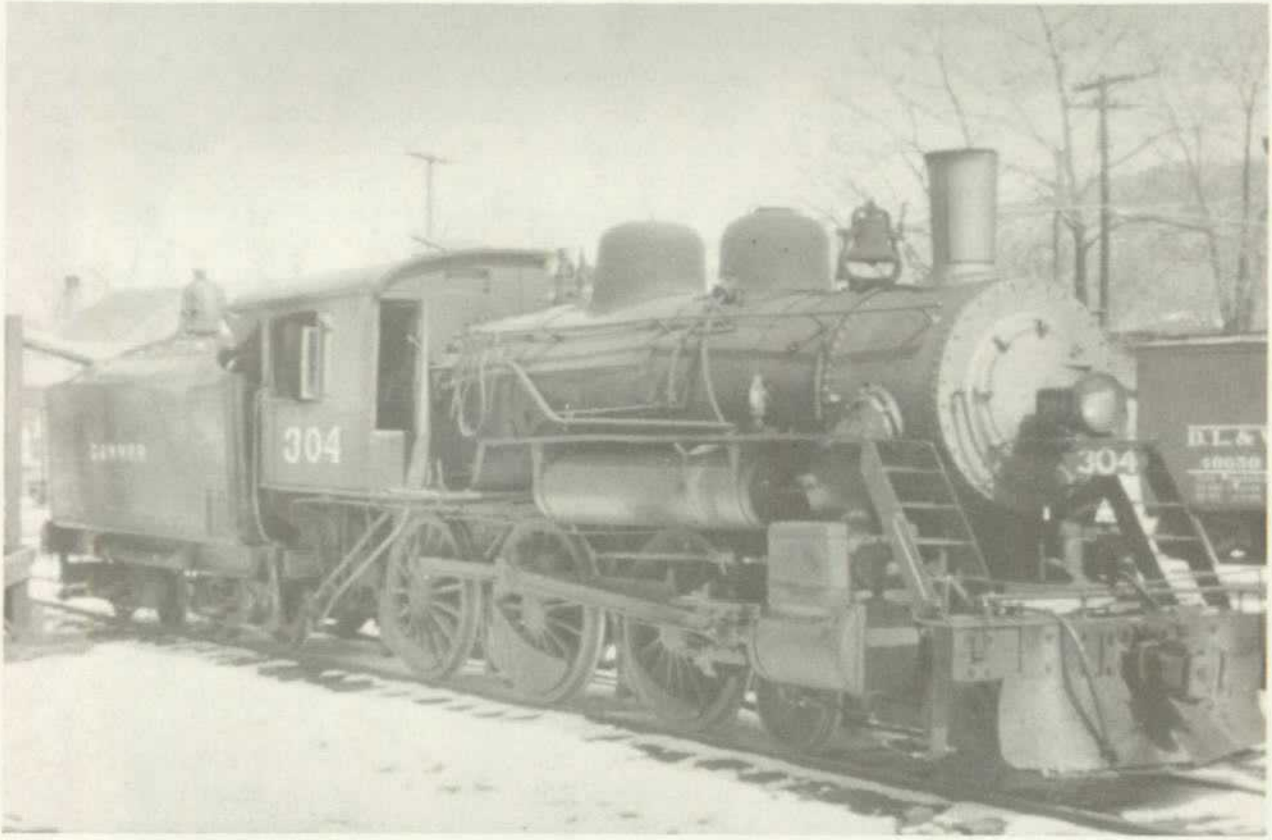
By the end of the 1920s, the A.C.& Y. had acquired heavier engines, and the little 300-series 4-6-0s vanished from the roster in 1929 and 1930, sold to other railroads, to industries, or to scrap dealers. The A.C.& Y. sold No. 304 to a New York State short line, the Dansville and Mount Morris Railroad, on July 6, 1929.

The Dansville and Mount Morris had a long history for a short line. Incorporated less than three years after the Civil War, on January 4, 1868, as the Erie and Genesee Valley Railroad, the company completed construction between Mount Morris and Dansville, 15.5 miles, at a cost of $191,302, in 1871, and the Erie Railroad, which had encouraged construction of the short line, immediately leased it. As the Erie at that time had a broad gauge of 6 feet between rails, it is likely the Erie and Genesee Valley also featured that gauge; if so, when in June 1880, the Erie narrowed its tracks to the standard gauge of 4 feet, 8½ inches, the Erie & Genesee Valley must also have done so. The terms of the lease Jay Gould had established proved very adverse to the Erie & Genesee Valley, and on October 21, 1891, the Dansville and Mount Morris Railroad was incorporated as a reorganization of the Erie and Genesee Valley. But the new company, independent at last of the Erie, proved too weak financially to meet interest payments, and on June 8, 1894, the company entered a receivership that was to last until September 30, 1927. The initial receiver, Ambrose S. Murray, Jr., who held the post for 31 years, failed to revive the line to the point of terminating the receivership, but on May 19, 1925, E.M. Harter and Clifford Hubbell became receivers and had begun to pull the railroad out of its financial cesspool by the end of that same year. Their aggressive management terminated the receivership in less than three years, and less than two years after that, on July 6, 1929, they bought from the Akron, Canton & Youngstown Railroad its Locomotive No. 304, whose number they retained. In early years, the railroad connected with the Erie, but during its later years, it connected with the Delaware, Lackawanna & Western Railroad at Groveland, New York.



Views of No. 304 on the Akron, Canton & Youngstown Railroad have yet to be located, but the locomotive was well-photographed on trackage of its subsequent owner, the Dansville & Mount Morris Railroad. In a summertime view, the angle bar rather than boiler tube pilot, which replaced the locomotive's original hardwood pilot, is evident, the flanges on the sides of the tender have been reduced in height, the headlight lowered to center on the smokebox front, and the old Nickel Plate Road front number plate mounted just beneath the headlight.

Medefoto, Steamtown Foundation Collection



In a view during winter, Dansville & Mount Morris Railroad No. 304 carried a wedge snowplow bolted to her angle-bar pilot or "cow-catcher." The arched side windows of her cab bespoke her Nickel Plate Road origin.

Universal Slide Company, Steamtown Foundation Collection

The Dansville and Mount Morris Railroad operated Locomotive No. 304 intermittently for another quarter-century. The company also acquired a Lackawanna Mogul, No. 565, and to gain time on compulsory renewal of boiler tubes, adopted the unusual policy of laying one engine up for an entire year while the other worked steadily, borrowing an Erie locomotive if their one "in-service" locomotive broke down. For repairs, the railroad relied on a boilermaker from the Erie's nearby Hornell Shops. In later years, the road operated only the 7.8 miles from Dansville to the Lackawanna connection at Groveland. Both of the later engines, Nos. 304 and 565, reportedly steamed freely on a very light fire, and thus kept fuel costs extraordinarily low, which in later years deterred Diesel salesmen. The line hauled feed, fuel, and light manufactures, its principal shipper being the Foster-Wheeler plant at Dansville that manufactured marine boilers and allied equipment. It was a mystery to many how so small a railroad could survive after nearly a century; David P. Morgan, editor of *Trains* magazine, visited the line in 1956 and characterized it as follows:

> It owns 2 locomotives.
> It has 2 stockholders.
> It has 15 employees.
> Net income in 1954 was about enough to buy a Ford, and in 1955 there wasn't any.

Nevertheless, he pointed out, from 1937 until 1956 it had paid yearly dividends! He subtitled his article on the Dansville and Mount Morris and several other short line railroads in the twilight of steam locomotives in America, "A story of small, elderly engines."

But even small, elderly engines finally come to the end of track. It was in the year after Morgan's visit, 1957, that the Dansville and Mount Morris Railroad finally retired No. 304, selling it on June 25, 1957, to Myers Steel and Supply Company, a scrap dealer. However, the Myers firm never removed the engine from the Dansville and Mount Morris property, and in 1963, F. Nelson Blount learned of it and arranged to purchase it for $1,256 f.o.b. Dansville, New York. Dansville and Mount Morris General Manager F.A. Hart wanted Blount to be clear on the condition of the engine, and wrote him on November 18, 1963, after receiving Blount's $500 down payment:

> Frankly I never expected to hear from you but before I make out a bill of sale there are several things I want to be sure we both understand. The engine is exactly the way it was when you inspected it viz: minus the water glass and fixture, the feed valve and the injector. The glass in headlight is broken and someone stole the builders number plate. As I informed you the [other] missing items were sold to the A&A [Arcade & Attica] R.R.
>
> I have ordered a beam for the rear of the tank [tender] from a sawmill at a cost of $15.00, delivery promised in about two weeks. The train crew of 3 men have agreed to install the timber, take off the main and side rods, block the crossheads and fix the air on Saturdays, but they won't do anything until after the hunting season is over which I think is December 7th. They figure it will take them 4 Saturdays to do this work which would be 96 hours at $2.25 per hour or $216.00. We will have to hire a mobile crane to load the 4 side rods onto the tank which will cost $25.00 making the total cost of $256.00.

Whether the repairs took longer than anticipated or other delays occurred is not clear, but it was not until March 17, 1964, that the Dansville and Mount Morris shipped Engine 304 out on the Erie-

Lackawanna via Binghamton and Mechanicville and the destination was to be Bellows Falls, Vermont, where Blount had moved from North Walpole, New Hampshire.

The only American-built ten-wheeler type in the Steamtown collection, No. 44 (No. 304) may be the oldest New York, Chicago & St. Louis Railroad engine surviving, of which there are 12, half of which are Berkshires and a quarter of which are Mikados, the others being a Hudson and a six-coupled switcher, and, of course, No. 44. Furthermore, No. 44 is the only surviving steam locomotive of the Akron, Canton & Youngstown Railroad, no other locomotive of its eventually sizable roster of steam power having been preserved. No. 304 is one of two Dansville and Mount Morris locomotives to survive, the other one, Lackawanna No. 565, also in the Steamtown collection.

The most notable changes in the appearance of this locomotive were replacement of its wooden pilot with a steel pilot, replacement of its box headlight with a Pyle headlight relocated from the top of the smokebox ahead of the stack to the center of the smokebox front, and cutting down of the flange at the top of the tender sides. On the A.C.& Y. the headlight had been moved already to the center of the smokebox front, with the original Nickel Plate number plate hanging from the headlight platform's front edge, and this configuration continued on the Dansville and Mount Morris. If Steamtown has the headlight bracket and Pyle headlight stored in the collection, it may also have the original Nickel Plate smokebox-front number plate. It is not known whether it was the New York, Chicago & St. Louis Railroad itself which relocated the headlight and number plate, or whether that was done on the Akron, Canton & Youngstown in the 1920s. The engine has a steel cab which dates from before 1910 and appears to be the engine's original cab.

Condition: Mechanically, this locomotive is in very poor condition and probably cannot be made operable without great cost and at the expense of much of its original fabric. As an exhibit specimen, this locomotive has comparatively more integrity dating from its original construction than do most locomotives of comparable age. Restoration to its early appearance as Nickel Plate No. 44 of the 1905-1910 period appears feasible.

Recommendation: This excellent example of a Nickel Plate 4-6-0 should be preserved by the National Park Service, which should commission an in-depth report, to document and describe the history and physical history of the locomotive. Unless the locomotive appears under close examination to be in much better mechanical condition than assumed, it should be considered an exhibit locomotive not to be fired up and not to be restored to operable condition. It should be accurately restored to reflect one of the three major periods in its history. This special history study leans toward restoring the locomotive to its Brooks "as built" appearance as New York, Chicago & St. Louis Railroad No. 44, of the 1905-1910 period, a recommendation made after serious and thoughtful consideration. Locomotives of comparable age in the Steamtown collection generally have been so altered over the years that restoration to their earliest appearance is not feasible without unacceptable cost to original fabric of a later era. The changes to this particular locomotive, however, appear to have been so minimal that it may be possible at comparatively little cost to historic fabric to restore the locomotive to its earliest appearance. If, after the more thorough examination of a historic railroad locomotive report, that proves to be the case, then such restoration should be done so that at least one locomotive in the Steamtown collection will represent its appearance during the first decade of the 20th century, since the 20th century in steam railroading is a recommended focus of this collection. If the locomotive is restored to its pre-1910 appearance, removal of the later Pyle headlight and the steel pilot would be necessary; these and any other components removed should then be cataloged into, and stored as a part of, the museum collection and their association with this locomotive documented. In the process of preparing the report, physical analysis of paint on the locomotive should be carefully carried out, to document the colors of boiler and cylinder jackets, domes, smokebox, driver centers, and tender, and to document placement, shape, color and size of any early letters and numbers that survive under later paint. The documentary research for the report should especially focus on obtaining early photographs of this class of 4-6-0 on the New York, Chicago, & St. Louis and later on the Akron, Canton & Youngstown.

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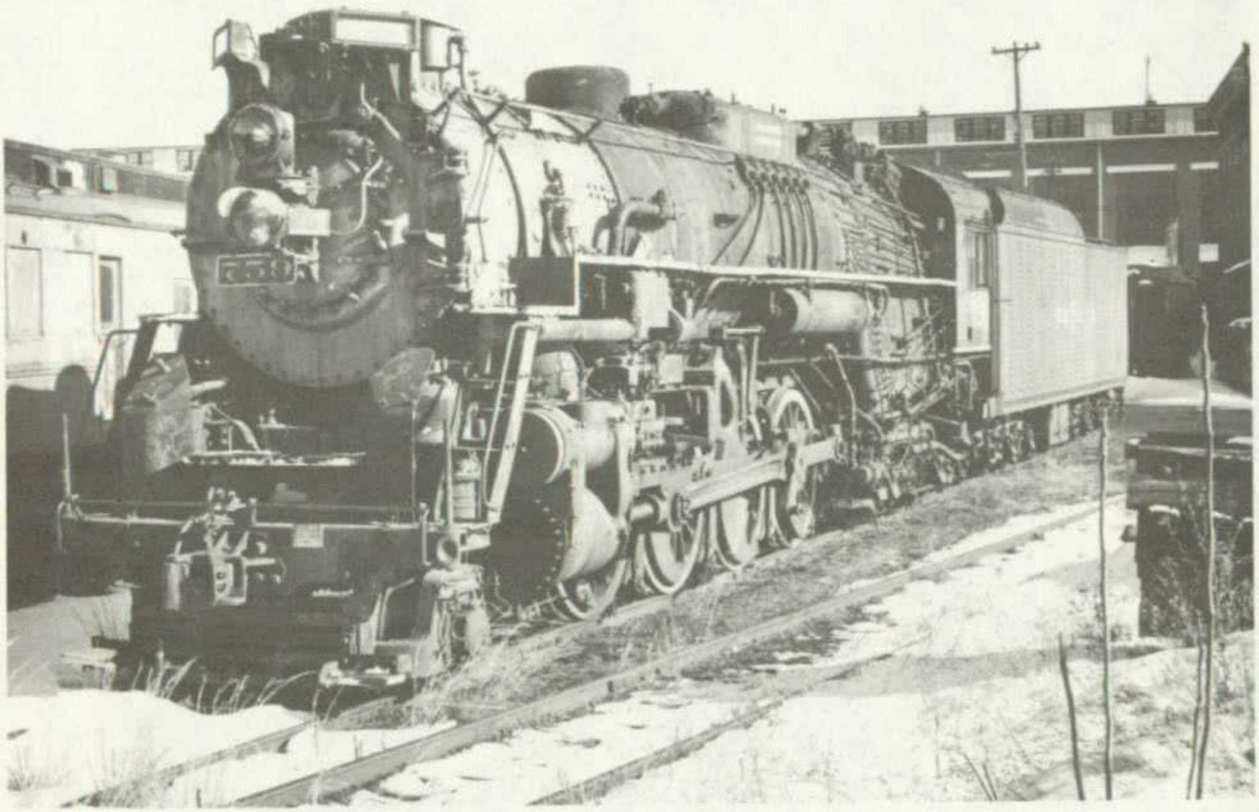
NICKEL PLATE ROAD (NEW YORK, CHICAGO AND ST. LOUIS) NO. 759



Owner(s): New York, Chicago & St. Louis Railroad ("Nickel Plate Road")

Road Number(s): 759

Whyte System Type: 2-8-4 Berkshire

Class: S-2

Builder: Lima Locomotive Works, Lima, Ohio

Date Built: August 1944

Builder's Number: 8667

Cylinders (diameter x stroke in inches): 25 x 34

Boiler Pressure (in lbs. per square inch): 245

Diameter of Drive Wheels (in inches): 69

Tractive Effort (in lbs.): 64,100

Tender Capacity: **Coal (in tons):** 22
Oil (in gallons): Not applicable

Water (in gallons): 22,000

Weight on Drivers (in lbs.): 264,300

Total weight: 440,800

Remarks: Engine is not in bad condition, but needs tubes and flues, new superheater units, and valve packing and bull rings. It has Baker valve gear and piston valves. It was overhauled by N.K. Porter in 1958, and received minor work in 1969 for High Iron excursions.

Nickel Plate Road (N.Y., C. & St. L. R.R.) 2-8-4 Locomotive No. 759

History: One of a class of modern, heavy-duty, main line engines, a type first developed in 1925 and dubbed Berkshires by the Boston & Albany Railroad for the mountains over which they first ran, Locomotive No. 759 was one of 80 Berkshires purchased by the Nickel Plate Road (formally the New York, Chicago & St. Louis Railroad) between 1934 and 1949. The American Locomotive Company won the low bid for the Nickel Plate Road's first 15 2-8-4s in 1934, but the Lima Locomotive Works in Lima, Ohio, built the remaining 65 in a series of subsequent orders.

The 2-8-4 or Berkshire type of railroad engine, according to steam locomotive historian Eugene Huddleston, originated in an effort of the Lima Locomotive Works and its designer Will Woodard to improve on the speed and horsepower of the Mikado 2-8-2 locomotive designed as a standard for the nation's railroads by the World War I federal transportation agency, the United States Railroad Administration, which advanced some admirable standard locomotive designs. Woodard's and Lima's first effort was simply a bigger and better 2-8-2, with the same cylinder and firebox dimensions as the "U.S.R.A." engine design, but with larger boiler, front end throttle, Baker valve gear, the recently developed Type E superheater, and a feedwater heater. This effort, in engines sold to the New York Central, proved successful, but the new Mikados still exhibited some limitations such as wheel slippage and inability to keep up steam at speed over a long period.

Woodard sought to improve on his "super Mikado" by solving these problems too, which led him to expand from a "super" 2-8-2 to a wholly new wheel arrangement, a 2-8-4, designed to accommodate an even larger boiler and firebox to ensure an engine that could produce sufficient steam at speed over long distances. Turned out by Lima in February 1925 for a New York Central System subsidiary, the Boston and Albany, in tests between Albany, New York and West Springfield, Massachusetts, the new 2-8-4 successfully hauled 2,500 tons unassisted by helper engines across the Taconic Mountains of western Massachusetts, known regionally as the Berkshire Hills. Soon the new class of engine, the 2-8-4, was dubbed "the Berkshire," and the New York Central bought 55 of them, while other railroads purchased still more.

A variant, improved series of Berkshire locomotives originated two years later on the group of railroads controlled by the brothers Oris P. and Mantis J. Van Sweringen. These bachelor Cleveland, Ohio, financiers had purchased control of the New York, Chicago & St. Louis Railroad, better known as the Nickel Plate Road, by 1916, and when the Interstate Commerce Commission began developing a scheme of railroad consolidation after World War I, the Van Sweringens undertook their own private strategy of consolidation, determined to control one of the major groupings or railroad systems that would emerge. To their ownership of the Nickel Plate they added other carriers, including notably by 1922, the Chesapeake and Ohio and the Hocking Valley, and by 1927, the Pere Marquette, the Wheeling and Lake Erie, and the Erie Railroad. The Van Sweringens' talented subordinate, President John Bernet of the Nickel Plate, moved to the Erie Railroad to revitalize that newly acquired carrier, and took with him Nickel Plate Superintendent of Motive Power William Black. While working for the Erie, Black designed a high-powered Berkshire 2-8-4 with 70-inch drivers, wheels 7 inches larger in diameter than those of the conventional Lima Berkshires. The Erie bought 105 of these.

The Interstate Commerce Commission refused to allow the Van Sweringen consolidation scheme, so the brothers lost interest in the Erie Railroad. Consequently, Black moved to the Van Sweringen-owned Chesapeake & Ohio Railroad. For that line he designed a larger variant of the Berkshire, a 2-10-4.

Meanwhile, headquartered in Cleveland, Black also led an Advisory Mechanical Committee that served the four principal remaining Van Sweringen-owned roads, the Nickel Plate, the Chesapeake & Ohio, the Pere Marquette, and the Hocking Valley, a committee that continued to function even after both Van Swearingens had passed from the scene. This committee designed five eminently successful classes of modern high-powered steam locomotives, one of which proved to be the finest class of Berkshires ever made and among the finest steam locomotives ever built.

First produced in 1934 for the Nickel Plate Road, this new design of engine was not merely a copy of Black's Erie Railroad Berkshire, but a mathematically scaled-down version of the C & 0's 2-10-4, which had derived from the Erie Berkshire.

Both Chief Mechanical Officer William Black and his mentor, President John Bernet, soon died, but their Advisory Mechanical Committee survived them, and in 1937 the Pere Marquette ordered another group of the Berkshires designed by the committee.

George D. Brooke had succeeded Bernet as president of the Pere Marquette, the Nickel Plate and the C & O, and the C & O soon purchased a similar class of engines. When Brooke later left the C & 0 to head the Virginian, that railroad too would soon acquire similar Berkshire locomotives. Two other railroads not controlled by the Van Sweringens and their successors acquired Berkshires of essentially the Nickel Plate design: the Louisville and Nashville and the Richmond, Fredericksburg and Potomac. Other railroads, such as the Missouri Pacific and the Wheeling & Lake Erie, obtained Berkshires whose design derived either from the Boston & Albany Berkshires or from independent design.

Of all of the Berkshires, those of the Nickel Plate Road became probably the most famous, perhaps more famous even than those of the Boston & Albany Railroad from which the type derived its name.

To return to the story of the Nickel Plate Berkshires, historian Huddleston observed that in 1934, the Advisory Mechanical Committee

> designed the greatest 2-8-4 ever to take to the rails. The Committee achieved this feat by "slide ruling" down the C&O Texas type of 1930 [the 2-10-4 already mentioned] in all important dimensions (except driver diameter) to a 2-8-4. This new Nickel Plate Berkshire not only looked like a slightly scaled down version of the C&O T-1, it performed like it, for with a tractive effort and weight on drivers 70%, of the T-1's, it had the same factor of adhesion. In fact, the NKP 2-8-4 had one advantage over the C&O T-1--less dynamic augment (jumping up and down) as a result of having less side and main rod weight. With visored headlight in middle of boiler and cast number plate attached, twin shields protecting the air pumps, a platform between the shields, and bell hanging jauntily over the brow of the smokebox, the Erie influence was unmistakable.

This led to that initial purchase from the American Locomotive Company of 15 2-8-4s for service on the Nickel Plate, which designated them as Class S engines.

But it was the Lima Locomotive Works, noted especially as a builder of Shay patent-geared locomotives used primarily by logging and mining railroads, that had built the first Berkshires, and it was Lima, now builder of many fine main line steam locomotives, that won subsequent orders for Berkshire-type locomotives from the Nickel Plate. The Nickel Plate bought eight of these in June 1942, Nos. 715 through 722, designated as Class S-1, and in 1943 bought seven more from Lima, these in a new Class S-2, Nos. 730 through 734 being delivered in March and Nos. 735 and 736 in June. The difference between the S-1 and S-2 classes appears to have been principally in the weight on drivers, 258,000 lbs. for the S-1 and 264,000 for the S-2, and the total weight of engine and tender, 421,000 pounds compared with 440,800 pounds. The other vital statistics of the two classes of Nickel Plate Berkshires were the same: 25-inch diameter cylinders with 34-inch stroke, 69-inch diameter drive wheels, 245 pounds per square inch boiler pressure, 90.3 square feet of grate area, and tractive effort of 64,000 pounds. Because of its greater weight, the S-2 had a slightly greater adhesion factor.

The S-2 in the Steamtown collection, No. 759, came with the Nickel Plate's third order of Berkshires from Lima, order No. 1184, placed on June 25, 1943, in the middle of World War II. The order called for 15 identical locomotives, and these the builder delivered in two increments: Lima outshopped Nos. 755 through 762 in August, 1944, and the remaining seven, Nos. 763 through 769, in September 1944. The company photographer made builder's photographs of No. 757 as representative of each of these 15 locomotives on August 18 and 19, 1944.

After World War II, the able management of Nickel Plate President John Davin made the old New York, Chicago & St. Louis a highly efficient freight carrier, characterized by heavy traffic density, sustained fast speeds, and specialized consists. It handled "bridge" traffic between East St. Louis, Peoria, and Chicago as its three western termini, and Buffalo, its eastern terminus. The Nickel Plate offered the shortest, fastest route between Chicago and Buffalo. The line primarily traversed flat land and featured many long tangents or stretches of straight track on which a capable locomotive could really step out.

In 1949, the railroad bought another 10 Berkshires from Lima, these classed as S-3, being still heavier engines. No. 779, turned out in 1949, proved to be the last steam locomotive produced by the Lima Locomotive Works.

In later years, the Nickel Plate made a number of modifications to the locomotives, such as the illuminated number plates slanted at a 45-degree angle on each side of the feedwater heater pre-heater unit. The most striking change came in the early 1950s, when the Nickel Plate equipped these engines with large Mars safety lamps whose penetrating beam oscillated in a figure eight pattern, mounting this second headlight above the fixed headlight. This, and other modifications such as installation of radios in the cabs of some of the Berkshires between 1953 and 1957, called for an increased number of generators, until some Nickel Plate Berkshires had four.

The 80 Nickel Plate Berkshires became famous as locomotives due to their fine performance and efficient design, but also perhaps due to the fact that they were well-proportioned, handsome machines. *Trains Magazine* said in March 1969 that they

> exemplified not only "the engines that saved a railroad" . . . but the larger world of Super Power instigated by her builder and by her wheel arrangement. She had the long stroke, high pressure, big boiler, tall drivers, and generous grate area of advanced but sound design, and her modernity of measurements had been refined with force-feed lubrication, roller bearings, a feedwater heater, and a division-spanning tender.

These 2-8-4s, as mentioned, served the Nickel Plate principally as freight locomotives, rolling across the hills and plains of Ohio and Indiana at speeds of 50 to 70 miles per hour. Locomotive historian Richard Cook said that they "must be ranked among the most successful steam locomotives ever built."

Paul Hackenberger recalled to Richard Cook running Nickel Plate "Berkshires":

> My first contact with the Lima-built S-class engines was the No. 730. To say that she was different is an understatement. I was annoyed that the finely ground coal the road used burned in suspension in the S engines; this gave lots of ash, especially in any switching, and I had to shake the grates often.
>
> I found that these engines could really pull. In fact, in about 1952 or 1953, the company began to load the tonnage on these 700's and 5,000-ton trains were something unheard of until then. And yet, those 700's handled the heavy trains with ease.
>
> I always ran the 700's with the throttle to the roof. Those engines have four valves --which didn't open all at once. Most of us engineers, about 80 per cent I'd say, just laid that throttle wide open and worked her more by the cut-off marking on the quadrant and by sound. Those engines were also equipped with a back-pressure gauge. If you didn't open the throttle clear up, you weren't getting all the power that was available.
>
> It didn't take me long to find out the S-class engines were slow to pick up speed, but that was due to their high 69-inch drivers. But when they got going--boy, how they could run! A good hogger [engineer] was able to run from South Lima to Frankfort, Indiana, a distance of 145 miles, in three hours and 30 minutes with a 75 to 85 car train, practically the same as passenger train No. 9. In fact, I often ran around the passenger with the NS-5, the *Flying Saucer* as we called it. This was the hottest thing on the railroad.
>
> That S-class engine was one you could depend on. You couldn't do that with any of the other engines. They were balanced just right. Why during World War II, when I had an 18 or 20 car troop train, all with heavy Pullmans you know, those engines would just take off with that train and really run!
>
> Oh, how I loved to hear those engines bark! They had the most beautiful exhaust, which just cracked back and echoed across the buildings when I would walk her out of town. There was never an engine built that had a sound like those engines. They were clear at the stack and they just cut 'em off 'right now'; they really cracked. And on rare occasions when two of them double-headed--oh what a sound!
>
> I handled tonnage over here with those 700's and made time just as good as I could do today with three diesel units--and I'm talking about 1,800 horsepower diesel engines.
>
> The 700's were a beautiful engine; they were undoubtedly the best steam locomotive that ever sat on wheels.

Another Nickel Plate engineer, E.A. Donovan, recalled at the request of historian Cook:

> As far as the S-class engine is concerned, I'm convinced that it was the most powerful locomotive ever built. They have never been surpassed and represented the highest

degree of efficiency in a steam locomotive It was really a thrill to operate them. In fact, it was an art to operate a steam locomotive--just the opposite from running a diesel. With a steam engine you could feel what was happening, and you used your ears in running it. Why, when that locomotive started, you just became a part of it; you functioned as part of that wonderful piece of machinery. They were lovely to handle.

I have worked between Bellevue and Lima, Ohio, and from Lima to Frankfort, Indiana. We used the 700's over the entire distance. When they came to the road they were welcome indeed. The crews soon became convinced that they were well advanced over any previous type of locomotive.

With the 700's, in spite of the tonnage that was loaded on her, I never had one that hung up on me; I never had to double a hill--something that couldn't be said for the smaller engines. Turn-around time at the engine terminal was much shorter, thus making a saving for the company.

The fact that the S-class had so much power took a real throttle artist with a certain sense of feel to get the most out of her. On big trains we could run them wide open, but with a shorter train we couldn't do it. It was a company policy to work them with a wide open throttle whenever possible. The object was to keep a constant pressure of steam going to the valves through the superheater unit to get a high degree of heat. Also, the 700's used steel cylinders, I think that was one of the big things that contributed to the locomotive's success.

I believe they were the most powerful steam locomotive of this type that could be achieved.

Thus the Nickel Plate Berkshires, along with a handful of other locomotive types on other railroads, represented the apotheosis of locomotive development on the eve of the diesel locomotive.

In May 1958, the Nickel Plate thoroughly overhauled No. 759 in the company's great shop at Conneaut, Ohio. As it turned out, No. 759 was the last steam locomotive the Nickel Plate overhauled. By then rapidly converting to diesel power, the company scrapped other steam locomotives where they stood in the Conneaut shop at that same time.

But Nickel Plate Road No. 759 was not finished. On October 16, 1962, F. Nelson Blount added her to his collection of engines at Steamtown USA at Bellows Falls, Vermont, though without restoring her to operation. That was left to Ross Rowland, Jr., a Wall Street commodity futures broker who on the side founded and served as president of the High Iron Company in the mid-1960s. Rowland's purpose was to restore main line steam excursions using heavy-duty motive power. After some trial efforts, in 1967 he incorporated the High Iron Company and operated still more excursions. He had his eye on 1969, the hundredth anniversary of the completion of the first transcontinental railroad at Promontory Summit, Utah, which he planned to commemorate by operating a heavy-duty steam-powered Golden Spike excursion from the East to the Missouri. Steamtown agreed to make No. 759 available in exchange for excursion profits to complete a roundhouse for its engine collection. Norfolk and Western (which by then had absorbed the Nickel Plate in a merger) leased to High Iron the former Nickel Plate roundhouse in Conneaut, Ohio, for purposes of restoration. After limited repairs, No. 759 steamed up on August 17, 1968, made several trial runs, and on August 30 was christened with champagne and took off for Buffalo with a 15-car excursion run. Subsequently No. 759 handled other excursions.

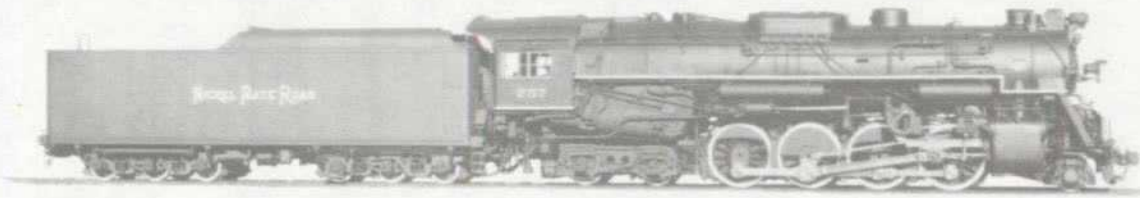
On May 3, 1969, Nickel Plate No. 759, painted black with yellow lettering and with white driver tires departed New York City for Kansas City with the *Gold Spike Special*, which Union Pacific locomotives handled from there to Promontory Summit. Subsequently returned to Bellows Falls, Vermont, the engine operated twice in excursion service for Steamtown USA. Leased to others for excursion use, the locomotive apparently operated into Scranton, Pennsylvania, on August 15, 1971, and on July 22, 1973.

After its last main line excursion, from Boston, Massachusetts, to Montpelier, Vermont, and back, over the Boston and Maine and the Central Vermont in October 1973, Locomotive No. 759 deadheaded under steam to Rouses Point, New York, for winter storage in the Delaware and Hudson roundhouse there, since the locomotive had been scheduled tentatively for excusion duty on the D. & H. the following April. Unfortunately, negotiations for that excusion broke down, and the D. & H. management in an apparent fit of pique had the locomotive pulled out of the promised warm roundhouse storage and set out in the icy winter of upper New York State without draining it. Various pipes, connections, and fittings containing water froze and broke. The Steamtown Foundation sued the D. & H. for its negligence.

No. 759 returned to Bellows Falls towed dead in a train in the spring of 1975. In settlement of the lawsuit, the D. & H. contracted out repair work on some of the freeze damage and on July 6, 1975, a Steamtown crew fired up the locomotive and tested it on the enginehouse lead at Riverside, Vermont. Then it rested unused until the spring of 1977, when Steamtown received a request to use the locomotive in a mainline excursion. Steamtown management planned the completion of freeze-damage repairs and an application to the Federal Railroad Administration for an extension on the deadline for replacing the flues. But when they gave the locomotive a preliminary hydro test a flue burst. Recalling the experience of having two flues blow out while one of Steamtown's older locomotives was in service, and at the suggestion of Steamtown's boiler-repair contractor, Steamtown management decided to reflue the locomotive. The boiler contractor removed all the older flues, and Steamtown ordered a new set. Then sponsorhsip for the proposed excursion fell apart, Steamtown cancelled the order for new flues, and a partially disasscmbled No. 759 awaited an uncertain future. She remained in that status during and after her move to Scranton.

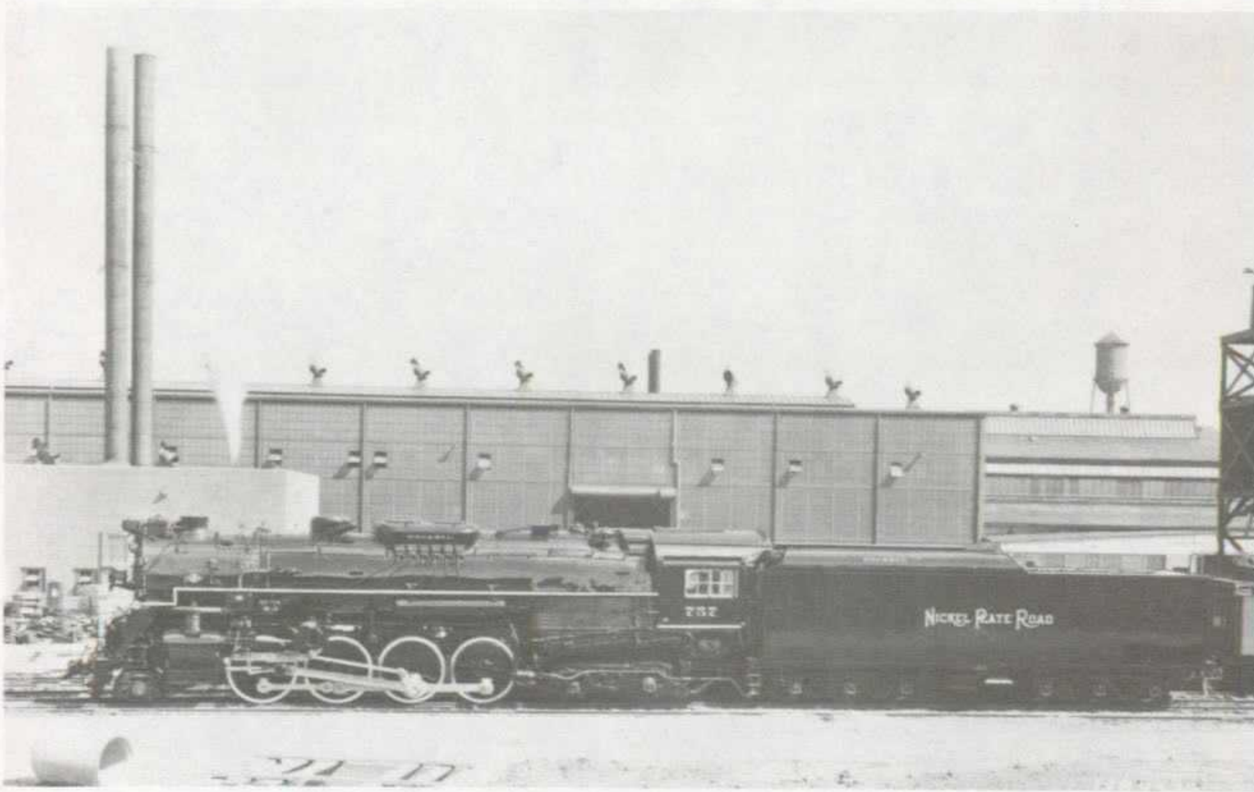
Twenty Berkshire-type locomotives survive in the United States today, six of them from the 80 that operated on the Nickel Plate Road. These include No. 755 at Conneaut, Ohio; No. 757 in the Railroad Museum of Pennsylvania at Strasburg; No. 759 at Scranton; No. 763 at Roanoke, Virginia; No. 765 at Fort Wayne, Indiana; and No. 779 in Lincoln Park at Lima, Ohio. Of the remaining surviving Berkshires, 12 were C & O locomotives, and two came from the Pere Marquette.

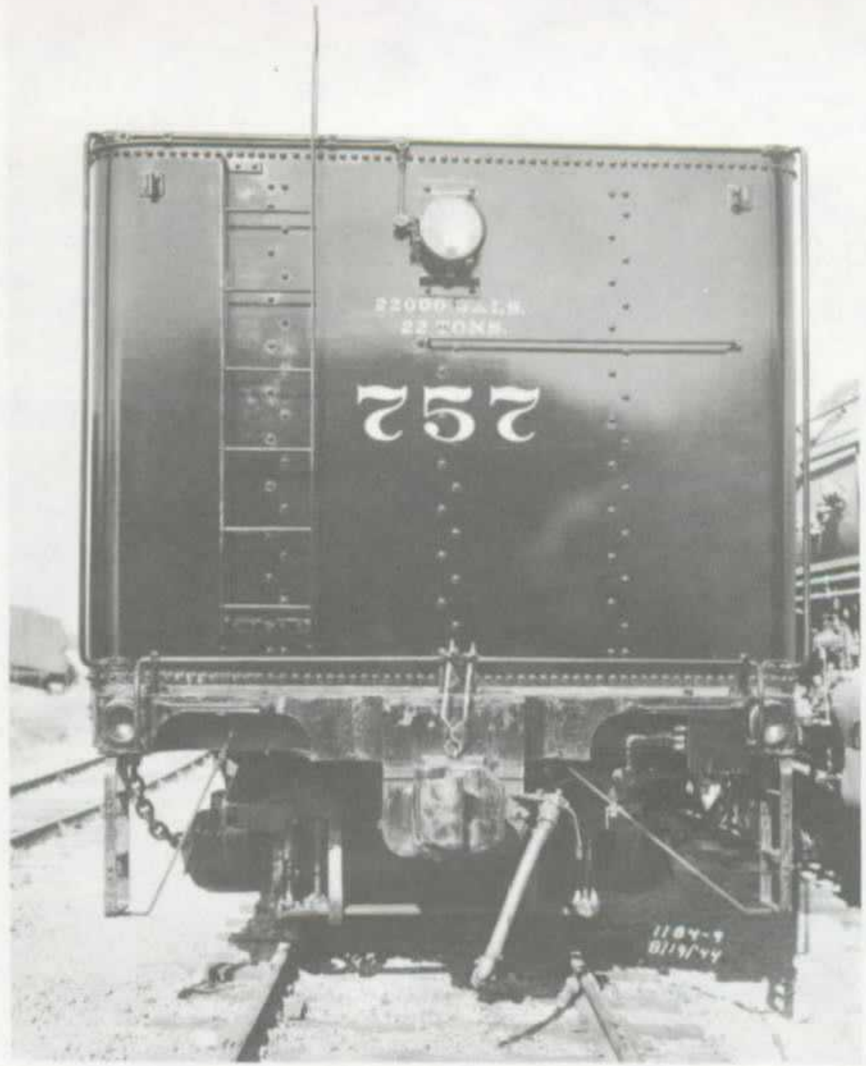
Condition: Nickel Plate Road No. 759 is in need of a major overhaul including flues, but reportedly is a basically sound locomotive that can be restored to operable condition.



As a set of builder's photographs representative of the series of Nickel Plate Road Locomotives 755 through 769, the Lima Locomotive Works chose to photograph right and left sides (shown above and below) of Locomotive No. 757 on August 18, 1944. Locomotive No. 759, now at Steamtown, looked identical except for the last digit in its number.

Allen County Historical Society





Front and rear views of newly built Locomotive No. 757, photographs of which the Lima Locomotive Works intended to represent the entire lot of locomotives, Nos. 755-769, including Steamtown's 759.

Allen County Historical Society

Recommendations: Nickel Plate Road No. 759 is exactly the sort of main line, heavy-duty 20th century steam locomotive that should be the main focus of the Steamtown collection. It is recommended that a report be completed on the subject of this locomotive, after which it should be restored both cosmetically and mechanically and operated occasionally for either excursions or interpretive demonstrations.

In terms of the research in the report, there is extensive published literature on this class of locomotives. The report needs to synthesize that literature and concentrate on pinning down the details of modifications specifically to Locomotive No. 759 over time, and on obtaining copies of photographs of it when it was in service, representing all stages of its career and its modifications and especially when it was in freight service on the Nickel Plate. Operational history of that particular locomotive, together with oral history of any of its surviving crews, should also be a part of the report.

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Owner(s): Norwood & St. Lawrence Railroad

Road Number(s): 210

Whyte System Type: 2-6-0 Mogul

Class:

Builder: American Locomotive Company (Cooke Works, Paterson, New Jersey)

Date Built: December 1923

Builder's Number: 65265 (or 65365)

Cylinders (diameter x stroke in inches): 20 x 26

Boiler Pressure (in lbs. per square inch): 180

Diameter of Drive Wheels (in inches): 56

Tractive Effort (in lbs.): 28,400

Tender Capacity: **Coal (in tons):** 8
Oil (in gallons): Not applicable

Water (in gallons): 5,000

Weight on Drivers (in lbs.): 129,000

Remarks: Locomotive has an all-weather cab and is a manually fired coal burner. This is a tired, worn-out locomotive.

Norwood and St. Lawrence Railroad 2-6-0 Locomotive No. 210

History: The origins of the Norwood and St. Lawrence Railroad paralleled those of other New York State short lines built in the 20th century. Orrin E. Martin, a prominent Norwood, New York, businessman, interested Watertown industrialist Charles H. Remington in the development of water power in nearby Norfolk, New York, and the two organized the Remington and Martin Paper Company, which secured water rights on the Racquette River where it passed through Norfolk, as well as a right-of-way for a railroad.

At their instigation, citizens of Norfolk, Raymondville, and Chase Mills, New York, gathered in the Norfolk Town Hall in February 1900 to promote the organization and construction of a railroad to serve their region. An unusual aspect of this railroad promotional meeting was the active participation of four women, who received special notice in local newspaper accounts of the gathering. Ambitious plans came out of the meeting for construction of a railroad along the Racquette River from its confluence with the St. Lawrence to Piercefield and beyond. Those at the meeting organized a committee including men from Norfolk, Raymondville, Chase Mills, and Waddington.

At 8 a.m. on September 6, 1900, a hundred people gathered to watch O.E. Martin turn the first sod for the new railroad at Norfolk. Curiously, no railroad company had yet been organized, but the committee envisioned the line commencing on the north side of the river near the Furnace Street Bridge and running to the mill and a half-mile beyond. A newspaper account of the day said that it would then be decided whether to continue to Norwood or run to connect with the Raymondville, Waddington and Ogdensburg Railroad at the Marble Hill School House.

Not until March 30, 1901, did its promoters get around to incorporating the Norwood and St. Lawrence Railroad, which then proceeded to construct 7.5 miles of track from Norwood, New York, to Raymondville, New York, which it opened for traffic on July 2, 1901. The railroad's progress then stalled for several years until, under an agreement approved on January 6, 1909, the Norwood and St. Lawrence absorbed and consolidated with the Raymondville and Waddington Railroad Company, completing its 12-mile line between those two towns on July 1, 1909, to create a railroad 18.02 miles long, with 1.5 miles of siding. At Waddington, the railroad had reached its intended destination as stated in its corporate title: the St. Lawrence River. There a ferry provided a connection for traffic across the river, which was also the international boundary, to Morrisburg, Ontario, in Canada. The Norwood and St. Lawrence was thus one of those select few railroads that actually reached the typically over-ambitious objectives stated in their corporate titles.

By 1912 the company owned an ancient, secondhand 4-4-0, another 4-4-0, a 2-6-0, and a 2-6-2, seven box cars of 30-ton capacity, four 20-ton capacity flat cars, and three work-outfit cars, as well as an elegant wooden combination car.

The Remington and Martin Paper Company built mills at Norwood, Norfolk, and Raymondville. The Norfolk mill boasted two paper machines, one of which supposedly was the largest machine of its kind in the world at the time. The hauling of paper pulp became one of the most important functions of the line.

In 1920, the St. Regis Paper Company purchased all three Remington and Martin paper mills and obtained control of the Norwood & St. Lawrence through purchase of stock. Incorporated in New York on February 4, 1899, the St. Regis Paper Company had begun the manufacture of paper in July 1901 in upstate New

York near the St. Lawrence River, and during the next seven decades would expand not only from New York to Florida to California and to the state of Washington, but would own numerous subsidiary plants in Canada, Belgium, Brazil, Argentina, the Republic of South Africa, Rhodesia, Australia, Nicaragua, Colombia, Zambia, Angola, Panama, and Ecuador. It was a company destined, in other words, to grow into a multinational corporation. Meanwhile, it also would own the Norwood and St. Lawrence Railroad.

Robert Wagner, whom the Norwood and St. Lawrence hired in 1945, recalled the line as a "robust Class 2 road" whose traffic outbound consisted of

> roe, ([eggs from] river sturgeon,) milk, paper, passengers, mail, Railway Express, and after 1956, pulpwood. Pulpwood was a summer operation with 25-35 car trains of 55 ft. gondola cars (rented from P[enn] C[entral]), twice daily. Each car carried 10 baled cords which was shipped on to the Deferiets paper mill.

The railroad interchanged traffic to the south and west with the New York Central (later the Penn Central) at Norwood, and to points east with the Rutland Railroad. Traffic inbound consisted of

> Feed grain, mail, Rwy. Express, lumber, mixed freight, tarvia, coal, service to Norfolk mill ([which] employed *at least* 200 people), passengers, mill employees, Norfolk rural school children and students from the towns of Chase Mills, [and] Raymondville. In 1952 a centralized school was built and bussing was begun.

In December 1923, the Norwood and St. Lawrence Railroad purchased what was at least its fifth locomotive from the American Locomotive Company, whose Cooke Works in Paterson, New Jersey, outshopped No. 210, a high-boilered, modern 20th century version of a 2-6-0 Mogul-type engine. Why the railroad chose to number it 210 is unknown, but its purchase apparently resulted from acquisition of the railroad by the massive St. Regis Paper Company. A hand-fired coal burner, Engine No. 210 featured a second sand dome mounted behind the steam dome, and an enclosed, all-weather cab, the latter believed to be fairly rare on 2-6-0 locomotives. Down through the years of mixed train service (freight cars with a combination baggage-express-passenger car on the rear) as well as freight service, the railroad replaced the locomotive's original wooden pilot, or cowcatcher, with a "boiler tube" pilot made of steel pipe, and eventually removed the road number plate from the center of the smokebox front and moved the headlight from atop the smokebox to the center of the smokebox front in place of the number plate. Originally the tender carried the lettering NORWOOD & St. LAWRENCE R.R. but the railroad later changed this to simply N.& S^{t} L. While the railroad operated its own blacksmith shop for running repairs to motive power and rolling stock, for major overhauls the Norwood and St. Lawrence sent Locomotive No. 210 and her sisters down to the Rutland Railroad shops in Rutland, Vermont.

When Bob Wagner hired out on the railroad in 1945, the company paid him 40 cents an hour as a mechanic. "The work was sometimes dangerous, there's no doubt about that," he recalled. "You had to keep your eyes open."

> There was one job that some men refused, and that was going in to repair the fire box of the old steam engines. First, you'd drop the fire and then have to climb in there with your hammer and tools and repair the flues.
>
> You'd hold your breath when you were in there, and then stick your head out to gulp some air, then go back in and hold your breath again. You didn't linger; you did your

> work and got out. But some men would say, "You want me to go in there? No sir, I'm not doing it," and off they'd go.

Coming out of military service in Europe during World War II, Wagner found the cacophony of the railroad's roundhouse took some getting used to:

> It was a little frightening, really, when you first walked in there because there was nothing but noise and smoke, because it was where they stored the engines and did the repairs. We'd been trained to keep our eyes open in the army. So it was something to see and hear.

Locomotive No. 210 was among those Wagner had to repair. He recalled its paint scheme:

> The tires of driver and lead truck were painted white, as were the wheel rims of the tender and the locomotive number. The inside of the cab was painted *dark* green, and black leather covered the fireman's seat box, the engineer's seat, both arm rests, and the window sills. Wooden entry doors were at both sides.

Wagner recalled that the rest of the roster of equipment included two more locomotives, No. 211, a Baldwin 2-6-0 outshopped in 1926, whose firebox grates eventually were burned and damaged due to lack of proper cleaning, and No. 14, a 40-ton 2-8-0 borrowed from and eventually returned to the St. Regis Paper Company at Deferiet, New York. The company also owned a wooden snowplow with built-in flanger, a small two-way flanger, two section crew motor cars, and around 40 to 60 secondhand 33-foot Rutland Railroad converted wooden boxcars, whose roofs the railroad had removed and whose sides had been shored up with rail across the top. These the Norwood and St. Lawrence used to haul pulp wood from Canada to Norfolk. The cars did not meet standards requisite for interchange with other railroads. The railroad operated the same old combination baggage-express-passenger car until 1949, when the railroad discontinued passenger service.

With its two little Moguls, the Norwood and St. Lawrence Railroad continued to haul freight through the years, serving the Norfolk Mill. (St. Regis had closed the Norwood and Raymondville mills during the Depression.) In 1956, two great changes affected the railroad: First, the St. Regis Paper Company closed the Norfolk Mill; second, the Norwood and St. Lawrence purchased a small diesel locomotive, shipping No. 210 late that year to Abe Cooper's scrapyard in Watertown, New York, and No. 211, under its own power, to a paper mill at Carthage, New York. Without the traffic of the Norfolk mill, the railroad had a difficult time surviving. The railroad continued to haul pulpwood from the St. Lawrence at Waddington to Norfolk, from which the New York Central then hauled it to the St. Regis mill at Deferiet. In 1973 the Simplicity Pattern Company operated in the old Remington and Martin mill at Norfolk, providing some traffic, as did other businesses, but it diminished until it could no longer sustain the railroad.

Bob Wagner had by this time worked his way up from mechanic to machinist, foreman, master mechanic, and assistant superintendent to the position of manager of transportation. He had witnessed a drop in the shipment of carloads of freight from 2,513 per year in 1971 to 161 in 1972, after the elimination of pulpwood imports from Quebec. On June 2, 1973, the Norwood and St. Lawrence Railroad applied to the Interstate Commerce Commission for permission to discontinue service and abandon its line, and the history of New York State's last steam-powered short line railroad seemingly came to an end.

That was not quite the case. The St. Regis Paper Company did not subsequently have the line dismantled, and on January 2, 1975, donated the railroad to the Ogdensburg Bridge and Port Authority. The

Ogdensburg Bridge and Port Authority in turn leased the line to the National Railway Utilization Company, a railroad car leasing and managing corporation which in turn owned the St. Lawrence Railroad Company, to which it turned over the trackage formerly that of the Norwood and St. Lawrence Railroad. In 1977, Robert Wagner became president of the St. Lawrence Railroad, which now included the trackage of his former employer. Thus the railroad *company* for which Locomotive No. 210 operated had vanished, but the actual *trackage* of that company over which it once operated still remained in service in 1988, owned by a government agency.

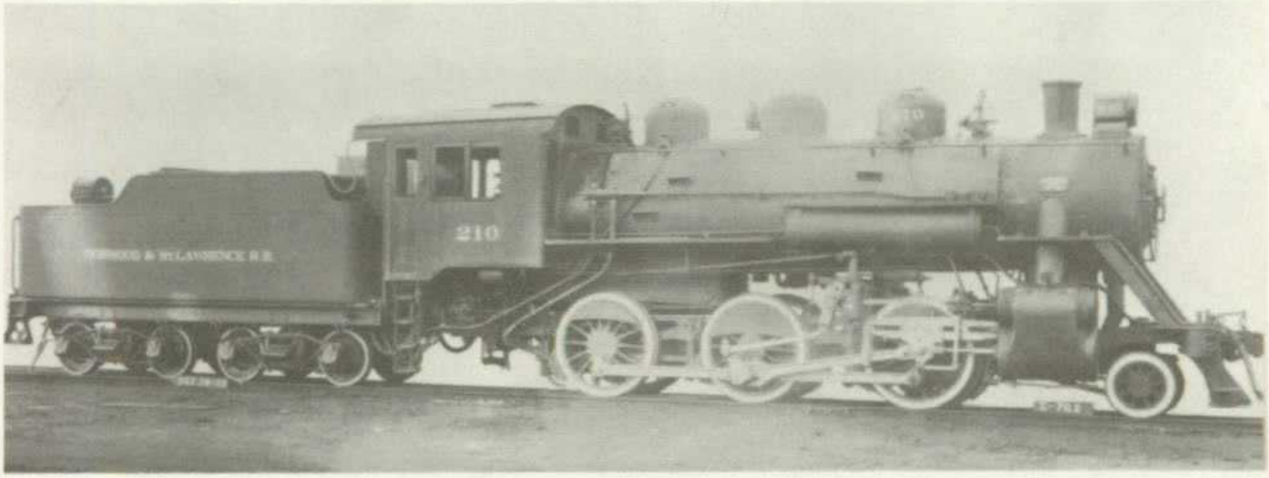
Condition: Although Norwood and St. Lawrence Locomotive No. 210 will make a fine static exhibit engine, mechanically it is reported to be a tired, worn-out machine, not suitable for operation.

Recommendation: The NPS should commission a report to document the operational and physical history of this locomotive. The report should include a roster of all Norwood and St. Lawrence locomotives to place this locomotive in context, as such a roster has not been located for this railroad. The report should discuss in detail all paint and lettering schemes and recommend the period to which the locomotive should be restored. Upon completion of this report, the NPS should undertake restoration of this locomotive for static exhibit in the roundhouse at Scranton or in some other indoor exhibit facility.

It would probably be feasible to restore this locomotive to its as-built condition by building and installing a wooden "pilot," remounting the headlight atop the smokebox, and casting a replica brass or bronze road number plate to be installed on the smokebox front (unless, of course, the original number plate can be located and obtained). This is not to say that such restoration work should be done. While the final decision should be recommended by the historic railroad locomotive report, this study leans toward preserving the locomotive in basically its present form, but with an earlier style of initials on the tender.

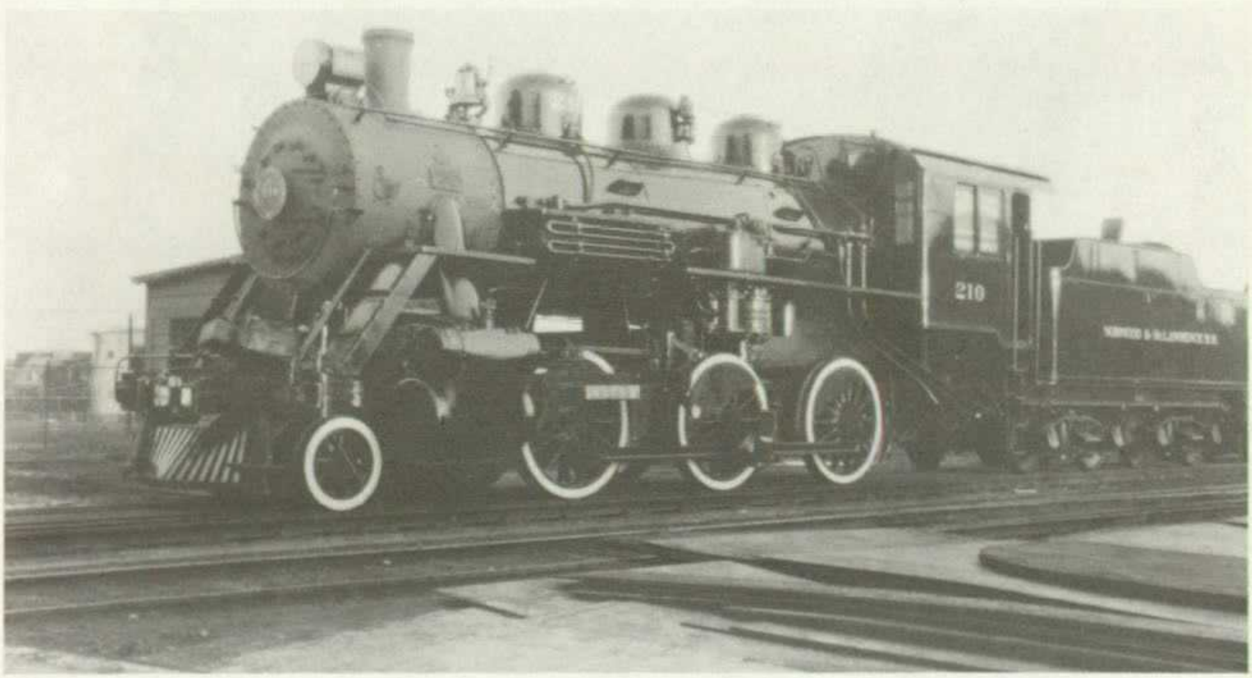
Available historic sources differ on cylinder specifications (which may be 20 by 26 inches or 22 by 28 inches) and driver diameter (53 inches or 56 inches). The report on this locomotive should ascertain which measurements are correct, and document any significant changes to cylinders and drivers that account for the differing accounts (such as reboring of cylinders, replacement of driver tires, etc.).

As part of the report, unless the locomotive was entirely stripped to bare metal before Steamtown volunteers repainted it in the fall of 1980, physical analysis of past paint and lettering schemes on the locomotive, locomotive cab, and tender needs to be performed by means of careful sanding followed by measurement and tracing of letters and numbers and their location on tender and engine, as well as color analysis of the paint layers on the smokebox, pilot, boiler jacket, domes, frame, cab interior and exterior, cab roof, drivers, tires, tender, tender frame, and tender trucks. Robert Wagner reported the colors he remembered, but he did not work for the company until 1945, whereas it acquired this locomotive in 1923. In any case, it would be desirable to ascertain the exact shade of dark green Wagner recalled inside the cab.



Photographed by its builder, the American Locomotive Company, at its Cooke Works at Paterson, New Jersey, the brand new Norwood and St. Lawrence Railroad Engine No. 210 exhibited, above, its engineer's side on December 28, 1923. Below, in a view of the fireman's side of the engine, Norwood and St. Lawrence No. 210 fairly glistened in a fresh coat of paint, this time apparently after being overhauled for its home railroad.

Collection of the Railway and Locomotive Historical Society,
Courtesy California State Railroad Museum Library



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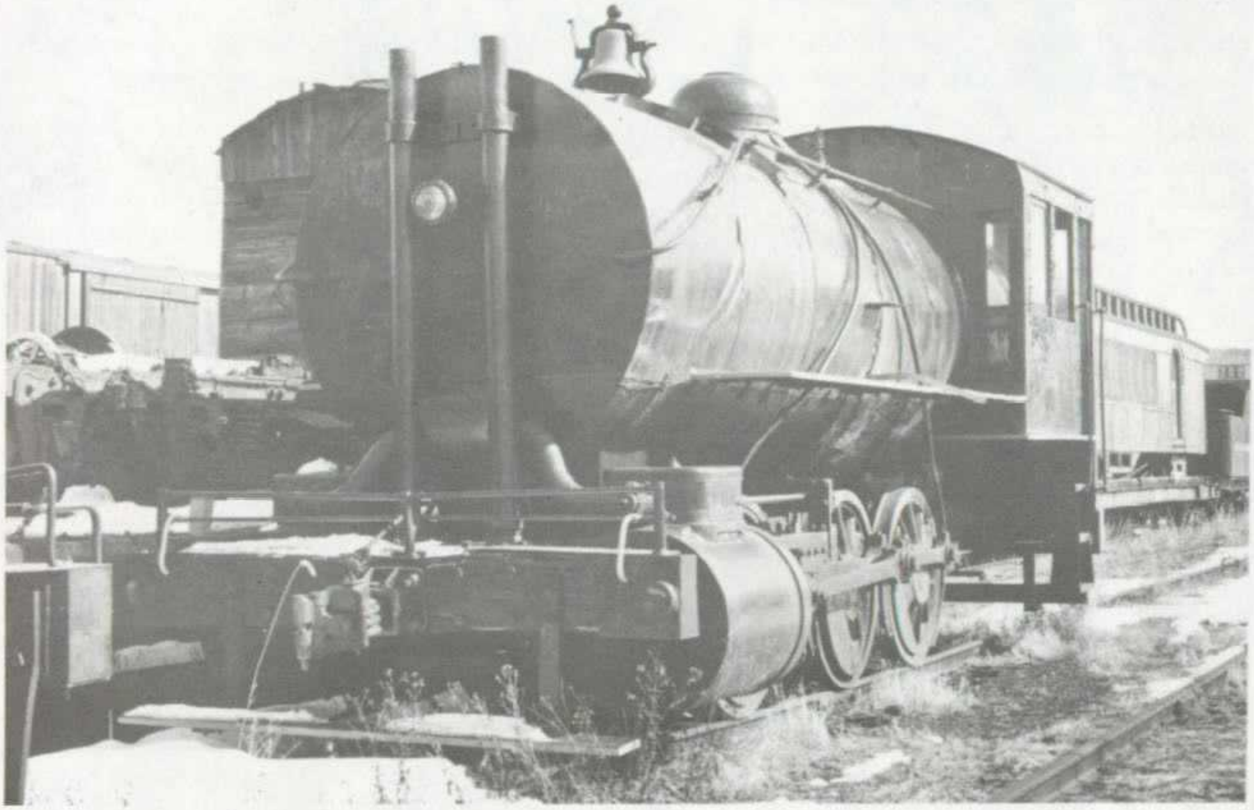
PUBLIC SERVICE ELECTRIC AND GAS COMPANY NO. 6816



Owner(s): Public Service Electric Company
Public Service, Electric and Gas Company

Road Number(s): 6816
6816

Whyte System Type: 0-6-0F "Fireless" switcher

Class:

Builder: H.K. Porter

Date Built: February 1923; also reported as July 1923

Builder's Number: 6816

Cylinders (diameter x stroke in inches): 30 x 28

Boiler Pressure (in lbs. per square inch): Storage: 190; Working: 60

Diameter of Drive Wheels (in inches): 52

Tractive Effort (in lbs.): 24,300; also reported as 24,000

Tender Capacity: **Coal (in tons):** Not applicable
Oil (in gallons): Not applicable

Water (in gallons): Not applicable

Weight on Drivers (in lbs.): 125,000

Remarks: A "fireless" locomotive No. 6816 was charged with live steam from a stationary boiler; it used no fuel.

Public Service Electric and Gas Company 0-6-0F Locomotive No. 6816

History: One of the strangest aberrations in the long history of steam locomotive technology was the fireless steam railroad engine. Carrying no fuel and having no means to heat water to create steam, its engineer periodically connected it to a stationary steam boiler and charged the engine with steam, then operated it until the steam pressure diminished to a point of ineffectiveness, and then recharged it again from a stationary steam boiler.

A Dr. Lamm supposedly invented the type, and engines of his design entered service on the Crescent City Railroad in New Orleans, Louisiana, in 1875. A French inventor, Leon Franque, introduced an improved version in 1876 on a tramway that ran from St. Augustin, Paris, to the Boulevard du Chateau at Neuilly. Franque's design used a reducing valve and also featured an atmospheric condenser on top of the reservoir to collect exhaust steam. He also conceived the idea of injecting high-temperature steam into the reservoir instead of emptying and refilling it after each run.

That same year Theodore Schaffer further improved the design in the United States, and eight locomotives of his design were built at Paterson, New Jersey, for New Orleans's Crescent City Railroad. Schaffer patented a valve gear that consisted of a main valve working to control the exhaust and an auxiliary valve on top to govern the admission of steam to the cylinders. These Crescent City locomotives received steam from stationary boilers at a pressure of 220 pounds per square inch. The engines then operated until the pressure dropped to 100 pounds, at which time they would recharge, and could operate 3½ miles in the interim. Still further technical improvements were necessary to make the "fireless" locomotive, as these were called, readily marketable. But by the end of the 19th century, both Baldwin and H.K. Porter were in the business of manufacturing fireless locomotives, principally for use as industrial switchers at industrial plants, although some common carrier railroads used fireless locomotives themselves, generally as shop switchers.

Generally 0-4-0, 0-6-0, or 0-8-0 wheel arrangements, fireless locomotives looked superficially like a saddle tank engine because their extra fat steam reservoir gave them the appearance of a boiler with a saddle tank on top of it, and like saddle tankers, they lacked a tender, although they also lacked a fuel bin or tank behind the cab which many saddle tankers had. Although an article in *Trains* magazine in 1945 proposed the use of fireless locomotives as "road" or main line locomotives, the railroad industry never considered them for the purpose, and indeed a rebuttal to that article by an anonymous but reportedly prominent railway mechanical engineer in the same issue of the magazine stated that fireless locomotives would not be practical in the role of road engines. The fireless locomotive was destined to remain nothing more than an industrial switcher throughout its history.

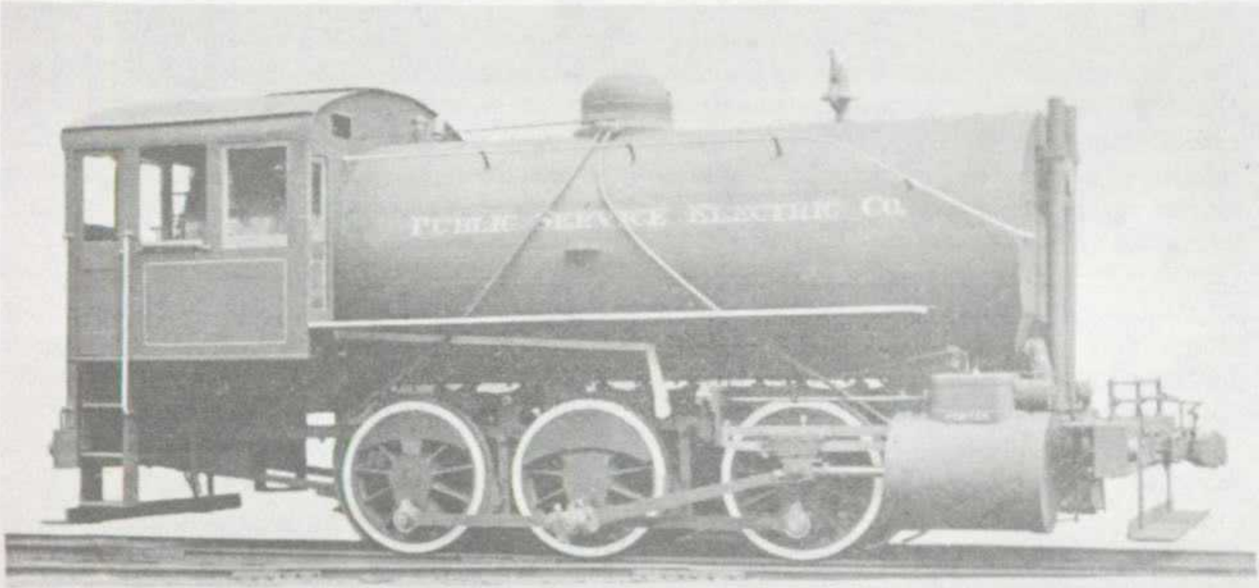


Fig. 2349—Six-Coupled (0-6-0) Fireless Locomotive. Built for the Public Service Electric Company by the H. K. Porter Company.

Gage	4 ft. 8½ in.	Diam. of drivers	52 in.
Cylinders	30 in. x 28 in.	Tractive force	24,300 lb.
Storage pressure	190 lb.	Wheel base	11 ft. 0 in.
Working pressure	60 lb.	Weight of engine	125,000 lb.

In 1925, the *Locomotive Cyclopedia of American Practice* illustrated a fireless 0-6-0 locomotive built by the H.K. Porter Company for the Public Service Electric Company of New Jersey which appears to be Engine 6816 of the company's successor, Public Service, Electric and Gas Company of New Jersey.

Colorado Railroad Museum Library

One industry to use one was the Public Service Electric Company of New Jersey. Incorporated on June 13, 1910, the company commenced operations on July 1, 1910, and took over the leases of a number of subsidiary electric power firms that previously had been held by the Public Service Corporation of New Jersey. The leased firms included eight local firms, such as the Bordentown Electric Company and the Middlesex Electric Light and Power Company as well as another six combined gas and electricity companies. The Public Service Electric Company also shared leases with a sister firm, the Public Service Gas Company, such as with the Gas and Electric Company of Bergen County and the South Jersey Gas, Electric and Traction Company. Actually, the Public Service Electric Company was established as a subsidiary of the Public Service Corporation of New Jersey in order to consolidate management of these various subsidiaries. The Public Service Corporation of New Jersey had been incorporated on May 6, 1903, and by 1918, through its myriad subsidiaries and sub-subsidiaries, controlled almost all of the gas, electric, and street railway business through the larger cities and more populous suburbs of New Jersey, with the exception of the seashore resorts and a few other localities. As of 1918, the electric business served 2,196,081 people, the gas business of the firm served 2,033,027 individuals, and the street railway branch claimed a patronage of 2,126,889.

In 1923, the Public Service Electric Company of New Jersey ordered an 0-6-0F fireless locomotive from the H.K. Porter Company of Pittsburgh, Pennsylvania, for use at its Newark, New Jersey, coal-burning electricity generating plant. The locomotive was to have cylinders 30 inches in diameter with a 28-inch stroke, 52-inch diameter drive wheels, and would weigh 125,000 pounds on drivers. The engine would be 29 feet, 6 inches in length, and with the center pair of drivers without flanges, could turn in a 200-foot radius, or on a 28.5-degree curve. The engine was equipped with Stephenson valve gears. The locomotive was to be capable of hauling a 180-ton train up a 4 percent grade with an effective pressure of 50 pounds per square inch, and a 230-ton train up a 4 percent grade with a 60-pound effective pressure. Oddly, the Public Service Electric Company assigned no number to this locomotive, so its H.K. Porter shop number, 6816, became the only number by which employees ever knew it. As outshopped, it had the words Public Service Electric Co. on each side of its steam reservoir, a rectangle of white pinstriping on the cab, and two horizontal lines of white pinstriping around the single dome. It also had a white "grabiron" forward of the cab door on each side, white driver tires, a white edge to the running board, and a white reverse lever. The body color is not known, but was not black. It may have been gray or some other color that appeared gray in a black-and-white photograph.

At that time the Public Service Electric Company operated four generating plants: the Essex plant in Newark, built in 1915, where this particular engine operated; the Marion plant in Jersey City, constructed in 1905; the Burlington plant in Burlington, constructed in 1914; and the Perth Amboy plant in Perth Amboy, built in 1911.

On July 25, 1924, the year following purchase of this locomotive, the Public Service Electric Company and the Public Service Gas Company merged to form the Public Service Electric and Gas Company of New Jersey, which then proceeded in December to merge with seven other companies, and between 1937 and 1940 absorbed 13 more. To its electric streetcar lines, it added motor bus companies. The enlarged concern produced, purchased, and distributed electricity and manufactured gas from northeastern New Jersey southwest across the state to Trenton and Camden, its empire thus extending from the Hudson River to the Delaware. It sold gas and electricity to cities such as Newark, Jersey City, Paterson, Trenton, Camden, Elizabeth, Bayonne, Hoboken, Passaic, Perth Amboy, and a dozen more. Among improvements over the years, it added a final unit to the Newark generating plant in 1947, which brought its total effective productive capacity to 330,500 kilowatts.

At this time little is known of the operational history of Locomotive No. 6816, but it is believed principally to have switched incoming carloads of coal at the Essex plant in Newark, and to have switched outgoing empty coal cars. It carried a storage pressure of 190 pounds per square inch and a working press of 60 pounds. The 1925 edition of the *Locomotive Cyclopedia of American Practice* included on page 925 an H.K. Porter Company builder's photograph that is believed to be this particular locomotive. A copy of its original specifications from H.K. Porter, together with instructions for operation, are to be found in the Steamtown files.

At least four 0-4-0F fireless locomotives, five 0-6-0F, and one 0-8-0F are known to survive in the United States in addition to No. 6816, and there may be more. As far as is known, No. 6816 is the only one that represents the Public Service Electric and Gas Company of New Jersey. The other five 0-6-0F locomotives consist of three used by Cleveland Electric in Ohio and two used by Pennsylvania Power and Light.

Condition: Locomotive No. 6816 is believed to be in operable condition, and has been operated since owned by the Steamtown Foundation.

Recommendations: The National Park Service should preserve this locomotive because of the technology it represents. A small report should be prepared and should deal especially with the operational history of the locomotive. The report should include a map of trackage at the Essex plant, photos of the Essex plant, and, if obtainable, photographs of this particular engine at work at the Essex plant, as well as a description of its operations. A former engineer should be located and interviewed. The report needs to focus also on the physical history of the locomotive, documenting any changes to it and especially how the locomotive was painted when built, which may involve physical analysis of paint layers at various locations on the locomotive to ascertain its original body and lettering colors. The reports should also document the pattern of its painting and lettering after the merger in 1925 that created the Public Service Electric and Gas Company. For example, was the locomotive then repainted with the new name, and if so, in what style and color of lettering and at what locations? The completed report should include recommendations as to which period the locomotive should be restored to represent. This special history study leans toward restoring this particular locomotive to represent its as-built appearance of 1923.

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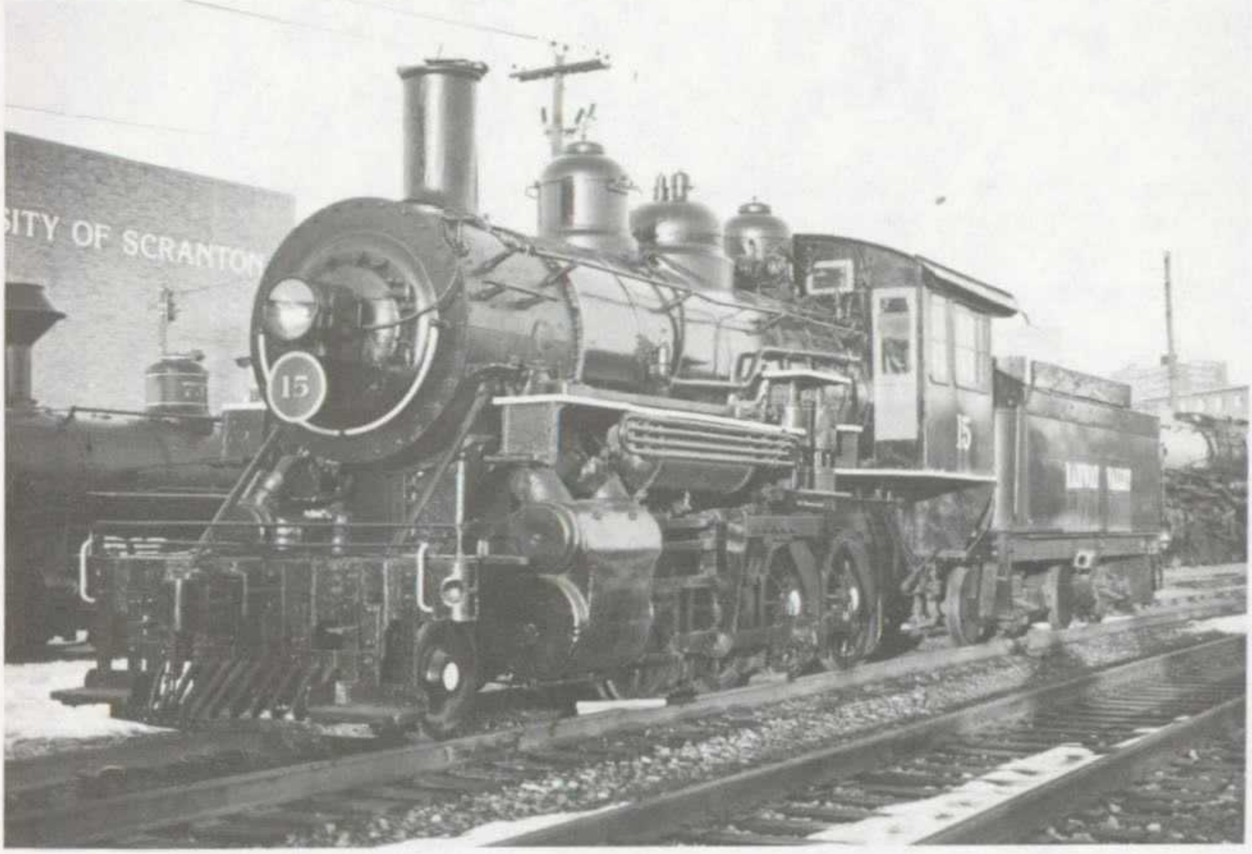
Steamtown Foundation files, Locomotive 6816, including H.K. Porter Company Locomotive Specifications for No. 6816, instruction manual for the locomotive, and invoices and correspondence regarding repair parts. [Includes all original documents obtained from the Public Service Electric and Gas Company of New Jersey along with the locomotive.]

RAHWAY VALLEY RAILROAD NO. 15



Owner(s):	Oneida & Western Railroad Rahway Valley Railroad	**Road Number(s):**	20 15

Whyte System Type: 2-8-0 Consolidation **Class:**

Builder: Baldwin Locomotive Works

Date Built: June 1916 **Builder's Number:** 43529

Cylinders (diameter x stroke in inches): 20 x 26

Boiler Pressure (in lbs. per square inch): 200

Diameter of Drive Wheels (in inches): 50

Tractive Effort (in lbs.): 35,360

Tender Capacity: **Coal (in tons):** 6 **Water (in gallons):** 3,500
Oil (in gallons): Not applicable

Weight on Drivers (in lbs.): 127,700

Remarks: In May 1987, the tender of this engine was rammed by a railroad car and now needs repairs. Engine needs new front tube sheet and flues.

Rahway Valley Railroad 2-8-0 Locomotive No. 15

History: Of the four 2-8-0 Consolidation-type locomotives in the Steamtown collection, this comparatively small short line railroad engine has probably the most aesthetically pleasing design. With a lower, smaller boiler than the Illinois Central or Maine Central engines, the little locomotive has a more balanced appearance than the other three 2-8-0s in the collection.

Its history reflects the role of short line railroads in the American rail transportation network, in which they served as essential feeders to the major Class 1 carriers. Incorporated on September 18, 1913 to build from Oneida, Tennessee, to Albany, Kentucky, the Oneida & Western Railroad ordered its Locomotive No. 20 from the Baldwin Locomotive Works. Delivered in June 1916 when the Oneida & Western was but three years old, the trim little Consolidation went to work in the hills of Tennessee. Intended to spur the development of coal and lumber properties, the Oneida & Western disappointed its supporters and became a short line stretching only 25 miles from Oneida to East Jamestown, Tennessee. At Oneida, the short line connected with the Cincinnati, New Orleans and Texas Pacific Railway.

Aside from its fine proportions, Engine No. 15 reportedly became the favorite locomotive of her regular O & W engineer. Despite a narrow firebox, the engine performed well in the hands of crews who knew how to handle her.

Built with fairly common Walschaert valve motion and standard slide valves, the engine retained that character only for her first 10 years. About 1926 a neglectful hostler allowed the engine to freeze one cold night, and the expanding ice broke the bridges. The company apparently shipped the locomotive to Baldwin's Eddystone Shops for repair, and for reasons unknown, Baldwin fitted the locomotive with new piston valves, employing outside admission to avoid altering the valve gear. It was a common practice to retain the old-style admission on locomotives refitted with universal valve chests, but it was an unusual feature on an engine just given new cylinders. Furthermore, the use of outside steam pipes that branched above the valve chests made Oneida & Western No. 20 a unique locomotive. It was apparently at this same time that Baldwin applied a Franklin Type B Ragonnet power reverse mechanism and a mechanical lubricator, as well as a standard steel pilot in place of the hardwood pilot and electric headlight and markers in place of the oil (kerosene) headlight and marker lights.

Back in the hills of Tennessee, the locomotive returned to her duties on the Oneida & Western. By 1937, the little engine had performed faithfully for 21 years, and Oneida & Western management (by then the road had entered bankruptcy and was operating under a trustee) considered the locomotive somewhat tired and small for their needs and began thinking of buying larger motive power. Thus No. 20 became surplus, and the frugal company put her up for sale in August 1937 through the Birmingham Rail and Locomotive Company.

Charles Nees, master mechanic of the Rahway Valley Railroad of New Jersey, came to Tennessee with an eye toward purchase of the engine. Older than the O & W, the Rahway Valley Railroad had been incorporated back on July 18, 1904, to acquire the 4-mile-long New Orange Four Junction Railroad and extend it to new destinations. The Rahway Valley linked New Orange, later renamed Kenilworth, with the Lehigh Valley at Roselle Park and the Central Railroad Company of New Jersey, and then reached at the other end for a connection with the Delaware, Lackawanna & Western Railroad at Summit. Promoter of the Rahway Valley was Louis Keller, rumored to have gone into the railroad business to give himself and his golfing buddies easy transportation to the Baltusrol Golf Club he had founded near Summit. Indeed, construction of the new line proceeded past the golf links to within a few feet of the

Lackawanna line near Summit, and there the plans of the Rahway Valley Railroad unraveled, for the Lackawanna refused to allow a connection to their tracks. Instead of serving as a connection in New Jersey between the Lehigh Valley and the "Jersey Central" at one end and the Lackawanna at the other, the little Rahway Valley was frozen into being a short line feeder only to the two connections at its southern end.

Meanwhile, the Rahway Valley initiated a schedule of 14 passenger trains, whose principal patrons indeed proved mostly to be "blue-chip fellows" heading for the golf club, but this did not last. Frequency of passenger trains had dwindled to six by 1909, and in 1911 the railroad turned to the development of further freight traffic as its bread and butter by constructing a 3-mile branch line to Maplewood, later renamed Newark Heights. The Rahway Valley abandoned all passenger traffic in 1919, and thereafter handled freight only.

After World War I, Roger Clark, a short line railroader with extensive experience on the Buffalo, Rochester & Pittsburgh and later on the Central Railroad of Oregon, came to the Rahway Valley, bringing along his son, George, a former lumberjack. When Louis Keller died in 1921, Roger Clark became president of the Rahway Valley, and George became the line's traffic manager. They nursed the little short line through deficit after deficit during the 1920s, when red ink seemed to pour onto the railroad's books. Ironically, it was just as the Depression hit in 1929 that the Clarks began to pull the Rahway Valley out of its pool of red ink, and indeed the Depression marked the start of the short line's era of profit. The Clarks managed in 1929 to find funds with which to buy two secondhand Lehigh and New England Railroad 2-8-0 locomotives. That good fortune was followed by more: In 1931, the Lackawanna at long last allowed a connection between the two roads at Summit, New Jersey, which spawned further business. Roger Clark died in 1932, and George Clark became president. The Clarks' success with the road continued. In 1934, the company's books showed a net profit. Again in 1935 and in 1936 the line was in the black, and President Clark began to consider the need for a fourth 2-8-0 to supplement No. 12, a tired, old former Bessemer & Lake Erie engine, and Nos. 13 and 14, the two Consolidations obtained secondhand from the Lehigh & New England Railroad. It was then that he sent master mechanic Charles Nees down to Tennessee to look over Oneida & Western No. 20.

"The small engine had been battling the grade and sharp curves for some time when the visiting master mechanic from New Jersey got down off the left-hand seatbox, glanced at the steam gauge above the sloping backhead, and peered into the firebox," wrote the locomotive's anonymous historian in an article published in the first issue of *Steam Locomotive* magazine:

> He couldn't see much of a fire; in fact, the grates were almost uncovered. Yet despite the long and narrow dimensions of a "cussed" type firebox, the 70-ton Consolidation he was riding had built up a good head of steam and was handling an ample load with obvious effort but seeming ease.
>
> That was Charles William Nees' first encounter with Oneida & Western No. 20, then (1937) with 21 years of Tennessee mountain service already behind her--and it sold him. In due time the unusual little Baldwin became Nees' charge as No. 15 of New Jersey's Rahway Valley R.R. . . .

But on the Rahway Valley, whose No. 12 had been considered too large and been set aside for years, new No. 15 did not compare favorably with the pair of former Lehigh & New England Consolidations, deckless locomotives that were real workhorses.

Matched against these twins, No. 15 came off third in performance. Everybody agreed that she was a well-fitted engine. But when it came to crew preferences, the older deckless engines were more powerful and had semi-wide fireboxes--and their closed cabs were warmer in winter. For a long time No. 15 was used sparingly during the cold months.

Not everyone could stoke the new arrival successfully. Her design called for a clean but light fire, something never achieved without care.

Even so, the handsome Consolidation remained the master mechanic's pet and the favorite of most observers. Her charms were even audible, in a clean exhaust and a melodious whistle on which Engineer Frank Froat could sound either muted, low tones or higher, louder notes of urgency. The admirers of that whistle are many, and Carl Nees, a man not given to oversentiment, always liked to tell how beautifully its notes echoed among the mountains of Tennessee.

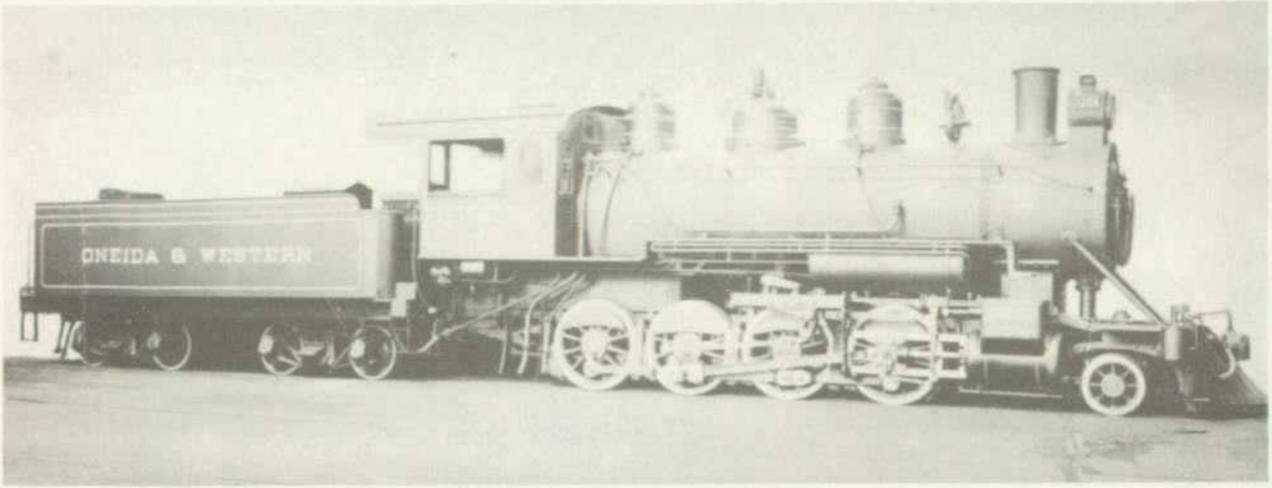
Perhaps not the most efficient engine, Rahway Valley No. 15 qualified as the line's most attractive.

Traffic on the Rahway Valley proved not to be so heavy that the line needed to keep three locomotives in regular service, so with No. 12 eventually retired, Nos. 13 and 14 performed most of the work, with No. 15 serving as a spare locomotive to fill in when one of the others was in the shop. For major repairs, the Rahway Valley sent its locomotives to the Lackawanna's Kingsland Shops or the Central Railroad Company of New Jersey's Elizabethport shops, but No. 15, at least on one occasion went down to the Lackawanna's Scranton shops for repairs.

The three steam engines continued to serve as the regular motive power of the Rahway Valley Railroad until January 1951, when the company purchased a 70-ton diesel. Thereafter, Engine No. 15 served as a relief engine when the diesel needed repair. The Rahway Valley Railroad fired her up and placed her in service for the last time for four days in 1953 when the diesel was down for repairs, and the crew dumped the last fire on No. 15 on November 28, 1953. Several weeks later, the company took delivery on a second diesel, and the era of steam motive power on the Rahway Valley Railroad had passed forever.

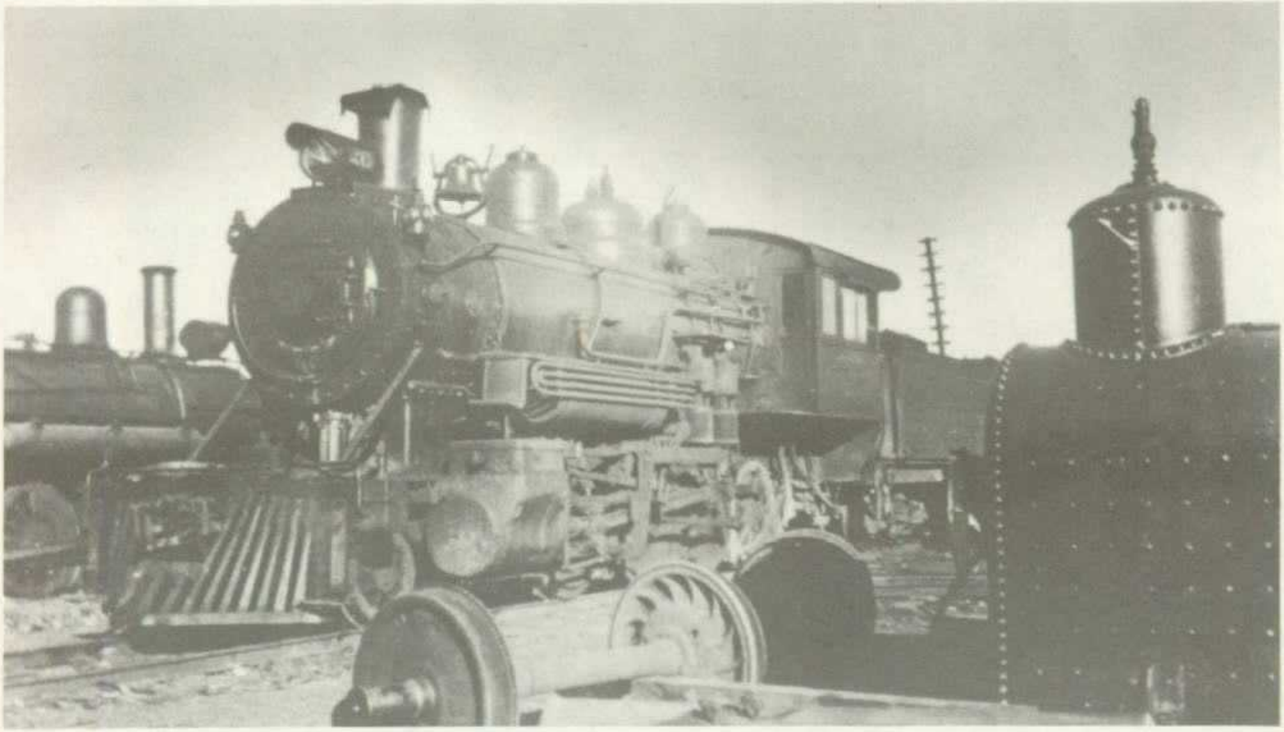
"President Clark, who knew a good engine when he saw one," wrote the locomotive's historian, "was as reluctant as anybody to see No. 15 go for scrap. Pending developments, the engine remained well protected in a closed and heated shed, part of the diesel shop."

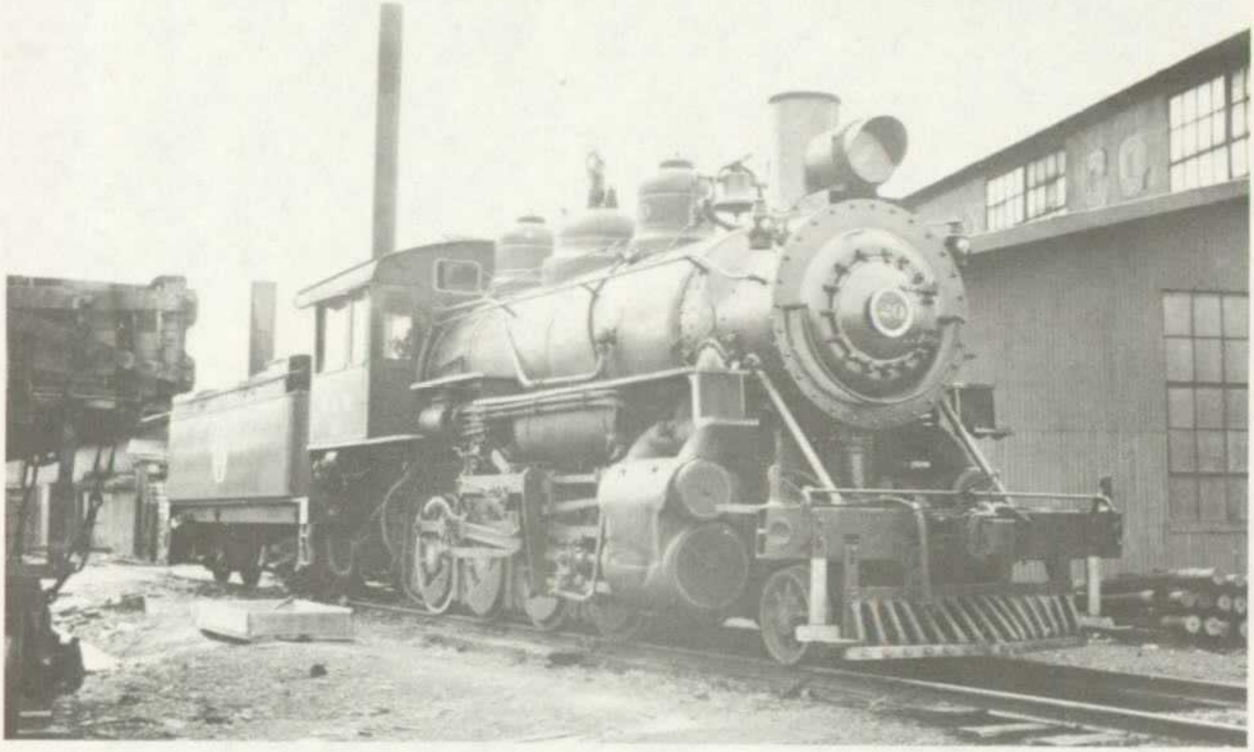
By then F. Nelson Blount, president of the Edaville Railroad, had contracted to operate a railroad at the new Pleasure Island park in Wakefield, Massachusetts and purchased No. 15 for exhibit there. The Rahway Valley Railroad shipped the locomotive on June 5, 1959, via the Central of New Jersey, the Delaware & Hudson, and the Boston & Maine.



Baldwin Locomotive Works photographed Oneida & Western Railroad 2-8-0 No. 20 in June 1916, in its fresh builder's paint job (above), and some time later an unidentified photographer recorded her appearance in a yard in Tennessee (below). Both views illustrate the locomotive's original pistons and cylinders and her original "pilot" or cowcatcher.

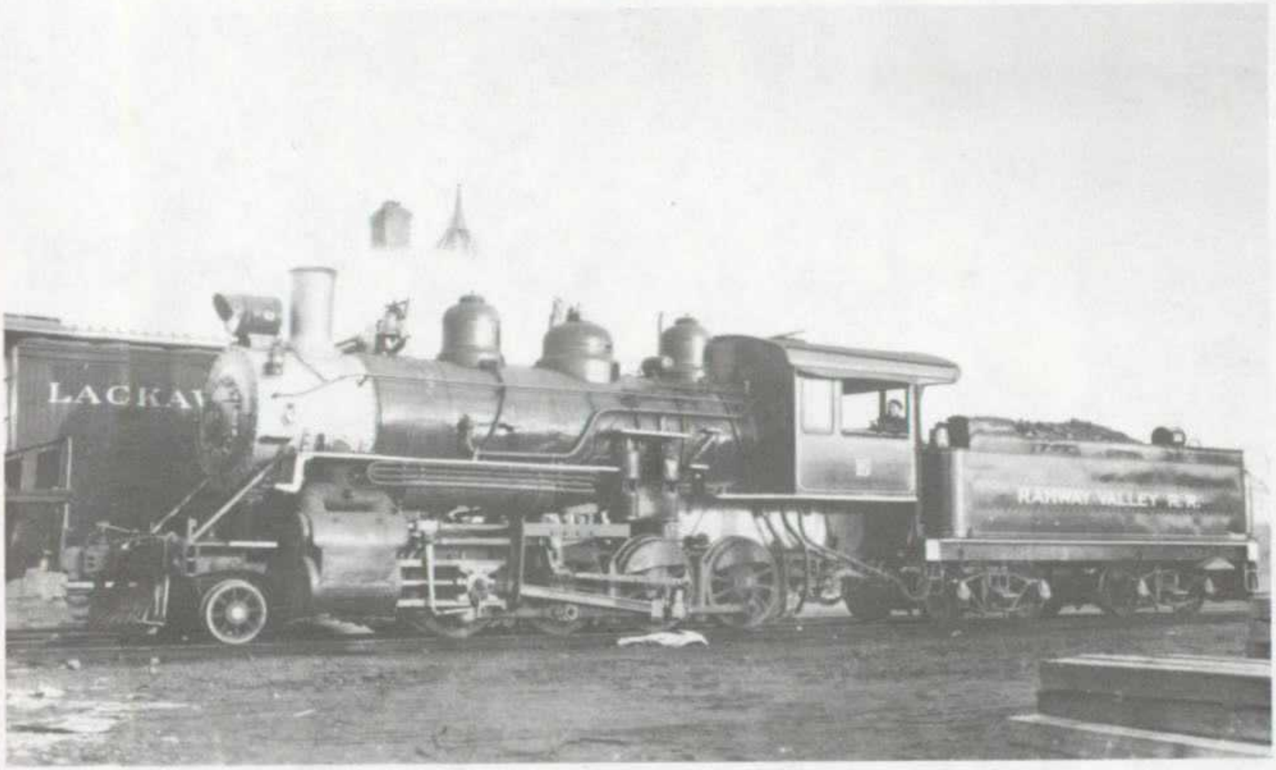
Above, collection of Mallory Hope Ferrell
Below, collection of the Railway & Locomotive Historical Society,
California State Railroad Museum Library





A later view of Oneida & Western Railroad Locomotive No. 20 in the yard at Oneida, Tennessee, in June 1937, illustrated a rebuilt engine with a rather unique arrangement of cylinders. Note also the new "pilot" of steel tubes which replaced the original wooden one. This engine later become Rahway Valley Railroad Engine No. 15.

Photo by J.B. Allen, collection of Mallory Hope Ferrell



Rahway Valley Railroad Locomotive No. 15 featured a front number plate and a headlight mounted on top of the smokebox, which is different from her present appearance in Scranton, Pennsylvania. The changes apparently were made on the Green Mountain Railroad.

Collection of Walt Thrall, Colorado Railroad Museum

Rahway Valley Railroad Locomotive No. 15 featured a front number plate and a headlight mounted on top of the smokebox, which make her look different from her present appearance in Scranton, Pennsylvania.

Collection of Gerald Best, California State Railroad Museum Library

But old No. 15 refused to remain an idle exhibit engine, and Blount was not destined to remain involved at Pleasure Island. He moved his collection to Keene and then North Walpole, New Hampshire and finally across the river to Riverside, a meadow north of Bellow Falls, Vermont. While at North Walpole, he had Rahway Valley No. 15 overhauled and put back into service on his Monadnock, Steamtown and Northern Railroad, a tourist excursion line. When forced to move from Boston and Maine trackage at North Walpole across the river to Rutland Railroad trackage near Bellows Falls, he renamed the excursion line simply Monadnock Northern. There former Rahway Valley No. 15, former Oneida & Western No. 20, served so reliably and for so long that she came to be called the "faithful fifteen." During the winter of 1962-1963, the locomotive even ran up to Boston to play a role in a motion picture entitled "The Cardinal."

No. 15 operated regularly from the beginning of the 1962 season until its "flue time" expired early in 1967. After Blount's death, in 1968 the Steamtown Foundation obtained from the Federal Railroad Administration an extension on the flue deadline, and the locomotive returned to service lettered for the Green Mountain Railroad, but after only a handful of runs, broke a piston, and limped into storage. In January 1973 the Steamtown Foundation obtained another flue extension, machined and installed a new piston and piston road, and modified the appearance of the locomotive by removing the front number plate and lowering the headlight to a position in the center of the smokebox door. Steamtown leased the locomotive for a run to Boston to carry a wealthy couple from their wedding to a reception a couple of towns away. After returning to Bellows Falls, Steamtown fired up the locomotive again as part of the "Friends of Steamtown" Day on August 12, 1973. While heading Steamtown's first triple-headed excursion with a couple of Canadian Pacific 4-6-2s, the locomotive blew a flue out just north of Riverside, badly scalding veteran engineer Andy Barbera. Inspection of the boiler indicated that reflueing and installation of a new front flue sheet should be completed before the locomotive operated again, and since the Steamtown Foundation did not need the services of No. 15 at that time, the work was not done. Just a day or two before the August 1973 excursion, the Steamtown mechanical force had placed a round number plate just below the headlight, giving the locomotive the appearance it has today. Briefly lettered "Steamtown R.R.," the locomotive received from Steamtown volunteers during the early 1980s a new paint job and lettering that spelled out "Rahway Valley." Nevertheless, its present appearance is not its appearance when on either the Rahway Valley Railroad or the Oneida & Western.

Condition: The engine needs to be restored either to her appearance on the Oneida & Western Railroad after the 1926 rebuild, or, perhaps preferably, to her appearance on the Rahway Valley Railroad, under whose ownership she was shopped in Scranton, and whose operations connected with the Delaware, Lackawanna & Western. Mechanically, the engine needs a new front tube sheet and new flues in order to operate. Furthermore, in May 1987, at the beginning of Steamtown excursion operations out of Scranton, the rear of the tender of this locomotive was damaged by vandals and requires repair.

Recommendation: The National Park Service should commission a report on the subject of this locomotive. The report should recommend whether to restore this locomotive as a Rahway Valley locomotive or as an Oneida & Western locomotive as it appeared after its 1926 modifications. In terms of location, the Rahway Valley Railroad was better situated with respect to the Scope of Collections Statement, as it operated in that northeastern quarter of the United States identified as a particular focus for the collections of this institution, while the Oneida & Western in Tennessee lies south of that geographic area.

Upon completion of the research and the report, No. 15 should be restored both cosmetically and mechanically to operable condition, and a schedule of operation for interpretive use should be established. The locomotive is too light for regular excursion train use to Moscow or Pocono Summit, Pennsylvania, but it could be used in switching around the Scranton yard or for small, occasional, special excursions and charter groups out on the main line, or for period freight trains for photographic purposes.

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Owner(s): The Reading Company

Road Number(s): 2124

Whyte System Type: 4-8-4 Northern

Class: T-1

Builder: Baldwin Locomotive Works; Reading Company Shops

Date Built: January 1947

Builder's Number: (old) 2044

Cylinders (diameter x stroke in inches): 27 x 32

Boiler Pressure (in lbs. per square inch): 240

Diameter of Drive Wheels (in inches): 70

Tractive Effort (in lbs.): 68,000

Tender Capacity: **Coal (in tons):** 26
Oil (in gallons): Not applicable

Water (in gallons): 19,000

Weight on Drivers (in lbs.): 278,200

Remarks: Has high mileage since last overhaul; needs extensive repairs to be made operable. This locomotive was designed to burn hard coal.

Reading Company 4-8-4 Locomotive No. 2124

History: By the middle of the 20th century, the Reading Company (*not* the Reading *Railroad*) operated a network of rail lines in southeastern Pennsylvania that were originally spawned by the Philadelphia & Reading Railroad Company, chartered in 1833. A major coal carrier, its associated Philadelphia and Reading Coal and Iron Company at one time owned 30 percent of all of the coal lands in coal-rich Pennsylvania. The company leased, and through the lease controlled (twice) the Central Railroad Company of New Jersey and the Lehigh Valley Railroad. A holding company, the Excelsior Enterprise Company, was incorporated on May 24, 1871, changed its name to the National Company in 1873, and changed its name again to Reading Company on December 7, 1896. It acquired control of the Philadelphia and Reading Rail*way* Company of November 17, 1896, which was a reorganization of the original Philadelphia and Reading Rail*road* Company. On December 31, 1923, the Reading Company merged a number of subsidiaries such as the Philadelphia and Reading Railroad into itself, and thus became an actual operating railroad company, not merely a holding company, a practice that was somewhat unusual. This summary is a great oversimplification of a corporate history as complex as the tangled strands on a large plate of spaghetti--a complexity quite typical of large railroad systems.

Reading Company Locomotive No. 2124 became a nationally famous engine, because of its use on railroad-enthusiast excursions, the famous "Reading Rambles" of the 1960s, when she and sister engines hauled trainloads of people at a time when steam engines had nearly disappeared from the nation's railroads. She also appeared in the film *From the Terrace* with Joanne Woodward and Myrna Loy, which was shot at Jersey City, New Jersey in December 1959.

Originally a Baldwin-built 2-8-0 of Reading Class I-10a of the mid-1920s, probably No. 2044, the engine was completely rebuilt into a virtually new T-1 Class 4-8-4, No. 2124, in January 1947. While most locomotives used in the United States were built by locomotive manufacturing companies, some railroads such as the Southern Pacific built locomotives new in their own shops, and some companies took older locomotives of one type and rebuilt them into a new type. Reading Company No. 2124 represents a product of the latter practice--it is essentially a remodeled locomotive, the remodeling done by the railroad's own shops to a total of 30 engines thereafter renumbered 2100 through 2129.

According to Reading historian Bert Pennypacker, the rebuilding of these locomotives originated with a former Baltimore & Ohio road foreman of engines named Revelle W. Brown, who became a vice president of the Reading and then president of the Lehigh Valley, where the latter railroad's modern 4-8-4 Northern-type locomotives had greatly impressed him. Subsequently he moved back to the Reading Company as its president, where he decided to speed up its handling of traffic by replacing some of its existing motive power, principally 2-8-0s, 2-8-2s, and 2-10-2s, with 4-8-4s similar to those of his Lehigh Valley experience.

Acting under Brown's instructions, E. Paul Gangewere, Reading Company superintendent of motive power and rolling equipment, got together with the design engineers of the Baldwin Locomotive Works on plans to convert 20 I-10a 2-8-0 Consolidations to new 4-8-4 Northerns. The Reading Company purchased new underframes, wheels, boiler courses, and many other new parts supplied either by the Baldwin Locomotive Works or its neighbor at Eddystone, Pennsylvania, the General Steel Casting Corporation, and then did the work of conversion in its own shops at Reading, Pennsylvania. To bring the comparatively short boiler of the old 2-8-0s out to the length required for the new 4-8-4s, Gangewere and the Baldwin engineers designed a radically long 111-inch smokebox. The first two boiler curses or segments were replaced with new 187-inch extensions, complete with new tubes and flues. They were also able to salvage some parts of the old 2-8-0s not used in the new 4-8-4s and use them elsewhere, such as the 61½-inch drive wheels that Reading used on its I9sb-class locomotives.

Some components of the new 4-8-4s other than the boiler remained unchanged, such as the 94.5-square-foot Wootten firebox and the cylinders. Others, as Pennypacker noted, such as the feedwater heater and the booster, were new, as was its tender.

Assigned to Class T-1, the new 4-8-4 locomotives entered freight service, a large part of which was coal traffic, in 1947, on Reading main lines and some branch lines in New Jersey and Pennsylvania. They eventually operated in pool service with connecting railroads into Maryland on the Western Maryland and into West Virginia on the Pennsylvania Railroad.

The Reading Company also tested the locomotives' capacity to handle coal trains with a test train of 200 cars, after which the superintendent of motive power and rolling equipment determined that the optimum limit should be set at 150 cars.

Northerns were an attractive, modern, heavy-duty steam locomotive. Replaced in freight service by diesel-electric locomotives, the T-1s found a new career hauling loads of railroad enthusiasts in the famous Reading Rambles, and the first T-1 to be used for this service in May 1959 was No. 2124, now at Steamtown. Later, the 2100 and the 2102 pitched in to help haul railroad enthusiasts throughout the first half of the 1960s. Widely featured in the railfan literature of the era, the Reading Rambles made No. 2124 an individually famous locomotive; it's last "ramble" was on October 22, 1961.

It was also ironic that although the Reading T-1 class engines represented a major post-World War II motive power acquisition drive in 1945, 1946, and 1947, the decline of Reading Company steam motive power began as early as 1950 with accelerating acquisition of main line diesel-electric locomotives. Thus the Reading T-1 engines such as No. 2124 represent steam locomotives in their "last hour" on America's railroads.

In an article published in 1968, Bert Pennypacker cited one engineer's experience with the T-1s:

> All Reading enginemen with whom we talked agreed that the T1 4-8-4s were the best engines they ever ran. Tommy Foss remembers them well. A Port Reading coal trip with one almost got him into serious trouble with the officials. It seems that a brakeman running out of Bridgeport had learned a lot about firing and running these engines, and he often took over either position in the cab for short periods of time. On this occasion a crew shortage had failed to produce a fireman for the run, and the experienced brakie said he'd fire her, which he did with ease. But on the return trip, a trainmaster climbed into the cab and asked who was firing the T1.
>
> "I am," said the brakeman.
>
> "Whattaya mean, you are?" retorted the official. "You are a brakeman and you're not firing anything." He turned to the engineer. "Who fired this engine over from Bridgeport?"

> Jerking a gloved hand toward the brakie, Tommy Foss grunted, "He did, and if he can't fire her back to Bridgeport I'm not running her."
>
> Well, the t.m. apparently decided it would be better to get the train over the road than tie her up with a rules technicality, especially in view of the crew shortage.
>
> "OK," he said to the shack [brakeman], "you can fire her again on the return trip, but I don't want any more runs made with brakemen firing, even in a pinch."

Indeed, for all their ungainly front end appearance, the T-1s were fine motive power, and would be one of a few select classes of locomotive that had a whole book devoted to them in the body of railroad history literature.

Even before the Reading Company ceased operating its "Iron Horse Rambles," popularly called "Reading Rambles," it had retired Locomotive No. 2124 to Steamtown. The company shipped her out of Reading, Pennsylvania, at 11 p.m. on July 31, 1963, via its own line, the Central of New Jersey, the Delaware & Hudson, and the Boston & Maine.

Locomotive No. 2124 is one of about 37 4-8-4 Northern-type engines preserved in the United States, and one of four Reading T-1 Class 4-8-4 locomotives to survive out of the 30 built (or *re*built), the others being No. 2100 at Hagerstown, Maryland; No. 2101 at Baltimore, Maryland; and No. 2102 at Temple, Pennsylvania. These are four of a total of nine locomotives of the Reading Company of various types that have survived.

Condition: This engine has accrued high mileage since its last overhaul, which means that it is due for a major, expensive overhaul before it can run again. Otherwise, it is in reasonably good condition.

Recommendation: The NPS should prepare a report documenting the history of this particular engine and any changes in its fabric or appearance since its historic use as a freight locomotive. Then the locomotive should be given a complete cosmetic and mechanical overhaul to put it in operable condition. It is just the kind of modern, heavy-duty main line 20th century steam motive power that the Steamtown collection should emphasize. When in operable condition, it should be placed in a schedule of operation for excursion and/or interpretive purposes.

In researching a report on this locomotive, special attention should be directed toward obtaining photographs of it while in freight service, which in the published literature are rare.

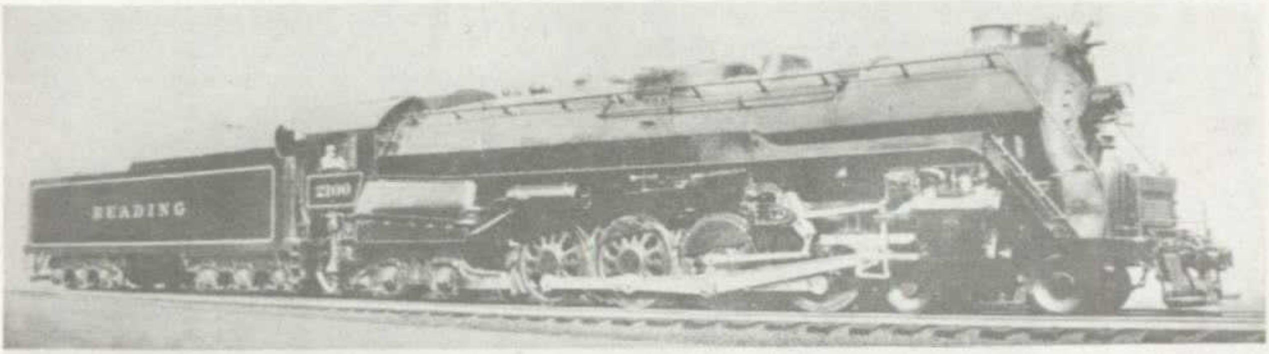


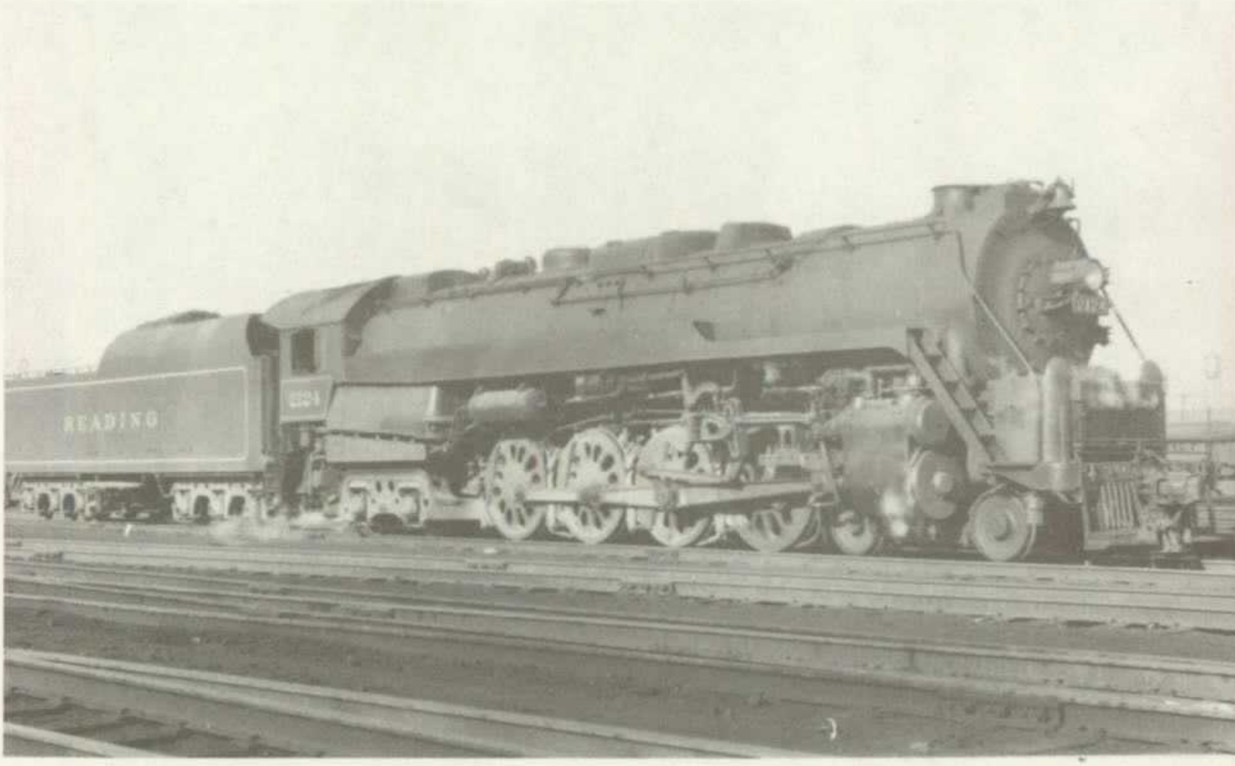
Fig. 2.181—Reading 4-8-4 Type Locomotive for fast freight service. Class T-1, Road Nos. 2100-2129. Built at Reading Shops

Description: Railway Mechanical Engineer, April, 1946; *Railway Age*, March 23, 1946.

Tractive force, engine	68,000 lb.	Driving wheel base	[illegible]
Tractive force, booster	11,100 lb.	Total engine wheel base	[illegible]
Cylinders, diameter and stroke	27 in. x 32 in.	Fuel	Soft coal
Drivers, diameter	70 in.	Firebox, length, width	[illegible]
Weight on drivers	278,700 lb.	Grate area	[illegible]
Weight on front truck	67,600 lb.	Steam pressure	[illegible]
Weight on trailing truck	96,100 lb.	Evaporative heating surface	465 + 4,455 = 4,920 sq. ft.
Total weight of engine	441,300 lb.	Superheating surface (Type A)	[illegible]
Weight of tender, loaded	367,700 lb.	Tender capacity	19,000 gal., 26 tons

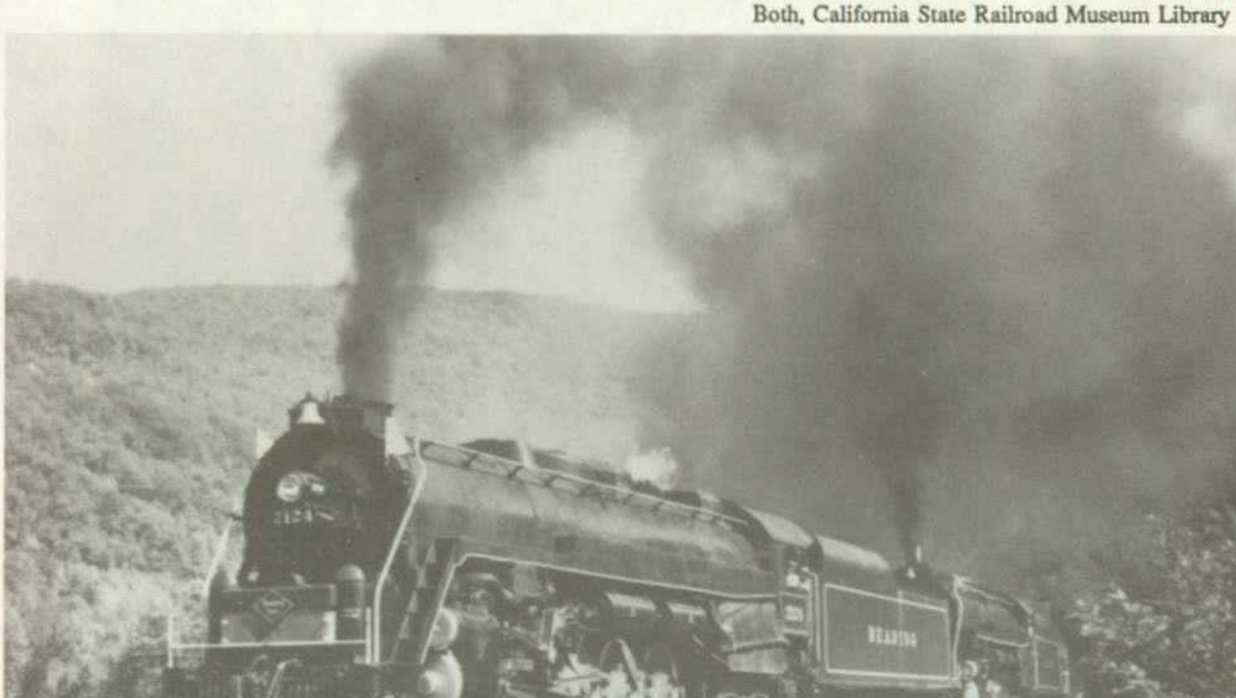
The 1947 edition of the *Locomotive Cyclopedia of American Practice* illustrated the new Reading Company class of T-1 4-8-4 locomotives, which the company itself built from old Baldwin 2-8-0 locomotives in its own shops.

Colorado Railroad Museum Library



The Reading Company operated its heavy 4-8-4 locomotives principally in freight traffic until the twilight of the steam locomotive, when it pressed a number of them into service in passenger or railfan excursions, the famous Reading Rambles, such as the one shown below at Port Clinton, Pennsylvania, on September 23, 1961.

Above, collection of Gerald M. Best
Below, collection of the Railway and Locomotive Historical Society
Both, California State Railroad Museum Library



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Reading Company Locomotive No. 2124 rested in its home yard in Reading, Pennsylvania, on November 14, 1959, ready for service.

Collection of Malcolm D. McCarter

READING COMPANY
Office of Chief Mechanical Officer

READING, PA.

IN YOUR REPLY PLEASE REFER TO ______

August 1, 1963

Mr. Robert W. Adams, Supt.
Monadnock Northern Railroad
North Walpole, New Hampshire

Dear Sir:

Wish to advise that Steam Locomotive 2124 consigned to Monadnock Steamtown & Northern Corporation at Bellows Falls, Vermont, routed via Reading Company - Allentown, Pa., CNJ-Wilkes Barre, Pa., D&H - Mechanicville, N.Y., - B&M was moved from Reading at 11 PM, July 31, 1963 on RB-2 enroute Allentown.

Yours truly,

F. G. Fisher
F. G. Fisher
Chief Mechanical Officer

UNION PACIFIC RAILWAY NO. 737

Owner(s):	Union Pacific Railway	**Road Number(s):**	737
	Union Pacific Railroad		737
	Southern Pacific Company		246
	Southern Pacific Company		216
	Erath Sugar Company		216
	Vermilion Sugar Company		216

Whyte System Type: 4-4-0 "American" **Class:** U.P. "600-700" S.P. E-21

Builder: Baldwin Locomotive Works

Date Built: 1887 **Builder's Number:** 8395

Cylinders (diameter x stroke in inches): 18 x 26

Boiler Pressure (in lbs. per square inch): 160

Diameter of Drive Wheels (in inches): 62
Tractive Effort (in pounds): 18,478

Tender Capacity: **Coal (in tons):** 8, later 14 **Water (in gallons):** 2,000, later 4,000
Oil (in gallons): 4,000

Weight on Drivers (in pounds): 62,000

Remarks: Mechanically this is a tired, worn-out engine, but one that is very valuable for stationary exhibit purposes.

Union Pacific Railway 4-4-0 Locomotive No. 737

History: Incorporated on July 1, 1862, the Union Pacific Railroad constructed the eastern half of the nation's first transcontinental railroad during the 1860s, its main line extending from Omaha, Nebraska, westward to Promontory Summit, Utah, (later cut back to Ogden, Utah) by May 1869. Subsequently the Union Pacific took over the Utah Central extending south through Salt Lake City, and the Utah & Northern, extending from Ogden through Idaho into Montana, and it built or absorbed local lines, which gave it access to Denver and to Portland, Oregon, and the Pacific Northwest. It also acquired the Kansas Pacific (originally called the Union Pacific, Eastern Division, though in essence a separate railroad), and until forced to divest it to the Colorado & Southern Railway by reason of bankruptcy during the 1890s, it owned narrow gauge trackage into the heart of the Colorado Rockies and a standard gauge line south from Denver across New Mexico into Texas.

The railroad's early troubles led to bankruptcy during the 1870s, the result of which was reorganization of the Union Pacific Rail*road* as the Union Pacific Rail*way* on January 24, 1880. It was this second company that purchased Locomotive No. 737, but that company, too, entered bankruptcy in the 1890s from which it emerged on July 1, 1897, reverting again to the original name, Union Pacific Rail*road*. Such minor changes in corporate titles were a common result of reorganization after bankruptcy among American railroads, but the terms "railroad" and "railway," while interchangeable in common usage, are not interchangeable in the proper title of a company, and generally designate a specific and definable period in that company's history. It was during a surge of expansion in the late 1880s preceding the bankruptcy of the 1890s that the Union Pacific acquired diamond-stacked locomotive No. 737.

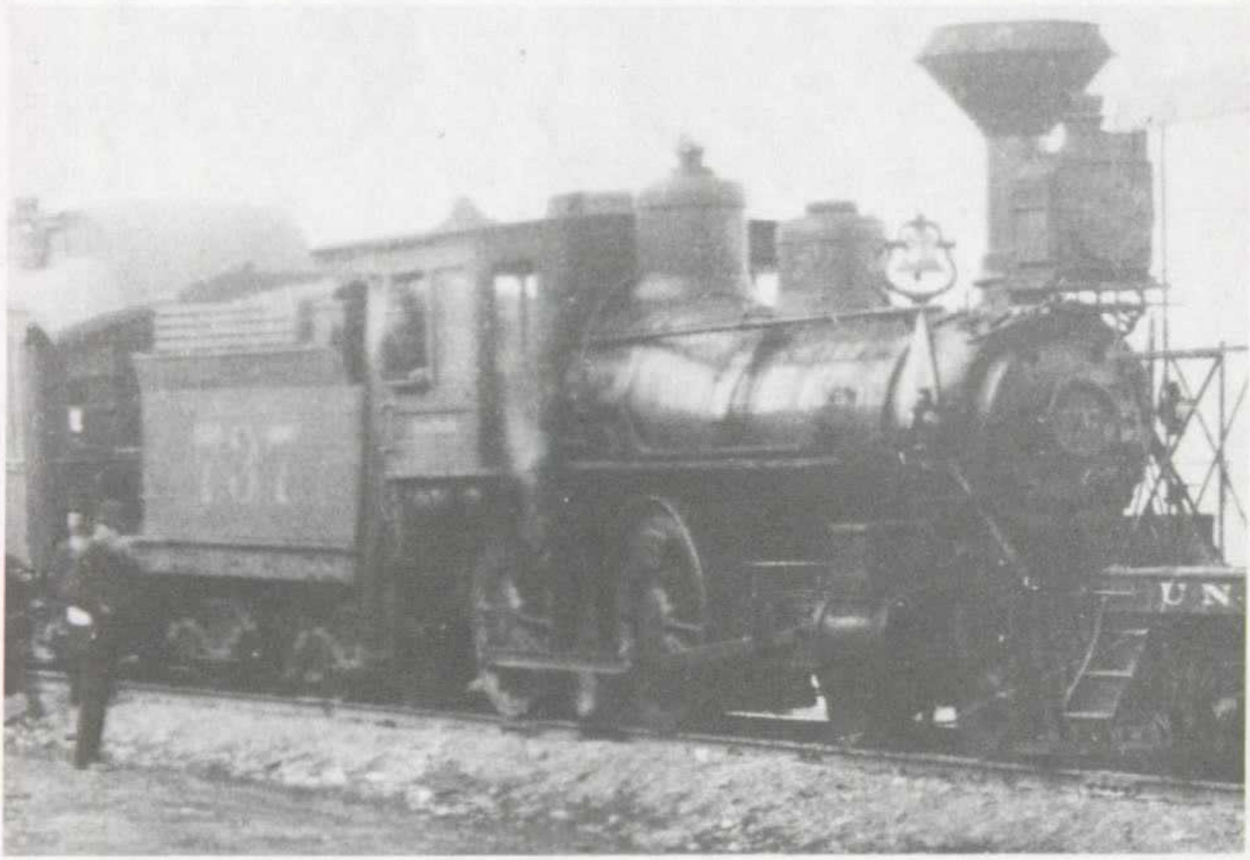
During the 19th century, the 4-4-0 was the most common type of American locomotive, so common that the type came to be called the "American Standard," or, to be briefer, simply the "American." Thousands of these locomotives rolled out of the erecting shops of America's locomotive builders. At mid-century, and at the time of the Civil War during the 1860s when the Union Pacific was just getting organized, the American-type locomotive was not only *the* passenger engine on America's railroads but also the freight engine, although by the 1860s and 1870s, 2-6-0 and 2-8-0 types were beginning to supplant it in main line freight service. Nevertheless, the American type continued to hold its dominance in passenger traffic until nearly the end of the century, when heavier and larger 4-6-0 "ten-wheelers" and eventually other types replaced the American on main line passenger trains. Increasingly, as time passed, 4-4-0 locomotives found themselves downgraded to branch line and short line service, where they continued to serve in ever-diminishing numbers until the middle of the 20th century, and some even came into the ownership of industrial concerns such as logging firms and sugar cane plantations. The 4-4-0 thus is a prime example of an engine that started out as a mainstay of main line passenger traffic (and, briefly, freight) on the nation's major railroad systems, but that by the 20th century had been replaced by heavier power and had been shunted aside to the branch line mixed trains as well as to use on lumber, mining, and other industrial railroads. Thus one era's main line motive power became a later era's secondary or branch line motive power. Of the thousands and thousands of these locomotives built in America, only about 39 examples of the 4-4-0 American survive in the United States.

Fittingly, Union Pacific Railway Engine No. 737, the oldest locomotive in the Steamtown collection used in the United States, began its career in 1887 as part of one of the largest locomotive orders on record up to that date, for use on Union Pacific passenger and freight trains. As delivered, the locomotive had a long, pointed, vertical bar wooden pilot, an oil "box" headlight, a "diamond" stack of the shallow diamond style peculiar to the Union Pacific at that period, and steam and sand domes that appeared comparatively square in profile and lacked the common, ornate, cast-iron dome "rings," a decorative molding that dressed up the appearance of such domes and that many 19th century locomotives sported. Upon entering service, the locomotive reportedly had the initials "O.& R.V." painted on the small panel below the windows on each side of the cab, standing for the name of a Union Pacific subsidiary in Nebraska, the Omaha & Republican Valley Railroad. Later the locomotive had "Union Pacific" spelled out in small letters on each side of the cab, probably in white, and a large white "737" on each side of its black tender.

In August 1904 (different sources disagree on the date), the Union Pacific, since July 1897 again a "Rail*road*," sold Locomotive No. 737 and a few similar 4-4-0s to either Morgan's Louisiana and Texas Railroad and Steamship Company or the Texas and New Orleans Railroad, both of them components of the Southern Pacific System. A Union Pacific Railroad folio locomotive diagram book issued in 1911 showed engines of this class as having had their diamond stacks replaced with straight or "shotgun" stacks, but whether that change had been made before the sale of Locomotive No. 737 is not known.

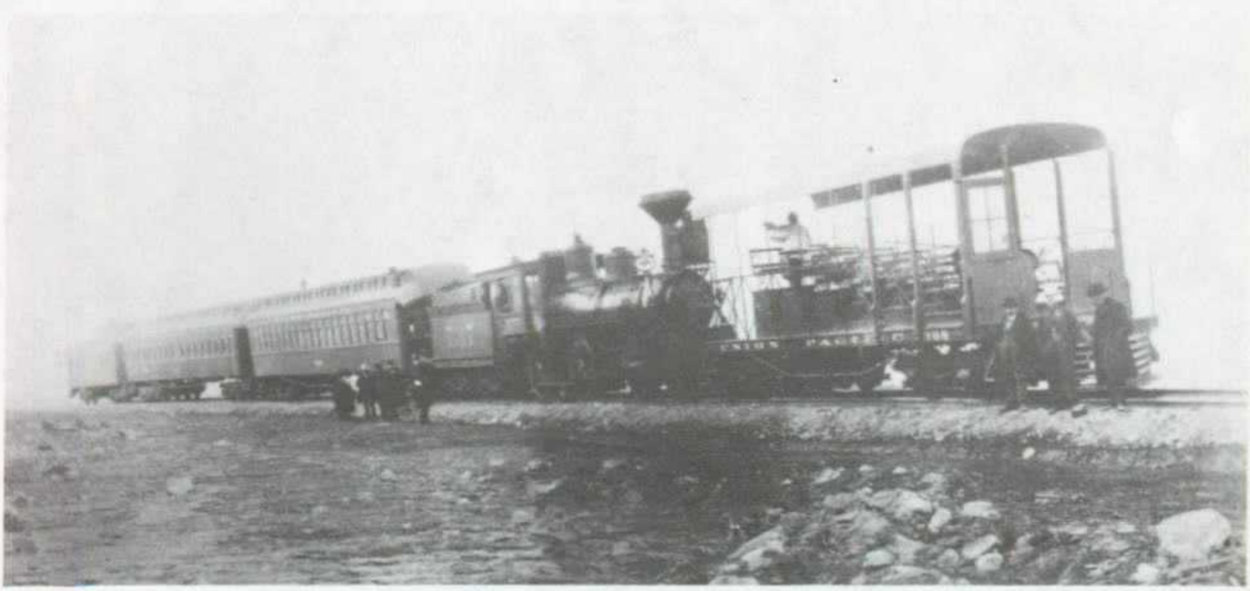
By the time it purchased Locomotive No. 737, the Southern Pacific Company had grown into a major railroad system that incorporated many smaller companies, such as the Texas and New Orleans and Morgan's Louisiana and Texas, and that extended from New Orleans through Texas to El Paso, across New Mexico and through Tucson, Arizona, to Los Angeles, throughout most of California including San Francisco and Sacramento; it absorbed the Central Pacific extending eastward across Nevada to Ogden, and had lines reaching north throughout and across Oregon to Portland. Developed by the same Big Four California entrepreneurs who had built the Central Pacific--Leland Stanford, Collis P. Huntington, Mark Hopkins, and Charles Crocker--the Southern Pacific became their tool for expansion beyond the original Central Pacific, which one might have expected to grow instead, but the Southern Pacific corporate structure proved more amenable to their needs than that of the Central Pacific. Thus the historic Central Pacific slowly vanished into the corporate structure of the Southern Pacific as the original developers of the system passed one by one from the economic scene.

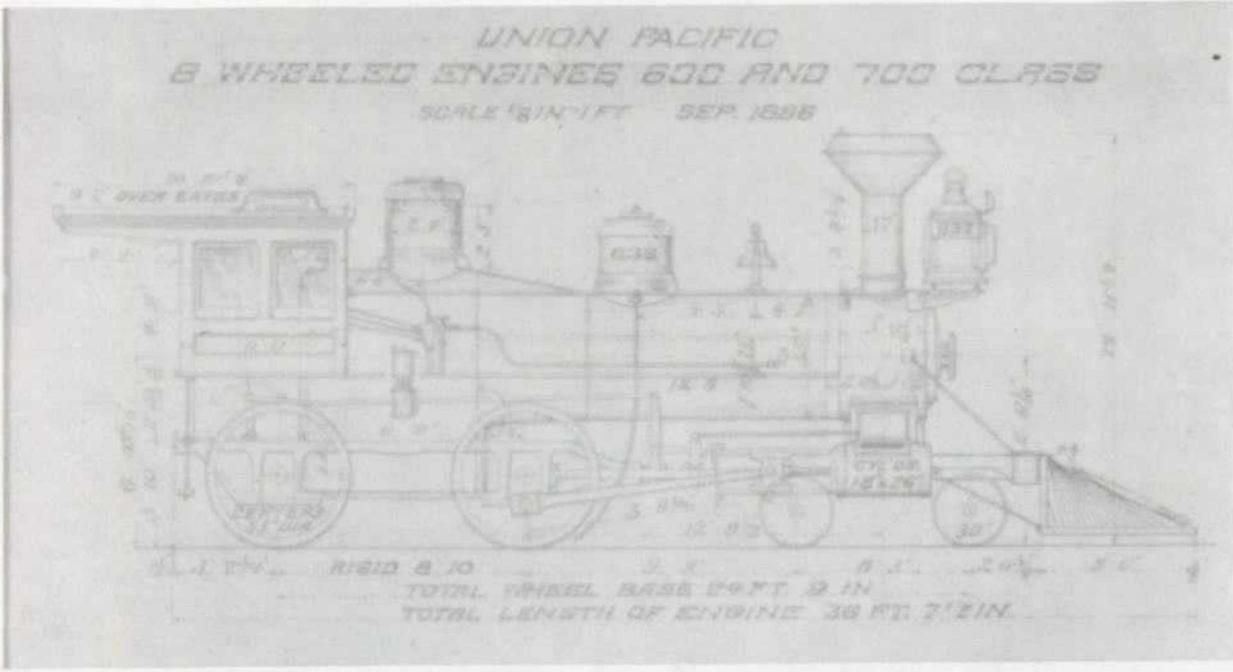
Although the Union Pacific Railroad and the Southern (Central) Pacific jointly operated the first transcontinental railroad, elsewhere they competed bitterly throughout their history, and only briefly around the turn of the century did they come under the same ownership, that of Edward Henry Harriman. It was during Harriman's comparatively brief period in control of both systems that Locomotive No. 737 and some of her sisters migrated southward about 1904 to the Texas and Louisiana lines of the Southern Pacific System, such as the Galveston, Harrisburg and San Antonio Railway, the Texas and New Orleans Railroad, and Morgan's Louisiana and Texas Railroad and Steamship Company. According to one source, No. 737 became No. 246, lettered "Morgan's Louisiana and Texas." Other sources suggest that it became a Texas and New Orleans Railroad locomotive. The Southern Pacific Company owned or controlled both of these Texas-Louisiana railroads, but the question of which subsidiary owned No. 216 is not unimportant, because it would have determined how the locomotive was lettered. In 1913, in a renumbering and reorganization of motive power, the Southern Pacific Company gave the locomotive its final number: No. 246 became No. 216.



The original appearance of Union Pacific Railway Engine No. 737, as shown in an enlargement of a section of a photo of an official inspection train out on the line around 1890, differed considerably from that resulting from the misguided "restoration" by the Steamtown Foundation about 1969.

Collection of the Railway and Locomotive Historical Society
California State Railroad Museum Library





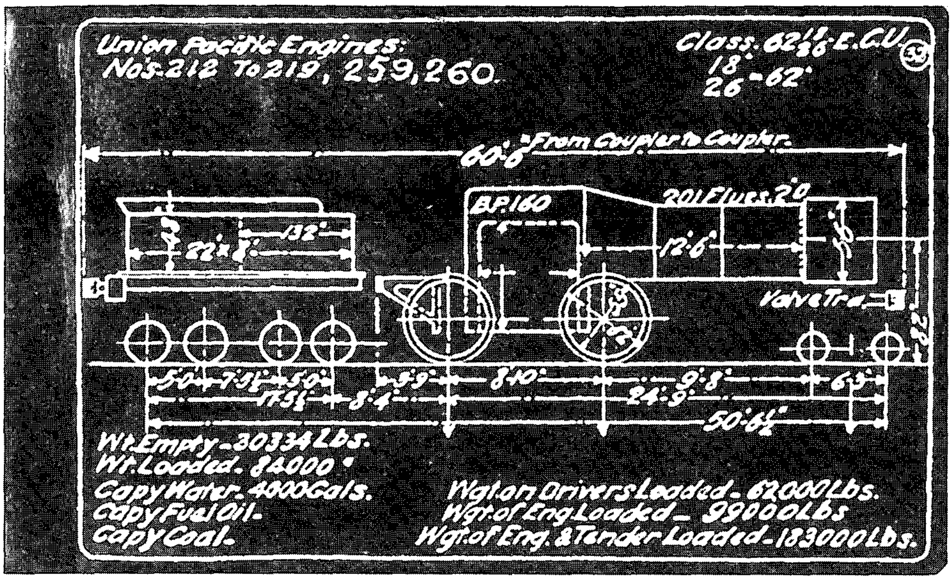
Union Pacific Railroad Folio Locomotive Diagram Book No. 200, issued in 1897, showed the original appearance and vital statistics of locomotives such as No. 737. Note the squared profile of the domes on this engine.

Courtesy Union Pacific Railroad

DESCRIPTION OF 8 WHEELED ENGINES 600 AND 700 CLASS
GAUGE 4 FT. 8 1/2 INS.

CYLINDERS	
18 ins dia. x 26 ins Stroke	
Steam Ports	16 x 1 1/4 in.
Exhaust Ports	16 x 2 1/2 in.
Travel of Valve	5 1/4 in.
Lap of Valve, outside	7/8 in.
Lead in Full Gear	1/16 in.
Throw of Eccentric	5 1/4 in.
Distance Cen. to Cen. of Cyl'drs.	6 ft 3 1/2 in.
Exhaust Nozzles	Double
WHEELS	
Dia. of Driving Wheels	62 in.
Dia. of " " Centers	55 in.
Dia. of Truck Wheels	30 in.
JOURNALS	
Driving Axle Journals	7 1/2 dia. x 8 in.
Truck Axle Journals	5 1/2 dia. x 10 in.
Main Rod Journal	4 1/2 dia. x 4 1/2 in.
Side Rod Main Driver	3 1/2 dia. x 3 1/2 in.
Side Rod Trailing	3 1/2 dia. x 3 1/2 in.

Out to Out of Frames	4 ft. 2 1/2 in.
Total Length of Engine & Tender	58 ft. 4 in.
BOILER	
Outside Dia. of Smallest Ring	55 in.
Thickness of Shell in Barrel	1/2 in.
201 Tubes 2 in. dia. No. 11 B.W.G. 12 ft 6 in long	
Fire-box inside, 72 1/8 ins long x 33 1/8 ins wide	
Fire box, 69 7/8 ins high.	
Grate Surface	16.71 sq ft
Heating Surface in Tubes	1306.7 sq ft
Heating Surface in Fire box	141.7 sq ft
Total Heating Surface in Boiler	1448.4 sq ft
WEIGHT OF ENGINE	
Weight of Engine, 2 gauges of water	99,000 Lbs
Weight on Drivers, " " "	62,000 "
Weight of Tender, Empty	30,334 "
Capacity of Tank in Gallons	2,900 Gal
Pounds of Coal (Lump)	16,000 Lbs
Total Weight of Engine & Tender in Working order	169,500 Lbs



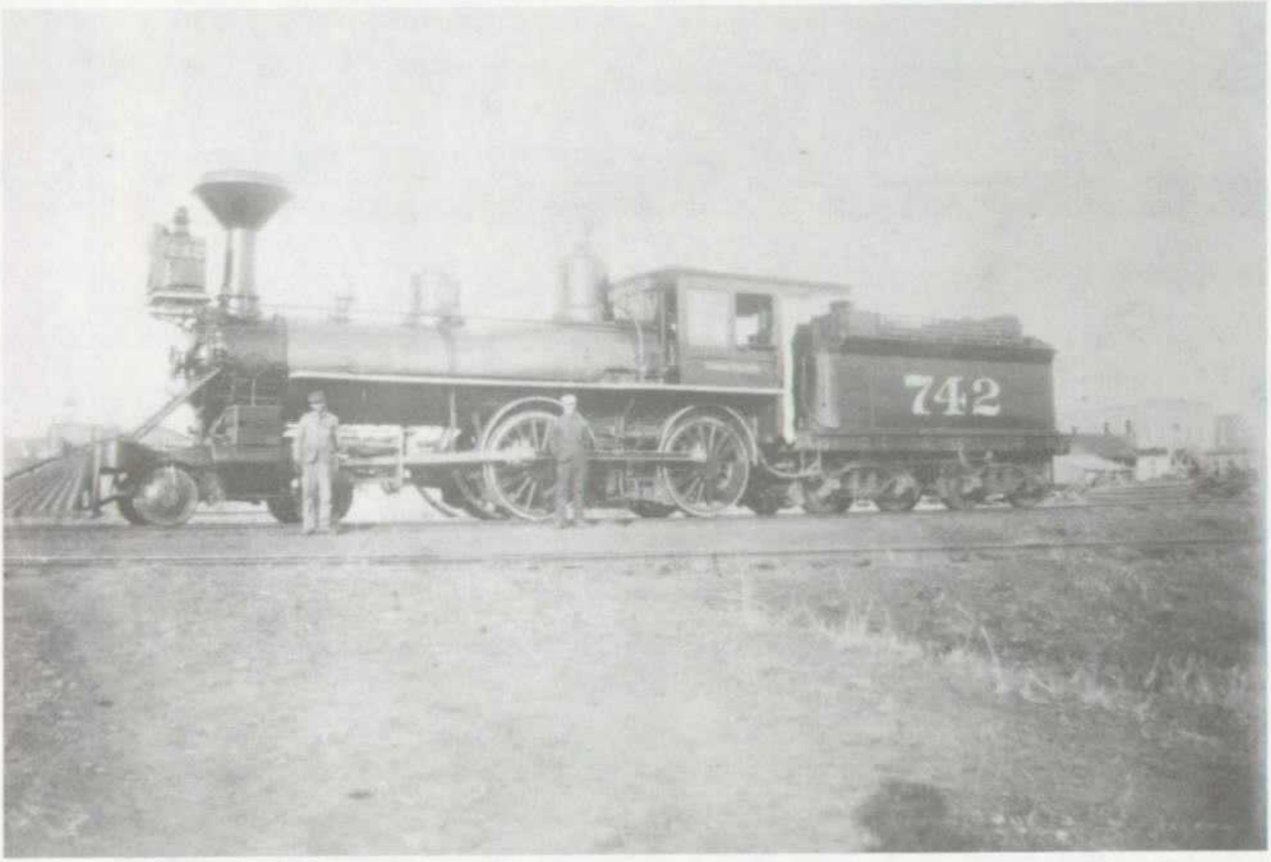
After its acquisition of Union Pacific No. 737, at an unknown date probably durng the 1920s, Southern Pacific Lines prepared its own locomotive diagram sheet for the locomotives it had acquired from the Union Pacific. No. 373 had become No. 216 in this series.

Colleciton of Louis Saillard

During the first quarter of the 20th century the owning railroads made a number of important modifications to Engine 246, later 216. By the end of 1904, subsequent to Congress passing a safety act that mandated the change, the Southern Pacific converted the locomotive's link and pin coupling equipment to automatic "knuckle" couplers, possibly of the Janney type. At unknown dates, a number of other changes followed. While some of the modification may have occurred before the locomotive left the Union Pacific, such as change out of the couplers and replacement of the diamond stack by a straight or shotgun stack, it was probably on the Southern Pacific lines that the locomotive soon experienced further alteration in the form of modernization quite common on railroads across the country during the first two and a half decades of the 20th century. Mechanics and boilermakers replaced the original short smokebox with an extended smokebox with shotgun stack, and it was almost certainly on the Southern Pacific Lines that the shops converted the locomotive from a coal burner to an oil burner by installing an oil tank in the tender in place of the coal bin and rigging connecting hoses and pipes to feed oil to the firebox, with suitable controls and probably modification of the firebox grates. Thus the locomotive could exploit Texas and Louisiana petroleum for fuel. A steel pipe or "boiler tube" pilot replaced the original wooden type of cowcatcher. An all-steel cab replaced the original Baldwin wooden cab. A new and different headlight replaced the old kerosene "box" headlight.

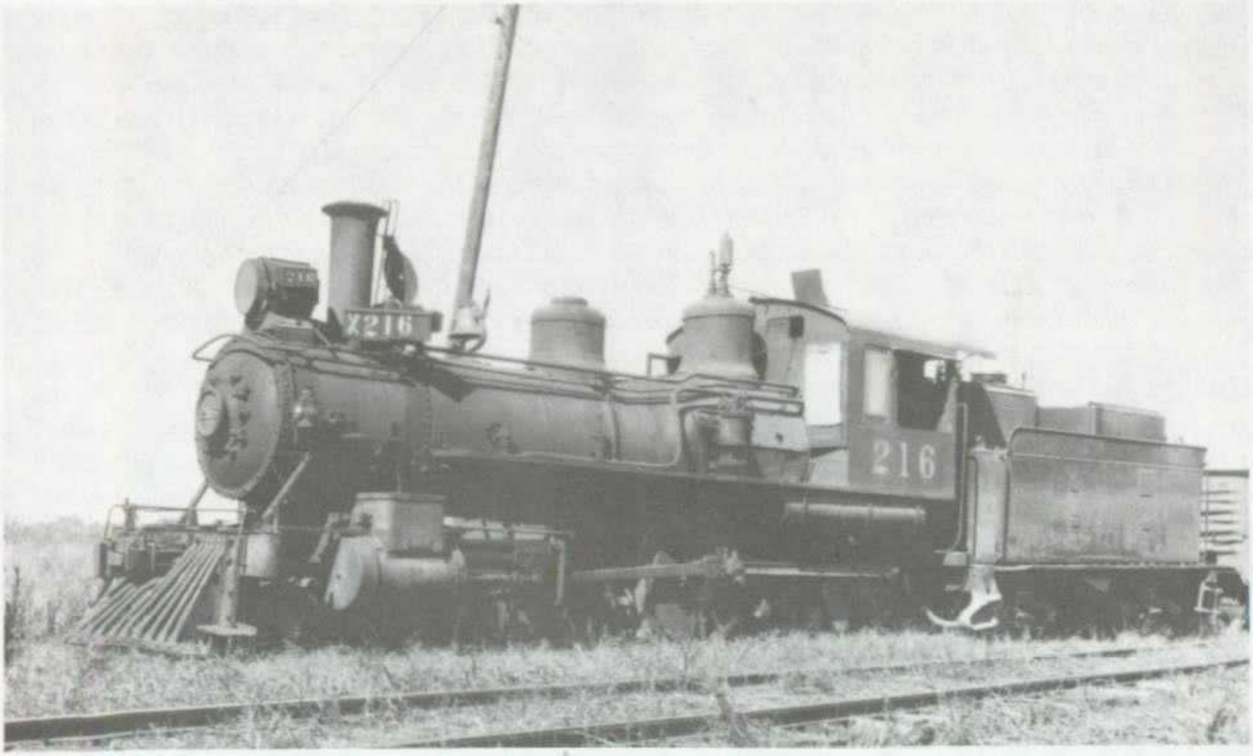
In 1913, the Southern Pacific System gave the locomotive its final number in yet another renumbering of motive power. No. 246 became No. 216. At the time, the locomotive probably was lettered "Southern Pacific Lines" in large white letters on her tender, with the number on the cab and the small initials to indicate the actual Southern Pacific subsidiary that owned her. Several variant lettering schemes succeeded each other in Southern Pacific practice.

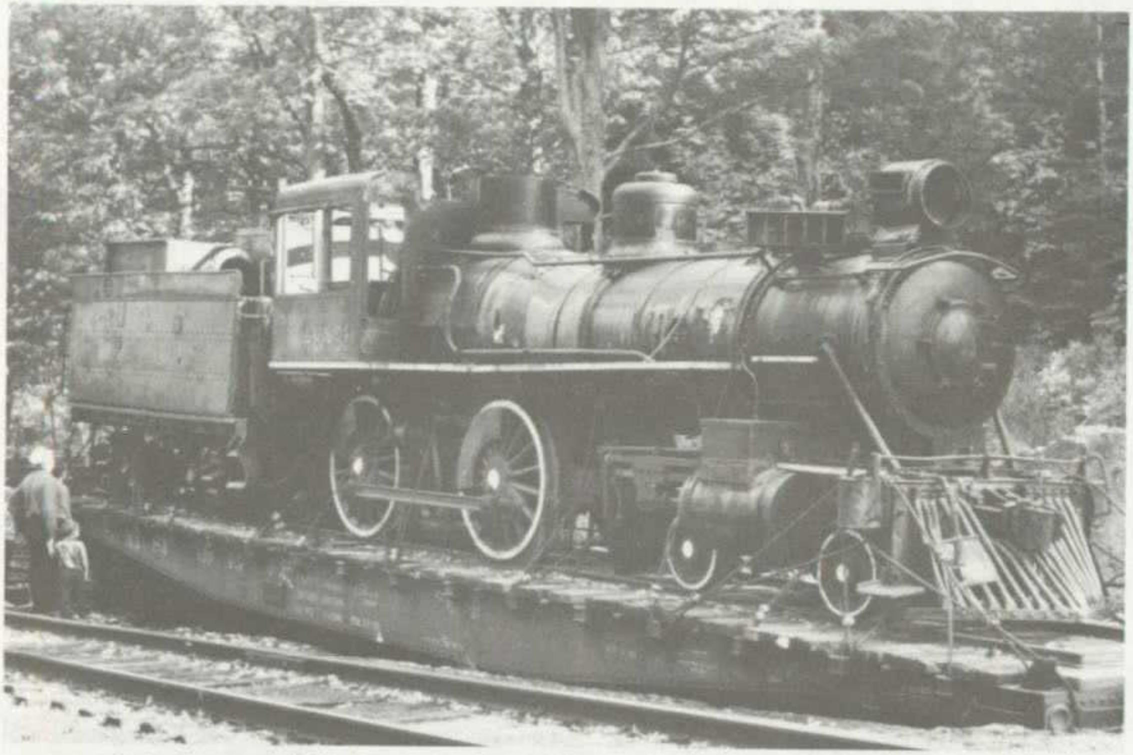
It was not until December 4, 1929, that Locomotive No. 216 retired from active service on a major railroad system; on that date, the Southern Pacific Company sold her to the Erath Sugar Company for industrial use in the canefields of Louisiana.



Union Pacific Railway Engine No. 742, an identical sister of No. 737, showed the fireman's side of that class of engine in its original appearance (above). By 1947, at the Erath Sugar Company in Louisiana, No. 737, now No. 216, had an extended smokebox, shotgun stack, electric headlight, and "boiler tube" pilot, and had been converted from coal to oil fuel.

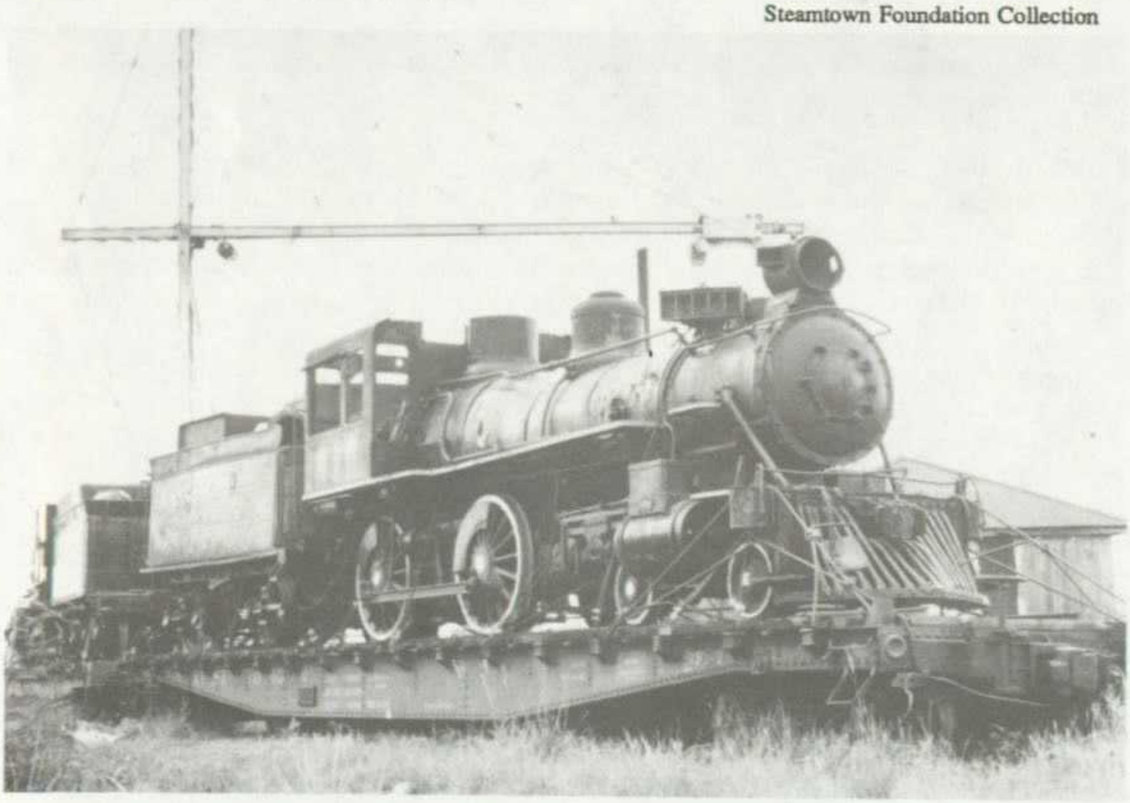
Above, Union Pacific Railroad
Below, collection of Guy L. Dunscomb





Locomotive No. 737 arrived at Steamtown in Vermont with some dismantled parts loaded in her tender, others more vulnerable to theft shipped separately.

Steamtown Foundation Collection



In preparation for shipment from Louisiana to Vermont, a crew of men removed the stack of Locomotive No. 737, removed the bell, removed the whistle and top of the steam dome, and cut off the top of the cab roof, along with other minor work. W.T. Golson photographed the forlorn engine sitting on a Santa Fe flat car coupled to another car carrying another former sugar company engine to Vermont in September 1965.

Collection of Louis Saillard

The Erath and Vermilion sugar factories, located in Vermilion Parish, Louisiana, at Erath and Abbeville, respectively, had been established in 1909 when the Caldwell and Moresi brothers entered a partnership to process sugar cane. At Erath, they erected for the 1910 grinding a large new factory with a cane-grinding capacity exceeding that of most other mills in the state. Knowledgeable entrepreneurs in the sugar cane industry regarded the Erath mill as one of the most modern plants in the sugar district, a large factory supplied by more than 1,200 outside growers, the company itself owning only 1,000 acres of land.

Extending out from the factory, 17 miles of railroad reached into the canefields to 16 loading stations. The company not only had purchased Southern Pacific Locomotive No. 216, but later acquired Southern Pacific (T.& N.O.) No. 319, a Cooke-built 4-6-0 outshopped in 1892. The company owned no gondola cars of its own, using cars owned and supplied by the Southern Pacific. In August 1947, the Erath Sugar Company sold or otherwise transferred ownership of No. 216 to the Vermilion Sugar Company at Abbeville, Louisiana.

On Vermilion Bayou in the heart of Abbeville, Louisiana, parish seat of Vermilion Parish, the same pair of brothers had built another major central sugar processing factory. This Vermilion Sugar Company plant was not at the heart of a plantation, but drew entirely from outside cane growers to fill its capacity of grinding 1,400 tons of cane every 24 hours. Some 800 growers in the Vermilion Bayou region supplied it with cane, much of it moving to the mill by 18 100-ton barges and one towboat that negotiated Vermilion Bayou as far as 30 miles. The remaining cane came to the mill on the Abbeville Branch of the Southern Pacific. The Vermilion plant had one steam locomotive to handle switching to the weighing scales and to and from the Southern Pacific, and this generally was another Cooke 1892 4-6-0 purchased from the Southern Pacific.

In practice, the three locomotives were used interchangeably between the two mills, so that No. 216 worked the Vermilion plant trackage as well as that of the Erath plant. The sugar companies retained the locomotive's last Southern Pacific number, 216, and other than painting out the Southern Pacific lettering, probably made no other noticeable changes in the locomotive. The Vermilion Sugar Company retired No. 216 in 1956.

F. Nelson Blount bought the engine for Steamtown in 1957. To move the locomotive to Vermont on a flat car, it proved necessary in meeting height clearance requirements to cut off the roof of the steel cab that had replaced the wooden cab early in the 20th century, but Steamtown retained the cab roof, and moved it to Bellows Falls and then to Scranton.

It was in 1970, inspired by the excitement generated by the centennial of the first transcontinental railroad even though a year late, that the Steamtown Foundation undertook an ill-conceived attempt to "restore" the locomotive either to the appearance of an engine at Promontory Summit in 1869 or her original appearance of 1887--it is not clear which was the intention. Whichever, Don Marshall supplied a replica of a "diamond" stack that reflected neither the types of stacks present on engines in 1869 nor the types of stacks used on Engine No. 737 during the 1880s and 1890s. This replica was installed, as well as a box or kerosene headlight, and Bill Kimberly built a wooden cab cosmetically applied over the remaining walls of the Southern Pacific steel cab. Thus, No. 737 does not today represent *any* appearance she presented historically.

As already mentioned, the oldest locomotive in the Steamtown collection, No. 737 is the oldest genuine Union Pacific engine in existence and the only Union Pacific 4-4-0 in existence. It is one of 52 surviving Union Pacific steam locomotives. Considered as part of the entire Southern Pacific System, it is one of only five Southern Pacific 4-4-0 locomotives to survive, and one of about 65 Southern Pacific steam engines to survive.

After No. 737 and other Steamtown locomotives were moved from Bellows Falls, Vermont, to Scranton, Pennsylvania, in 1984, stack covers were needed to keep rain, sleet, and snow from going down the stacks in bad weather, collecting in the smokeboxes, and rusting them from the inside outward. A stack cover is nothing more than a disc of steel plate slightly larger in diameter than the stack to be covered and heavy enough not to be dislodged by wind. Seeking scrap steel from which to cut some stack covers, an employee of Steamtown unfortunately found the steel cab roof from Locomotive No. 737 lying in either a box car or gondola and, attaching no significance to this sheet of gently curved steel, proceeded with an acetylene torch to cut two discs about 2 to 2 1/2 feet in diameter out of the middle of the roof, and left the remainder of the cab roof lying on the ground in the Scranton yard.

Subsequently, another Steamtown Foundation employee, one more sensitive to historical values, became curious about the piece of oddly shaped steel, and when he learned what it was, recognized its historical importance, retrieved it from where it was lying on the ground like a piece of scrap metal, and locked it away in a boxcar.

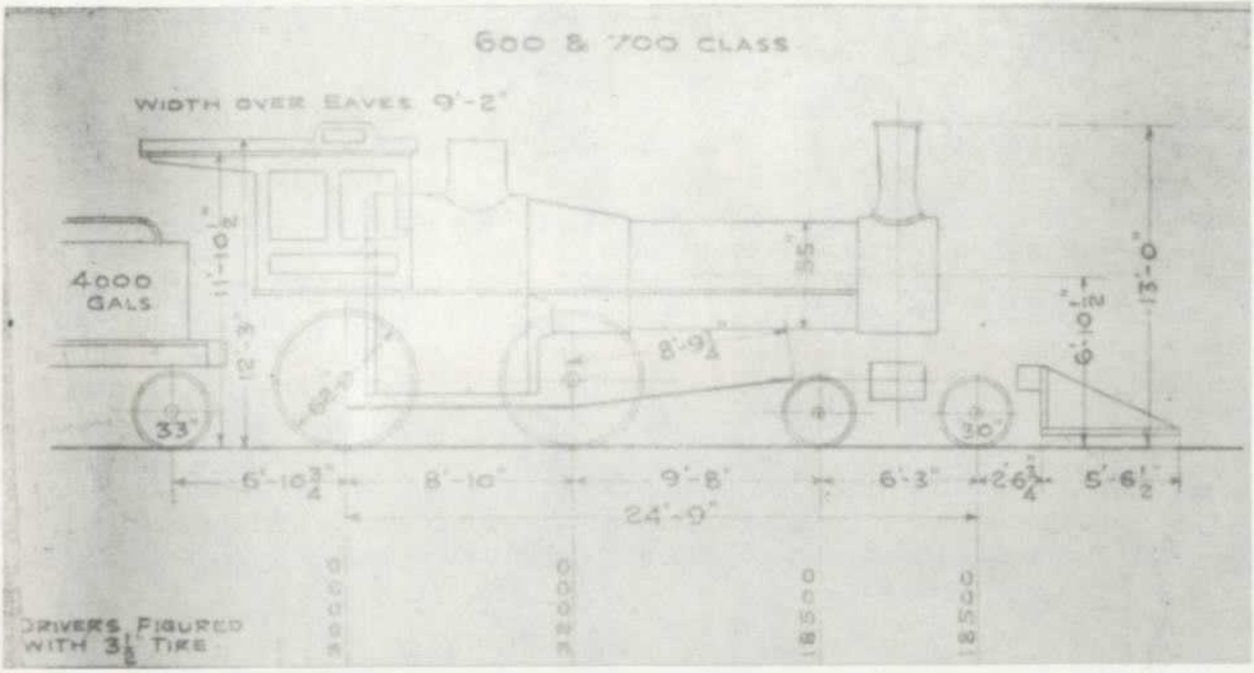
Condition: This locomotive is mechanically a very tired, worn-out engine with a lap-seam boiler. It is missing both boiler lagging and boiler jacket, and has a rotten wooden pilot beam and a rotten wooden tender frame. The steel roof was cut off its metal cab, although part of the walls may remain. They have been covered by a wooden cab of nonhistoric character and design. The engine has a phony "diamond" stack and a nonhistoric box or kerosene headlight, all applied in a misguided attempt to restore a semblance of 19th century appearance. The engine probably is not operable, and probably is suited only for static exhibit use.

Recommendations:

(1) The specific stack covers that were cut from this cab roof should be located and matched with the holes from which they were cut, and they should be labeled and locked up with the cab roof for future restoration. Eventually, the cab roof should be repaired not by overlapping patches of the holes, but by welding the stack covers back into their original position, with the welding ground smooth on both sides so that when painted, it is impossible to tell that the discs of steel ever were missing.

(2) Substitute stack covers should be made from nonhistoric steel plate purchased from some scrap metal shop, and placed on the locomotive stacks from which the two stack covers cut from No. 737's cab roof were removed. These two recommendations are urgent and high priority.

(3) An effort should be made to trade or exchange this locomotive for Delaware, Lackawanna & Western Railroad Engine No. 952, a Camelback 4-4-0C in the collection of the National Museum of Transport in St. Louis, Missouri. The advantage of this trade to the National Museum of Transport is that it would obtain an 1887 locomotive in exchange for a 1905 locomotive, and a locomotive whose significance to the Union Pacific and Southern Pacific Railroads already has been discussed. The advantage to Steamtown NHS is in the acquisition of one of the very few Camelback locomotives surviving, a type once common in Pennsylvania and the eastern United States, and more important, in acquiring the second surviving locomotive of the Delaware, Lackawanna & Western Railroad. Steamtown would thus bring Engine No. 952 back to its own territory, and Union Pacific No. 737



A Union Pacific Railroad Folio Locomotive Diagram Book revised as of September 23, 1911, illustrated 700-class locomotives as having had diamond stacks replaced with "shotgun" stacks, but whether this change occurred before the Union Pacific sold Locomotive No. 737 ca. 1901-1904 is not known at present.

Union Pacific Railroad

CYLINDERS	18" DIA. x 26" STROKE	NUMBER OF FLUES	201
WT. ON DRIVERS	62000 LBS	SIZE OF FLUES	2" DIA. 12'-6" LONG
TOTAL WT. OF ENG. LOADED	99000 LBS	HEATING SURFACE OF FLUES	1308.7 SQ FT
TOTAL WT. OF ENG & TEND LOADED	206233 LBS	HEATING SURFACE OF FIREBOX	141.7 SQ FT
WT. OF TENDER LIGHT	45960 LBS	TOTAL HEATING SURFACE	1448.4 SQ FT
CAPACITY OF TENDER WATER	4000 GALS	GRATE AREA	16.71 SQ FT
CAPACITY OF TENDER COAL	28000 LBS	LENGTH OF FIREBOX INSIDE	72⅛
WT. OF TENDER LOADED	107233 LBS	WIDTH OF FIREBOX INSIDE	33⅜
TOTAL WHEEL BASE ENG. & TEND.	46'-5¾"	BOILER PRESSURE	160 LBS
TOTAL LENGTH OF ENG. & TEND.	58'-4"	RATIO OF H. S. TO GRATE AREA	86.
DRIVING AXLE JOURNALS	7½" x 8"	RATIO OF H. S. TO CYL. VOLUME	189.1
ENGINE TRUCK JOURNALS	5½" x 10"	TRACTIVE POWER	18478 LBS

would migrate to the trans-Mississippi west in which it once operated. If the exchange is agreed to and sealed in a legal document, the National Museum of Transport should decide to what era No. 737, a.k.a. No. 246 and No. 216, should be restored.

(4) If the National Museum of Transport rejects the proposal to exchange Union Pacific No. 737 for Delaware, Lackawanna & Western No. 952, then the National Park Service should restore the locomotive to its appearance during the 1920s prior to its sale by Southern Pacific Lines to the Erath Sugar Company in 1929, or to its appearance in 1947 on the Vermilion Sugar Company's track, which is documented by a photograph. As a first step, the NPS should commission a report, modeled on a report on Atchison, Topeka & Santa Fe Railway No. 1 prepared for the Kansas State Historical Society. The report should contain a thorough narrative history of the locomotive as well as exhibit the results of an exhaustive search for historic photographs of the locomotive, and photographs of sister locomotives, along with all pertinent documents obtainable from Baldwin records and from the records of the Union Pacific and Southern Pacific systems. The report should then recommend specifically what the appearance of the restored locomotive should be. It is believed on the basis of currently available evidence that the appearance of the locomotive at the time it was acquired by Steamtown in 1957 was essentially the same as that shown in the photograph made when it was on the Vermilion Sugar Company line in 1947, which was probably essentially the same as its appearance in the 1920s, except for paint and lettering. This restoration, in addition to requiring thorough cleaning of all rust including stripping of the present paint, would involve installing a new wooden pilot beam, a new wooden tender frame (unless some original members are salvageable), boiler lagging, and a new boiler jacket, removing the oil headlight and restoring the type of headlight used on the Southern Pacific (which may be in storage in the Steamtown collection), and restoring the "shotgun" stack (which may be beneath the added "diamond"). Other missing parts of the locomotive, some of which may be stored in the collections, should be restored to the engine. The physical restoration of the locomotive should include extreme care to ascertain original components and colors and to locate and preserve any specimens that might be Russia Iron jacketing on the cylinders; as the engine was stripped of its boiler jacket long ago, none is anticipated around the boiler, but some might still exist around the cylinders. The report should thoroughly investigate and research the various paint, lettering, and numbering schemes that the locomotive carried while on the Southern Pacific System, and it should then be painted, lettered, and numbered in a suitable Southern Pacific style, probably of the mid-1920s. Finally, the engine should be exhibited indoors as an example of a main line 19th century 4-4-0 at the end of its common carrier career as a 20th century branch line locomotive about to be sold to an industrial concern.

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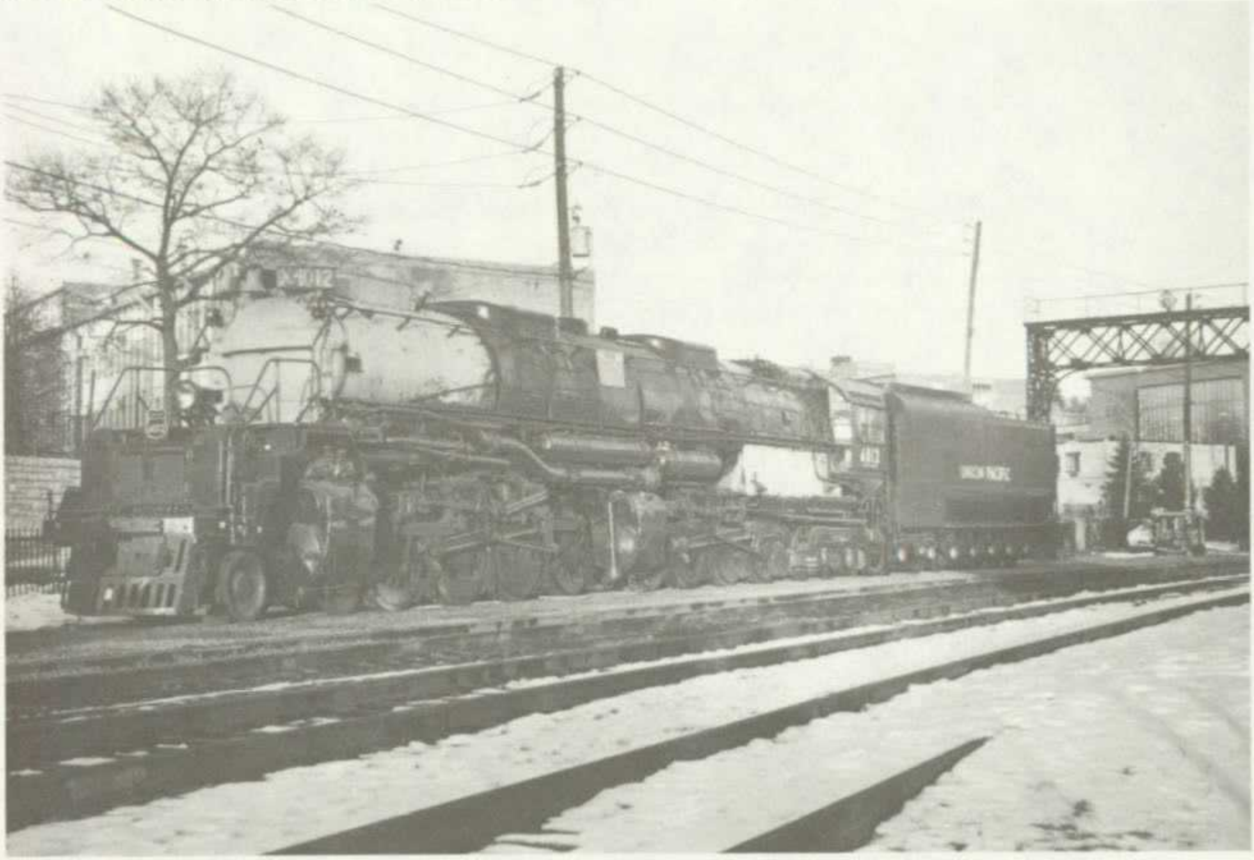
UNION PACIFIC RAILROAD NO. 4012



Owner(s): Union Pacific Railroad

Road Number(s): 4012

Whyte System Type: 4-8-8-4 "Big Boy"

Class:

Builder: American Locomotive Company

Date Built: November 1941

Builder's Number: 69583

Cylinders (diameter x stroke in inches): 23¾ x 32 (four)

Boiler Pressure (in lbs. per square inch): 300

Diameter of Drive Wheels (in inches): 68

Tractive Effort (in lbs.): 135,375

Tender Capacity: **Coal (in tons):** 28
Oil (in gallons): Not applicable

Water (in gallons): 24,000

Weight on Drivers (in lbs.): 540,000; Total Weight: 1,200,000

Remarks: Overall length: 132 feet, 9¼ inches; retired by the Union Pacific in February 1962 after logging 1,029,507 miles. In good mechanical condition, but with small parts missing.

Union Pacific Railroad 4-8-8-4 Locomotive No. 4012

History: Brief background on the 19th century history of the Union Pacific Railroad appeared in the discussion of Union Pacific Locomotive No. 737. By the 20th century, the Union Pacific had gone through the processes of bankruptcy and reorganization, and early in the 20th century experienced rejuvenation in the hands of one of America's foremost railroad managers, the legendary Edward Henry Harriman. The company had lost its lines south of Denver extending southeastward across Colorado, New Mexico, and Texas, as well as its narrow gauge lines into the Colorado Rockies, during the bankruptcy of the 1890s, but under Harriman, it experienced not only a complete overhaul of its physical plant but also new construction across southwestern Utah, southern Nevada, and southern California to reach the growing metropolis of Los Angeles as well as a tidewater port at San Pedro. Thus the Union Pacific of the 20th century extended from Omaha to Cheyenne to Ogden to Portland, as well as to Denver, Salt Lake City, Las Vegas, Los Angeles, and San Pedro. It also owned a line between Denver and Kansas City. It was, furthermore, a thoroughly modern and up-to-date railroad.

Union Pacific Railroad Engine No 4012 is one of eight 4-8-8-4 "Big Boy" locomotives that have survived out of 25 that were built and operated. Its class remained among the largest steam locomotives in the United States, and locomotives of this type operated on no other railroad. Built in 1941, Engine No. 4012 is the epitome of modern, main line heavy-duty steam motive power. This class of engine was created to haul heavy freight trains over the mountain divide known as Sherman Hill between Cheyenne and Laramie in southeastern Wyoming and further west, across the deserts and then the Continental Divide in south-central Wyoming and the Wasatch Range in northeastern Utah, on the run between Cheyenne, Wyoming, and Ogden, Utah. The engine is one of 52 historic Union Pacific steam locomotives that escaped the scrappers' cutting torches. Engine No. 4012 is the only articulated locomotive (with more than a single set of drive wheels pivoting on more than one center) currently in the Steamtown collection. No. 4012 worked on the run between Cheyenne and Ogden for more than 20 years, rolling 1,029,507 miles before the Union Pacific retired the locomotive in February 1962.

Steamtown has claimed that the "Big Boy" was the "largest locomotive on earth," and while there is a grain of truth in that, it is also somewhat misleading. The Duluth, Missabe and Iron Range Railway, in 1941 a 541-mile iron ore carrier operating in Minnesota, purchased early that year eight 2-8-8-4 Baldwin locomotives that were among the most powerful in the world.

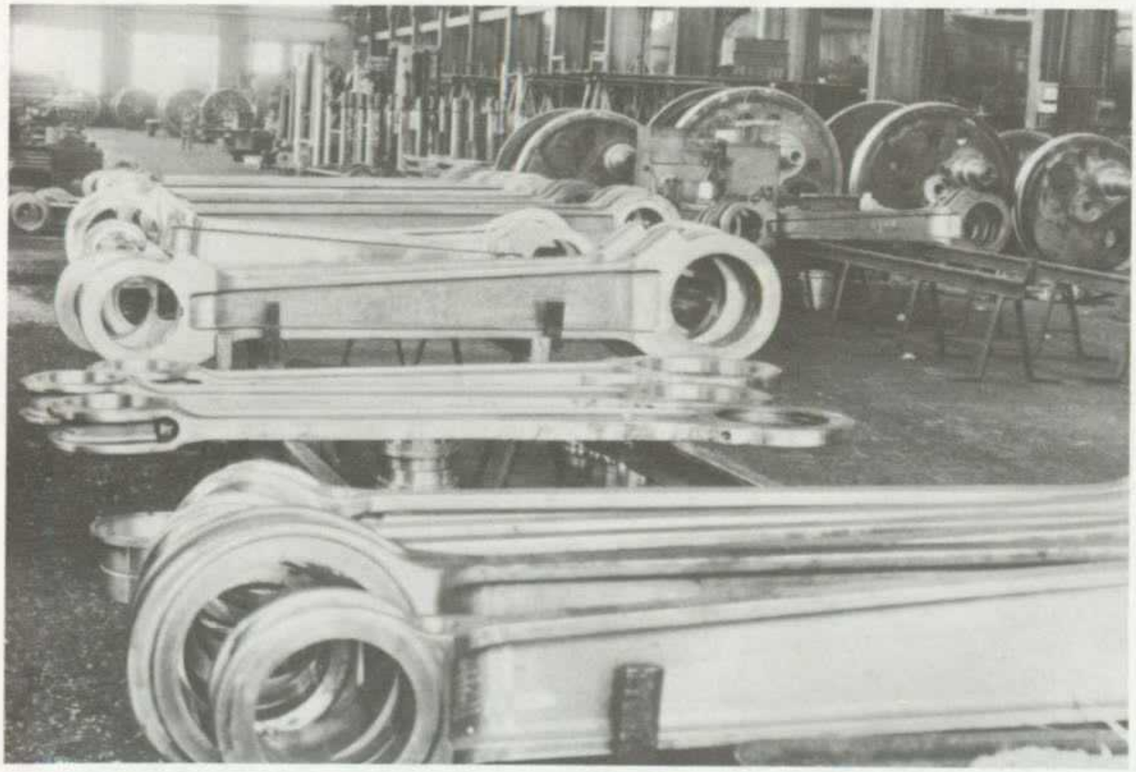
The Union Pacific 4-8-8-4 Big Boy, so named because an anonymous mechanic at the American Locomotive Company plant had scrawled those words in chalk on one of the new locomotives, had the larger wheel arrangement, carried a boiler pressure of 300 pounds per square inch to the 240 pounds of the DM&IR engines, had 68-inch diameter drive wheels compared with the 63-inch drives of the Missabe locomotives, had a longer engine wheelbase (75 feet 5½ inches, compared with 67 feet 2 inches on the DM&IR engines), a longer engine and tender wheelbase combined (117 feet 7 inches compared with 113 feet 5-7/8 inches on the Missabe engines), and was the heavier of the two types, with a total engine weight of 762,000 pounds compared with the 695,040 pounds of the Missabe engines.

Denver railroad photographer Richard H. Kindig found Union Pacific Railroad "Big Boy" Locomotive No. 4012 under steam in Cheyenne, Wyoming, awaiting its next call to service, on May 5, 1946, and recorded the engineer's side of the locomotive (above). Three years later, on June 25, 1949, Kindig made this dramatic photograph (below) of Engine 4012 on Sherman Hill near Sherman, Wyoming, with an eastbound extra freight train of 101 cars moving at 25 miles per hour.

Collection of Richard Kindig

On May 10, 1951, Photographer Richard Kindig recorded Union Pacific Railroad Locomotive No. 4012 westbound with an extra freight train of 26 cars near Buford, Wyoming.

Collection of Richard Kindig



Marked upside-down in crayon on the side rods lying flat just left of center in this view is the number "4012." Some of the wheels and other parts in this shop bay similarly may belong to Union Pacific No. 4012, undergoing a major overhaul in the Cheyenne, Wyoming, shops during the 1940s.

Photograph by Neal Miller, collection of Tim Klinger

But in some vital respects, the Duluth, Missabe and Iron Range 2-8-8-4 locomotives exceeded the statistics of the Union Pacific 4-8-8-4 engines. The Missabe engines had cylinders 26 by 32 inches compared with the 23¾- by 32-inch cylinders of the Union Pacific locomotives. The Missabe engine and tender weight of 1,131,675 pounds exceeded the Big Boys' 1,104,200 pounds, and the Missabe weight on drivers of 560,257 pounds exceeded the Big Boys' 540,000 pounds. Most important, the tractive force, or pulling power, of the Missabe engines reached 140,000 pounds, compared with the 133,375 pounds of the Big Boy of the Union Pacific. What it comes down to is, the Union Pacific Big Boy was the longer locomotive, the Missabe engine and tender combined were heavier, the Union Pacific engine had the higher boiler pressure, the Missabe engines were the more powerful and capable of pulling heavier tonnage, and the Union Pacific 4-8-8-4 locomotives were faster, capable of 80 or more miles per hour. It would therefore be wise to describe the Big Boy as *among* the largest and most powerful in the world, rather than to focus on simple but misleading superlatives.

Condition: Engine No. 4012 is believed to be in reasonably good condition, and with some overhaul, to be operable. However, her operability rests not alone with her own condition and state of repair, but equally with the capacity of track, switches, culverts, trestles, bridges, wyes, turntables, and other facilities that would have to carry her to bear her great weight.

Recommendations: The National Park Service should preserve this locomotive as the only articulated locomotive in the Steamtown collection, for immediate use as a static exhibit engine, with the question of restoration to operation deferred until a study of the line over which she might operate has been completed with respect to its ability to carry her weight and her ability to negotiate its curvature (the latter not believed to be a problem). If the line can carry her weight, this locomotive should be restored to operable condition. Prior to such restoration, the NPS should commission a report to document any physical changes to the locomotive since construction as well as her operational history on the Union Pacific. Because of her fairly recent date of construction, a report on this locomotive should be comparatively easy to research. Due to her great length, the locomotive will not fit on a reconstructed Scranton turntable or in a restored Scranton roundhouse, and may, therefore, have to be exhibited and preserved outdoors.

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CANADIAN STEAM LOCOMOTIVES

It is not the purpose of this study to deal in depth with the history of the railroads whose locomotives are in the Steamtown collection, but a brief characterization of the two principal Canadian railroad systems whose locomotives are numbered among those in Scranton is appropriate.

The Canadian Pacific Railway was incorporated on February 17, 1881 to take over a scheme of the Dominion government to build Canada's first transcontinental railroad, connecting the seaboard of British Columbia with the system of railways that already existed in eastern Canada. As was typical of major systems, the Canadian Pacific not only built much new trackage, but also bought up and eventually absorbed various existing railways. The Canadian Pacific received a subsidy of $25 million from the government and obtained exemption from taxation for all time. The Canadian Pacific completed extremely difficult construction across the Laurentian Shield north of the Great Lakes and the Canadian Rockies and the Selkirk Ranges to the Pacific Coast in 1886, and by 1920 had grown to a system of 8,355.9 miles of wholly owned trackage. The main line of the Canadian Pacific extended 2,894.7 miles from Montreal to Vancouver, essentially from the Atlantic to the Pacific. No single American railroad stretched similarly from the Atlantic seaboard to the Pacific Coast. The Canadian Pacific became one of the world's great railroad systems. Despite its government subsidy and exemption from taxation, it has always been essentially a private company.

The Canadian National Railways, in contrast, is a transcontinental railway system operating in many places in competition with the Canadian Pacific, but is a government-owned corporation, in effect a nationalized railway system. While a more recent system than that of the Canadian Pacific, its origins are nevertheless older. From the beginning, railways in Canada's Atlantic provinces had been sponsored and funded by provincial governments. On July 1, 1867, the new government of the Dominion of Canada inherited a collection of comparatively small railways from the provinces of New Brunswick and Nova Scotia. Subsequently the government sponsored and funded a new railway, the Intercolonial, to connect the railways of these maritime provinces with the privately owned railways of Quebec and Ontario. From time to time the government acquired additional railways, and operated them under the title Canadian Government Railways. Meanwhile, around the end of the 19th century, private capital again had undertaken new railway construction, in this case the Canadian Northern Railway built to serve the prairie provinces northwest of the Great Lakes. By 1914, the Dominion government again had a foot in the door, having acquired a considerable block of Canadian Northern common stock in exchange for loans advanced to the Canadian Northern. Again in financial difficulties in 1916, the Canadian Northern passed into the hands of government control, total acquisition being achieved in 1918. On December 20, 1918, the Dominion government established Canadian National Railways, a crown corporation, to place the Canadian Government Railways and the Canadian Northern railway system under a single management.

Another railway system in Canada that had an early start was that of the Grand Trunk Railway, incorporated in 1853 by British investors, and for many years the largest privately owned railway system in Canada. In 1903, the Grand Trunk worked out an agreement with the government of Canada to build a second transcontinental link between the east and the Pacific Coast. The Grand Trunk Railway established a subsidiary, the Grand Trunk Pacific, to build from Winnipeg to Prince Rupert, while the government undertook to build a subsidiary, the National Transcontinental, east from Winnipeg, which, when the Grand Trunk management declined to take over operation of the National Transcontinental, the government assigned to the Canadian Government Railways to operate. In 1919 the Grand Trunk Railway defaulted on Grand Trunk Pacific Railway securities, and it entered a government-managed receivership. Meanwhile, on March 31, 1919, work had begun on consolidating the Canadian Northern with the Canadian Government Railways, and the government legally amalgamated these two lines under Canadian National Railways effective January 20, 1923. The Grand Trunk Pacific Railway legally joined Canadian National Railways on January 30, 1923. Already, in July 1922, the government had included the 3,000 miles of the bankrupt Grand Trunk Railway in the new Canadian National Railways System.

One might suppose that this narrative has nothing to do with United States history, and that the locomotives of Canadian railways, especially a government-owned Canadian railway, and locomotives built in Canada, have no place in an American railroad museum operated by the United States National Park Service. However, a number of historic factors undercut any such assumption.

Perhaps least significant, many Americans involved themselves in the building and operating of Canadian railroads. William Cornelius Van Horne, who built the Canadian Pacific across the great Pacific Coast mountain ranges, is only one example of an American in Canadian employ, though perhaps the most notable one. Michael Heney, who became a distinguished railroad engineer, was another American who worked on the Canadian Pacific.

Somewhat more important, although Canada established an efficient locomotive-building industry of its own, its locomotive works tended to follow American practice so that most Canadian-built locomotives were similar in appearance to American-built locomotives, in vivid contrast to the extreme physical differences between American and Canadian locomotives on the one hand and European locomotives on the other. Furthermore, while the Canadian government and the Canadian Pacific owned some American railroads, for many years the American Locomotive Company owned and controlled the Montreal Locomotive Works. In more than one sense, then, the Canadian locomotive-building industry was an extension of the American locomotive-building industry.

Of much greater importance in establishing a connection between Canadian and American railroads historically, is a fact that would surprise most Americans: a significant part of the American railroad system has historically been owned or controlled by the two great Canadian railway systems. The original Grand Trunk Railway included lines in New England, the ultimate consequence of which was that the Canadian National Railways owned and controlled the Central Vermont Railway. Furthermore, Canadian National Railways owned and controlled another major American railroad, the Grand Trunk Western Railroad in Michigan and Illinois, which not only connected Chicago and Detroit but provided Detroit with its only commuter service. How many commuters riding behind Grand Trunk Western Locomotive No. 6038, a sister to the 6039 at Steamtown, realized that the company carrying them was owned by the government of Canada? Not only did the Canadian National Railways own railroads incorporated and operating in the United States, so did the Canadian Pacific Railway. Many Americans have heard of the "Soo Line," the Minneapolis, St. Paul and Sault Saint Marie Railway operating across North Dakota, Minnesota, Wisconsin, and Michigan, mostly west of the Great Lakes on the prairies. Few of them probably ever realized that the "Soo" was owned and controlled by Canada's great private railway system, the Canadian Pacific. The Canadian Pacific also owned and controlled the Duluth, South Shore and Atlantic Railway, operating mostly in Michigan between Duluth, Minnesota, and Sault Saint Marie. Thus the two great Canadian railway systems are inextricably linked with the history of a number of railroads in the United States.

While the trains of these Canadian-owned American railroads carried their own names and employed locomotives and cars built in the United States, it is also true that a section of main line of the Canadian National Railways (formerly Canadian Northern) crosses roughly 25 miles of the northeast corner of Minnesota, over which Canadian National locomotives operated, and to get from Montreal to Fredericton, New Brunswick, Canadian Pacific locomotives had to cross the state of Maine. Not only did Canadian locomotives operate over these lines, they regularly crossed the border into the United States in New England in interchange service, although customs regulations required that once a Canadian locomotive was uncoupled from its train at the end of a trip, the next train to which it was coupled it had to lead back into Canada. It is therefore necessary to recognize that Canadian Pacific and Canadian National locomotives, lettered for those lines, regularly operated within the United States. Additionally, Canadian Pacific kept certain locomotives in the United States for switching and short runs. Canadian Pacific even acquired and operated a former Boston & Maine shop at Lyndonville, Vermont.

The following chapters discuss the various Canadian locomotives in the Steamtown collection.

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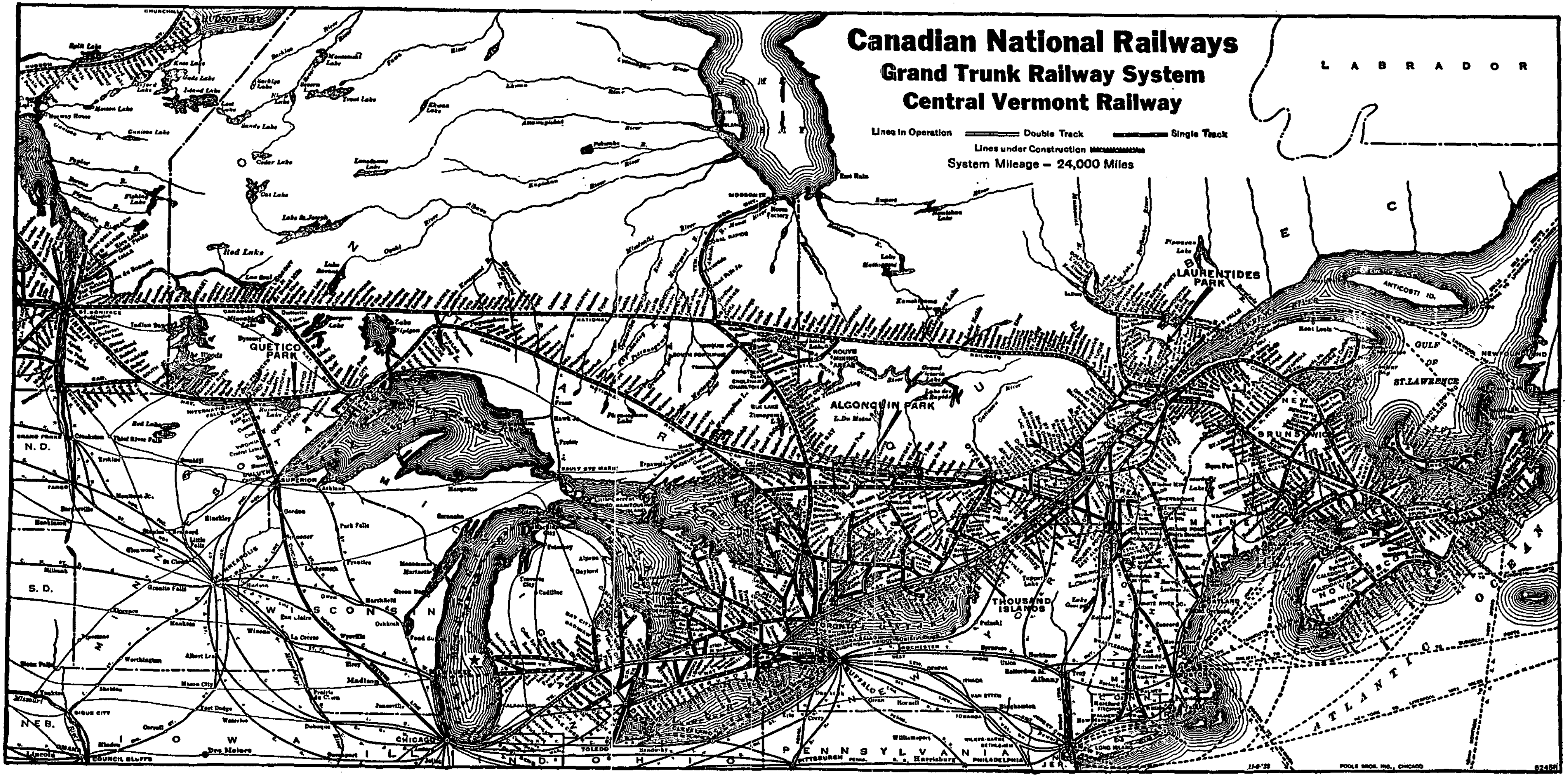
THE CONTINENTAL LIMITED
Solid, Through, All-Steel Train—Montreal and Toronto-Winnipeg-Vancouver

TO THE HAUNTS OF CAPTAIN KIDD
The West Indies and Caribbean Ports via Canadian National Steamships



★Grand Trunk Ry. Car Ferry operates between Milwaukee and Muskegon (not Grand Haven)

ACROSS CANADA MAP
ATLANTIC COAST
TO WINNIPEG

TRAVEL BY TRAIN
THE RAILWAY IS THE SAFE WAY

CANADIAN NATIONAL RAILWAYS NO. 47

Owner(s): Grand Trunk Railway
Canadian National Railways

Road Number(s): 1542
47

Whyte System Type: 4-6-4T "Baltic tank"

Class: X-10-a
Series of six, Nos. 45-50

Builder: Montreal Locomotive Works

Date Built: September 1914

Builder's Number: 54896

Cylinders (diameter x stroke in inches): 21 x 26

Boiler Pressure (in lbs. per square inch): 210

Diameter of Drive Wheels (in inches): 63

Tractive Effort (in lbs.): 32,487

Tender Capacity: **Coal (in tons):** 5
Oil (in gallons): Not applicable

Water (in gallons): 2,900

Weight on Drivers (in lbs.): 146,000

Remarks: Used in Montreal suburban (commuter) service.

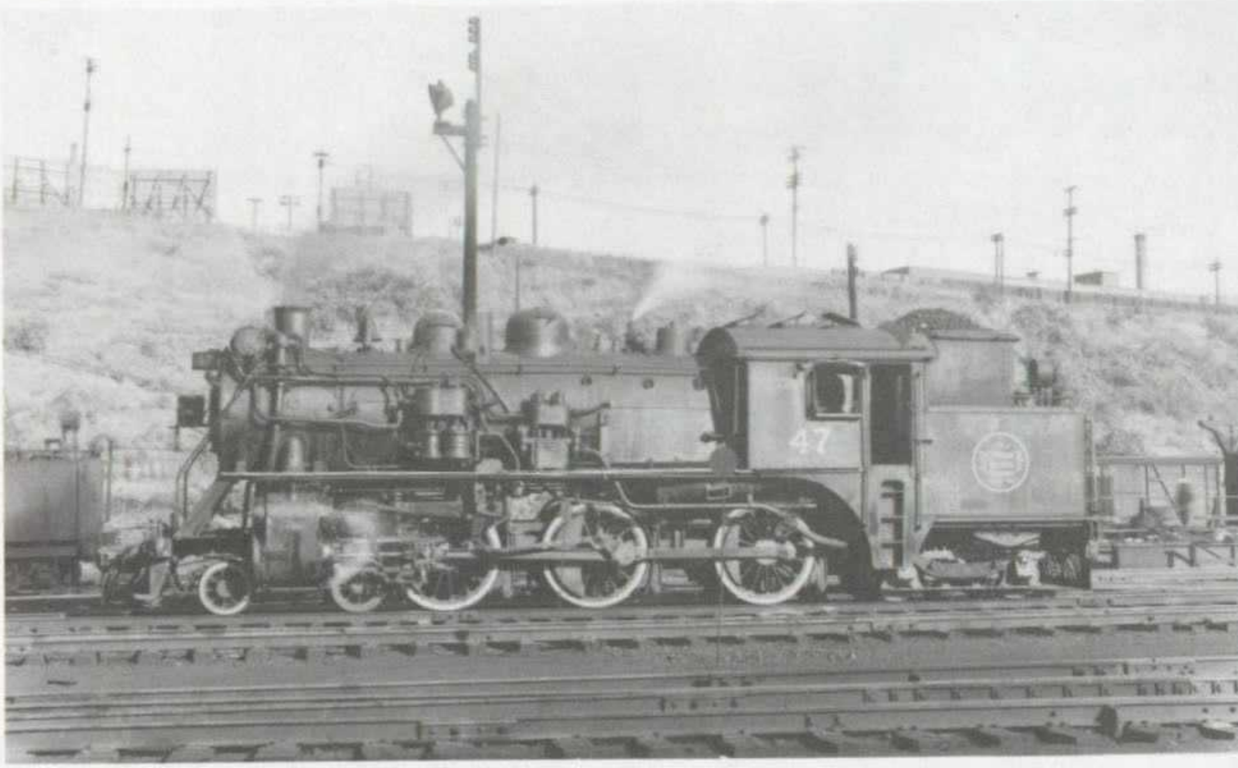
Canadian National Railways 4-6-4T Locomotive No. 47

History: Canada's Grand Trunk Railway had been incorporated in 1853, financed by investors in Great Britain, and became for many years the largest and longest privately owned railway in Canada, operating principally in eastern Canada and controlling the Grand Trunk Western Railroad in Michigan and the Central Vermont in New England. The Canadian government, meanwhile, had become involved in financing railways by making loans in exchange for stock and had inherited other railroads as early as during the creation of the Dominion in 1867. These operated in eastern Canada under the name Canadian Government Railways. Subsequently the government acquired control of the Canadian Northern Railway, and on December 20, 1918, consolidated the two operations as Canadian National Railways, a government-owned Crown corporation. Later the government acquired and added to this corporation the Grand Trunk Railway and the Grand Trunk Pacific Railway, thus establishing by 1923 a transcontinental railway system in competition in many areas with the privately owned transcontinental, the Canadian Pacific Railway.

While the Grand Trunk Railway still rested in private hands, in 1914 the company purchased for Montreal suburban service six 4-6-4T (or 4-6-4FT) "Baltic tank" locomotives from the Montreal Locomotive Works. "Suburban" meant that this class of locomotives had been designed for and employed in the service of hauling commuters between the suburbs and a major Canadian city, in this case, Montreal, and "tank" meant that it was an engine with its tender carrying coal and water integral with the main frame of the locomotive, rather than in the form of a separate "tender" car semipermanently coupled to the locomotive; in other words, the locomotive had no tender, but instead had a tank for water and bin for coal built right onto the extended locomotive frame behind the cab where normally a tender would be coupled. For reasons unknown, this class received the type name of "Baltic tank," though the wheel arrangement, ignoring the tank aspect, was that of a Hudson type.

The suburban tank locomotive had a long history of development and use in the United States as well as in Canada, particularly around Boston, Chicago, and, more important, New York City. The New York Central operated 2-4-4Ts, the Boston and Albany and the Chicago and Northern Pacific each operated 2-6-6Ts, and even the Illinois Central operated tank locomotives in suburban service. Canada, however, and the Montreal Locomotive Works specifically, seems to have been first to develop the 4-6-4T type.

In the United States, however, the Central Railroad of New Jersey, which operated a large volume of commuter service around New York City using four-coupled locomotives, began around the turn of the century seeking heavier motive power for its suburban trains, and in 1902 and 1903 purchased from the Baldwin Locomotive Works a number of 2-6-4T locomotives that proved quite successful, but with time the need for power exceeded even their capacity, and in 1923 the Central of New Jersey had the Baldwin Locomotive Works design and build six 4-6-6T Baltic tank-type locomotives. In an article published three years later in *Baldwin Locomotives*, the quarterly house organ of the Baltimore Locomotive Works, Paul Warner described the characteristics of these first American 4-6-4T locomotives:



Grand Trunk Railway Locomotive No. 1542, later Canadian National Railways No. 47, served as a suburban 4-6-4T engine on commuter trains operating in the vicinity of Montreal. Today, it is the only engine of its type surviving in the United States. This series of CNR suburban engines probably inspired the design of a very similar class of 4-6-4T suburban engines purchased by the Central Railroad of New Jersey for commuter service around New York. Unfortunately, none of the American copies of this Baltic tank type of locomotive were preserved, and only this single Canadian specimen is left in the United States to represent the type.

Above, collection of Gerald Best, California State Railroad Museum Library
Below, Colorado Railroad Museum Library

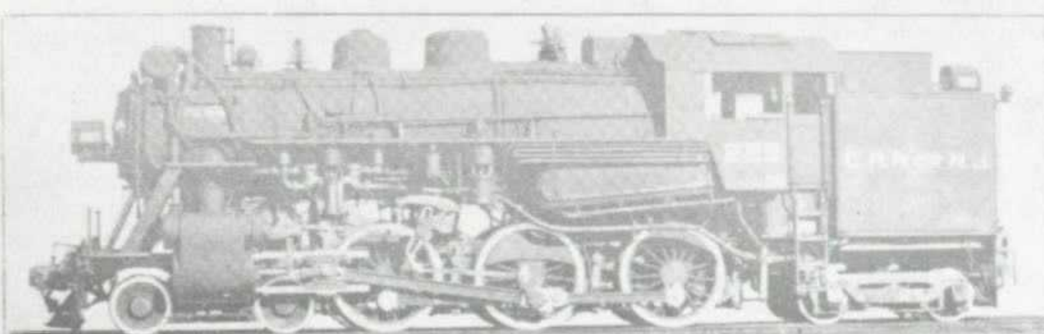


Fig. 161—Six Coupled (4-6-4) Double-Ender Tank Locomotive for Suburban Passenger Service Built for Central R. R. of New Jersey by the Baldwin Locomotive Works.

Cylinders, diameter and stroke	21 in. x 26 in.	Driving wheel base	13 ft. 9 in.
Tractive force	30,940 lb.	Total engine wheel base	39 ft. 3 in.
Cylinder horsepower	1,588 h.p.	Fuel	Hard and soft coal
Drivers, diameter	63 in.	Grate area	68.5 sq. ft.
Weight on drivers	163,450 lb.	Steam pressure	200 lb.
Weight on front truck	53,630 lb.	Evaporative heating surface	1,922 sq. ft.
Weight on trailing truck	74,560 lb.	Superheating surface	449 sq. ft.
Total weight of engine	291,640 lb.	Tank capacity	4,000 gal., 6 tons

> These locomotives were designed to traverse curves of 20 degrees, and had flanged tires on all the wheels. Both trucks were of the swing bolster pattern with three-point suspension links, the front truck being center bearing and the rear truck side bearing. The latter was placed under the tank, which was of the water-bottom type. The rear frame, on which the tank was carried, was of steel, cast in one piece with the truck center plate, draft gear housing, rear bumper and tank supports.
>
> These locomotives used superheated steam, and the distribution was controlled by piston valves 11 inches in diameter. The Walschaerts valve gear was used in conjunction with a power reverse mechanism. . . .
>
> The boiler was of the wagon-top type, with a wide firebox placed above the main and rear drivers. The fuel used was a mixture of anthracite and bituminous coal, and the grates were of the rocking pattern, arranged to shake in four sections. Feedwater heating equipment was applied, with a heater of the closed type placed above the smokebox in front of the stack. The smokebox shell was depressed on top, in order to keep the drum and piping within the limit of height. The feed-water pump, and also the air pump, were placed on the left side. The saving in water consumption effected by the feed-water heater has proved of special benefit to these locomotives, on account of their limited tank capacity.
>
> While the greater part of the suburban traffic on the New Jersey Central [sic] is now being worked by locomotives with separate tenders, the double-ender tank locomotives have proved practically indispensable on certain short runs where facilities for turning the engines are lacking. The locomotives operate in either direction with equal facility, and are well liked by the enginemen.

Similar qualities characterized the earlier Canadian 4-6-4T locomotives.

In fact, the Central Railroad of New Jersey 4-6-4Ts were quite similar in appearance and some vital statistics to the earlier Grand Trunk Railway Baltic tank engines. Both types had 63-inch drive wheels and cylinders 21 inches in diameter with a 26-inch stroke. The Canadian engines carried 210 pounds per square inch of steam pressure in the boiler, compared with 200 for the Central of New Jersey engines. In appearance the locomotives were sufficiently similar that a layman might not notice subtle differences: The steps between the pilot deck and the running boards were much closer to the cylinders on the American than on the Canadian engines, and the American engine had a two-segment running board most of which was higher, over the air pumps rather than beneath them; a curved skirt beneath the cab connected with the cab steps on the Canadian locomotive that the American engines lacked; the cab window arrangement differed on the locomotives, as did the size and shape of the tender tank and coal bin; the third pair of drive wheels was spaced the same distance from the second as the second from the first on the American engine, but on the Canadian locomotive was spaced much further back; the pilot wheels of the Canadian engine were spoked, but on the American engine had solid centers; and there were many other minor differences.

Interestingly, a year earlier than Baldwin built these well-known American Baltic tanks, in 1922, the American Locomotive Company built a single Baltic tank locomotive for singularly obscure service. The Tennessee Coal, Iron and Railroad Company was an outgrowth of a firm dating from 1860 in Tennessee that operated an extensive network of coal mines, iron ore mines, quarries, coke ovens, and blast furnaces, originally in Tennessee and later in Alabama. Most of its blast furnaces, foundries, rolling mills, and eventually steel works lay in the district around Birmingham, Alabama, in Jefferson County, though some facilities were in Tuscaloosa, Walker, Blount, and Shelby counties, Alabama, and other plants were in Franklin and Marion counties, Tennessee. The firm employed principally 0-6-0 and 0-4-0T switchers.

With the main thrust of its business moved to the western area around Birmingham, Alabama, the Tennessee Coal, Iron and Railroad Company needed to provide transportation for its workers between the city and the mines. In 1922 the firm ordered from the Richmond Locomotive Works of the American Locomotive Company a single 4-6-4T locomotive to be numbered 450. The Tennessee Coal, Iron and Railroad Company placed it in service hauling a company commuter passenger train connecting downtown Birmingham, at a depot at 14th Street and 1st Avenue, North, with company mines at Hamilton, Edgewater, Docena, Wenonah, Ishkoda, and Muscoda, Alabama, and possibly others. The Depression killed this traffic about 1932, after which the company used Locomotive No. 450 as a hostler's switcher. The Tennessee Coal, Iron and Railroad Company finally retired the locomotive and cut it up for scrap in 1945.

The Grand Trunk Railway 4-6-4T locomotives, meanwhile, continued routinely to haul commuters in and out of Montreal and to and from its suburbs. The same year that the Central Railroad of New Jersey ordered six similar locomotives, the Canadian National Railways absorbed into its roster the Grand Trunk Railway 4-6-4T locomotives, numbered 1540-1545, renumbered as 45 through 50, and in the process No 1542 became No. 47, a number it retained for the rest of its service.

Canadian National Railways Locomotive No. 47 never operated historically in the United States, until in June 1959, after the company had retired it, the Canadian National sold the locomotive for $2,000 f.o.b. Montreal to Nelson Blount's Edaville Railroad for exhibit in the United States. Blount subsequently transferred the locomotive to North Walpole, New Hampshire, and then briefly operated it on the Clarement and Concord Railroad. However, the locomotive's official records had been destroyed in a roundhouse fire on the Canadian National, and Blount could not document the condition of its flues, so the Interstate Commerce Commission ordered the locomotive retired until it could either be documented or be reflued.

This Canadian National Railways Baltic tank locomotive, built in September 1914, is the only one of its type in the United States, none of the American locomotives of this type having survived. Furthermore, as this locomotive and sisters of her class predate by the better part of a decade the one American 4-6-4T built in 1922 and the six built in 1923, it seems likely that they influenced the design of the American locomotives.

Two sister 4-6-4T locomotives of the same class survive in Canada, No. 46 at Longueuil, Quebec, and No. 49 in the Canadian Railway Museum at Delson, Quebec.

Condition: Canadian National Railways Locomotive No. 47 reportedly is in fairly good condition and could be made operable with an overhaul, probably involving reflueing of the boiler.

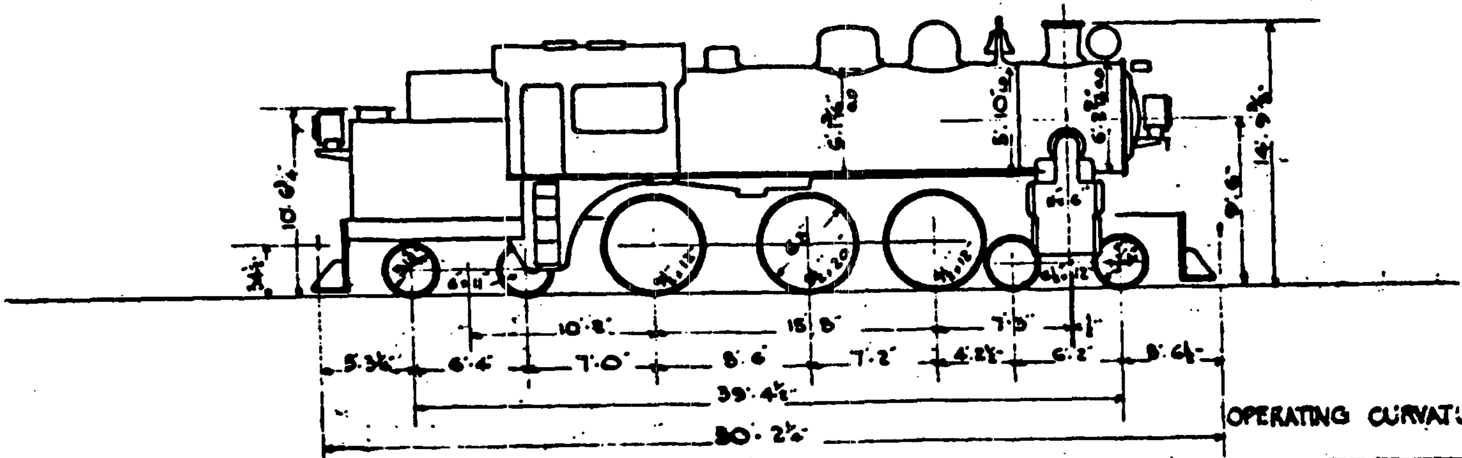
Remarkably similar in appearance to the Canadian National 4-6-4T Baltic tank-type locomotives whose design they had inspired, a Central Railroad Company of New Jersey suburban tank locomotive, No. 225, hurried along with a local train outbound from Jersey City on October 4, 1936. As not a single locomotive of this type was preserved in the United States, only a Canadian stepchild of this American 4-6-4T, Canadian National Railways No. 47, exists in the United States to represent the type.

Bruce D. Fales photo, Steamtown National Historic Site

SUB CLASS	DATE BUILT	BUILDER	BUILDERS ORDER Nº	BUILDERS BOILER Nº'S	PREVIOUS ROAD Nº'S AND ARTIALS	PRESENT ROAD Nº'S
X.10.a	1914	M.L.Wº	Q241	54895 to 54899	1541 to 1545 G.T.R	46 to 50

CANADIAN NATIONAL RAILWAYS
MECHANICAL DEPARTMENT
MONTREAL

TYPE **SUBURBAN** CLASS **X.10**



OPERATING CURVATURE 16°

SUB-CLASS	CYLINDERS DIA	CYLINDERS STROKE	DRIVING WHEELS OS. DIA.	DRIVING WHEELS DIA. CTR	FIRE BOX LENGTH	FIRE BOX WIDTH	GRATE AREA SQ. FT.	TUBES LARGE	TUBES DIA	TUBES SMALL	TUBES DIA	TUBES LENGTH	TENDER CAPACITY WATER	TENDER CAPACITY COAL	SUPERHEATER	HAULAGE RATING
X.10.a	21"	26"	63"	56"	129⅛"	75⅛"	47	26	5½	191	2"	11'.10"	2900 GAL	5 tons	SCHMIDT	32%

SUB-CLASS	HEATING SURFACE □' TUBES	HEATING SURFACE □' FIREBOX	HEATING SURFACE □' TOTAL	HEATING SURFACE □' SUPER-HEATER	WEIGHTS IN WORKING ORDER LBS. ENGINE TRUCK	DRIVING	TRAILING	TOTAL ENGINE	TENDER	ENGINE & TENDER	LIGHT WEIGHTS DRIVERS	LIGHT WEIGHTS TOTAL ENGINE	FACTOR OF ADHESION	MAXIMUM TRACTIVE EFFORT	BOILER PRESS.
X.10.a	1628	160	1.788	342	49000	146,000	80,000	275,000	–	–	151,400	222,800	4.45	32,487	210 lbs.

SUB-CLASS					TYPE OF VALVE GEAR		FEED WATER HEATERS		STEAM HEAT	Nº & SIZE OF AIR PUMPS	BRICK ARCH	EXTREME WIDTH
X.10.a					WALSCHAERT		SEE SPEC. LIST		YES	1-9½cc	YES	10'.1"

Recommendation: This locomotive is the only 4-6-4T Baltic tank locomotive in the United States and a rare surviving example of a suburban locomotive of which no American-made examples exist. The NPS should commission a report on the subject of this locomotive; the report should be exhaustively researched in the Montreal region to ascertain what changes in appearance and fabric may have taken place over the career of this locomotive. The report should then recommend whether to restore this as a Canadian National locomotive or a Grand Trunk Railway locomotive. At the minimum, it should be restored cosmetically for exhibit purposes indoors, and, if feasible, it should be restored mechanically to operable condition, and operated occasionally for interpretive purposes.

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CONDENSED SCHEDULES

EASTERN TIME unless otherwise indicated. *Connecting services shown in italics.*

MONTREAL — TORONTO — HAMILTON — LONDON — WINDSOR — DETROIT — CHICAGO

Nos. 5, 15, 17, 6, 14 and 16 are POOL TRAINS between Montreal and Toronto only

WESTBOUND —Daily	5 The LaSalle	15 The Internat'l Limited	19 / 77	17 The Inter City Limited	75-83 Ex. Sun.	9
Lv Montreal Cen. Stn.	9.15AM	..	8.45PM	11.00PM		
Win. Stn.	..	3.30PM	—	—		
Ar Toronto	5.25PM	9.45PM	6.10AM	7.15AM		
Lv Toronto	6.00PM	10.00PM	†7.10AM	8.30AM	3.30PM	11.59PM
Ar Hamilton. ..	6.55PM	10.55PM	†8.30AM	9.25AM	♈	1.01AM
Ar London	9.10PM	12.47AM	†11.00AM	11.42AM	5.40PM	3.30AM
Ar *Windsor*.. ..	*11.25PM*	*n7.15AM*	..	*2.20PM*	8.40PM	7.15AM
Ar *Detroit*	*12.10AM*	*n8.05AM*	—	*3.05PM*	9.25PM	8.05AM
Ar Chicago (C.T.).	7.00AM	8.00AM	—	8.20PM		

EASTBOUND —Daily	14 The Internat'l Limited	6 The Inter City Limited	18 Ex. Sun.	118 Sun.	20 The Maple Leaf	16 The Ontario Limited	10
Lv Chicago (C.T.).	5.00PM	11.00PM	—	—	9.40AM		
Lv *Detroit*	*10.30PM*	*8.50AM*	12.15PM	1.05PM	—	3.45PM	10.30PM
Lv *Windsor* . ..	*12.30AM*	*9.40AM*	1.10PM	1.45PM	—	4.45PM	12.30AM
Lv London	5.50AM	12.05PM	4.20PM	4.40PM	7.35PM	7.25PM	4.00AM
Lv Hamilton. ..	7.55AM	2.22PM	7.04PM	7.04PM	...	9.28PM	$
Ar Toronto	8.56AM	3.25PM	8.15PM	8.15PM	10.10PM	10.25PM	8.00AM
Lv Toronto	9.15AM	4.00PM	8.45PM	9.30PM		11.30PM	
Ar Montreal Cen. Stn.	5.45PM	...	6.30AM	6.30AM		7.30AM	
Win. Stn.	—	10.15PM					

† Daily except Sunday. C.T. Central Time. ♈ Bus leaves C.N. Station Hamilton 3.45 p.m. for Dundas with passengers to Brantford and beyond. n Train No. 9 leaving Toronto 11.59 p.m. daily. $ Via Stratford.

MONTREAL — QUEBEC — (SAINT JOHN) — HALIFAX

EASTBOUND	2 Daily Maritime Express	4 Daily Ocean Limited	60 Daily The Scotian	354 Daily Pool	362 Sat. Pool	356 Ex. Sat. Pool	358 Daily Poo
Lv Montreal Central Stn.	11.30AM	8.00PM	8.15PM				
Windsor Stn.	..	..	—	9.45AM	1.20PM	7.10PM	11.55PM
Ar Drummondville ..	1.07PM	9.26PM	9.51PM	..	..	..	..
Ar Trois Rivieres. ..	..	..	—	11.56AM	3.35PM	9.25PM	3.15AM
Ar Levis	4.25PM	11.40PM	12.10AM	..	—	..	..
Ar Quebec Via Ferry ..	4.50PM	12.20AM	12.50AM	...	—	..	..
Palais Stn. ..	..	..	—	1.50PM	5.40PM	11.10PM	6.25AM
Ar Mont Joli.	11.25PM	5.05AM	6.05AM				
Lv Mont Joli.	‡11.45PM	5.25AM	6.20AM				
Ar Moncton (A.T.). ..	†10.00AM	2.30PM	4.10PM				
Ar *Saint John* (A.T.) ..	*†1.20PM*	*C5.45PM*	*7§15PM*				
Ar Halifax (A.T.).. ..	†5.30PM	7.50PM	10.30PM				

No. 4—All Sleeping Car Train.

WESTBOUND	3 Daily Ocean Limited	59 Daily The Scotian	1 Daily Maritime Express	353 Daily Pool	45-23 Ex. Sun.	355 Daily Pool	357 Daily Pool
Lv Halifax (A.T.).. ..	8.00AM	8.15AM	†3.10PM				
Lv *Saint John* (A.T.) ..	*†7.05AM*	*B7.05AM*	*†5.45PM*				
Lv Moncton (A.T.). ..	1.20PM	2.15PM	10†00PM				
Ar Mont Joli.	8.40PM	9.55PM	¶6.20AM				
Lv Mont Joli.	9.00PM	10.10PM	*6.40AM				
Lv Quebec Palais Stn. ..	—	...	...	2.00PM	3.35PM	6.00PM	11.55PM
Via Ferry ..	2.00AM	4.00AM	12.30PM	...	..	—	..
Lv Levis	2.50AM	4.30AM	1.15PM	...	Via	—	..
Lv Trois Rivieres. ..	—	...	—	3.40PM	Richmond	7.40PM	3.15AM
Ar Drummondville ..	5.20AM	6.53AM	4.35PM	...	..	—	..
Ar Montreal Central Stn.	7.15AM	8.45AM	6.30PM	—	9.50PM	—	..
Windsor Stn.	—	...	—	5.50PM	—	10.05PM	7.15AM

No. 3—All Sleeping Car Train.

*Daily. † Daily except Sunday. ‡ Daily except Saturday. ¶ Daily except Monday. § Sunday only. B On Sunday leave 11.10 a.m. C On Sunday arrive 7.15 p.m. A.T. Atlantic Time.

MONTREAL (Central Station) — OTTAWA

WESTBOUND	47 Daily	151 Sat.	51 Ex. Sat. and Sun.	153 ① Sun.	1 Daily
Lv Montreal.. ..	8.55AM	1.30PM	4.30PM	6.50PM	8.20PM
Ar Ottawa	12.10PM	4.35PM	7.50PM	10.05PM	10.45PM

EASTBOUND	2 Daily	48 Ex. Sun.	50 Daily	152 ① Sun.
Lv Ottawa	6.35AM	7.40AM	4.30PM	7.05PM
Ar Montreal.. ..	9.00AM	10.55AM	7.40PM	10.00PM

① Will also run Tues. Dec. 25 & Jan. 1.

MONTREAL (Central Station) — NEW YORK — WASHINGTON

SOUTHBOUND Daily	332	20 The Washingtonian	Rutland R.R. 52
Lv Montreal...	9.20AM	8.35PM	8.05PM
Ar New York			
Grand Cent.	10.13PM	—	7.35AM
Penn. Stn.	..	7.55AM	
Ar Washington	..	12.15PM	

NORTHBOUND Daily	307	21 The Montrealer	Rutland R.R. 51
Lv Washington ..	..	4.10PM	
Lv New York			
Penn. Stn.	..	8.25PM	
Grand Cent.	9.30AM	—	10.30PM
Ar Montreal...	9.30PM	8.15AM	8.55AM

"The Washingtonian" and "The Montrealer", also Nos. 307 & 332—C.N.—East Alburgh; C.V.—Windsor; B.&M.—Springfield; N.Y.N.H. & H.—New York; "The Washingtonian" and "The Montrealer", Penn. R.R.—Washington. Rutland trains 51 & 52—C.N.—Rouses Point; Rutland—White Creek; B.&M.—Troy; N.Y.C.—New York.

OTTAWA — TORONTO

POOL TRAINS

WESTBOUND	563-5 Ex. Sun	559-15 Daily	33 Daily	23 ② Ex. Sat
Lv Ottawa	9.20AM	3.30PM	11.00PM	11.20PM
Ar Brockville. ..	11.45AM	5.30PM	Via	Via
Lv Brockville. ..	12.15PM	5.55PM	Peterboro	Belleville
Ar Toronto	5.25PM	9.45PM	7.10AM	8.10AM Ex. Sun.

EASTBOUND	14-562 Ex. Sun.	6-560 Daily	34 Daily	24 ② Ex. Sat.
Lv Toronto	9.15AM	4.00PM	11.30PM	11.40PM
Ar Brockville. ..	2.40PM	7.50PM	Via	Via
Lv Brockville. ..	2.55PM	8.10PM	Peterboro	Belleville
Ar Ottawa	5.35PM	10.00PM	7.20AM	7.50AM Ex. Sun.

② No checked baggage handled on Trains 23 and 24. Trains 23 & 24 will not run Dec. 23, 24, 30, 31 nor April 11.

TORONTO — NEW YORK

EASTBOUND Daily	89-90-8 The Maple Leaf
Lv Toronto	8.35PM
Lv Hamilton	9.40PM
Ar Philadelphia	⊙9.18AM
Ar New York Penn. Station ..	9.00AM

WESTBOUND Daily	7-93-94 The Maple Leaf
Lv New York Penn. Station ..	8.10PM
Lv Philadelphia	8 20PM
Ar Hamilton	7.55AM
Ar Toronto	9.00AM

⊙ On Sat., Sun. & U.S. Holidays Ar. 8.40 a.m.

MONTREAL (Central Station) — BOSTON

SOUTHBOUND Daily	332 The Ambassador	20-302 The New Englander
Lv Montreal	9.20AM	8.35PM
Ar Boston North Station	6 30PM	8.05AM

NORTHBOUND Daily	307 The Ambassador	325-21 The New Englander
Lv Boston North Station	12.30PM	9.00PM
Ar Montreal	9.30PM	8.15AM

"The Ambassador" and "The New Englander"—C.N.—East Alburgh; C.V.—White River Jct.; B.&M.—Boston

CANADIAN NATIONAL RAILWAYS

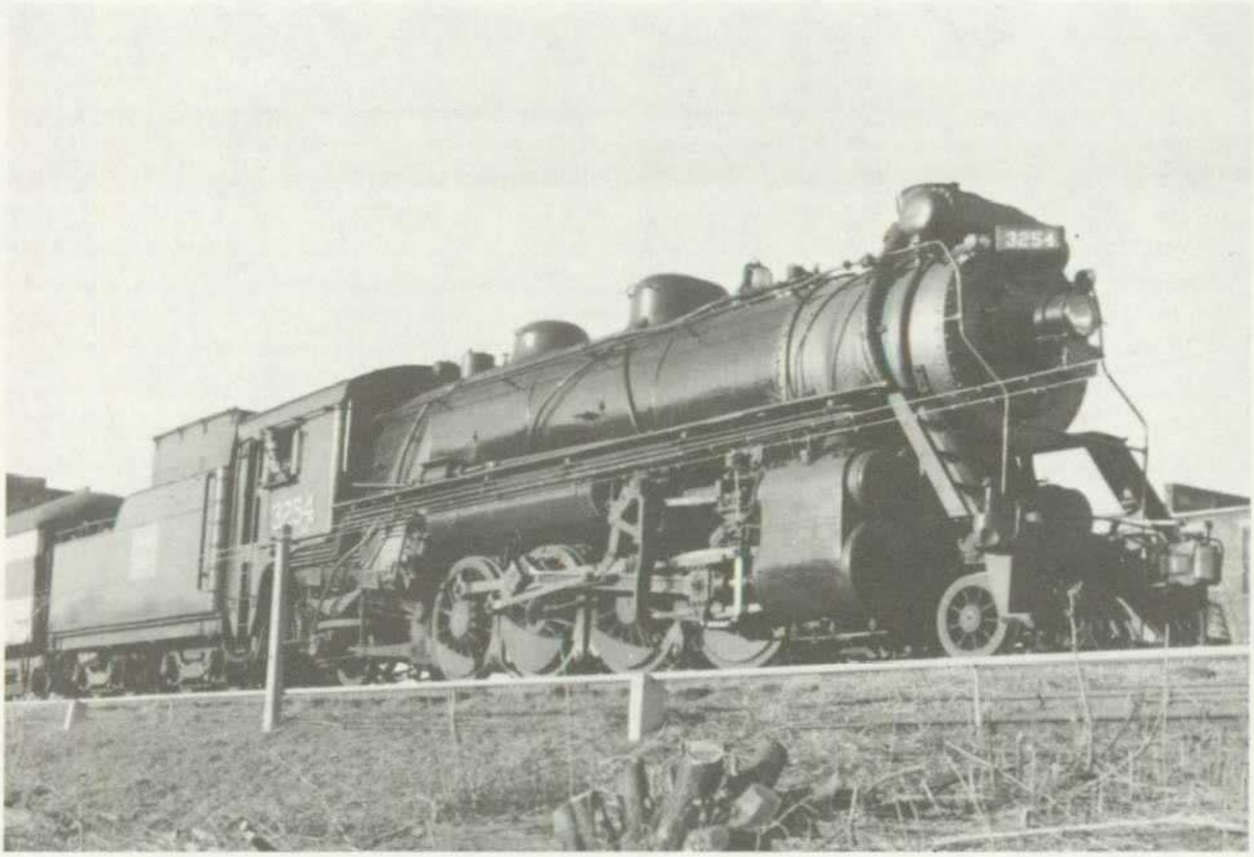
FOLDER B No. 154

Printed in the United States

1

From a November 25, 1951 timetable.

CANADIAN NATIONAL RAILWAYS NO. 3254



Owner(s): Canadian Government Railways
Canadian National Railways

Road Number(s): 2854
3254

Whyte System Type: 2-8-2 "Mikado"

Class: S-1-b

Builder: Canadian Locomotive Company, Kingston Works

Date Built: 1917

Builder's Number: 1497

Cylinders (diameter x stroke in inches): 27 x 30

Boiler Pressure (in lbs. per square inch): 180

Diameter of Drive Wheels (in inches): 63

Tractive Effort (in lbs.): 53,115

Tender Capacity: **Coal (in tons):** 17
Oil (in gallons): Not applicable

Water (in gallons): 7,200

Weight on Drivers (in lbs.): 277,500 (also reported as 209,970)

Remarks: Acquired from Gettysburg Railroad in 1987 in purchase/trade for Canadian Pacific Railway 4-6-2 No. 1278 plus $100,000. Engine is operable.

Canadian National Railways 2-8-2 Locomotive No. 3254

History: Locomotive No. 3254, a "Mikado" type, often known colloquially as a "Mike," rolled out of the Canadian Locomotive Company's works at Kingston, Ontario, for use on the Canadian Government Railways in 1917 as No. 2854. With the power of the public treasury behind it, Canadian Government Railways was assembling a large stable of modern motive power in 1917 that included 2-8-0s, 2-8-2s, 4-6-2s, and 2-10-2s, despite the fact that Canada had for three years been fully engaged in World War I against the Central Powers as a Dominion under the British Crown. Furthermore, Canadian Government Railways characteristically ordered locomotives built with enclosed "all-weather" cabs to provide the engine crew protection against the harsh Canadian winters, so these locomotives constituted the latest in motive power of their types.

Canadian Government Railways had a very brief existence. Canada had a long tradition of government ownership of railways, both provincial and federal (Dominion) ownership, mostly in eastern Canada, though Canada also had many privately owned and operated railroads. But on April 1, 1916, the Dominion government consolidated five of its railways under a new government-owned entity, the Canadian Government Railways: they were the Intercolonial Railway with 1,527 miles of main line, the Transcontinental Railway, the Prince Edward Island Railway with 276 miles of narrow gauge, the 36-1/2-mile New Brunswick and Prince Edward Island Railway, and the National Transcontinental with 1,814 miles of track extending west to Winnipeg. In May 1917, the Canadian Government Railways bought Class S-1-b 2-8-2 No. 2854, among others of its type, and that same year went on to add the International Railway of New Brunswick, and in 1918, the company swallowed the Elgin and Havelock Railway's 26 miles, the 30 miles of the Moncton and Buctouche Railway, the St. Martin's Railway's 28 miles, the 44.77-mile Salisbury and Albert Railway, and the mere 6-mile-long York and Carleton Railway. All of these lines lay east of Montreal except for the main line from Quebec to Winnipeg, Manitoba. A bit later the Caraquet Railway joined Canadian Government Railways, bringing 68 miles of main line into the system. By March 31, 1919, the company owned 767 locomotives, 725 passenger train cars, 26,878 freight cars, and 728 service cars. But its brief existence neared termination.

On September 6, 1918, the Dominion government appointed a new board of directors for its newly acquired, though privately built and operated, Canadian Northern Railway, and recognized that it needed to combine this new acquisition west of Lake Superior on the prairies with its lines east of Montreal that constituted the Canadian Government Railways. On November 20, 1918, the Canadian government assigned the new Canadian Northern directorate responsibility for administering the Canadian Government Railways, and on December 20, 1918, an Order-in-Council directed the board henceforth to refer to both systems as the Canadian National Railways. Thus, the Canadian Government Railways, large as the system was, lasted as a distinct entity for less than three years, although consolidation of the two systems did not begin until March 31, 1919, and the amalgamation was not legally complete until January 20, 1923.

The operational history of this Class S-1-b Mikado is not known, but the locomotive received its last shopping, class 3 repairs, at Allendale, Ontario, in February 1958. Canadian National probably retired the locomotive then or shortly thereafter and put it in storage.

In November 1961, Willis F. Barron of Ashland, Pennsylvania, purchased the locomotive with the intention of operating it, apparently on a Reading branch that served Ashland, but by the time he was able to move the locomotive, the Reading Company had abandoned and dismantled the branch. Barron had to dismantle the locomotive into its major components--frame and wheels, boiler, cab, tender--and truck it into Ashland where he apparently reassembled the locomotive on the grounds of his Ashland Court Motel, but he never bolted the parts together; the cab, for example, simply sat in place, held by its own weight. With his plans for operating the locomotive dismantled along with the nearby Reading branch, he sold the locomotive to the Adirondack Railroad near Lake Placid, New York, but that outfit never completed paying for the locomotive, and consequently never took delivery.

In 1982, the Gettysburg Railroad purchased No. 3254 from Barron and trucked it, again broken down into major components, along with one or more passenger cars Barron had owned, to Gettysburg, Pennsylvania.

The Gettysburg Railroad operated some 25 miles of track between Gettysburg and Mount Holly Springs, Pennsylvania, which had once been the Reading Company's Gettysburg-Harrisburg Branch. One of the recent trends in American railroading has been the bankruptcy and collapse of a number of major railroad systems, the Reading among them, and the practice of entirely new small firms of private entrepreneurs, often railroad enthusiasts at heart, purchasing abandoned but not yet dismantled sections of main or branch lines and placing them back into revenue service using diesel-electric locomotives, in many cases hauling diesel-powered passenger excursions and, in some cases, acquiring steam locomotives and operating summer steam passenger excursions. The Gettysburg Railroad, among these, resumed common-carrier freight service between Gettysburg and Mount Holly Springs on October 15, 1976, and, after a few special passenger excursions, began regular passenger excursion service in May 1978. Eventually the company acquired a 2-8-0, No. 76, from the Mississippian Railway, to enable it to offer steam-powered excursions, and in 1982 it purchased Canadian National No. 3254.

The latter locomotive, once overhauled, reassembled, and placed in service, did not really meet the Gettysburg Railroad's excursion needs, for it was too large and too heavy a locomotive.

In the summer of 1987, however, the Steamtown Foundation, operating an excursion line from Scranton toward Pocono Summit, Pennsylvania, did need just such a locomotive. At that time the Steamtown Foundation needed an operable, heavy-duty locomotive. The time required to do the repair work on suitable Steamtown motive power was not available, and while the foundation at that time had a fair amount of money, it was out of time, and had to run diesel motive power on its supposed-to-be-steam excursion train. Consequently, Steamtown traded Canadian Pacific Railway 4-6-2 No. 1278 plus $100,000 for the Gettysburg Railway's operable Canadian National Railway No. 3254. The Gettysburg Railroad got a fairly light Pacific-type locomotive suitable to their needs, and the Steamtown Foundation got a fairly heavy Mikado suitable, though not really a passenger engine, for their heavier duty needs.

The Steamtown Foundation lettered its new acquisition "Lackawanna" in honor of the original builder of the railroad on which it now was to operate, and gave it the fictional number 1271, which would have been the number assigned to the last Lackawanna Mikado had the Lackawanna owned one more engine of that class than it did: the last Delaware, Lackawanna & Western Mikado had been No. 1270. In the transformation of the Canadian engine into a "Lackawanna" engine, the Steamtown shop removed the raised numbers 3254 under the cab windows, removed the distinctively Canadian National angled number boards from on top of the smokebox, replacing them with headlight number boards apparently from a Delaware, Lackawanna & Western electric car, and otherwise changed the appearance of the locomotive to represent more closely that of a true Lackawanna 2-8-2. In August 1987, the 1271 went into service hauling the Steamtown passenger excursion so that Canadian Pacific Locomotive No. 2317 could enter the Scranton Shops for repairs.

No. 3254 (a.k.a. 1271) is the only S-1-b class Mikado preserved, but a somewhat similar locomotive of predecessor class S-1-a, No. 3239, built two years earlier than No. 3254, is preserved by the Canadian Railway Museum at Delson, Quebec.

Condition: Locomotive No. 3254 is an operable locomotive, subject to the usual running repairs and periodic inspection and overhaul.

Recommendation: Canadian National Railways Locomotive No. 3254 is a historic locomotive that should be preserved and could be used to operate an excursion train. The Steamtown collection does not include any American Mikado type 2-8-2 locomotives, but counting Canadian National No. 3377, it has two Canadian Mikados. Until Steamtown National Historic Site can acquire an American 2-8-2, it should retain these two Canadian Mikados as representative of that wheel arrangement. This report leans toward No. 3377 as the later and less altered of the two Mikados to become a museum exhibit locomotive, rather than 3254, which can be used in passenger excursion service.

SUB-CLASS	DATE BUILT	BUILDER	BUILDERS ORDER Nº	BUILDER'S BOILER Nºs	PRESENT ROAD Nºs
H.6.g	1912-13	M.L.W	Q188-Q213	50778, ~~79~~, 81, ~~[illegible]~~, 86, ~~[illegible]~~	1354, ~~1355~~, 1357, ~~1359~~, ~~1360~~, 1362, ~~[illegible]~~
				50794, 95, 97, 98, 99, 50807, 08	1370, 71, 73, 74, 75, ~~[illegible]~~, 83, 84, 1387
				52646, 47, 48, 50, 52590, 91, 92, 96, 97, 52600, 01, ~~[illegible]~~, 04	1389, 90, 91, 93, 95, 96, 1397, 1401, 1402, 1405, 1406, ~~[illegible]~~, 1409

CANADIAN NATIONAL RAILWAYS

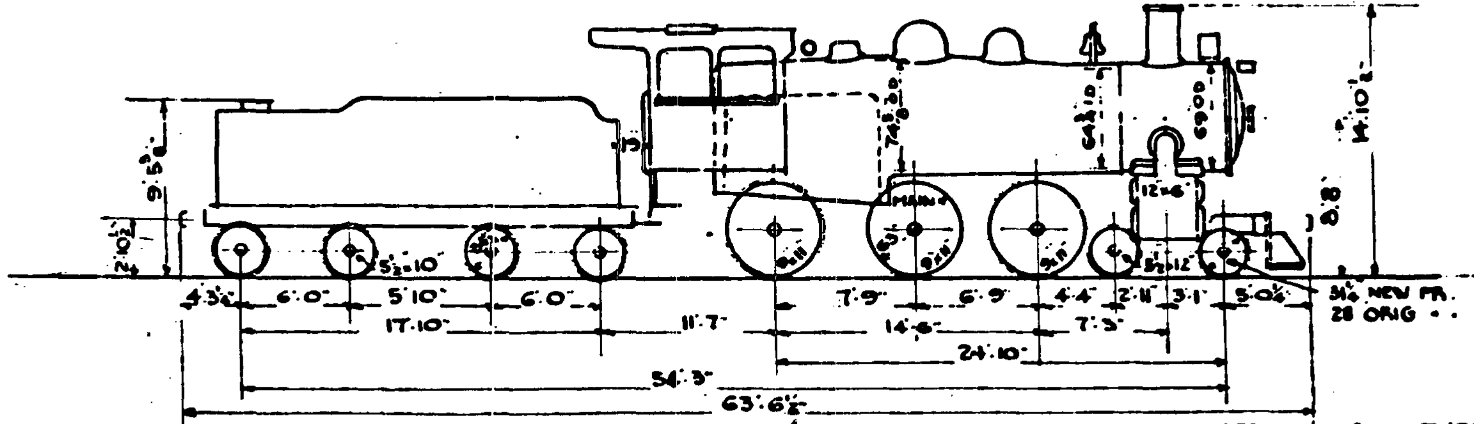
MECHANICAL DEPARTMENT

MONTREAL

TYPE **10-WHEEL** CLASS **H-6**

⊠ 1397. 11" PUMP

* OIL BURNER
OIL CAPACITY 3000 GAL.
FOR LIST OF OIL BURNING LOCOS SEE SPEC. LIST



OPERATING CURVATURE 16°

SUB-CLASS	CYLINDERS DIA.	CYLINDERS STROKE	DRIVING WHEELS O.S.DIA	DRIVING WHEELS DIA. CTR	FIRE BOX LENGTH	FIRE BOX WIDTH	GRATE AREA SQ. FT.	TUBES LARGE	TUBES DIA.	TUBES SMALL	TUBES DIA.	TUBES LENGTH	TENDER CAPACITY WATER	TENDER CAPACITY COAL	SUPERHEATER	HAULAGE RATING
H 6 g	22"	26"	63"	56"	113"	40¼"	31.6	26	5⅜"	186	2"	13'.2¼"	6000 GALS	10 TONS	SCHMIDT T BOLT	28%
"	"	"	"	"	"	"	"	"	"	166	"	12'.5⅜"	"	"	" THRU BOLT	"

SUB-CLASS	HEATING SURFACE SQ FT TUBES	FIREBOX	TOTAL	SUPER-HEATER	WEIGHTS IN WORKING ORDER LBS ENGINE TRUCK	DRIVING		TOTAL ENGINE	TENDER	ENGINE & TENDER	LIGHT WEIGHTS DRIVERS	TOTAL ENGINE	FACTOR OF ADHESION	MAXIMUM TRACTIVE EFFORT	BOILER PRESS.
H.6.g T BOLT	1757	183	1940		40,000	133,000		173,000	124000	297,000	119,700	155,700	4.35	30,560	180#
" THRU BOLT	1531	"	1714		"	"		"	"	"	"	"	"	"	"

SUB-CLASS				TYPE OF REVERSE GR.	TYPE OF VALVE GR.			TYPE OF BOILER	STEAM HEAT	Nº & SIZE OF AIR PUMP	BRICK ARCH	EXTREME WIDTH
H.6.g				SEE SPEC. LIST	WALSCHAERT			EX. WAG. TOP	YES	2 - 9½" ⊠	YES	10'.8"

Bibliography

Clegg, Anthony, and Ray Corley. *Canadian National Steam Power.* Montreal: Trains & Trolleys, 1969: 27, 91.

Cornell, Jim. Telephone interview with author, Jan. 8, 1991.

"Railnews," *Railfan and Railroad.* Vol. 6, No. 11 (Sept. 1987): 32, 33.

"Railnews," *Railfan and Railroad.* Vol. 6, No. 13 (Nov. 1987): 38-39.

Steam Passenger Service Directory, 1989. Richmond, Vermont: Locomotive & Railway Preservation, 1989: 17.

Owner(s): Canadian Government Railways
Canadian National Railways

Road Number(s): 2977
3377

Whyte System Type: 2-8-2 "Mikado"

Class: S-1-d

Builder: Canadian Locomotive Company, Kingston Works

Date Built: 1919

Builder's Number: 1582

Cylinders (diameter x stroke in inches): 27 x 30

Boiler Pressure (in lbs. per square inch): 180

Diameter of Drive Wheels (in inches): 63

Tractive Effort (in lbs.): 53,115

Tender Capacity: **Coal (in tons):** 17
Oil (in gallons): Not applicable

Water (in gallons): 7,200

Weight on Drivers (in lbs.): 277,550 (also reported as 209,970)

Remarks: Has mechanical stoker. Sold to Edaville in September 1961. Engine needs repairs; "jewelry" or certain small parts are missing.

Canadian National Railways 2-8-2 Locomotive No. 3377

History: This locomotive, built as Canadian Government Railways No. 2977 in 1919, was turned out by the Canadian Locomotive Company in Kingston, Ontario, just in time to be relettered Canadian National and renumbered 3377. The engine was quite similar to No. 3254, though two years younger, carried the same cylinder and driver measurements and boiler pressure, and produced the same tractive effort, but because of minor differences was classified by the Canadian National as a Class S-1-d. A typical freight locomotive, No. 3377 featured in later years a mechanical stoker, a superheater, a feedwater heater, and large-capacity air pumps for the braking system, allowing it to haul long main line freight trains. Soon the Canadian National Railways, once equipped with a stable of locomotives of this type, was able to retire a lot of decrepit 4-4-0s and 2-6-0s that it had inherited from predecessor railroads.

The operational history of this locomotive is not known.

Condition: No. 3377 reportedly is in relatively good condition with low mileage since its last overhaul. Most of its "jewelry" is missing, i.e., brass fittings in and outside of the cab including such items as gauges, copper pipes, and the like. Most of this material was deliberately removed before the move from Canada to Bellows Falls, Vermont. The locomotive could be overhauled and placed back in service.

Recommendation: As one of the two "Mikado" type locomotives at Steamtown, this locomotive should be preserved to represent its type. It may also be used in excursion train service.

SUB CLASS	DATE BUILT	BUILDER	BUILDERS ORDER Nº	BUILDERS BOILER Nº	PREVIOUS ROAD Nº	ROAD NUMBERS
S.1.a	1916-17	C.L.Cº	520	SEE OTHER RECORDS	2800, 03, 04, 06, 07, 09, 11, 14, 15, 16, C.G.R. 2818, 2822 to 26, 28 to 32 " 2835, 37, 39, 40, 41, 42, 43, 44, 48, 49 "	3200, 03, 04, 06, 07, 09, 11, 14, 15, 16, 3218, 3222 to 3226, 3228 to 3232 3235, 37, 39, 40, 41, 42, 43, 44, 48, 49
S.1.b	1917-18	"	534		2852, 53, 54, 55, 56, 57, 59, 61, " 2862, 63, 64, 65, 69, 72, 73, " 2875, 76, 80, 81, 82, 83, 84, " 2885, 86, 87, 88, 90, 91, 92, " 2893, 95, 96, 98, 99 "	3252, 53, 54, 55, 56, 57, 59, 61 3262, 63, 64, 65, 69, 72, 73, 3275, 76, 80, 81, 82, 83, 84, 3285, 86, 87, 88, 90, 91, 92, 3293, 95, 96, 98, 99

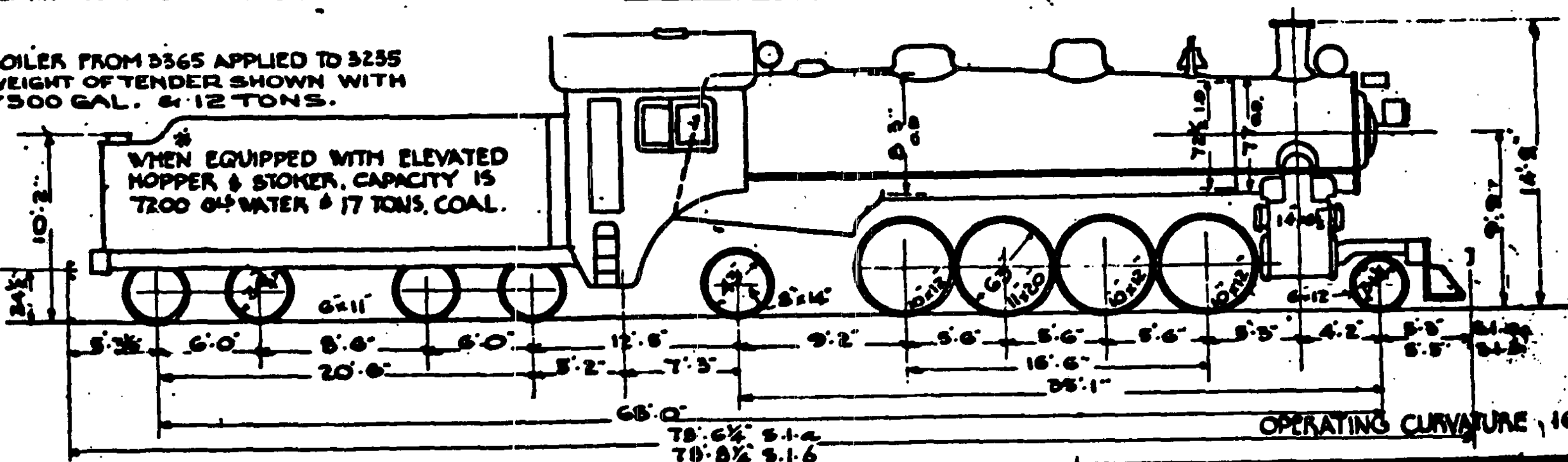
CANADIAN NATIONAL RAILWAYS

MECHANICAL DEPARTMENT
MONTREAL

MIKADO CLASS S-1

* HEATING SURFACE OF FIREBOX INCLUDES ARCH TUBES.
HEATING SURFACE OF SYPHON = 67 SQ FT.

BOILER FROM 3365 APPLIED TO 3235
WEIGHT OF TENDER SHOWN WITH
7500 GAL. & 12 TONS.



SUB CLASS	CYLINDERS DIA	CYLINDERS STROKE	DRIVING WHEELS O.S. DIA.	DRIVING WHEELS DIA. CTR	FIRE BOX LENGTH	FIRE BOX WIDTH	GRATE AREA SQ. FT	TUBES LARGE	TUBES DIA.	TUBES SMALL	TUBES DIA.	TUBES LENGTH	TENDER CAPACITY WATER *	TENDER CAPACITY COAL *	SUPERHEATER	HAULAGE RATING
3200 to 3253	27"	30"	63"	56"	108⅛"	78¼"	56.5	32	5⅜"	219	2"	20'-0"	7500 gal	12 tons	SCHMIDT	53%
3254 to 3299	"	"	"	"	"	"	"	"	"	213	"	"	"	"	"	53%

SUB CLASS	HEATING SURFACE SQ. FT. TUBES	FIREBOX	TOTAL	SUPER-HEATER	WEIGHTS IN WORKING ORDER LBS ENGINE TRUCK	DRIVING	TRAILING	TOTAL ENGINE	TENDER	ENGINE & TENDER	LIGHT WEIGHTS DRIVERS	TOTAL ENGINE	FACTOR OF ADHESION	MAXIMUM TRACTIVE EFFORT	BOILER PRES.
3200 to 3253	3196	228 *	3424		23,530	209,910	44,050	277,960	167,250	444,800	194000	250,200	3.95	53,115	180 lbs
3254 to 3299	3133	" *	3361		"	"	"	"	"	"	"	"	"	"	"

SUB CLASS			STOKER	TYPE OF REVERSE	TYPE OF VALVE GR	SYPHONS	MECHANICL LUBRICATOR	FWTR HTR	STEAM HEAT	SIZE & Nº OF AIR PUMPS	BRICK ARCH	EXTREME WIDTH
S1-ab			SEE SPEC LIST	SEE SPEC. LIST	WALSCHAERT	SEE SPEC LIST	SEE SPEC LIST	SEE SPEC LIST	YES	1-8½ C.C.	YES	10-4¾

Bibliography

Clegg, Anthony, and Ray Corley. *Canadian National Steam Power.* Montreal: Trains & Travel, 1969: 29-32, 91.

Guide to the Steamtown Collection. Bellows Falls, Vt.: Steamtown Foundation, n.d. (ca. 1973), Item No. 41 and roster entry.

CANADIAN NATIONAL RAILWAYS NO. 5288

Owner(s): Canadian Government Railways
Grand Trunk Railway
Canadian National Railways

Road Number(s): 516
1516
5288

Whyte System Type: 4-6-2 "Pacific"

Class: J-7-b

Builder: Montreal Locomotive Works

Date Built: 1918

Builder's Number: 60483

Cylinders (diameter x stroke in inches): 24 x 28

Boiler Pressure (in lbs. per square inch): 200

Diameter of Drive Wheels (in inches): 69

Tractive Effort (in lbs.): 39,735

Tender Capacity: **Coal (in tons):** 14
Oil (in gallons): Not applicable

Water (in gallons): 7,100

Weight on Drivers (in lbs.): 268,000 (also reported as 174,000)

Remarks: Has superheater. This engine has low mileage since last overhaul. Some "jewelry" or small parts are missing.

Canadian National Railways 4-6-2 Locomotive No. 5288

History: Canadian National Railways' medium-size 4-6-2 "Pacific"-type Class J-7 locomotive rolled out of the Montreal Locomotive Works in 1919. The rapid corporate reorganizations coupled with Canadian government acquisition of private railway companies then taking place in Canada and the creation, while this locomotive was being built, of the Canadian National Railways on December 20, 1918, left this locomotive with a particularly complicated conception. Canadian National motive power historians Anthony Clegg and Ray Corley outlined the situation:

> Ownership of several orders placed by the Federal Government [of Canada] through the Canadian Government Railway for assignment to the various [rail]roads was vested in 'Canadian National Rolling Stock Limited.' Essentially similar locomotives owned by the latter company, but operated initially on different railways, were occasionally modified to suit the practice of the operating line. For example, the twenty J-7 Class locomotives constructed for the CGR's use, (later CN 5250-5279) had closed cabs in keeping with the rigors of the Canadian winter; the fifteen J-7 engines destined for Grand Trunk use [including No. 5288], however, were given open cabs, in line with GTR practice.

Thus No. 5288 originated as one of a series of locomotives ordered under the name of the Canadian Government Railway in June 1918 as Nos. 508 through 522 (No. 5288 would have been originally No. 516) nearly six months prior to the actual creation of the Canadian National Railways. Even before these engines were completed, the Canadian Government Railway earmarked this particular series of locomotives for use on the Grand Trunk Railway, also ordering modification of the cab specifications from an all-weather enclosed cab to an open cab, exposed at the rear except for cab curtains. Though it was carried on Canadian Government Railway books as No. 516, the company had the builder modify the order prior to delivery, renumbering the series 1508 through 1522, so that 516 became 1516, in order that these engines not duplicate the numbers of a series of Grand Trunk Railway 2-8-2 locomotives already numbered in the 500 series. It is unlikely that any of these locomotives ever carried their originally assigned 508 through 522 numbers; when the Montreal Locomotive Works turned them out, they were undoubtedly numbered in the 1509 through 1522 series, and although some of them, possibly even No. 516, may originally have carried lettering for Canadian Government Railways, those must have been quickly relettered "Grand Trunk."

On paper, the engines were taken over by Canadian National Railways in September 1919, although with other Canadian Government Railways motive power, and between October 1920 and March 1921 they were renumbered as Canadian National Railways 5280 through 5294, while still leased to the Grand Trunk Railway. In another paper transfer, in 1922 the Canadian National Railways sold the 15 locomotives, still carried on the books as owned by Canadian Government Railways though it no longer existed as a separate operating company, to the Grand Trunk. In March 1923 in yet another paper transfer, Canadian National again picked up the 15 locomotives in its records, although listing them as owned by the Grand Trunk.

The addition of the J-7 class locomotives, and many other new locomotives, resulted, in 1923, in the retirement of many old 4-4-0 and 2-6-0 locomotives as the newer, heavier power class took over their assignments. Grand Trunk No. 1516, subsequently Canadian National No. 5288, handled principally passenger trains in eastern Canada.

Operating for the Grand Trunk, the locomotive had "Grand Trunk" spelled out on each side of the cab and on each side of the flange of the tender near the top front, with a large number 1516 on the side of the tender, probably all in white. Later renumbered as 5288, it carried a white number on each side of the cab and the Canadian National's name spelled out in a tilted box on each side of the tender.

A detailed history of the use of this locomotive over the years awaits research in Canada. At one time the engine apparently hauled international trains into White River Junction, Vermont, so that it can be said to have operated historically within the United States, even if only in across-the-border service. By 1956 it was assigned to haul commuter trains in the vicinity of Montreal, where it operated out of the huge engine house at Turcot, Quebec. It was there that boiler inspector J.O. Carrier reported the locomotive in good condition on the Monthly Locomotive Boiler Inspection and Repair Report for July 1957, when the date for boiler tube (flue) removal was extended to September 13, 1957. When F. Nelson Blount acquired the locomotive in September 1961 and moved it to Edaville, Massachusetts, and later to Steamtown at Bellows Falls, Vermont, the engine reportedly was operable, or nearly so.

Very similar in design to the "standard" 4-6-2 design adopted by the United States Railroad Administration during World War I, this locomotive was typical of 4-6-2s that operated all over North America in the 1920s through 1950s. They served on both main lines and branch lines, and though generally considered passenger train locomotives, they occasionally pulled freight. Representing the Grand Trunk Railway as well as the Canadian National, this locomotive has New England associations, for the Grand Trunk operated in New England as well as Canada.

Out of the 186 J class and 135 K class Canadian National 4-6-2s built, a total of 321 engines, only 12 have survived, 3 of them Grand Trunk Western locomotives that historically operated entirely within the United States. No. 5288, however, is the only survivor of the 15 J-7-b class of locomotives, the variant with the GTR-style open cabs, although J-7-a No. 5270 with the CGR-style all-weather enclosed cab survives in a park in Moncton, New Brunswick. No. 5288 is one of about 57 4-6-2 locomotives preserved in the United States, six of which are Canadian Pacific engines, one--No. 5529--a Canadian National engine, and three of them the aforementioned Grand Trunk Western locomotives. No. 5288 represents a good example of mid-20th century steam motive power.

Condition: Reportedly the locomotive is in fairly good condition, with low mileage since its last major overhaul, but it also has much of its "jewelry" missing--the brass-rimmed gauges, brass valve levers, and other appurtenances in the cab and elsewhere that attract thieves of brass or railroad artifacts--though some of these items may be in Steamtown storage.

Recommendation: The locomotive *type* No. 5288 represents, the 4-6-2 "Pacific" type, is also represented in the Steamtown collection by Boston & Maine No. 3713. It should be noted that No. 5288 is known to have pulled international trains across the Canadian border into the United States at least as far as White River Junction, Vermont, and No. 5288 could represent that history of a Canadian National Railways locomotive actually operating in common-carrier service in the United States.

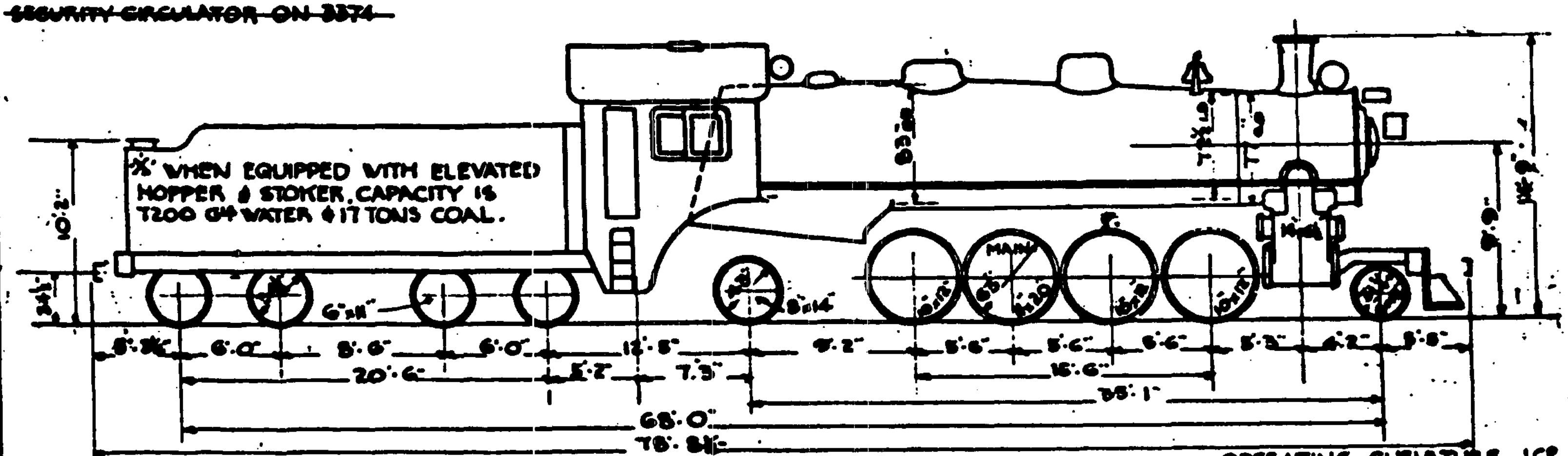
SUB CLASS	DATE BUILT	BUILDER	BUILDERS ORDER Nº	BUILDER'S BOILER Nº	PREVIOUS ROAD Nº & INITIALS	PRESENT ROAD Nº
S.1.d	1918-19	C.L.Co	539	1536,37,39,40,41,43,45,47,48, 1549,50,51,52,53,55,56, 1560,62,63,64,65,66,67,68, 1569,71,73,77,78,80,82, 1585,87,89,90,91,93	2931,32,34,35,36,38,39,40,42,43, 2944,45,46,47,48,50,51, 2953,57,58,59,60,61,62,63, 2964,66,68,72,73,75,77, 2980,82,84,85,86,88	3331,32,34,35,36,38,40,42,43, 3344,45,46,47,48,50,51, 3353,57,58,59,60,61,62,63, 3364,66,68,72,73,75,77, 3380,82,84,85,86,88

CANADIAN NATIONAL RAILWAYS
MECHANICAL DEPARTMENT
MONTREAL

TYPE MIKADO, CLASS S-1

* HEATING SURFACE OF FIREBOX INCLUDES ARCH TUBES
HEATING SURFACE OF SYPHON = 67 SQ. FT.

~~SECURITY CIRCULATOR ON 3374~~



OPERATING CURVATURE 16°

SUB CLASS	CYLINDERS DIA	CYLINDERS STROKE	DRIVING WHEELS O.S. DIA	DRIVING WHEELS DIA CTR	FIRE BOX LENGTH	FIRE BOX WIDTH	GRATE AREA SQ. FT	TUBES LARGE	TUBES DIA.	TUBES SMALL	TUBES DIA.	TUBES LENGTH	TENDER CAPACITY WATER *	TENDER CAPACITY COAL *	SUPERHEATER	HAULAGE RATING
3331	27"	30"	63"	56"	108⅛"	75¼"	56.5	32	5⅜"	219	2"	20'-0"	7500 G's	12 TONS	SCHMIDT	53%
3332 3334 to 40	-	-	-	-	-	-	-	-	-	215	-	-	-	-	-	-
3342 to 88	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SUB CLASS	HEATING SURFACE SQ. FT TUBES	FIREBOX	TOTAL	SUPER-HEATER	WEIGHTS IN WORKING ORDER LBS ENGINE TRUCK	DRIVING	TRAILING	TOTAL ENGINE	TENDER	ENGINE & TENDER	LIGHT WEIGHTS DRIVERS	TOTAL ENGINE	FACTOR OF ADHESION	MAXIMUM TRACTIVE EFFORT	BOILER PRESS.
3331	3196	228 *	3424		23530	209,970	44,050	277,550	167,250	444,800	194,000	259,200	3.95	53115	180 lb
3332 3334 to 40	3133	- *	3361		-	-	-	-	-	-	-	-	-	-	-
3342 to 88	-	- *	-		-	-	-	-	-	-	-	-	-	-	-

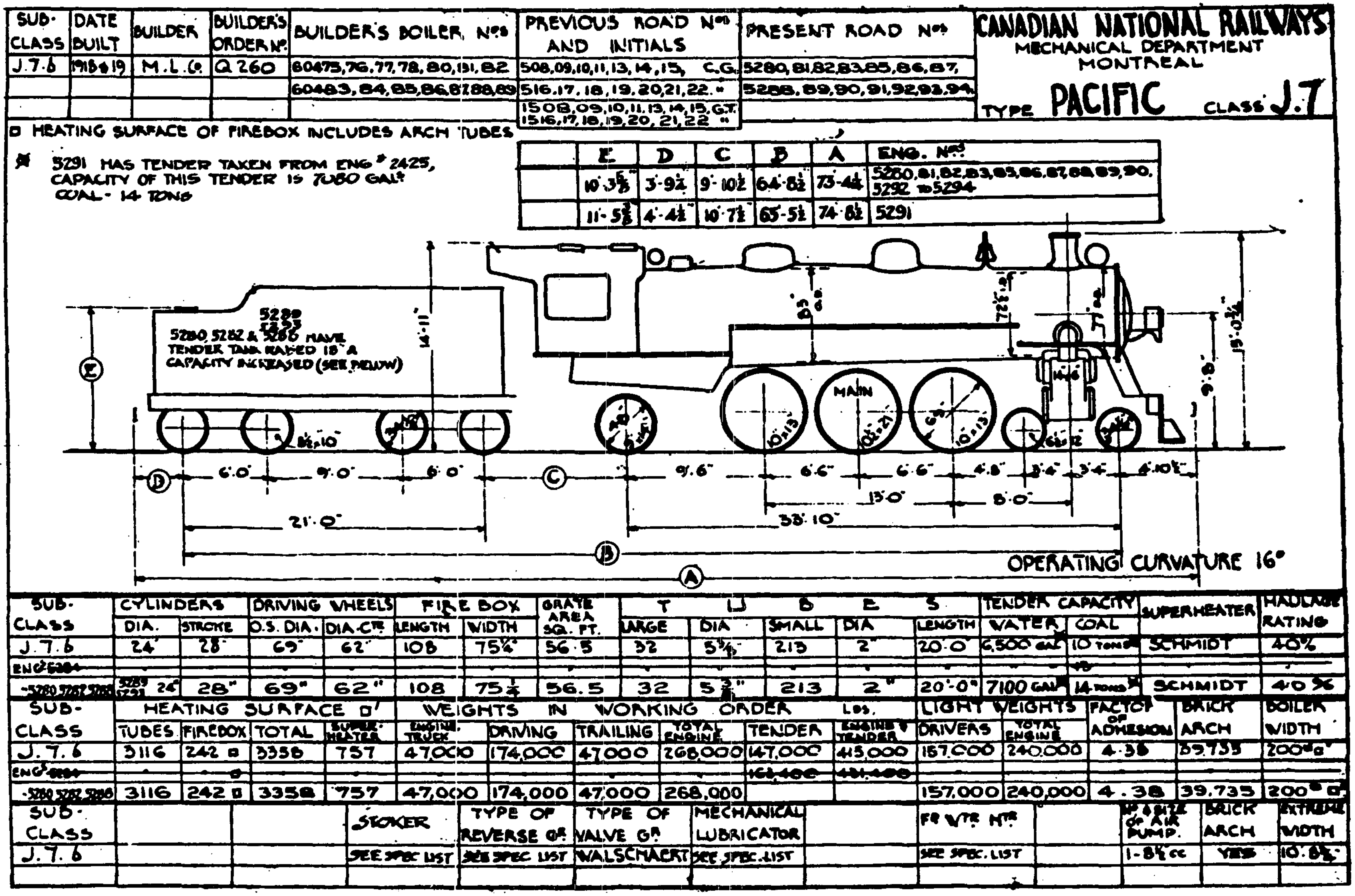
SUB CLASS			STOKER	TYPE OF REVERSE GR	TYPE OF VALVE GR	SYPHONS	MECHANICAL LUBRICATOR	FR WTR HTR	STEAM HEAT	SIZE & Nº OF AIR PUMPS	BRICK ARCH	EXTREME WIDTH
S.1.d			SEE SPEC. LIST		WALSCHAERT	-	SEE SPECIALTY LIST		YES	1-8½ CC	YES	10'-9¾"

Bibliography

Clegg, Anthony, and Ray Corley. *Canadian National Steam Power.* Montreal: Trains & Trolleys, 1969: 29, 30, 99.

Guide to the Steamtown Collection. Bellows Falls, Vt.: Steamtown Foundation, n.d. (ca. 1973), Item No. 44 and roster entry.

Kean, Randolph. *The Railfan's Guide to Museum & Park Displays.* Forty Fort: Harold E. Cox, Publisher, 1973: 175.



CANADIAN NATIONAL RAILWAYS
MECHANICAL DEPARTMENT
MONTREAL

TYPE **PACIFIC** CLASS **J.7**

SUB-CLASS	DATE BUILT	BUILDER	BUILDER'S ORDER No.	BUILDER'S BOILER Nos.	PREVIOUS ROAD Nos. AND INITIALS	PRESENT ROAD Nos.
J.7.b	1918 & 19	M.L.Co.	Q 260	60475, 76, 77, 78, 80, 131, 82	508, 09, 10, 11, 13, 14, 15, C.G.	5280, 81, 82, 83, 85, 86, 87,
				60483, 84, 85, 86, 87, 88, 89	516, 17, 18, 19, 20, 21, 22. "	5288, 89, 90, 91, 92, 93, 94.
					1508, 09, 10, 11, 13, 14, 15, G.T. 1516, 17, 18, 19, 20, 21, 22 "	

□ HEATING SURFACE OF FIREBOX INCLUDES ARCH TUBES

✱ 5291 HAS TENDER TAKEN FROM ENG # 2425, CAPACITY OF THIS TENDER IS 7080 GALS COAL - 14 TONS

	E	D	C	B	A	ENG. Nos.
	10'·3⅝"	3'·9¼"	9'·10½"	64'·8½"	73'·4¼"	5280, 81, 82, 83, 85, 86, 87, 88, 89, 90, 5292 to 5294
	11'·5⅜"	4'·4¼"	10'·7½"	65'·5½"	74'·8½"	5291

SUB-CLASS	CYLINDERS DIA.	CYLINDERS STROKE	DRIVING WHEELS O.S. DIA.	DRIVING WHEELS DIA. CTR.	FIRE BOX LENGTH	FIRE BOX WIDTH	GRATE AREA SQ. FT.	TUBES LARGE	TUBES DIA.	TUBES SMALL	TUBES DIA.	TUBES LENGTH	TENDER CAPACITY WATER	TENDER CAPACITY COAL	SUPERHEATER	HAULAGE RATING
J.7.b	24"	28"	69"	62"	108	75¼"	56.5	32	5⅜"	213	2"	20'·0"	6,500 GAL	10 TONS	SCHMIDT	40%
~~ENG 5284~~																
5280, 5282, 5286, 5289, 5293	24"	28"	69"	62"	108	75¼	56.5	32	5⅜"	213	2"	20'·0"	7100 GAL	14 TONS	SCHMIDT	40%

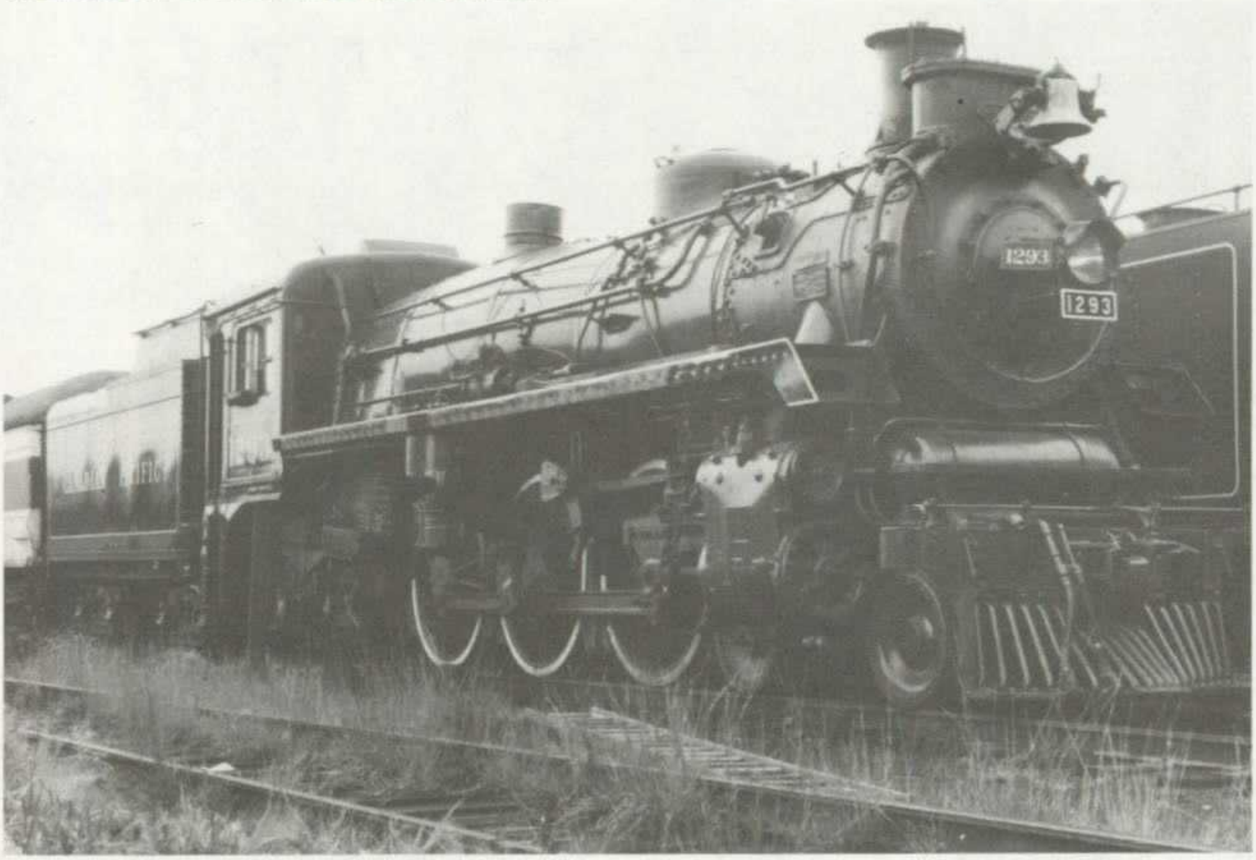
SUB-CLASS	HEATING SURFACE □' TUBES	FIREBOX	TOTAL	SUPER-HEATER	WEIGHTS IN WORKING ORDER LBS. ENGINE TRUCK	DRIVING	TRAILING	TOTAL ENGINE	TENDER	ENGINE & TENDER	LIGHT WEIGHTS DRIVERS	TOTAL ENGINE	FACTOR OF ADHESION	BRICK ARCH	BOILER WIDTH
J.7.b	3116	242 □	3358	757	47,000	174,000	47,000	268,000	147,000	415,000	157,000	240,000	4.38	39.735	200 □'
~~ENG 5284~~									~~163,400~~	~~431,400~~					
5280, 5282, 5286	3116	242 □	3358	757	47,000	174,000	47,000	268,000			157,000	240,000	4.38	39.735	200 □'

SUB-CLASS			STOKER	TYPE OF REVERSE GR.	TYPE OF VALVE GR.	MECHANICAL LUBRICATOR		FD. WTR. HTR.		No. & SIZE OF AIR PUMP.	BRICK ARCH	EXTREME WIDTH
J.7.b			SEE SPEC LIST	SEE SPEC LIST	WALSCHAERT	SEE SPEC. LIST		SEE SPEC. LIST		1-8½ CC	YES	10'·8½"

A Canadian National Railways folio locomotive diagram sheet documented the vital statistics of Locomotive No. 5288.

Canadian National Railways

CANADIAN PACIFIC RAILWAY NO. 1293



Owner(s): Canadian Pacific Railway

Road Number(s): 1293

Whyte System Type: 4-6-2 "Pacific"

Class: G-5-d

Builder: Canadian Locomotive Company

Date Built: June 1948

Builder's Number: 2450

Cylinders (diameter x stroke in inches): 20 x 28

Boiler Pressure (in lbs. per square inch): 250

Diameter of Drive Wheels (in inches): 70

Tractive Effort (in lbs.): 34,000

Tender Capacity: **Coal (in tons):** 14
Oil (in gallons): Not applicable

Water (in gallons): 8,000 (Imperial gallons)

Weight on Drivers (in lbs.): 151,000

Remarks: This locomotive can be made operable with some work. Sold January 1964 to Steamtown.

Canadian Pacific Railway 4-6-2 Locomotive Number 1293

History: "No railroad has contributed more toward the perfection of the steam locomotive in North America than the Canadian Pacific," wrote locomotive historian F. H. Howard as the opening sentence of his article in *Trains & Travel Magazine* on Canadian Pacific's last series of 4-6-2 locomotives, built on the evening before diesel dominance transformed North American railroads. He went on to say, "Its progressive attitude has been especially apparent in boiler matters: the first superheater, the first nickel-steel barrel, and the world's largest collection of welded boilers all breathed steam into CPR cylinders."

Henry Vaughan, in charge of Canadian Pacific Railway motive power, initiated construction of the railway's first two series of 4-6-2 or "Pacific"-type locomotives in 1905 to meet the demands of rapidly expanding passenger train service. Class G-1 locomotives with 75-inch drive wheels would pull passenger traffic over main lines in relatively flat terrain such as the prairies of central Canada. The G-2 class with smaller 69-inch drivers would be assigned to trains in hilly country. These engines began rolling out of the erecting shops in 1906, and during the next seven years before World War I, Canadian Pacific placed more than 200 of them in service. Then after the war ended in 1918, the company went on to build, for the most part, larger and heavier power.

In March 1911, G-1 No. 1011 appeared with a completely enclosed "all-weather" or "vestibule" cab, a feature destined to become common on Canadian locomotives that greatly increased the comfort and safety of the engine crew.

It was during the long tenure of Henry Blaine Bowman as chief mechanical officer of the Canadian Pacific (1928 to 1949) that the company again envisioned a need for smaller classes of locomotives. Bowen had presided over the development of such behemoths as 2-10-4s and modern 4-6-4s, but in 1935 his office designed the first of two classes of streamlined 4-4-4 locomotives intended to haul the new high-speed, "lightweight" passenger trains. Then in 1943, Bowen's office designed a new class of 4-6-2 locomotives. The Canadian Pacific in 1944 still operated 495 Vaughan Class D-10 4-6-0s and 150 Vaughan Class G-1 and G-2 4-6-2s, but all were more than 30 years old and beginning to wear out. The question of replacing this rapidly aging fleet of small locomotives for postwar assignments to principally secondary and branch lines concerned Bowen.

Locomotives Nos. 1200 and 1201 of the new class, which rolled out of Canadian Pacific's Angus Shops in April and June, 1944, was a modernized version of the Vaughan Class G-2 4-6-2 of 1906. The railway sent No. 1200 out west and assigned No. 1201 to the Montreal-Perth passenger run. No. 1201, incidentally, proved to be the last steam locomotive to be built in the Canadian Pacific Railway's own shops, though the railroad would order a hundred more of these Pacifics from the Montreal Locomotive Works and the Canadian Locomotive Company.

Trains Magazine reported on the new class of light Pacifics in its July 1944 issue, featuring a builder's photo of No. 1200 and a description of their features:

> The design of these Pacifics, Class G-5, is based on the earlier Class G-2, but the engine has been modernized and lightened. The portion of the cab extending forward over the fire box has been eliminated and the cab upper structure has been made of aluminum. The boiler steam dome was omitted, following the recent trend. Engine trucks are fitted with roller bearings. Monel-metal staybolts are used experimentally

where it was customary to use flexible staybolts in the past, and one locomotive is fitted with a complete installation of Monel-metal staybolts on one side and standard steel staybolts on the other side.

The weight distribution of the new G-5's is such that they can be used on most of the CP's branch lines. It is proposed that this design will eventually replace 495 of the D-10 class Ten-Wheelers, and 150 of the G-1 and G-2 class Pacifics, engines which were built in the early years of the century and which were originally used on mainline trains now hauled by heavy Pacifics.

The Canadian Pacific eventually purchased three subclasses of G-5 Pacifics, the first two locomotives forming Class G-5-a, built in 1944. Montreal Locomotive Works produced the first G-5-b in August 1945, 13 more in September, 13 more in October, and one in November 1945. It rolled out one each in January 1946 and April 1946. Fifteen of these 30 locomotives went into service on western lines, 15 to eastern Canada. Then in 1946, the company produced four of a new subclass of G-5-c, 11 more in June and five more in July.

Production then switched to the Canadian Locomotive Company, which produced two G-5-c locomotives in September 1946, nine in November 1946, and three in December 1946. That company turned out two more in January 1947 and another four in April 1947. After a hiatus of a year, the Canadian Locomotive Company produced seven of the new subclass of G-5-d in April 1948, then went on to produce eight more in May, seven more in June (of which No. 1293 was the last of the month's production), four more in July, and four more in August 1948, No. 1301 being the last steam locomotive built for the Canadian Pacific Railway.

All G-5 4-6-2s featured 70-inch diameter drive wheels, cylinders 20 inches in diameter, with a 28-inch stroke, 250-pounds-per-square-inch boiler pressure, and tractive effort of 34,000 pounds, and were identical in most other dimensions, variance between the G-5-a and G-5-b through -d subclasses consisting only of difference in some weights and appliances. All had Elesco Type A superheaters and HT-1 type mechanical or automatic stokers. The G-5-b type differed from G-5-a locomotives in Elesco exhaust steam injectors under the fireman's side of the cab. The G-5-c subclass featured a coaming around the top of the water compartment on the tender and differently located injector piping than predecessors had. The Class G-5-d engines of 1948 featured a revised Elesco feedwater heater in the smokebox, with a water pump on the left side of the boiler.

The operational history of locomotive No. 1293 awaits further research in Canadian archives.
F. Nelson Blount purchased the locomotive for excursion service on the Green Mountain Railroad out of the Riverside Yards north of Bellows Falls, Vermont. He purchased Locomotive No. 1293 in the name of the Green Mountain Railroad in January 1964. The Steamtown Foundation purchased No. 1293 from the Green Mountain Railroad in 1973.

Rebuilt in 1976, No. 1293 was the first Steamtown locomotive to be given an overhaul since F. Nelson Blount's death in 1967, nearly a decade earlier. After being broken in on the excursion train in June 1976, No. 1293 powered the state-funded Vermont Bicentennial Train over 13,000 miles that year, featuring a green and black color scheme for that use.

In 1979, the Steamtown Foundation leased No. 1293 to a Hollywood company for the filming in Canada of a motion picture starring Jamie Lee Curtis entitled *Terror Train.* The film company renumbered the locomotive "1881" and painted it black with silver stripes, along with the five

Steamtown cars used with the engine in filming near Montreal. As implied by the title, the film was a typical horror film involving a number of gruesome murders during a college fraternity excursion party aboard the train.

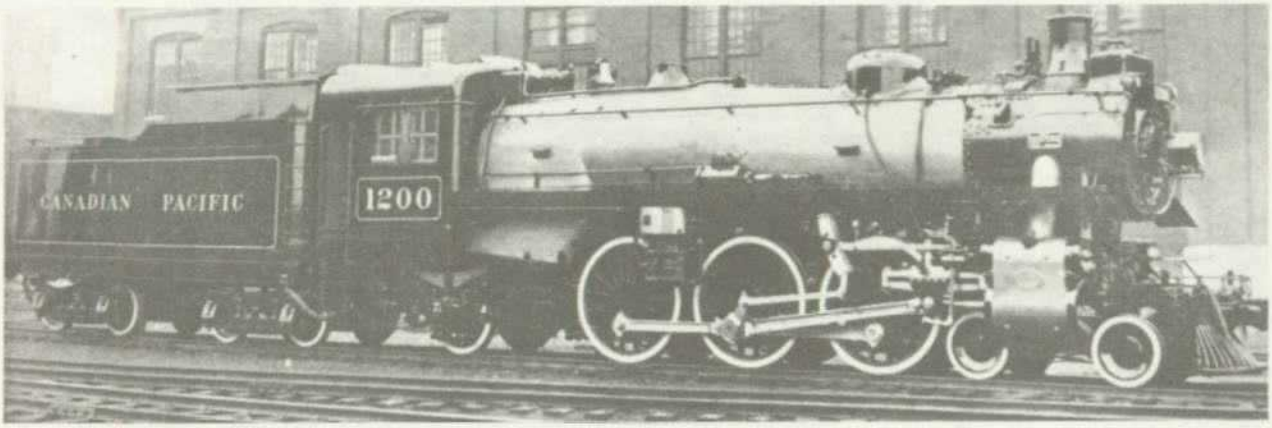
In 1980, the Steamtown Foundation restored No. 1293 and relettered it Canadian Pacific, painting it in the black, gold, and Tuscan red CPR passenger color scheme that had been inspired by a 1933 visit to Canada and the Chicago World's Fair of a British train in maroon and gold livery, the *Royal Scot*, whose colors the Canadian Pacific had begun copying between 1933 and 1936. The restoration of the locomotive to a historic color and lettering scheme proved immensely popular among railroad enthusiasts, who descended on Steamtown in droves for the annual "Railfan Weekend" photography spree. But there was no documentation to prove that No. 1293 ever had that particular color scheme historically.

On February 4, 1982, the locomotive was in the Steamtown storage and shop building when it collapsed at 7:45 a.m. under an unusually heavy load of several feet of fresh wet snow, damaging the upper parts of the locomotive, including such features as headlights, handrails, cab roof, and the like.

In Canada, the second of this series of G-5 locomotives, Pacific No. 1201, is preserved by the National Museum of Science and Technology in Ottawa, Ontario, and is used on occasion for excursion service. It is the only one of the G-5 type in Canada.

Condition: No. 1293 is basically an operable locomotive, given some routine repairs.

Recommendation: This type of locomotive did operate into New England occasionally, perhaps as far south as Boston in international service. While perhaps too light to handle long excursion trains on the stiff climb to Pocono Summit, this locomotive might be usable for smaller special trains or for occasional use on other lines in the Scranton vicinity.



The Canadian Pacific Railway photographed 4-6-2 No. 1200, first of the new series of light "Pacific" type locomotives built during and after World War II. This original model of the G-5 class rolled out of the Canadian Pacific's own Angus Shops in 1944.

Canadian Pacific Railway

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CANADIAN PACIFIC RAILWAY NO. 2317

Owner(s): Canadian Pacific Railway

Road Number(s): 2317

Whyte System Type: 4-6-2

Class: G-3-c

Builder: Montreal Locomotive Works

Date Built: June 1923

Builder's Number: 64541

Cylinders (diameter x stroke in inches): 25 x 30

Boiler Pressure (in lbs. per square inch): 200

Diameter of Drive Wheels (in inches): 75

Tractive Effort (in lbs.): 42,600

Tender Capacity: **Coal (in tons):** 17
Oil (in gallons): Not applicable

Water (in gallons): 12,000 (Imperial gallons)

Weight on Drivers (in lbs.): 181,500

Remarks: Sold November 1965 to Steamtown, in 1986 and 1987 this locomotive operated excursions out of Scranton.

Canadian Pacific Railway 4-6-2 Locomotive No. 2317

History: Before the Canadian Pacific built the small 1200-series G-5 "Pacific"-type locomotives to replace earlier classes of ten-wheelers and light Pacifics, the railroad had acquired a much heavier class of 4-6-2 locomotives for main line passenger traffic.

William H. Winterrowd had become chief mechanical officer of the Canadian Pacific Railway (CPR) in April 1918 as the World War was winding down. Under his supervision, and possibly that of his predecessor, wartime chief mechanical officer William E. Woodhouse, the drafting office had prepared designs for no less than four new postwar heavier and more powerful locomotives of the 2-8-2, 2-10-2 and 4-6-2 wheel arrangements (two classes of the latter). First to be constructed, ten new 2-8-2 Mikado types of Class P-2-a rolled out of CPR's erecting shops in April and July, 1919. Last to be produced, Winterrowd's 15 Class S-2-a 2-10-2 locomotives constituted at the time CPR's heaviest freight motive power, following the successful 2-10-0s Woodhouse had introduced.

For passenger service, CPR needed heavier locomotives because "heavyweight" six-wheel truck all-steel cars had rapidly replaced the older, lighter wooden passenger cars on main line runs. Building on Vaughan's successful G-1 and G-2 Pacifics manufactured well before the World War, Winterrowd's team produced plans for four G-3-a 4-6-2s with 75-inch drive wheels for service over relatively flat terrain and five G-4-a Pacifics with smaller 70-inch drivers for main line service in hilly terrain. Numbered 2300 through 2303, one of the G-3-a locomotives appeared in July 1919 and the other three in August. Construction of this type would resume with the G-3-b subclass in 1920 and extend with variations through G-3-j subclasses. Locomotive No. 2317, the eighteenth of the G-3 series, would be the seventh in the G-3-c subclass, which with its predecessors in that subclass was outshopped in June 1923. By that tine Charles H. Temple had succeeded Winterrowd as chief of motive power and rolling stock. Two more G-3-cs, Nos. 2318 and 2319, also came out in June, followed by six more in July, before the railroad began procuring the next G-3 subclass, the G-3-d. These were the first locomotives in North America to have nickel steel boilers and the first Canadian Pacific engines to be built new with feedwater heaters. Whereas all the G-3-a and G-3-b subclasses had been built at CPR's own Angus Shops, the G-3-c and G-3-d locomotives were erected by the Montreal Locomotive Works. Ultimately, the CPR acquired 173 G-3 4-6-2 locomotives in nine subclasses.

The G-4 class began coming out in October 1919, and totaled only 18 locomotives built in 1919, 1920 and 1921.

The operational history of G-3-c locomotive No. 2317 awaits further research in Canada, but the locomotive is known to have been stationed in Winnipeg, Manitoba, for many years. Canadian Pacific apparently retired the locomotive from service and put her in stored status in 1959, after 36 years of operation.

F. Nelson Blount acquired the locomotive for Steamtown at Riverside near Bellows Falls, Vermont, in November 1965, but the Steamtown Foundation did not restore No. 2317 to serviceability until 1978, more than a decade after Blount's death in 1967.

Because of the locomotive's overall excellent condition, Steamtown began its overhaul in March 1976 so it could pull a bicentennial train known by the unwieldy title of Vermont Bicentennial Steam Expedition sponsored by the State of Vermont. Steamtown was to have the locomotive serviceable by July. But it turned out that the engine had an axle loading too heavy for a few wood bridges between

Riverside and Chester. Steamtown instead assigned a lighter and more modern CPR 4-6-2, No. 1293, to haul the Vermont bicentennial train, and suspended work on No. 2317. Steamtown's shop did not resume work on the overhaul of No. 2317 until June 1978, in order to place it in service by the Annual Railfan's Weekend that October. On October 1, 1978, engineer Andy Barbera opened the throttle on a live No. 2317 for the first time in 19 years. On October 24, 1978, Steamtown posed the locomotive on a bridge at Rockingham, Vermont, for an "official" portrait.

Steamtown had repainted No. 2317 in a CPR gray and Tuscan red passenger train color scheme, a pattern apparently inspired in 1933 by operation across Canada and to Chicago for the World's Fair of a British train in maroon and gold "livery" named the *Royal Scot*. Canadian Pacific had originally adopted that color scheme between 1933 and 1936. The response of the public and railroad enthusiasts to the appearance of No. 2317 in this color scheme proved to be so enthusiastic that the following year, 1979, Steamtown repainted and relettered G-5s Nos. 1246 and 1278 in the same dark red and gray colors.

On February 4, 1982, the collapse of the Steamtown shop and storage building under the weight of three feet of heavy, wet snow caused some damage to this locomotive, though it was not serious.

After the decision to move Steamtown from near Bellows Falls, Vermont, to the Consolidated Rail Corporation yards at Scranton, Pennsylvania, No. 2317, dead, and a baggage car, four former Delaware, Lackawanna & Western "Boonton" coaches, and an Erie-Lackawanna business car pulled by Boston & Maine, Delaware & Hudson, and Norfolk & Western diesels arrived in Scranton on January 31, 1984. On Saturday, February 4, 1984, a Steamtown crew steamed up No. 2317 for a well-publicized "Grand Entrance" of Steamtown to Scranton at 2 p.m. that day. Mayor McNulty praised all concerned in Steamtown's move to Scranton and declared, "In Scranton, the light at the end of the [Nay Aug] tunnel *was* an oncoming train!"

At 10:47 am. Saturday, September 1, 1984, No. 2317 headed Steamtown's first revenue excursion train out of Scranton for Elmhurst, Pennsylvania, with nine passenger cars. Steamtown had decked the locomotive out in red, white, and blue bunting and American flags for the occasion. Bill Chaplik commented in *Railpace Newsmagazine* "If steam engines had a soul, and I'm not so sure they don't, 2317 might have thought this a little peculiar considering her Canadian heritage, but she accepted her new status as an American citizen with dignity and put on her best show for everyone. Her Canadian builders would have been proud." During September and October 1984, Steamtown's first operating season in Pennsylvania, No. 2317 hauled about 45,000 riders, compared with only 60,000 during the entire six-month season in Vermont in 1983; lack of patronage due to distance from centers of population was one of the reasons Steamtown left Vermont.

During the winter of 1984-1985, Steamtown undertook the overhaul of No. 2317, and began the 1985 excursion season on March 23 using No. 1246, but No. 1246 soon developed a crack in the firebox and Steamtown had to resort to the use of diesels, for 2317 was still in the shop. As repair of No. 2317 neared completion, the shop force bolted the left cylinder head in place, and then found a large crack that could not be repaired. A new left cylinder head had to be manufactured from 6-inch-thick steel boiler plate, which took a full month. It was not until mid-September 1985 that No. 2317 returned to service, and a number of other problems plagued the locomotive for several weeks, not uncommon in the case of a newly shopped engine. By the close of the 1985 season on October 27, No. 2317 operated well and with relatively little trouble, but Steamtown had used diesels so much that year that the foundation was subjected to a storm of scorn and criticism.

In 1986, No. 2317 went back into excursion service, but with the tender lettered "Lackawanna" and the running board skirts lettered "Pocono Mountain Route," a nonhistoric color scheme on this Canadian locomotive intended to harmonize with the trackage over which it operated, which at one time had been a part of the Delaware, Lackawanna & Western Railroad. Again in 1987, No. 2317 was down for repairs, which forced the Steamtown Foundation in August to purchase another locomotive, this one a former Canadian National Mikado, from the Gettysburg Railroad.

No G-3-c 4-6-2 locomotives survive among the 29 Canadian Pacific locomotives preserved in Canada, but a very similar G-3-d, No. 2341, built by the Montreal Locomotive Works in 1926, is preserved in the Canadian Railway Museum in Delson, Quebec.

Condition: Locomotive No. 2317 is essentially a serviceable locomotive with suitable running repairs and periodic inspection and overhaul.

Recommendation: Because the Pacific type is well represented in the Steamtown collection by an American locomotive, Boston & Maine No. 3713, Canadian Pacific No. 2317 should be used as excursion train motive power.

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In the Steamtown files are some Canadian Pacific Railway mileage and shopping records for this locomotive that would facilitate preparation of its operational history.

The Steamtown Foundation in Scranton operated Canadian Pacific Railway Locomotive No. 2317 with a fictional Delaware, Lackawanna & Western Railroad color and lettering scheme because it was in use on trackage that originally belonged to the Lackawanna.

Photo by Frank Ackerman

CANADIAN PACIFIC RAILWAY NO. 2816

Owner(s): Canadian Pacific Railway

Road Number(s): 2816

Whyte System Type: 4-6-4 Hudson

Class: H-1-b

Builder: Montreal Locomotive Works

Date Built: December 1930

Builder's Number: 68535

Cylinders (diameter x stroke in inches): 22 x 30

Boiler Pressure (in lbs. per square inch): 275

Diameter of Drive Wheels (in inches): 75

Tractive Effort (in lbs.): 45,300

Tender Capacity: **Coal (in tons):** 17
Oil (in gallons): Not applicable

Water (in gallons): 12,000
(Imperial gallons)

Weight on Drivers (in lbs.): 186,900

Remarks: Sold January 1964 to Steamtown.

Canadian Pacific Railway 4-6-4 Locomotive No. 2816

History: By the 1920s, with conversion completed of passenger rolling stock on the Canadian Pacific Railway from older wooden cars to heavier, all-steel six-wheel truck equipment on main line trains (the railroad had 96 such steel cars in 1918, 707 in 1930), the need for passenger motive power still heavier than the 4-6-2 G-3 and G-4 class Pacifics had become evident.

Henry Blaine Bowen became chief of motive power and rolling stock on CPR on September 1, 1928, a position he was to hold for 21 years. His long tenure, despite the handicaps of the depression which began in 1929 and World War II, which began in 1939, was second only to that of Vaughan in production of new locomotives, totaling 462 steam locomotives and including many new designs, such as F-1 and F-2 4-4-4s, H-1 4-6-4s, T-1 2-10-4s, U-5 0-8-0s, and G-5 4-6-2s. "An unyielding advocate of steam up to the moment of his retirement," commented Canadian Pacific locomotive historian Omer Lavallée, "Bowen was largely responsible for retaining this form of motive power for road operations long after many major North American carriers had thrown in their lot with the diesel-electric locomotive."

Immediately upon assuming his new duties as chief of motive power and rolling stock in 1928, Bowen began formulating his own motive power policy, which, unlike that of his predecessor, Charles H. Temple, focused on new designs. The first two, produced by the drawing office on October 1, 1928, called for a Class H-1 4-6-4, or "Hudson" type, essentially an enlargement or development beyond the G-3 and G-4 4-6-2s and intended to replace them in main line passenger service, and a Class Q-1 2-8-4 intended similarly as a development beyond the Class P 2-8-2s as a new and heavier freight locomotive. Omer Lavallée observed:

> In each case, the provision of a four-wheeled trailing truck would permit the use of a [mechanical] stoker, redesigned boiler with larger firebox capacity, Type E superheater and an increase in boiler pressure to 275 lbs. per square inch. Both designs would utilize the identical boiler; the tractive effort of the HI would be 45,000 pounds, about the same as a G3, but the Q1 would be rated at 60,000 pounds as against 58,000 pounds for the P2s.

The first new Bowen locomotives manufactured were 2-10-4s, No. 5900 completed in July 1929. It was not until four months later that the first of the H-1 4-6-4 Hudson type locomotives rolled out of the Montreal Locomotive Works erecting shop.

Lavallée made a number of observations on the significance of the new Hudson type:

> The class H1 4-6-4s, whose first representative left the MLW erecting shop in November 1929, were destined to be a superior breed of locomotive. Eventually numbering sixty-five units, they were the CPR counterparts of CN's famed class U2 4-8-4s, by which they were far outnumbered. Where axle-loading restrictions on former Grand Trunk Railway main lines had influenced CN to select an eight-coupled locomotive for heavy passenger and fast freight trains, these restrictions did not apply to the CPR, hence the selection of the shorter-wheelbased 4-6-4. Nominally rated at a little over 45,000 pounds tractive effort, boosters eventually fitted to a number of H1s raised the capacity of those so equipped to 57,000 pounds, the normal capacity of the CN U2s. The first of the new 2800s were assigned to main lines, not only

> certain sections of the transcontinental route but also between Montreal and Toronto and Montreal and Quebec. In these services, they soon demonstrated their talents.
>
> The need to effect economies while meeting competition during the first years of the Depression produced some beneficial effects in locomotive utilization, largely as a result of the introduction of the new class H1. In the summer of 1930, H1 No. 2808 set the stage by making what was described as a record continuous run handling Toronto-Vancouver passenger train No. 3, "The Dominion" between Fort William, Ont., and Calgary, a distance of 2,015 km (1,252 miles). The departure was made from Fort William on 19 June 1930 at 2020 CST, with arrival at Calgary at 0700MST on 21 June. The locomotive repeated its performance on a return trip, leaving Calgary on train No. 4 at 1450 MST on 22 June, reaching Fort William at 0535 CST on 24 June. The only servicing which No. 2808 received during these journeys was lubrication and fire and ashpan cleaning, carried out during brief scheduled stops at subdivision points. This test was undoubtedly influenced by the New York Central Railroad's experience after introducing its famed pioneer class J-1a 4-6-4s in 1927 to pull the "Twentieth Century Limited" between New York and Chicago, a distance of 1,545 km (960 miles). However, there was one engine change between these termini.
>
> The result of this was the introduction of regular long-distance assignments to passenger power on all of the system's main lines, using older 4-6-2s in addition to the 4-6-4s. . . .

Montreal Locomotive Works had turned out the first six Hudson type locomotives for CPR in November 1929, Nos. 2800 through 2805. Another four rolled out of the erecting shop in December. All of these fit in Class H-1-a. Nearly a year later, Montreal Locomotive Works began producing the first variation on the theme, Class H-1-b, four in November 1930 and six in December 1930. The latter were Numbers 2814 through 2819, including, of course, Steamtown's No. 2816.

Then the depression, reaching its depths, cut so far into CPR passenger traffic that the company built no more Hudsons for over six and a half years, resuming production in September 1937 with 30 of the new subclass H-1-c locomotives by the end of the year. In August 1938, the company began procuring still another subclass, H-1-d, consisting of 10 locomotives produced that month.

In 1939, King George VI and Queen Elizabeth made the first visit of a reigning monarch to Canada, and to haul the royal train, the Canadian Pacific repainted 4-6-4 No. 2850 blue and silver with stainless steel boiler jacket, cylinder casings, and grabirons, and with royal crests on the tender sides, on the smokebox front, and on the running board skirts above the cylinders. In honor of the King's visit, the railway designated the entire H-1-d class the "Royal Hudsons."

After two more years and the beginning of World War II in 1939, the Montreal Locomotive Works produced in June 1940 a final five Class H1e Hudsons, for a total of 65 Class H1 4-6-4 locomotives.

The Canadian Pacific Railway experimented with a number of variations of smoke deflectors on the Hudsons over a period of years, and No. 2816 carried one of the more successful variations of smoke deflectors for some 20 years.

F. Nelson Blount acquired Hudson No. 2816 for the Steamtown Foundation in January 1964, by which time those smoke deflectors or "elephant ears" alongside the smokebox had been removed.

Canadian Pacific Railway Locomotive No. 2816 arriving at Toronto, Ontario, on July 9, 1948, with eastbound Train No. 8. Note the smoke deflectors or "elephant ears" alongside the smokebox, which are no longer on the locomotive.

Photo by Elmer Treloar
Steamtown Foundation Collection

No. 2816 is the only H-1-b subclass CPR 4-6-4 to survive, but H-1-d No. 2858 is preserved in the National Museum of Science and Technology in Ottawa, Ontario, and H-1-e No. 2860 operates an excursion train near Vancouver, British Columbia, for which service it has been named "The Royal Hudson," although it was neither the original Royal Hudson nor of the true Royal Hudson subclass of H-1 4-6-4 locomotives.

Condition: The condition of this locomotive is fair; it has operated about 35,000 miles since it was last shopped.

Recommendation: This locomotive is at present the only 4-6-4 type in the Steamtown collection and for that reason should be preserved by the National Park Service. If any major overhaul to restore the locomotive either for exhibit or for service ever is undertaken, it should be preceded by a report, which should include a thorough physical and operational history of the locomotive prepared by an experienced railroad historian and research in relevant Canadian archives, railway museums, and historical organizations. The report should determine precisely during what years the locomotive had smoke deflectors, and whether more than one type was used. It should also determine whether the engine carried more than one color and lettering scheme, and if so, precisely what those were. In addition to photographs, physical analysis of paint layers and lettering and striping layers should be done to determine color and placement of such decoration, with careful tracings made to serve as the basis for stencils. The report should then recommend to which period the locomotive should be restored.

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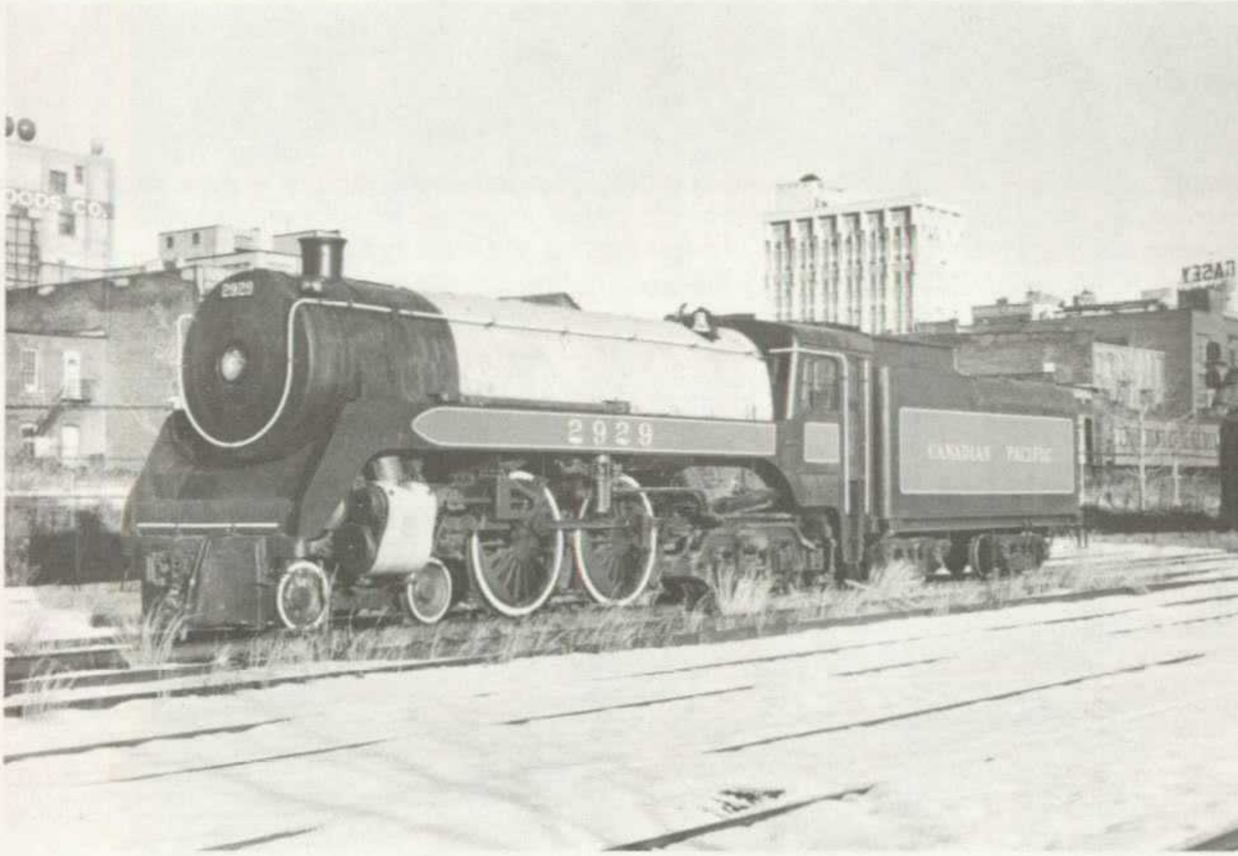
CANADIAN PACIFIC RAILWAY NO. 2929



Owner(s): Canadian Pacific Railway

Road Number(s): 2929

Whyte System Type: 4-4-4

Class: F-1-a

Builder: Canadian Locomotive Company

Date Built: March 1938

Builder's Number: 1943

Cylinders (diameter x stroke in inches): 16.5 x 28

Boiler Pressure (in lbs. per square inch): 300

Diameter of Drive Wheels (in inches): 75

Tractive Effort (in lbs.): 25,900; also reported as 26,000

Tender Capacity: **Coal (in tons):** 12
Oil (in gallons): Not applicable

Water (in gallons): 7,700
(Imperial gallons)

Weight on Drivers (in lbs.): 111,000 (another source claims 111,250)

Remarks: Sold June 1959 to Edaville.

Canadian Pacific Railway 4-4-4 Locomotive No. 2929

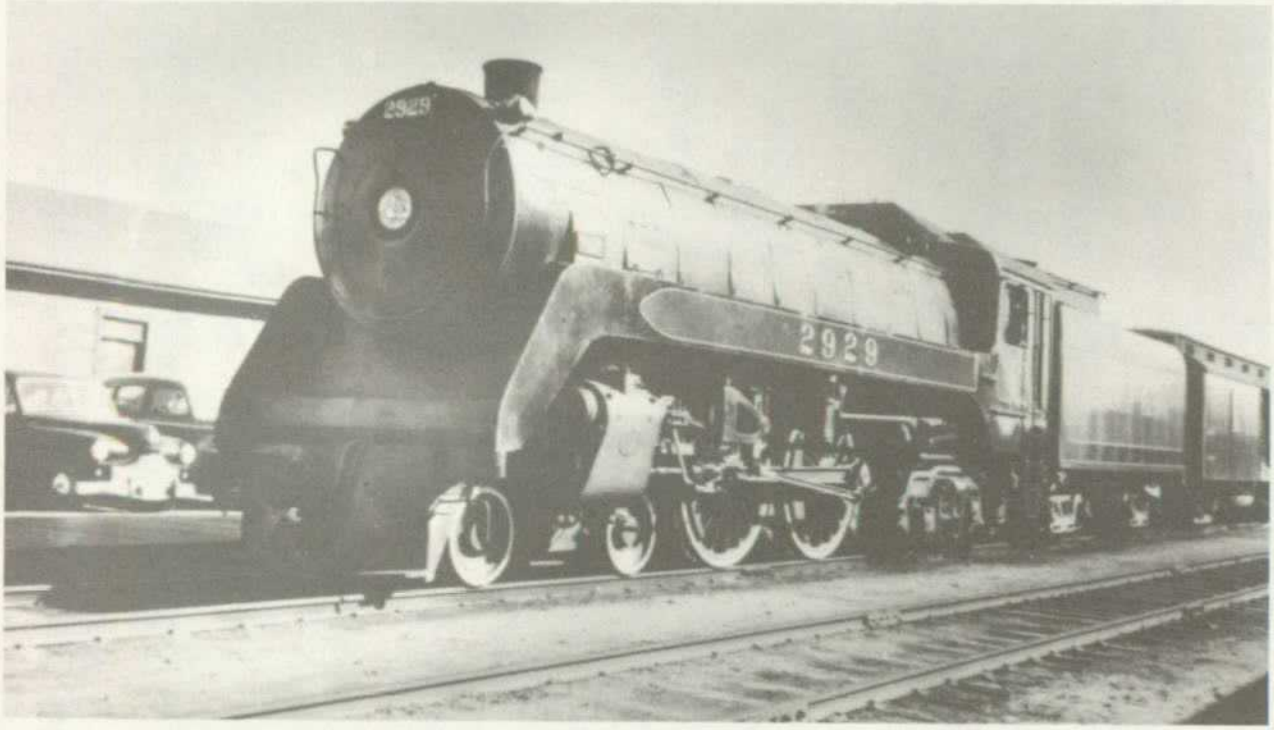
History: Canadian Pacific Railway Locomotive No. 2929 constituted the last in a series of twenty locomotives, Nos. 2910 through 2929, built by the Canadian Locomotive Company, Limited, expressly for service on streamlined "lightweight" passenger trains, a then-recent development. This particular specimen of Class F-1-a locomotive was outshopped by the Canadian Locomotive Company in March 1938. Actually, this class of 4-4-4 "Jubilee" type locomotives followed five earlier locomotives of Class F-2-a. Those earlier 4-4-4s were slightly larger and more powerful locomotives. Both classes of 4-4-4s featured streamlined exteriors appropriate for their service. The streamlined design of No. 2929 is somewhat reminiscent of streamlining used on a Delaware, Lackawanna & Western locomotive of a different wheel arrangement once photographed in the Scranton yard.

Canadian Pacific historian Omer Lavallée provided the context for the design of these locomotives under the supervision of long-tenured motive power chief Henry Blaine Bowen:

> Despite the effects of the Depression, many railways found the resources to experiment with then-new concepts such as diesel motive power and high-speed, lightweight trains, usually in articulated, fixed-length consists as on the Burlington, Union Pacific and Boston & Maine. Other lines, including the Baltimore & Ohio and the Milwaukee Road, continued to think in terms of steam motive power and variable-length trains composed of individual cars, as did Canadian Pacific.

Brilliant steam locomotive advocate though he may have been, Bowen proved no accurate prognosticator of the future when he wrote, "The Diesel engine of today, wonderful as it is, is doubtful as a lasting standard and it seems a reasonable prediction that it will be considered obsolete in a short period of years." Lavallée continued:

> So wrote Bowen in 1935, as his drawing office was engaged in designing a number of new lightweight trains which were to be hauled by 4-4-4 type semi-streamlined locomotives equipped with 80-inch driving wheels having disc, rather than spoked, centers, and boilers carrying steam at 300 pounds pressure per square inch. Emphasis was placed on *semi*-streamlining: ". . . no extremes (have) been resorted to from a streamlining point of view, and yet it is felt that the same results will be accomplished in diminishing head-end resistance as with the more extreme designs which have been resorted to by . . . other railroads . . . (which) . . . will not meet safety appliance requirements and make parts very inaccessible for repairs."
>
> The first of the new class F2a 4-4-4 locomotives made its appearance at 1130 on Monday, 27 July 1936. III No. 3000 emerged under steam from the erecting shop at Montreal Locomotive Works, tearing through a canvas mural carrying a drawing of the front of Brown class S.C. 4-4-0 I No. 371, which had been built fifty years before, in 1886. The dignitaries, headed by CPR chairman and president Sir Edward Beatty; W.C. Dickerson, president of MLW, and Camillien Houde, mayor of Montreal, learned that as a publicity gesture, the 4-4-4 wheel arrangement had been given the type name "Jubilee" by the CPR to mark the fiftieth anniversary of the inauguration of its transcontinental service. The second locomotive of this class, No. 3001, was soon on its way to western Canada heading an exhibition train, going as far as Vancouver on the main line and returning via the Kettle Valley and Kootenay route through southern British Columbia before being



Canadian Pacific Railway 4-4-4 "Jubilee"-type Locomotive No. 2929 appeared at the head of a train in Fredericton, New Brunswick, on October 21, 1953. The locomotive undoubtedly crossed Maine to get to New Brunswick.

Collection of Gerald M. Best, California State Railroad Museum Library

> placed in regular service between Calgary and Edmonton. Nos. 3000 and 3002 were assigned to service between Toronto and Windsor, Ont., while Nos. 3003 and 3004 were put into operation between Montreal and Quebec. All remained in their respective areas until withdrawal twenty years later.
>
> The class F2 4-4-4s featured nickel steel boilers and the extensive use of high strength alloys in construction. Interestingly, the main rods were connected to the leading drivers, in the manner of a 4-4-0.

That same year, as Lavallée described, one of the new locomotives set a long-standing speed record for Canadian railroads:

> The establishment of official speed records preoccupied mechanical men in North America to the extent that it did on the opposite side of the Atlantic. However, the attainment of the generally-accepted speed record for a Canadian steam locomotive came about in a curious way. In the autumn of 1936, the Canadian Westinghouse Company was asked by Bowen to conduct air brake tests on a train of the new lightweight equipment. A consist was made up, headed by class F2a 4-4-4 No. 3003, pulling a train composed of mail/express car 3603, baggage/buffet car 3053 and coaches 2105 and 2107. On 18 September 1937, eastbound from Smiths Falls to Montreal, the train was brought up to high speed. Near mile 38 of the Winchester

> Subdivision (about one mile west of Soulanges), the brakes were applied in emergency. The test established that the train required 2,227 m (1 mile, 2025 feet) to be brought to a complete stop, that the brake shoe temperatures on the cars ranged in excess of 360°C. (700°F.) while those of the driving wheel tires was in the order of 315°C. (600°F.). However, the report notes that the speed of the train at the moment that the brakes were applied was 181 km/h (112.5 mph). . . .
>
> This speed record remained unchallenged until 10 March 1976, when the Alcan-Dofasco-MLW consortium's LRC Train attained a speed of 208 km/h (129 mph) on a test run on CP Rail between St. Jean and Delson, Que., on the Adirondack Subdivision. A few weeks later, on 22 April 1976, the United Aircraft-built Turbo Train, operated by Canadian National Railways, attained 226.2 km/h (140.6 mph) on a test run near Morrisburg, Ontario.

Subsequently, the Canadian Pacific Railway built another 20 "Jubilee" type 4-4-4 locomotives which, despite being later locomotives than the F-2s, had the lower class number. Lavallée explained:

> A later series of twenty 4-4-4s, designated class F1a, possessed smaller 75-inch drivers; the main rods were connected to the rear pair. Numbered 2910-2929, these smaller engines were built in 1937. The fast, local intercity services for which the F1s were designed never materialized and they were assigned to secondary local passenger services on the prairies and in eastern Canada. However, one of these assignments, the Regina-Moose Jaw local train, called for the 16.4 km (10.2 miles) between Pasqua and Belle Plaine Sask., to be effected in ten minutes, an average start-to-stop speed in excess of 98 km/h (61 mph). This was, for some time in the late 1940s and early 1950s, the fastest scheduled speed attained by a Canadian passenger train.

Thus the locomotive Canadian Pacific numbered 2929 came into existence, rolling out of the Canadian Locomotive Company's erecting shop in March 1938, last of the Jubilees, last of the 4-4-4s in North America.

Interestingly, although the 4-4-4 type proved unpopular and experienced little use in the United States, it had been tried there, even if unsatisfactorily. The first trial occurred in 1915 when the Philadelphia and Reading Railroad obtained four Class C-1a 4-4-4 locomotives: No. 110, built in May 1915; No. 111, built in June 1915; and Nos. 112 and 113, built in July 1913. These had 23½-inch diameter cylinders with a 26-inch stroke and 80-inch diameter drive wheels, and carried 240 pounds per square inch boiler pressure. They lasted less than a year before being rebuilt as 4-4-2 Atlantic type engines.

Many years passed, and then another single American 4-4-4 appeared two years before Canada's first. Did the American 4-4-4 inspire Bowen to design a Canadian counterpart in 1935? No evidence has been found to either prove or disprove that evolution. But in 1934, the Baltimore and Ohio Railroad erected in its own shops, or to be more precise, altered an existing 4-4-2 into a Class J-1 4-4-4 named the *Lady Baltimore*, which became B & O Locomotive No. 1. Along with Locomotive No. 2, the *Lord Baltimore*, a Class V-2 4-6-4 Hudson type, the *Lady Baltimore* was designed to pull new lightweight streamlined passenger trains: the *Lord Baltimore* received assignment to the *Royal Blue* and the *Lady Baltimore* to the *Abraham Lincoln* on the Alton (a wholly owned Baltimore & Ohio subsidiary that was originally the Chicago & Alton Railroad). The *Lady Baltimore* should have done well on the Alton Railroad, which featured easy grades and long tangents (stretches of straight track), but it did not. Later, the locomotive went back to Mt. Clare Shops in Baltimore where it received a conventional cab and front end to replace streamlined components, being renumbered 5330. Its low tractive effort and large drive wheels, conducive to speed, not power, continued to be a handicap. The Baltimore & Ohio placed it in service for a while on its Wheeling Division, hauling local passenger trains between Holloway and Cleveland, Ohio, but ultimately sent the locomotive to the Riverside Shop in Baltimore to be preserved in white lead for a year or so. The railroad finally scrapped the locomotive in 1949. This apparently was the second experiment with the 4-4-4 type on an American railroad; one or more other examples of American 4-4-4s have been rumored to exist, but none are confirmed.

However, another American 4-4-4 was designed, in the same year the Baltimore & Ohio built the *Lady Baltimore*, though it never was built.

As David P. Morgan wrote in *Trains*, when articulated, lightweight diesel-powered streamlined trains started showing up in 1933, the chief engineer of the Lima Locomotive Works quickly recognized their competitive virtues, and believed that lightweight standard equipment would be a wave of the future. He also believed that Lima should be able to offer a suitable streamlined steam locomotive to railroads in search of motive power for such trains. Thus in September 1934, Lima Vice President Will Woodard authored an article published in *Railway Age* accompanied by plans for a semi-streamlined 4-4-4 equipped with 84-inch diameter drive wheels, poppet valves, and a booster on the trailing truck. Woodard projected a sustained 2,200 horsepower at all speeds above 30 miles per hour, with a top speed estimated conservatively at 100 miles per hour. "This was more than enough power," commented David Morgan, "to keep a six-car, 250-ton train rolling at a consistent 90 miles per hour over tangent [straight] level track." Morgan went on to analyze the virtues of the proposed Lima 4-4-4:

> The 4-4-4's booster increased her starting tractive effort to 43,100 pounds in spite of the 84-inch drivers, and once she was under way the big wheels held machinery speeds down to reasonable levels. Moreover, the cylinders drove on the first pair of drivers--a principle which Woodard pointed out "was one of the great virtues of the old eight wheelers [4-4-0]" as a contribution to smoother operation. The popped valves separated the timing of admission and exhaust of steam within the cylinders, which would have increased her horsepower at 100 miles an hour by as much as 50 percent over conventional or Walschaerts gear.
>
> The design of the smallest details revealed painstaking care: the boiler was to be constructed from nickel steel, tender trucks were of welded design, and the booster was a comparatively high-speed unit--cutting out at 20 miles an hour.

Unfortunately, Lima Locomotive Works never built this locomotive that Woodard's engineers had designed.

The differences between this proposed Lima 4-4-4 and the *Lady Baltimore*, however, may explain why the latter did not succeed and inspire the construction of sister engines. The drive rods on the *Lady* connected to the rear pair of drivers rather than to the front pair, as on the Lima proposal. Equally important, the *Lady Baltimore* carried much smaller cylinders and constituted a much lighter locomotive, one that developed at a theoretical 100 miles per hour only 1,570 horsepower compared with 2,200 for the proposed Lima engine.

To return to the subject of the Canadian 4-4-4s, which may or may not have derived from the American designs, the operational history of the last of the F-1-a locomotives, No. 2929, has yet to be researched, but it is known to have operated between Montreal and Fredericton, New Brunswick, in

October 1953, which required it to cross the state of Maine, though whether under its own power, pulled by an American locomotive, or, on different occasions, both, is yet unknown. Canadian Pacific historian Omer Levallée photographed in color Locomotive No 2929 hauling Train No. 427 between Montreal and Ottawa in the spring of 1957. In June 1958, No. 2929 ran between Montreal and Farnham.

In June 1959, F. Nelson Blount purchased No. 2929 from the Canadian Pacific for exhibit either at his Edaville property at South Carver, Massachusetts, or in one of the amusement parks with which he then had a contract for display of historic locomotives.

One locomotive of this Canadian Pacific F-1-a class survives in Canada, No. 2928, exhibited in the Canadian Railway Museum at Delson, Quebec, so the presence of No. 2929 in the United States does not leave Canada without a representative of the type. Apparently no examples of Canadian Pacific Class F-2-a locomotives survive.

Condition: This locomotive is capable of being restored to operable condition. However, it is not really suitable for regular excursion train service, though it would be suitable for demonstration around the Scranton yard or in occasional short runs over fairly level terrain scheduled only periodically. One of the characteristics of a locomotive with large drive wheels is the capability of reaching high speeds, but at the cost of pulling power or tractive effort. In other words, this locomotive is fast but not powerful.

Recommendation: This locomotive should be preserved by the National Park Service on the grounds that: (1) it is the only 4-4-4 locomotive in the United States; (2) it is the only semi-streamlined locomotive in the Steamtown collection and the only locomotive designed expressly to power lightweight streamlined passenger trains developed during the 1930s; and (3) it did cross Maine historically during its common carrier service for the Canadian Pacific Railway and is thus an example of a Canadian locomotive that operated in the United States historically. At some future time a report, should be completed about this engine by a qualified railroad historian, and should involve in-depth research in Canada into the operational history of this locomotive. The locomotive should be restored mechanically for occasional operation as a historic locomotive. It should not be used in regular excursion train service.

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AMERICAN ELECTRIC LOCOMOTIVES

Just as the steam locomotive had been developed, in a sense, as an alternative to animal power--horses and mules that pulled single cars on little tramway tracks--on railroads, the electric locomotives were developed as an alternative to the steam locomotive. Smoke-spewing, cinder-spitting steam locomotives did not work well in certain places, such as long tunnels where the accumulation of smoke and fumes could and did asphyxiate engine crews. Coal-burning, soot-spreading steam locomotives became unwelcome when their large numbers in and around a major terminal in a large city such as New York or Chicago so fouled the air that air pollution had become a major public issue by the 1890s. Then, too, in cities like New York and Chicago where downtown real estate values climbed out of sight, city governments and the railroads themselves wanted to place tracks underground in tunnels to free valuable real estate overhead, but steam engines could not work in such tunnels because of the exhaust gases and smoke. Thus though steam remained dominant overall on most American railroads for another half century or more, a place still existed for some alternative form of motive power that did not create noxious fumes, did not need combustion (either external or internal) and could do the same job as steam locomotives.

But the electric railroad locomotive had complex origins long before the need for something of that kind became pressing. In 1835, Thomas Davenport of Vermont built a small model of an electric locomotive that ran around a circular track. In 1847, Professor Moses Farmer built a battery locomotive big enough to carry two people. In 1851, Dr. Charles Page operated a battery locomotive over 5 miles of track between Washington, D.C., and Bladensburg, Maryland.

As one might expect, that inventor extraordinaire Thomas Alva Edison began developing a generator-powered electric locomotive at his laboratory at Menlo Park, New Jersey, during the 1880s, operating an engine with a belt drive pulling two cars at 40 miles per hour over 1,400 feet of track he had built. Henry Villard of the Northern Pacific became interested and ordered Edison to build two electric locomotives for use at Chicago terminals, but in 1883 bankruptcy forced the Northern Pacific to abandon the development.

In New England at about the same time, Stephen Field built a center cab electric locomotive, or what was to become known as a "steeple cab," which he demonstrated on a small railway in Stockbridge, Massachusetts.

Edison and Field then formed a partnership in the Electric Railway Company, which demonstrated its first locomotive at the Chicago Railway Exhibition, where it hauled 26,000 people around a circular track.

Also during that productive decade of the 1880s, Frank Sprague invented the axle-hung electric traction motor. In 1889, the Electric Railway Company joined the Edison General Electric Company which, under the presidency of Henry Villard, formerly of the Northern Pacific, acquired Sprague's company and its patents.

After swallowing in 1892 another pioneering electric railway firm, the Thomas-Houston Company, in 1893 the Edison firm became the General Electric Company and produced its first electric locomotive, a 30-ton unit capable of 12,000 pounds of tractive effort and speeds of 30 miles per hour. Operated from a 500-volt direct-current overhead trolley wire, the engine appeared just in time to be shown at the World's Columbian Exposition in Chicago in 1893.

Meanwhile, a competitor to the General Electric Company in electric railroad technology appeared when in 1895 the company of George Westinghouse joined with the Baldwin Locomotive Works to build a 46-ton two-truck electric locomotive designed, unlike the General Electric locomotives, to use alternating current. Subsequently, although a number of railroads chose direct current systems built by the General Electric Company in conjunction with the American Locomotive Company, many others chose to use systems that employed alternating current and equipment built by the Westinghouse Electric Company in partnership with the Baldwin Locomotive Works, and both types of system remained in service virtually until diesel locomotives eclipsed electric locomotives on the nation's railroads. Each of the two systems of current had its advantages and disadvantages.

The first problem electrification of a main line railroad tackled involved a new 3.7-mile tunnel to carry the Baltimore and Ohio Railroad under part of Baltimore and its harbor. Steam locomotives arriving with trains at either end of the tunnel would shut down and bank their fires while one of three 600-volt direct current, 96-ton, steeple-cab, 360-horsepower locomotives coupled on, pulled the train through the tunnel, and cut off at the far end, where the engine crew would stoke up their steam locomotive and resume travel to their destination. Entering this service in 1895, the three pioneer locomotives worked until 1910. Electrification of a small main line portion of the Baltimore and Ohio had proved successful.

Grand Central Terminal in New York City with its 700 trains *daily*, each with at least one and some with two steam locomotives, not to mention the presence of additional steam switch engines, fouled the air of Manhattan with tons of coal smoke and soot. Aware of the B & O's success with its Baltimore tunnel, the New York legislature in 1903 passed a law that would outlaw steam locomotives south of the Harlem River after 1908. Now the railroads had to electrify Grand Central Station. The New York Central Railroad consequently decided to purchase 95-ton, 425-horsepower 660-volt direct current locomotives built by the American Locomotive Company and General Electric. Also serving Grand Central Terminal, the New York, New Haven and Hartford Railroad meanwhile selected an alternating current system for its approaches to New York City, though its Westinghouse-Baldwin locomotives came equipped to operate from the 660-volt direct current third rail of the New York Central when within the Grand Central Terminal District. The 102-ton New Haven locomotives featured a "box cab" design with two trucks and two pantographs each, a diamond-shaped spring-loaded framework designed to reach above the cab roof and maintain contact with an overhead power wire generally called a catenary. The first New Haven locomotives entered service in 1905, and the New Haven electrified not only its terminal operations, but some of its main line.

Elsewhere in the nation, electric motive power found a place hauling freight as well as passengers. In Montana, the copper-hauling Butte, Anaconda and Pacific Railway, a subsidiary of the Anaconda Copper Company, electrified its main lines with 2,400-volt catenary electrification during the 1920s, a system that proved successful for the next 40 years. In 1915, the Norfolk & Western used a Westinghouse-Baldwin alternating current system to electrify its lengthy main line Elkhorn Tunnel in West Virginia, which featured 2 percent grades. In 1925, the Virginian Railway electrified its main lines with a similar system.

The history of electrification of main line portions of the Pennsylvania Railroad, which began as early as 1903, merits a book-length study of its own. Resulting in a series of famous electric locomotives, Pennsylvania electrification culminated in 1934 with the creation of the most famous electric locomotive in America, the GG-1, dressed up with Raymond Loewy's striking, streamlined welded body design. Locomotives of the GG-1 type outlived the railroad itself, continuing to operate after the disappearance of the Pennsylvania Railroad into the Penn Central Transportation Company, which passed via bankruptcy into the hands of the Consolidated Rail Corporation.

Far to the west, the Great Northern electrified its line over the Cascade Mountains in the Pacific Northwest beginning in 1909, as did the Chicago, Milwaukee, St. Paul and Pacific in the same region, operating a famous class of distinctively designed "bipolar" electric locomotives not only on freight trains but on express passenger "name" trains such as the *Olympian.*

Another form of electrification involved the suburban or commuter service on steam railroads in the vicinity of major cities. Using equipment heavier than even that of most electric interurban railways, electric commuter equipment in main line railroad suburban service consisted generally of multiple units of electrically powered steel passenger cars, though some wood cars also entered such service. The standard gauge lines of the North Shore Railroad in Marin County north of San Francisco were electrified beginning in 1903; the North Shore soon would be reorganized and renamed the Northwestern Pacific Railroad. But the first really major principally commuter railroad to convert to electric motive power was the Long Island Railroad, which did so in 1905, purchasing 134 steel multiple-unit electric passenger cars.

The Delaware, Lackawanna & Western Railroad was the last major railroad to electrify its commuter operations when it did so in 1930 and 1931, although the Reading had done the same to certain of its lines only months earlier. The Lackawanna electric commuter operations would function essentially unchanged and with the same equipment for a half century of successful and largely trouble-free service. The Lackawanna also had two tri-power locomotives it used on freight transfer runs between the Secaucus freight terminal and the Jersey City Yard; these had batteries, could operate off catenary when on electrified lines, and also had diesel engines that could charge the batteries.

Second in fame only to the GG-1 of the Pennsylvania Railroad, a series of 20 electric locomotives built to a 1946 order from the government of the Soviet Union was embargoed before delivery when the Cold War developed during the late 1940s, with the result that three-quarters of them ended up on American railroads while the remainder went to Latin America. Twelve of these modern, streamlined, heavy-duty electric locomotives went to the Chicago, Milwaukee, St. Paul and Pacific Railway--the "Milwaukee Road"--for service on its 438 miles of electrified line between Harlowton, Montana, and Avery, Idaho, over the Continental Divide--a line that had gone into service with earlier generations of electric locomotives in 1915. Supposedly because of their aborted Soviet destination, this type of locomotive came to be known as the "Little Joe," theoretically for Soviet dictator Joseph Stalin, though local sources for that nickname existed and no one seems to know the truth of its origin. In addition to the 12 Milwaukee Road Little Joes, three went to the Chicago, South Shore and South Bend Railroad, where they attracted equal attention. Whoever their namesake, these struck most observers as handsome locomotives.

Electric locomotives could gather their power in two principal ways: from overhead power wires, either simple trolley wires or more complex catenary wires, using generally diamond-shaped spring-loaded frameworks known as pantographs equipped either with a bar that slid along the wires or a metal tube that rolled along the wires, or in some instances a simple trolley pole with a pulley-type connection; or from an electrified "third rail" located in the center of the track or alongside. A danger of the latter was that it would electrocute any animal or person that touched it; yet third rail remains in use in the 1990s on many electric interurban lines, generally requiring fenced right-of-way or some other form of separation from the potential for encounter with humans or animals.

While new electric lines such as the coal-hauling Black Mesa and Lake Powell Railroad in Arizona were being built long after World War II, the diesel-electric locomotive gradually eclipsed the electric locomotive on the nation's railroads, ironically at a time when light rail electric street railways and electric interurban lines experienced a resurgence. Cities that had retained them re-equipped them with modern new cars, and cities that had dismantled and scrapped them years before built entirely new street railways and interurban lines.

With respect to main line common carrier railroads, however, the story of their development in the 20th century involves steam, electric, and diesel motive power, but it should be noted that even diesel motive power has been almost universally of the diesel-electric persuasion, the diesel engine being used to drive generators that power axle-hung traction motors, thus substituting for the remote powerhouse that used coal-fired or hydroelectric generation to channel electricity into overhead wires or third rails. Only small diesel locomotives used as yard or industrial switchers made much use of chain, gear, or other mechanical drives, and the only diesel-hydraulic locomotives used in the United States were for experimental purposes, and were deemed unsatisfactory when used under American railroad conditions. Thus the diesel-electric form of locomotive--in a sense, the electric locomotive married to the diesel engine--became dominant to provide the locomotive power of American railroads at the end of the 20th Century.

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DELAWARE, LACKAWANNA & WESTERN RAILROAD ELECTRIC CAR NO. 2505

Owner(s): Delaware, Lackawanna & Western Railroad
Erie-Lackawanna Railroad
Consolidated Rail Corporation
New Jersey Transit Authority

Number(s): 2505
Renumbered: 3505
3505
3505

Type of Car: Electric Passenger Car (MU)

Car Name(s): None

Seating Capacity: 84

A.A.R. Class: EP

Builder: Pullman Car and Manufacturing Co.

Number in class: 141

Series: 2500-2640

Date Built: 1930

Number of Wheels per Truck: 4

Length--Inside: 58 feet 10 inches

Length--Over Buffer: 70 feet 2 inches

Length of Compartment--Baggage or Express: Not applicable

Mail: Not applicable

Remarks: Equipped with a pair of roof pantographs which, when raised, drew electric power from overhead wires, this electric car pulled one or more electric trailer coaches in "MU" or "multiple-unit" trains under the operation of a motorman.

Delaware, Lackawanna & Western Railroad Passenger Multiple-Unit Motor No. 2505

History: It may be considered more appropriate to treat Delaware, Lackawanna & Western Railroad electric passenger motor car No. 2505 as a variety of passenger coach rather than as an example of motive power; however, it did serve both roles: It constituted the motive power and control cab not only for itself but for a passenger coach coupled behind it, and could serve as the control unit for up to five additional pairs coupled into a string of 12 cars. For the purpose of this report, therefore, No. 2505 will be treated as motive power.

By the end of the first quarter of the 20th century, Scranton's home-grown railroad, the Delaware, Lackawanna & Western, reached from the Hudson River at Hoboken, New Jersey (with its own terminals and ferryboats to serve New York City) westward through Scranton and across Pennsylvania through Binghamton, New York, and on to Buffalo on Lake Erie, thus connecting the two ends of New York State that wrap around northeastern Pennsylvania. The railroad featured branch lines to Ithaca, Syracuse, Oswego, Cincinnatus, Utica, and Richfield Springs in western New York north of Pennsylvania, and to Montrose, Northumberland, and Wilkes-Barre, Pennsylvania, as well as a maze of short branches and interconnecting lines between Delaware Water Cap and Hoboken on the Hudson River.

Incorporated by special act of the Pennsylvania legislature as the Ligetts Gap Railroad, the Lackawanna actually received its real charter on March 18, 1849, and changed its name on April 14, 1851, to Lackawanna & Western. The Delaware & Cobbs Gap Railroad, chartered December 4, 1850, consolidated with the Lackawanna & Western on April 30, 1853, to form the Delaware, Lackawanna & Western Railroad. It was three-quarters of a century later to the very month that management of the Delaware, Lackawanna & Western Railroad decided to electrify part of its system, or to be more precise, to string overhead electric catenary wire and purchase electric motive power.

Still managed by the able William H. Truesdale as it reached its 75th anniversary, the railroad operated 241.37 miles of track in New Jersey, 263.63 miles in Pennsylvania, and 493.42 miles in New York, for a total system of 998.42 miles of line. Much of this was double, triple, or even quadruple track, and the railroad still carried heavy traffic in anthracite coal, as its nickname, "The Road of Anthracite," claimed. But anthracite accounted for a lower percentage of the freight traffic than it once had, the Lackawanna instead carrying heavy tonnage in clay, sand, gravel, stone, bituminous coal, and cement, as well as other mixed freight.

In terms of passenger traffic, while the Lackawanna did operate the usual main and branch line service, its principal business lay in carrying commuters between New York City and their homes in suburban communities to the west in northern New Jersey. Unfortunately, most of this traffic constituted a shorter haul than enjoyed by the commuter runs of the Pennsylvania Railroad, the New York Central Railroad and the New York, New Haven and Hartford Railroad, which also shared in New York City suburban traffic; consequently the Lackawanna's share of the commuter pie proved less profitable.

The automobile had been making serious inroads into railroad passenger traffic for a decade, but the decline in commuter traffic from that cause became precipitous in the railroad's 75th year, when in 1928 alone diversion of passengers to automobiles and bus lines caused a drop of 1,016,000 Lackawanna commuters. Completion of the Holland Tunnel under the Hudson River for use by motor vehicles added to this loss, and struck not only the rail commuter traffic but the Lackawanna ferries across the Hudson.

For some years the Lackawanna management had been considering what role electrification of motive power might play in its future. The Pennsylvania Railroad had been using it for some time on certain lines. Use of steam motive power to handle commuter traffic had reached a virtual saturation point involving increasing congestion of steam locomotives at the Hoboken Terminal, causing many delays. Some alternative for the future was required. Electrification could provide some cost savings as well as eliminate much switching for suburban train assembly, allow more rapid acceleration of the commuter trains, and offer more flexible operations during off-peak hours. Equally important, New Jersey communities served by the Lackawanna, alarmed at the implications for the future of continuing commuter traffic losses on the railroad, pledged to support an increase in fares to offset at least the cost of the improvement.

Thus, after some years of consideration--and even having bought in 1925 cars especially designed so they could be converted from steam railroad coaches to electric multiple-unit coaches--in April 1928 the Lackawanna Board of Directors approved electrification of 67 route miles (158 track miles) of its New Jersey suburban lines at a cost estimated to fall somewhere between $14,000,000 and $18,000,000. The lines to be electrified included the line from Hoboken via Morristown to Dover and those to Montclair and Gladstone. The company planned both to convert existing steel coaches to electric trailer coaches--and had bought 60 cars (50 coaches and ten combination baggage-passenger cars) in 1925 so designed that they could be easily converted if the railroad chose--and to buy new electric multiple-unit motor coaches.

The Lackawanna hired James S. Thorp from the Illinois Central's electrified lines to fill the position of engineer for electric traction. It should not be surprising that the Lackawanna system, therefore, would strongly resemble the Illinois Central system completed in 1926, from the rattan-covered seats in the cars to subtle elements such as the numbering of circuits in the catenary system.

The railroad commenced construction of its electric system in July 1929, setting the foundations for the catenary poles along the track. For this purpose the company employed a concrete mixer mounted on a flatcar to pour the foundations for the steel poles. The catenary system required 10,000 cubic yards of concrete and 8,000,000 pounds of steel.

Wire trains and crews then traveled the three lines being electrified, stringing guy wires, transmission lines, and finally the power wires for the catenary, as well as railroad signal lines. Regular steam passenger and freight service operated throughout this period over all these lines, so construction focused on midday hours between the morning and evening commuter rushes, on weekends, and during long summer days in the hours after the evening commute hours. The New York firm of Hatzel and Buehler built the electrical substations for the Lackawanna.

At Kingsland Car Shops, meanwhile, the Lackawanna shop force converted 118 steel vestibuled coaches built by Pullman between 1917 and 1925, 10 combination baggage-coaches built by Bethlehem Shipbuilding in 1925, five club cars built by Barney and Smith in 1912 and one by Pullman in 1917, and two combination Railway Post Office-Coach cars all into trailer cars, which they then semipermanently mated each to one of the newly built Pullman power cars built in 1930, No. 2505 among them. The railroad first energized a section of catenary on the line between East Secaucus and West End, and used that track to break in the new cars.

Engine and train crews, meanwhile, attended classes to learn how to operate electrically powered equipment. The Hoboken roundhouse force, their jobs terminated by the conversion from steam to electric, retrained as electricians and mechanics to work on the new rolling stock. The Lackawanna retained on the payroll the temporary inspectors whose job had been to ensure during construction that contractors met the construction specifications, retraining them to serve as power dispatchers and operators of the substations.

With electrification nearing completion, the railroad exhibited some of its new electrified rolling stock at Hoboken Terminal on August 21 and 22, 1930, attracting 21,441 people to the exhibit on those two days.

On September 3, 1930, the first passenger-carrying Delaware, Lackawanna & Western Railroad electric multiple-unit train departed Hoboken for Montclair, New Jersey. Nearly all Americans would have known the engineer at the controls: Thomas Alva Edison, wearing a suit and vest with a bow tie and a dark homburg. A photographer recorded the scene with Lackawanna President J.M. Davis to the left of Edison and the railroad's Chairman William H. Truesdale to the right of him. President Davis later sent Edison a print inscribed:

> Dear Mr. Edison:
>
> This is the first electric train on the Lackawanna (September 3rd, 1930), which you started and ran for half a mile through the tracks and switches of our terminal observing all signals like the men whose duty it is to do this work daily.
>
> J.M. Davis
> President.

It was not until a wintry January day in 1931, however, that the company completed construction of its electric system, and the final changeover from steam-powered commuter trains to electric multiple-unit cars took place on January 25, 1931.

Some of the newly electrified trackage began hauling commuters in 1930, the rest in 1931, with 236 trains daily. The system employed equipment from substation apparatus to traction motors manufactured by the General Electric Company. The railroad purchased alternating current from public utility companies in northern New Jersey and fed it mostly by underground cable to trackside stations where mercury-arc rectifiers converted it to 3,000-volt direct current fed into overhead catenary wires hung above the tracks. The first system of this type in the nation, it required no line-side high-tension transmission lines; consequently, the initial cost of construction as well as subsequent maintenance costs were lowered, and the system avoided vulnerability to delays caused by bad weather.

In the initial installation, the Lackawanna employed 141 new motor cars built by Pullman Car and Manufacturing Company and 141 steel Pullman coaches rebuilt into trailer cars at the Berwick, Pennsylvania, plant of the American Car and Foundry Company. The railroad semipermanently coupled one trailer to each motor, so each two-car train had a control position and motorman's cab at the end of each two-car set. The two-car sets could be coupled together in multiples up to six sets or 12 cars. Low voltage control jumpers plugged into sockets of adjacent cars so one man could control the multiple units throughout the tram.

The Delaware, Lackawanna & Western Railroad assigned the numbers 2500 through 2640 to the new electric motor cars it purchased in 1930 and 1931. Sixth in the series, No. 2505, appeared out of the Pullman shops early in the construction program. Four inches shorter than the coaches built in 1925, the 2500 series seated 84 passengers. Weighing 74 tons, each car like No. 2505 had four 255-horsepower traction motors supplied by the General Electric Company that afforded an acceleration of one-and-a-half miles per second and a maximum speed on the level of 63 miles per hour. Descending a grade, where curves permitted, these cars, whose trucks featured Hyatt roller bearings, could reach 70 miles per hour. The large pantographs on the cars had been designed especially to maintain adequate wire contact through a vertical range of 8 feet, 3 inches, from the normal 24-foot height of the power wires down to 15 feet, 9 inches at Roseville Avenue. No. 2505 came from the first series of commuter cars ever constructed to use 3,000-volt direct current power. Their design had no flaws and as long as they were well maintained, the cars achieved nearly 100 percent availability for use even 30 years after they had been built, an amazing record.

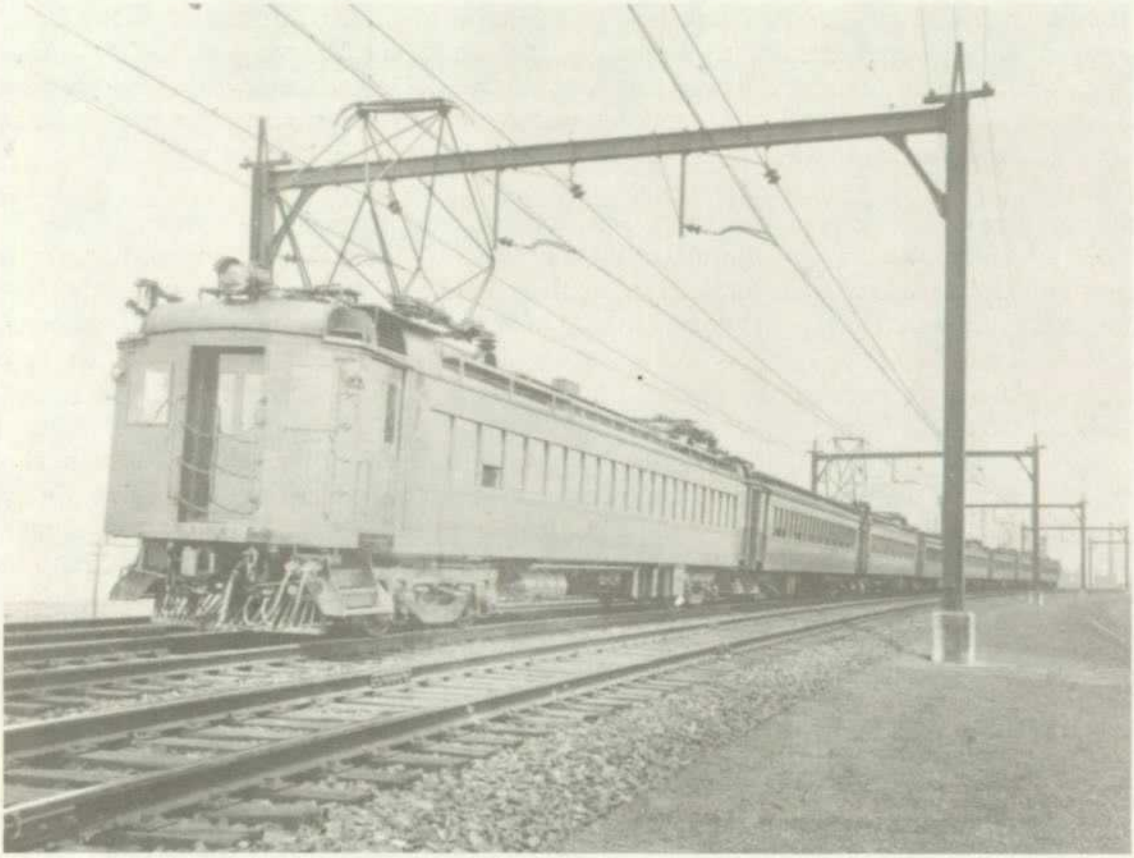
As mentioned, each of these cars had two self-ventilated 235-horsepower series traction motors. These were the lightest of their kind and capacity ever built, 1,500-volt motors designed to operate two in a series per truck on 3,000 volts of direct current delivered from the trolley. All motors were identical, thus interchangeable, and insulated for the full 3,000 volts from the trolley.

One anomaly of the system was that the trailer cars ranged in date of construction from 1912 or 1914 to 1925, and while some of them had low clerestory roofs about the same height as those on the new electric motor coaches, others stood quite a bit higher, creating an irregular appearance when several sets of these coupled together, an aberration that was to remain as long as the cars ran.

Very little changed in the character of the cars or the operation over the years, but the corporate structure under which they operated changed greatly. In 1960, the Delaware, Lackawanna & Western Railroad faced merger with the Erie Railroad. The Erie had originated as the New York and Erie Railroad incorporated in 1832, in a sense a successor or parallel to the Erie Canal on land.

To oversimplify a complex history, that firm became the Erie Railway in 1861, then the New York, Lake Erie and Western Railroad in 1878, and on November 14, 1895, reorganized as the Erie Railroad, which would operate through nearly two-thirds of the 20th century. It would require a small book to detail all of the mergers, acquisitions, and reorganizations that went into the modern Erie. The Erie of the late 1950s operated a main line between New York City and Chicago with major branches to Cincinnati, Ohio; Buffalo and Niagara Falls, New York; and Wilkes-Barre, Pennsylvania, and with many lesser branches both north and south of its main lines. The Erie Railroad had completed dieselization by the end of 1954. It owned 2,014.65 miles of main track and controlled other lines for a total of 2,319.68 miles operated in 1957.

After several years' planning, the Erie and the Delaware, Lackawanna & Western Railroads merged effective October 17, 1960, to form the Erie-Lackawanna Railroad Company, which in turn merged on April 1, 1968, into the Erie-Lackawanna Railway, a holding company incorporated in Delaware one month earlier. The Norfolk & Western Railway controlled that holding company.



Delaware, Lackawanna & Western Railroad multiple unit electric No. 2501, a sister to Steamtown's No. 2505, posed with seven other units on a newly electrified three track main line when new.

Collection of John W. Barriger, III, St. Louis Mercantile Library

As a consequence of this merger, the railroad soon relettered all of the electric cars such as No. 2505 "Erie Lackawanna" on the letterboards above the windows, and renumbered the cars into the 3000 series, No. 2505 becoming No. 3505. Another minor change involved the addition of a red light beneath the headlight on the end of the two-car sets. Under the Erie Lackawanna, the electric commuter service continued much as before, and with the same efficiency and comparative lack of trouble with the system.

Faced with intense competition from truck and bus lines and individually owned automobiles on subsidized highway systems, the railroads in the northeastern United States continued to experience declining fortunes. Bankruptcy rode the rails. It became necessary for the federal government to "bail out" a failing railroad system. To solve the problem, the United States Congress created the Consolidated Rail Corporation, better known as Conrail, as a private profit-making corporation to rescue six bankrupt railroad systems of the northeastern quarter of the country. Conrail arose from the Regional Rail Reorganization Act of 1973, as amended by the Railroad Revitalization and Regulatory Reform Act of 1976. The Consolidated Rail Corporation began operations on April 1, 1976, and took over most of the railroad properties of the Penn Central Transportation Company, the Reading, the Lehigh Valley, the Lehigh and Hudson River Railroad, the Central of New Jersey, and the Erie-Lackawanna. Conrail had 17,000 route miles in Delaware, Illinois, Ohio, Michigan, Maryland, Pennsylvania, Massachusetts, Indiana, Kentucky, Connecticut, Virginia, New York, West Virginia, Missouri, Rhode Island, the District of Columbia, New Jersey, and the Canadian provinces of Quebec and Ontario. Among its New Jersey track miles were those of the former Erie-Lackawanna commuter service, whose operation Conrail now assumed.

Under Conrail, the quality of service and maintenance on the electric lines began to fall; both cars and service deteriorated somewhat. However, Conrail management was not destined to last very long. On July 16, 1979, a public agency, the New Jersey Transit Authority, became the sole owner of the Hoboken Terminal, and a little less than three and a half years later, on January 1, 1983, at a half hour after midnight, the New Jersey Transit Authority took over complete control of all of the commuter operations out of the Hoboken Terminal, including the old Lackawanna electric lines.

New Jersey Transit Authority decided as early as 1980 to rebuild the former Lackawanna electric commuter lines with 25,000-volt alternating current and re-equip them with Arrow III stainless steel air-conditioned cars that it had used for many years, often on old Pennsylvania Railroad electric lines. The target date for the change-over was the Labor Day weekend in 1984. The work involved construction of an entirely new power distribution system with new insulation on the catenary and new signalling systems. The 25,000-volt system had the advantage of operating off the regular commercial-frequency alternating current. As the date of completion of the new system approached, numerous events were planned to celebrate the passing of the old Lackawanna cars. The New Jersey Transit Authority held a farewell party at Maplewood on August 11, 1984, offering free train rides to all and an auction of appealing items of hardware off some of the old cars. The Tri-State Chapter of the National Railway Historical Society operated a fan trip on August 19 that carried 510 passengers on an eight-car train over the entire electric system, returning from Dover behind a diesel-electric locomotive over the non-electrified Boonton line.

The last day of regular direct-current electric operation proved to be Friday, August 24, the final trains departing Hoboken for Gladstone at 7:20 p.m. and departing Hoboken for Dover at 7:30 p.m. Aboard the Gladstone train, Homer Hill, who had ridden the first electric train into Gladstone back in 1931, now rode the last, 53 years later. At Dover, parlor car 3454, relettered "Lackawanna" for the occasion, was met with a banner that read, "LAST RUN D.L.W. ELECTRICS/Jan. 21, 1931 to Aug. 24, 1984."

In the week that followed, New Jersey Transit killed the power, hauled commuter trains with diesel-electric locomotives and added substitute bus service, and made the final conversion to alternating current for the Arrow cars. The old Lackawanna electrics had reached the end of their line. The New Jersey Transit Authority moved them to storage at Mahwah, New Jersey, pending final disposition. A number of them were expected to go to museums or to tourist railroads.

One of them, No. 3505, originally Delaware, Lackawanna & Western Railroad No. 2505, went to an embryonic electric railroad museum in Scranton, Pennsylvania, and when that project failed, became the property of the Steamtown Foundation.

Condition: Ostensible exterior condition, fair to good; mechanical (and electrical) condition, unknown.

Recommendation: Because Car No. 2505 was built for and operated by the Delaware, Lackawanna & Western Railroad, and because it represents one of the two main alternatives to steam motive power on railroads, in this case especially for suburban service, it is recommended for preservation by Steamtown NHS. Furthermore, as this type of car typically operated in multiple-unit trains of a minimum of two cars, it is recommended that a suitable Lackawanna trailer be selected to be coupled to this car for exhibit purposes.

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AMERICAN DIESEL-ELECTRIC LOCOMOTIVES

Dr. Rudolf Diesel filed a patent on an internal combustion engine based on what is called the compression ignition principle in Augsburg, Germany, in 1892. Destined to be known by his last name, the first engine of this type ran on coal, but his second relied on refined oil as fuel. As early as 1893 in a book he wrote, Diesel talked about the applicability of his engine to railroad locomotives. Working with the firm of Klose and Sulzar, Diesel produced the first experimental diesel railroad locomotive in 1909. However, for many years the diesel engine would prove more suitable for use in submarines and for purposes other than powering locomotives.

As it turned out, street railroads or electric streetcar lines provided the key to successful transmission of power from the diesel engine to the drive wheel. Frank Sprague invented the axle-hung direct current motor and the principle of gear drive to the axle as early as 1866 for use on the Manhattan Electrified Railroad in the United States.

As early as 1913, an experimental 60-horsepower diesel-electric railcar appeared in Sweden. About 30 cars of this type, but with more powerful, 150-horsepower engines, soon went into service in Sweden, Denmark, France, and Tunisia.

After experimenting in 1909 with gasoline-electric railcar construction, the General Electric Company sent several of its engineers to Europe in 1911 to investigate continental experiments with diesel-electric motive power. The firm then signed a license agreement to use Junkers's opposed-piston engine. General Electric built five experimental diesel-electric switch engines early during World War I, but these failed to have any impact on motive power procurement by the nation's railroads.

General Electric then decided to concentrate on building only the electrical components of such locomotives, leaving the construction of the diesel engine and the body of the locomotive--what the industry referred to as the "carbody"--to other firms. Thus in 1923, General Electric built the electrical components, Ingersoll-Rand the four-stroke diesel engine, and the American Locomotive Company the carbody of a 300-horsepower 60-ton diesel-electric switcher. The builders demonstrated their diesel-electric long and hard on 14 railroads As a consequence, on October 20, 1925, the American Locomotive Company sold the first commercially produced diesel-electric locomotive in the United States to the Central Railroad of New Jersey (also known as the "Jersey Central"), which assigned it the number 1000.

That same year, the Baldwin Locomotive Works formed a team with the De La Vergne diesel engine firm and the Westinghouse Electric Company to build the largest diesel-electric constructed up to that time, a 1,000-horsepower machine powered by a Knudson 12-cylinder two-cycle inverted V-type engine with twin crankshafts geared to a central shaft.

In 1930, General Motors Corporation, principally an automobile manufacturer, acquired the Electro-Motive Corporation and the Winton Engine Company, the latter an established producer of diesel engines, and from this merger came a much smaller, much lighter diesel engine capable of producing many horsepower. This advanced diesel engine powered the Chevrolet exhibit at the Chicago World's Fair in 1933. Ralph Budd of the Chicago, Burlington and Quincy Railroad saw it there and decided to use this type of engine for his railroad's *Pioneer Zephyr*, a prototype of lightweight, stainless steel, streamlined fast passenger trains. On May 26, 1934, the sleek, silver *Pioneer Zephyr* set off on the return from a trip to Denver to run 1,015.4 miles to Chicago in 13 hours, 4 minutes and 58 seconds, an average speed of 76.61 miles per hour, though in fact the three-car articulated train exceeded 100 miles per hour during the trip. About the same time, the Union Pacific fielded the similar but bright yellow *City of Salina*, while in 1935 the Atchison, Topeka & Santa Fe purchased from Electro-Motive Corporation a pair of diesels to power the *Super Chief* between Chicago and Los Angeles. Thus the 1930s ushered in not only the era of the streamlined "lightweight" passenger train, but the era of diesel-electric motive power for passenger trains as well.

In March 1935, General Motors Corporation began construction of a huge plant for erection of diesel-electric locomotives at La Grange, Illinois, where the company would have the capability of building the locomotive carbody on a cast underframe. The locomotives would employ General Electric motors. The first La Grange product proved to be a 600-horsepower diesel-electric switcher with a cab at one end and exposed running boards on each side. It would more or less serve as a model for the most popular switch-engines for more than a decade. In 1937, an enlarged La Grange plant turned out the first E-Units, streamlined passenger locomotives with built-in cab and running boards along each side of the engines concealed in the carbody, a design that came to be called the "covered wagon" type, because cab and engine were totally enclosed. In 1939, Electro-Motive built the first similarly streamlined Model FT freight locomotive, consisting of an "A" unit with cab, and a "B" unit without, coupled together. Two such pair could be operated together as an "A-B-B-A" combination of four locomotives, all relying on a single crew in a single control cab.

That constituted one of the greatest advantages of the diesel-electric locomotive. While a whole book could be written on the invention of multiple-unit control, suffice to note here that a number of diesel-electric locomotives could be coupled together, with the controls for each plugged into a single locomotive cab so that a single engineer and fireman could control eight or ten locomotives coupled together on the head of a train. When railroads double-headed or triple-headed steam locomotives, each locomotive required its own engineer and fireman. Thus the diesel-electric locomotive represented a labor-saving, cost-cutting machine. Furthermore, the diesel-electric did not need the large quantities of water that steam locomotives required, and thus did not require the maintenance of expensive water tanks, pipelines, and water cranes at intermittent points along its lines, which meant another saving in cost.

The diesel-electric locomotive was not the only type of diesel locomotive. A number of firms such as H.K. Porter made small switch engines that were diesel-mechanicals, without electric generators and motors but using chain or geared drives. Later, two railroads would experiment with Krauss-Maffei German-built diesel-hydraulic locomotives. But the diesel-electric locomotive proved so overwhelmingly successful that the mere term "diesel" as applied to a railroad locomotive has come to mean almost automatically a diesel-electric.

At the beginning of the diesel locomotive era, railroaders simply applied the Whyte system of locomotive classification used for steam locomotives, but eventually a different system for electric and for diesel-electric locomotives evolved in which the letter "A" applied to a single powered axle with two wheels, the letter "B" to a truck with two powered axles and four wheels, the letter "C" to a truck with three power axles and six wheels, and so on. The same classification applied to electric locomotives, some of which had unpowered axles to which the old Whyte system numbers could be applied. But a small switch engine like the prototype developed by Electro-Motive that featured two four-wheel trucks with all four axles powered would fall into the classification of "B-B" type in this new system, while a passenger diesel-electric with two six-wheel powered trucks, each with three axles, would be a ""C-C" type. It must be kept in mind that this constitutes an entirely different use of the letters than does referring to a "covered wagon" type diesel-electric locomotive with cab as an "A" unit or a similar locomotive without cab as a "B" unit.

Thus by 1940, the streamlined E-type passenger and FT-type freight diesel-electric locomotives and the typical "SW" yard switcher which were to dominate the diesel market for many years had been introduced. Additionally, in 1941 Alco and General Electric had introduced a new type of locomotive with a 1,000-horsepower engine and an offset cab, with exposed running boards, which it called an RS type or "road switcher," capable of carrying out multiple duties. This, along with the products of the Electro-Motive Division of General Motors, would be a prototype of much yet to come.

It is not the purpose of this discussion to provide a complete history of the development and use of the diesel-electric locomotive, which indeed would require many volumes; but in providing an overall context for those in the Steamtown collection, it is necessary to point out that other manufacturers existed. Fairbanks-Morse, a mid-19th century firm that built scales, then railroad track scales, then other railroad equipment, and after 1900 gasoline engines and eventually electric motors, developed in the early 1930s a very successful opposed-piston diesel engine for use in navy submarines. Eventually the company began experimenting with this engine in a railroad locomotive, particularly in a switcher used on the Reading in 1939 and in railcars used on the Southern Railway.

Then World War II intervened, and the U.S. government through the War Production Board began assigning priorities for manufacturing and for allocation of raw materials to companies. The government allowed construction of no more diesel-electric locomotives for passenger traffic, restricting diesel-electric locomotive production to yard switchers and freight locomotives. Moreover, restrictions imposed on particular companies affected their destiny beyond the war. Fairbanks, Morse & Company had produced a diesel engine that proved to be so efficient, the War Production Board diverted its entire output for use in navy submarines, thus forcing Fairbanks-Morse entirely out of the diesel-electric locomotive business until 1944, during a critical period in the development of diesel-electric locomotives. Baldwin Locomotive Works, as the nation's foremost builder of steam locomotives, received War Production Board encouragement in that field, and could market its existing line of diesel-electric yard switchers, but the War Production Board would not allow it to undertake design and development of diesel-electric freight and passenger units. As a consequence, Baldwin could enter the diesel-electric field in a serious way only after 1945, by which time the Electro-Motive Division of General Motors Corporation and the American Locomotive Company had a near-stranglehold on the market for freight and passenger diesels. Both Baldwin (soon to merge with Lima-Hamilton) and Fairbanks-Morse produced notable diesel-electric locomotives after World War II, some of which still operated in 1990, but neither got a sufficient grip on the market to make a success of diesel sales.

The Lima-Hamilton Corporation, another firm that entered the diesel-electric production market, represented the 1947 merger of the Lima Locomotive Works and the General Machinery Corporation (the name Hamilton coming from an earlier General Machinery component, the Hamilton Press and Machinery Company). The new firm produced its first diesel-electric locomotive that same year. However, only three years later, on November 31, 1950, the Lima-Hamilton Corporation merged with the Baldwin Locomotive Works to form the Baldwin-Lima-Hamilton Corporation.

In the years that followed, passenger traffic declined on American railroads until the federally chartered National Railroad Passenger Corporation, marketed under the name of "Amtrak," short for American Track, took over most passenger service on America's railroads. With the decline in passenger traffic came a decline in the use of covered wagon-type diesels for passenger and even for freight service. The road switcher-type of locomotive eclipsed even the streamlined freight locomotive, and diesel-electric locomotives became uniformly uglier and more utilitarian in design. The handsome EMD E and FT units began to vanish, as did the Alco equivalents, for the PA and FA had begun to disappear even earlier.

Throughout this period the diesel-electric locomotive had been eclipsing the steam locomotive in the United States. The American Locomotive Company built its last steam locomotive in 1948, the Lima Locomotive Works erected its last in 1949, and Baldwin soon followed. Dieselization of the first major American railroad occurred in 1949, and extended to other railroad companies throughout the 1950s. Insofar as regular service was involved, and excepting special cases such as short lines that emphasized steam passenger excursions, narrow gauge lines, or other special cases, America's railroads were essentially dieselized by 1960, and the steam locomotive had nearly vanished from the railroads of the nation.

As its name implies, the Steamtown Foundation did not intend to acquire diesel-electric locomotives for museum purposes. When the foundation moved to Scranton, Pennsylvania, in 1984, it needed diesel-electric motive power as a supplement, and occasionally as a substitute, for steam motive power, and accordingly leased Delaware & Hudson Locomotive No. 4075. The deal included an option to purchase, and lease payments could be applied to purchase; consequently, when lease payments approached the cost of purchase and it seemed likely that the foundation would need the locomotive for quite some time, it proved cheaper to buy it outright than to continue to lease it, so the foundation did just that. Subsequently the Norfolk & Western Railway, which had merged with the old Nickel Plate (New York, Chicago & St. Louis) and the Wabash, provided a Wabash switcher and a Nickel Plate "General Purpose" locomotive or "GEEP." Still later the foundation acquired Milwaukee Road and Kansas City Southern F7 covered wagon units.

Because the purpose of Steamtown National Historic Site is the preservation of equipment and rolling stock related to the era of steam railroading, none of the diesel-electric locomotives is considered suitable as a museum locomotive, although some of them are old enough to be considered historic. Steamtown National Historic Site has, however, found it prudent to keep one or more of these diesels as serviceable switch engines for use around the yard and for emergency service out on the excursion line in case of the breakdown of a steam locomotive while in use.

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Extensive literature on the diesel-electric locomotives treated railroad by railroad exists. A trend in recent years with respect to certain large railroad systems such as the Burlington Northern, the Southern Pacific, and the Union Pacific has been publication of an "annual' monograph documenting in rosters, photographs and captions, and some text or narrative the history during the previous year of diesel motive power on particular systems.

CHICAGO, MILWAUKEE, ST. PAUL AND PACIFIC RAILWAY NOS. 97A, 97C

Owner(s): Chicago, Milwaukee, St. Paul & Pacific
Maryland Midland Railway

Road Number(s): 97A, 97C

Whyte System Type: 0-4-4-0 A.A.R.

Type: B-B **Class:** FP7

Builder: Electro-Motive Division, General Motors Corporation, La Grange, Ill.

Date Built: 1950

Builder's Number:

Cylinders (diameter x stroke in inches): 8½ x 10

Boiler Pressure (in lbs. per square inch): Not applicable

Diameter of Drive Wheels (in inches): 40

Tractive Effort (in lbs.): 40,000

Tender Capacity: **Coal (in tons):** Not applicable
Oil (in gallons): 1,200

Water (in gallons): Not applicable

Weight on Drivers (in lbs.):

Remarks: This 1,500-horsepower freight and passenger locomotive has a 16-cylinder, two-cycle "V" form engine.

Chicago, Milwaukee, St. Paul and Pacific Railway FP7 Nos. 97A and 97C

History: The "Milwaukee Road," more properly the Chicago, Milwaukee, St. Paul and Pacific Railway Company, gained fame in the 20th century for its Hiawatha passenger trains, named for the Indian heroine of Longfellow's poem, and for electrified trackage over the Continental Divide at Pipestone Pass, Montana, as well as for the company's nearly unique "Little Joe" electric locomotives, a type supposedly nicknamed for Joseph Stalin because they were designed and built for export to the Soviet Union for use on the Trans-Siberian Railway; however, as a result of the development of the Cold War, they were embargoed by President Harry S. Truman, and diverted instead in 1948 to sale to two American railroads, the Milwaukee Road and the Chicago, South Shore & South Bend.

The old Milwaukee & St. Paul Railway, incorporated in Wisconsin on May 5, 1863, grew and extended its trackage, consolidated with other lines, and changed its name on February 11, 1874, to Chicago, Milwaukee & St. Paul Railway to reflect its growth and expanded ambitions. As customarily occurred in railroad history, the company purchased many smaller lines and absorbed them into its system, thereby reaching Kansas City, Missouri; Omaha, Nebraska; and points in Iowa, Minnesota, and North and South Dakota. Ambition continued to grow also, so that the original company sponsored a subsidiary, the Chicago, Milwaukee and Puget Sound Railway, which undertook construction of a 2,081-mile extension from Mobridge, South Dakota, across the plains and through five mountain ranges in Montana, Idaho, and Washington to reach Seattle, on Puget Sound. But the Milwaukee Road, to use its nickname, was the last of the three northern transcontinentals to be completed, on May 14, 1909, and it faced competition with the already well-established Northern Pacific Railway, which had completed a through line to the Pacific Coast on September 8, 1883, and the Great Northern Railway, which drove its final spike on January 6, 1893. On March 31, 1927, the two railroads, the Chicago, Milwaukee & St. Paul and the Chicago, Milwaukee & Puget Sound, consolidated and reincorporated as the Chicago, Milwaukee, St. Paul and Pacific Railway.

The trials and tribulations, rise and fall of its fortunes, and the long decline of the Milwaukee Road is a story documented elsewhere, as is the story of its partial electrification and ultimate replacement of its remaining steam locomotives with diesel-electrics. For this account it is sufficient to note that by the 1950s the Chicago, Milwaukee, St. Paul and Pacific was in the middle of a program of replacing its remaining steam motive power with diesels, and it was in this context that the company ordered from the Electro-Motive Division of General Motors Corporation at La Grange, Illinois, 16 sets of three diesel-electric FP7 combinations, each consisting of an "A" unit with cab, a "B" unit without cab, and another "A" unit with cab. The Milwaukee Road numbered them as 16 three-unit sets in the series 90 through 105, designating the individual units within each set with the letters "A," "B," and "C" (which is an entirely separate use of those letters from the aforementioned designating of cab units as "A" units and cabless units as "B" units). Thus, for each of the numbers 90 through 105 there was an "A," "B," and "C," such as No. 97A, 97B, and 97C. It was possible to work these together in different combinations, such as an A-B-B-A or an A-B-B-B-A or, on the other hand, an A-A, such as coupling 97A and 97C back to back without 97B. Apparently the railroad found it desirable almost immediately to employ these locomotives in two- rather then three-unit sets. The "FP" in their model designation meant "Freight/Passenger," and indeed these units appeared in trains of both types. Electro-Motive delivered these 48 units in 1950 and 1951, probably painted orange and maroon, the road's passenger colors, but in 1959 the company renumbered the 15 units in the 90 through 94 sequence to 60 through 64, painted them orange, and assigned them exclusively to freight service. The remainder continued in passenger service, and No. 97C is known to have operated in Chicago area suburban service, but eventually even the 95 through 105 series locomotives hauled their share of freight trains. These versatile and handsome covered wagon units, so named because their body enclosed not merely the cab but also the running boards alongside the diesel engines, hauled many a freight and passenger train over Milwaukee Road rails.

As mentioned earlier, the Milwaukee Road was the third and last of the three northern "transcontinentals" to be completed, and by the 1970s it was failing to compete successfully with the Burlington Northern. By 1980, the western portion of the line, across Montana, Idaho, and Washington, had collapsed financially, and all that would survive--for a while--were midwestern portions of the company. Thus, it was to have much surplus motive power for sale, including diesel-electric locomotives Nos. 97A and 97C; what happened to cabless No. 97B is unclear.

These two locomotives, and possibly others, came into the ownership of a group of investors who styled themselves "FP7 Associates." Early in 1984, this firm leased diesel-electric locomotives Nos. 97A and 97C to the Maryland Midland Railway. The Maryland Midland immediately sent the two units to the Winchester & Western Railway at Gore, Virginia, for overhaul and restoration to service. Work proceeded slowly, and neither unit was ready for operation on excursion runs in the fall of 1984. Locomotive No. 97A, in fact, moved back to the Maryland Midland, arriving there on May 6, 1985, with no work having been done on it. Its body, according to one report, was in "deplorable" condition, and although the Maryland Midland shop force fired up its diesel engine, the locomotive was a long way from being serviceable for handling regular traffic.

Meanwhile, the Winchester & Western did restore Locomotive No. 97C to operating condition, and painted it black with the letters "WINCHESTER & WESTERN" in yellow on its sides. It moved sand trains and, on May 11 and 12, 1985, a couple of excursion trains. Subsequently the Winchester & Western sent the engine back to the Maryland Midland where it arrived on June 4, 1985. The latter company immediately pressed the locomotive into freight service, as several of its other diesels had broken down. Late in July, however, the No. 97C entered the Maryland Midland shop where the company had it relettered "WESTERN MARYLAND" in a slanted style known as "speed lettering," with "WM" on its nose. Of course, historically, the engine never had belonged to the historic Western Maryland Railway Company.

That same month the Maryland Midland obtained through Gibbs Railway Equipment of Neptune Beach, Florida, three former Norfolk & Western GP9 (General Purpose) diesel-electric locomotives. Within two years, in 1987, the Steamtown Foundation had acquired units 97A and 97C and moved them to Scranton, Pennsylvania. The Steamtown Foundation shopped Locomotive No. 97C to repaint it in a maroon and gray color scheme, letter it "LACKAWANNA," and assign it the new number 637. Then the locomotive went into service on passenger excursions to Pocono Summit during the summer of 1987.

Condition: Locomotive No. 97C is in essentially operable condition, and, of course, has been recently repainted. Locomotive No. 97A has been used as a source of replacement parts for No. 97C, so is inoperable, though of course, with enough work, it, too, could be restored to operable condition. Meanwhile, for foreseeable future, it is being cannibalized for parts to keep sister unit 97C operational. The body on No. 97A was regarded as being in very poor condition when the Maryland Midland received the unit, and that condition is not believed to have been corrected.

Recommendation: Locomotive No. 97C is recommended for emergency uses and possibly for helper service on excursion trains, though not for museum purposes. However, it must be recognized that this particular type of locomotive, though only 36 years old in 1988, is becoming increasingly scarce and historic, and that it is a type of locomotive acquired by many railroads for freight and passenger service to replace steam locomotives.

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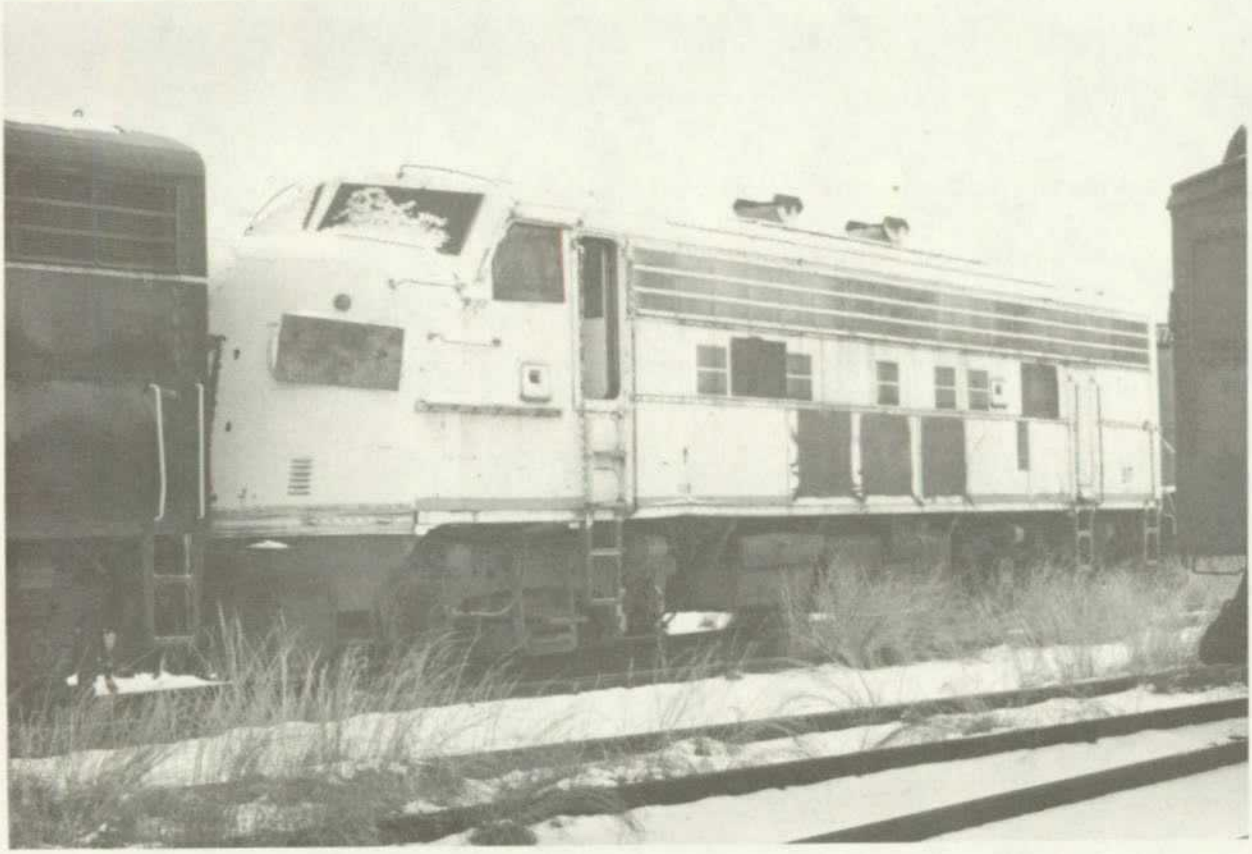

Owner(s): Kansas City Southern Railway

Road Number(s): 74D
Renumbered: 91
Renumbered: 4061
Class: F7Am

Whyte System Type: 0-4-4-0 A.A.R. Type: B-B

Builder: Electro-Motive Division, General Motors Corporation, La Grange, Ill.

Date Built: February 1951

Builder's Number: 9164

Cylinders (diameter x stroke in inches): 8½ x 10

Boiler Pressure (in lbs. per square inch): Not applicable

Diameter of Drive Wheels (in inches): 40

Tractive Effort (in lbs.): 52,400

Tender Capacity: **Coal (in tons):** Not applicable
Oil (in gallons): 1,200

Water (in gallons): Not applicable

Weight on Drivers (in lbs.): 230,000

Remarks: This F7 freight locomotive featured a 16-cylinder, two-cycle "V"-form engine, Model 567B, that provided 1,500 horsepower. Rebuilt to an F7Am.

Kansas City Southern Railway F7a Locomotive No. 4061

History: The Kansas City Southern (KCS) Railway ran exactly where its corporate name said it would: from Kansas City, Missouri, 788.91 miles southward to the Gulf of Mexico at Port Arthur, Texas. En route, the railway crossed Missouri, Kansas, Oklahoma, Arkansas, Louisiana, and Texas, with stations at Pittsburg, Kansas; Joplin, Missouri; Fort Smith, Arkansas; and Shreveport, Louisiana, as well as many other points between. Other lines of the KCS provided service to Dallas, Texas, and Baton Rouge and New Orleans, Louisiana, with the result that by 1962 the entire KCS system operated 957.69 miles of main line track.

Incorporated on March 19, 1900, the Kansas City Southern Railway succeeded the Kansas City, Pittsburg and Gulf Railway, whose property had come up for sale under foreclosure. Lines in Texas operated by the Texarkana and Fort Smith Railway continued under that name to satisfy Texas law until December 31, 1943, when the Kansas City Southern, through the intervention of the Interstate Commerce Commission and the United States Supreme Court, was able to dissolve and absorb the Texas company. Similarly, with only ICC permission, the Kansas City Southern was able to absorb in 1935 the Kansas City, Shreveport and Gulf Railway.

The Kansas City Southern provided a Gulf outlet for agricultural products of the middle Missouri River Valley. Large tracts of pine timberlands, which also included some hardwoods, lay adjacent to the line, and it served important oilfields and refineries as well as coalfields along the Kansas-Missouri and Missouri-Arkansas borders, in addition to other industries.

The Kansas City Southern completed conversion from steam to diesel-electric motive power in 1953, earlier than many other lines. By the end of 1961 the company operated 48 diesel-electric freight locomotives, 14 passenger, 11 multiple purpose, and 37 switchers, not to mention 4,828 freight cars, 66 passenger cars, and 133 maintenance-of-way cars.

Among the freight locomotives, in February 1951 the Kansas City Southern had taken delivery from the Electro-Motive Division of General Motors Corporation of two F7a covered wagon or streamlined freight locomotives, part of a larger order of 14 F7a and F7b locomotives bought between October 1949 and April 1951, including No. 74d. Later, the Kansas City Southern renumbered this unit 91, and still later gave it the number 4061. Its operational history is yet unknown, but it undoubtedly moved freight trains over a substantial part of the system for many years.

In April 1987, the Kansas City Southern reportedly sold No. 4061 to Canada's version of Amtrak, VIA Rail Canada, known more familiarly simply as "VIA." What happened then remains unclear, but within nine months the Steamtown Foundation had acquired the locomotive in Scranton, Pennsylvania.

Condition: Painted Kansas City Southern white but with the red KCS initials blocked out on each side, this 1,500-horsepower locomotive reportedly needs an entirely new diesel engine. It has not operated since received at Steamtown.

Recommendation: Representing the era of most attractive, streamlined "covered wagon" type diesel-electric locomotives, this Kansas City Southern engine may be used as an early example of a diesel locomotive.

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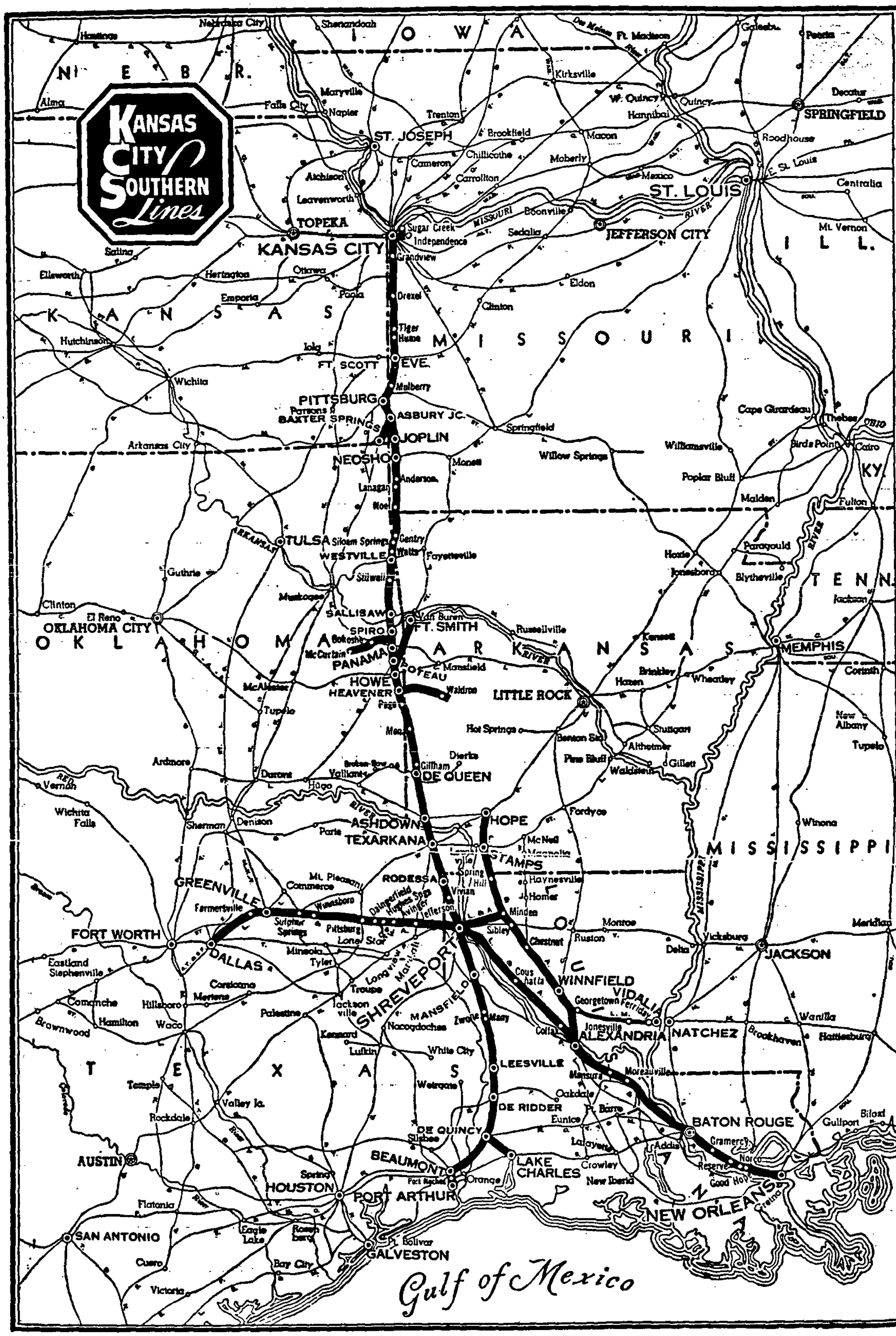
KANSAS CITY SOUTHERN Lines
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NEBR.
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Gulf of Mexico
ST. JOSEPH
KANSAS CITY
TOPEKA
ST. LOUIS
SPRINGFIELD
JEFFERSON CITY
FT. SCOTT
EVE
PITTSBURG
BAXTER SPRINGS
ASBURY JC.
JOPLIN
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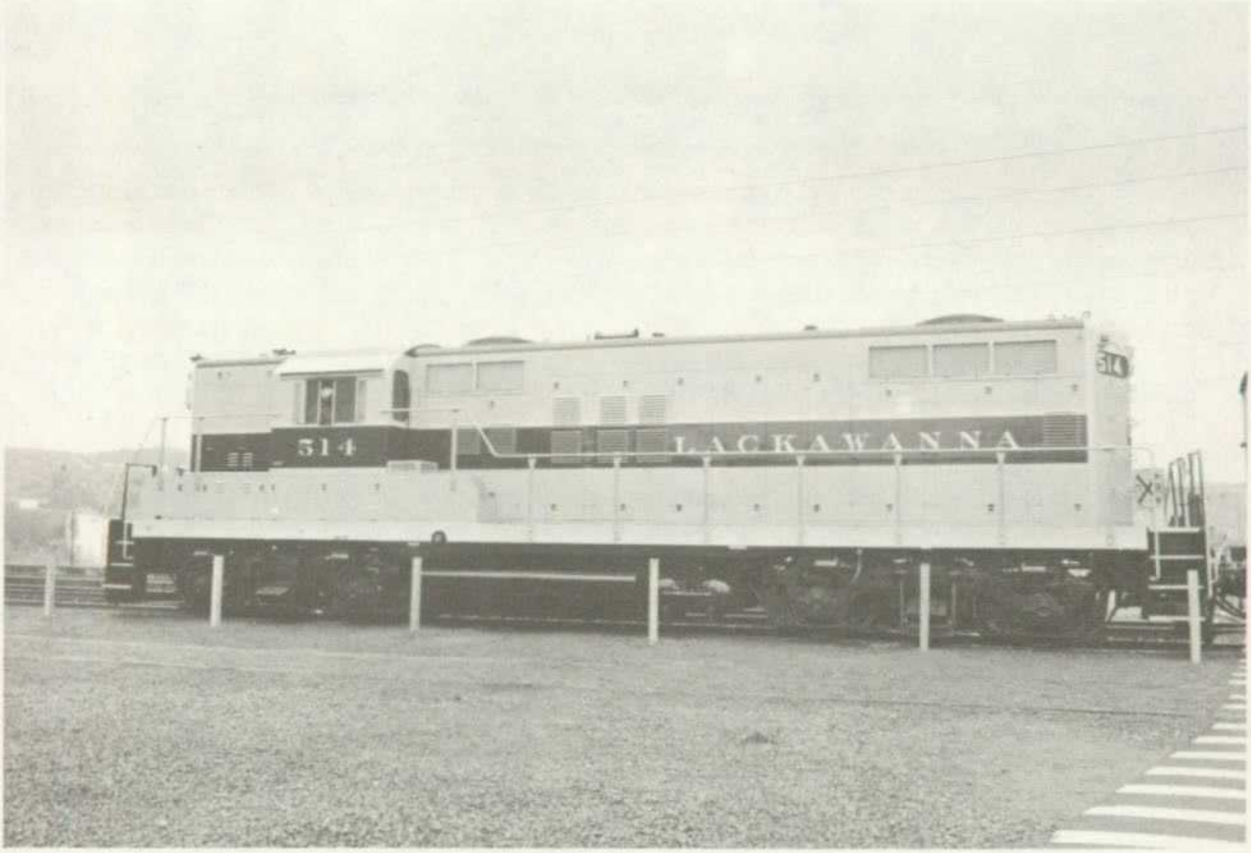
TULSA
WESTVILLE
SALLISAW
SPIRO
FT. SMITH
PANAMA
POTEAU
HOWE
HEAVENER
LITTLE ROCK
DE QUEEN
ASHDOWN
TEXARKANA
HOPE
STAMPS
RODESSA
OKLAHOMA CITY
GREENVILLE
FORT WORTH
DALLAS
SHREVEPORT
MANSFIELD
WINNFIELD
VIDALIA
NATCHEZ
ALEXANDRIA
LEESVILLE
DE RIDDER
DE QUINCY
BEAUMONT
LAKE CHARLES
PORT ARTHUR
HOUSTON
GALVESTON
SAN ANTONIO
AUSTIN
BATON ROUGE
NEW ORLEANS
MEMPHIS
JACKSON

NEW YORK, CHICAGO AND ST. LOUIS RAILROAD NO. 514



Owner(s): New York, Chicago & St. Louis Railroad
Norfolk and Western Railway

Road Number(s): 514
2514

Whyte System Type: 0-4-4-0 A.A.R. Type: B-B

Class: ERS-17E Model GP9

Builder: Electro-Motive Division, General Motors Corporation, La Grange, Ill.

Date Built: 1958

Builder's Number: 24505

Cylinders (diameter x stroke in inches): 8½ x 10

Boiler Pressure (in lbs. per square inch): Not applicable

Diameter of Drive Wheels (in inches): 40

Tractive Effort (in lbs.): Horsepower: 1,750

Tender Capacity: **Coal (in tons):** Not applicable
Oil (in gallons): 1,800

Water (in gallons):

Weight on Drivers (in lbs.):

Remarks:

New York, Chicago and St. Louis Railroad GP-9 Diesel-Electric Locomotive No. 514

History: The Norfolk Southern Corporation came to life in March 1982 with Interstate Commerce Commission approval to merge the Norfolk and Western Railway and the Southern Railway into one mostly end-to-end system, blanketing the southeastern United States from New Orleans, Louisiana; Mobile, Alabama; and Palatka, Florida, north to Washington, D.C., and to Memphis, Tennessee (principally the territory of the old Southern Railway), and from Norfolk, Virginia, westward through West Virginia to Cincinnati, Ohio, and as far as East St. Louis, Illinois (largely the territory of the old Norfolk and Western Railway).

Meanwhile, the transportation museum at Roanoke, Virginia, had obtained on loan from the Steamtown Foundation in Vermont for temporary exhibit the "A" Class former Norfolk and Western 2-6-6-4 articulated Locomotive No. 1218. Over a period of years that museum came to regard the locomotive as its property, not a loan, and the Norfolk and Western (N&W) eventually got into the matter when it desired to overhaul the locomotive for operation for publicity purposes, railfan excursions, and other special events. While the Steamtown Foundation apparently had a clear title to the locomotive and the Roanoke museum did not, the N&W put further pressure on the Steamtown group by indicating it would never allow the locomotive to move over its rails out of Roanoke, effectively the only way Steamtown could get it back. Since Steamtown had no answer to this stand, and was by then in the process of moving to Scranton, Pennsylvania, the Steamtown Board decided to accept two diesel-electric locomotives from the Norfolk and Western, which by then had come under the corporate umbrella of the Norfolk Southern, in exchange for giving the Norfolk Southern clear title to No. 1218.

Before creation of the Norfolk Southern, the Norfolk and Western had recently merged with the old Nickel Plate Road, known by the corporate name of New York, Chicago and St. Louis Railroad, and with the Wabash Railroad, acquiring from those firms not only their track but all their locomotives, which left the consolidated Norfolk and Western and eventually the Norfolk Southern with surplus and somewhat out-of-date motive power. Thus it proved no problem for the Norfolk Southern to come up with a Nickel Plate GP-9, No. 514, and a former Wabash SW-8 switcher to offer in exchange for No. 1218, a small price to pay for so valuable and rare a steam locomotive.

The Norfolk and Western GP-9 locomotive that the Norfolk Southern traded to Steamtown (the SW-8 is treated in a later section of this study under the heading Wabash Railroad) had been built in 1958 for the New York, Chicago and St. Louis Railroad, but carried the lettering, as had long been the custom even in the days of steam locomotives, of that railroad's nickname: "Nickel Plate Road." A general purpose B-B type diesel-electric, equivalent to a road switcher, it had been built by the Electro-Motive Division of the General Motors Corporation at La Grange, Illinois. The locomotive was the fifth in the ERS-17e class of 20 locomotives numbered 510 through 529. Weighing 245,800 pounds, the locomotive put out a tractive effort of 61,450 pounds.

The operational history of this locomotive has not been researched, but as Jim Boyd and M.C. McIlwain observed in their 1967 article on the line, the Nickel Plate Road "was a bridge-route freight hauler in the most competitive market in the country." Between the Illinois traffic "gateways," or connections with other railroad systems, and Buffalo, New York, the Nickel Plate had the reputation of providing fast service. During the 1950s its classic fast Berkshire steam locomotives regularly outran the diesel-electric locomotives of its competitors, especially the New York Central, the Erie and the Wabash, a situation that created little enthusiasm for early conversion to diesel-electric locomotives. Consequently, although the New York, Chicago and St. Louis bought diesel-electric yard switchers as early as 1940, it bought no road units until the 1950s. This relatively late acquisition of main line diesel-electric motive power spared the Nickel Plate the era of diesel experimentation in the 1940s that, as Boyd and McIlwain pointed out, "cluttered the rosters of most other roads" with oddball, experimental, and less-than-satisfactory locomotives. When finally it bought diesel-electric locomotives, completing dieselization of its motive power roster in 1958, the Nickel Plate invested conservatively in Alco PAs for passenger trains and hood units for all freight service: Alco or EMD B-B types (with two pair of four-wheel trucks each) for main line traffic and secondary line freight hauls, and C-C units from the same builders (featuring two six-wheel power trucks each) for use in the coal fields of southern Ohio. No. 514 counted among the B-B units used on main lines and secondary freight lines.

In 1966, the old New York, Chicago and St. Louis, the famed Nickel Plate Road, lost its identity through merger into the Norfolk & Western Railway. At the same time, the N&W swallowed the Nickel Plate's old adversary, the Wabash Railroad, creating a system under the N&W name that stretched from Norfolk, Virginia, and Hagerstown, Maryland, to Buffalo, New York; Chicago, Illinois; and St. Louis, Missouri (or to be absolutely precise, across the river from it to East St. Louis, Illinois), including most of the territory between such points.

The Norfolk and Western Railroad had been organized on January 15, 1896, under the laws of the Commonwealth of Virginia to succeed the old Norfolk and Western Railroad, which it did on September 24, 1896. That company had been incorporated on May 3, 1881, to take over the Atlantic, Mississippi and Ohio River Railroad, which had defaulted on payment on bonds. The latter company had come into existence on November 12, 1870, as a consolidation of the Norfolk & Petersburg Railroad, chartered on March 15, 1851 and opened for business in 1852; the South Side Railroad, chartered in 1846 and opened for business in 1854; and the Virginia & Tennessee, chartered in 1849 and opened for business in 1857. So the Norfolk and Western's antecedents predated the Civil War.

The Norfolk and Western, on merging with the Nickel Plate and the Wabash, renumbered the motive power of the three roads into a compatible system, which required renumbering the 510 series Nickel Plate diesels into the 2510 through 2529 series, wherein No. 514 became No. 2514. A second renumbering by the Norfolk and Western did not affect this particular locomotive, which remained No. 2514. After coming under the Norfolk Southern umbrella, the Norfolk and Western retired No. 2514 on April 5, 1985, and gave it to the Steamtown Foundation in Scranton, Pennsylvania, which promptly repainted it to Nickel Plate colors and lettering, still later repainting and relettering it fictionally as a Lackawanna locomotive so it would be compatible with the steam locomotive and passenger cars used on the excursions out of Scranton to Elmhurst and later Moscow and Pocono Summit.

Condition: This locomotive is basically operational.

Recommendation: No. 514 is used by Steamtown NHS as its basic shop and yard switcher, since it is far easier to maintain and operate for these limited operations than any steam locomotive in the collection. It should be repainted and relettered in a historically accurate Nickel Plate Road color scheme.

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Owner(s): Wabash Railroad
Norfolk and Western Railway

Road Number(s): 132
3132

Whyte System Type: 0-4-4-0 A.A.R. Type: B-B

Class: D-8 Model SW-8

Builder: Electro-Motive Division, General Motors Corporation, La Grange, Ill.

Date Built: February 1953

Builder's Number: 17593

Cylinders (diameter x stroke in inches): 8½ x 10 (eight)

Boiler Pressure (in lbs. per square inch): Not applicable

Diameter of Drive Wheels (in inches): 40

Tractive Effort (in lbs.): Horsepower: 800

Tender Capacity: **Coal (in tons):** Not applicable
Oil (in gallons): 600

Water (in gallons):

Weight on Drivers (in lbs.): 232,100

Remarks: This SW-8, 800-horsepower diesel-electric locomotive featured a Model 8-567B 45 degree "V"-form engine.

Wabash Railroad SW-8 B-B Switching Locomotive No. 132

History: The Wabash Railroad after World War II consisted of an Ohio company incorporated September 2, 1937, to reorganize a bankrupt Wabash Railway; on March 15, 1941, it completed a reorganization plan for the purpose, and soon the booming World War II traffic helped the company back to solvency.

The oldest antecedent of the Wabash was the Northern Cross Railroad, chartered about 1837 to run from Quincy, Ohio, to the Indiana state line. This grew into the Toledo, Wabash & Western Railway, whose 678 miles of track its management reorganized in 1877 as the Wabash Railway Company. Two years later it merged with the St. Louis, Kansas City & Northern Railway that added 778 miles west of the Mississippi to the new firm, now named the Wabash, St. Louis & Pacific Railway. By 1889, the railroad had grown to about 3,518 miles of track, at which time it reorganized yet again, this time emerging as the Wabash Railroad Company.

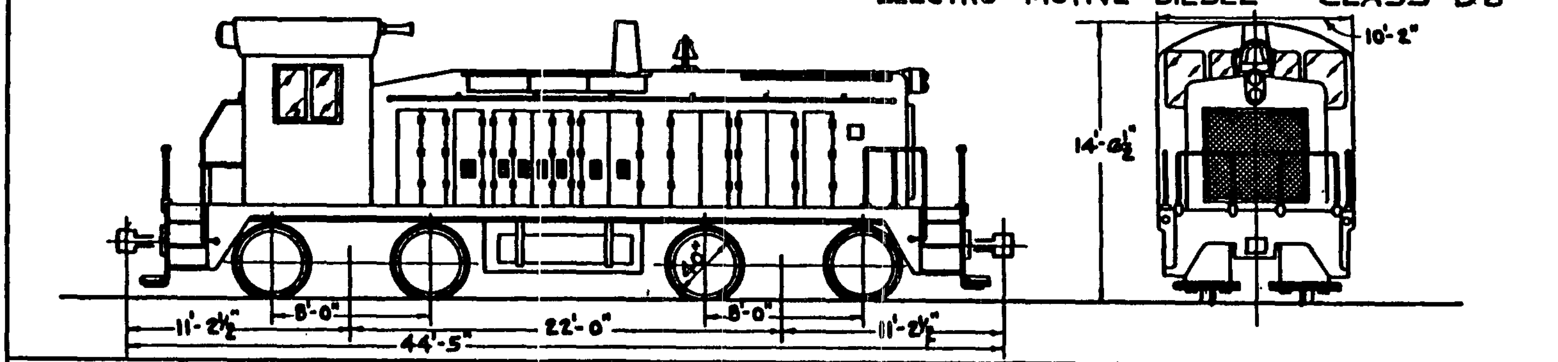
Bankruptcy of this company about 1915 resulted in sale under foreclosure on July 21 of that year and its reorganization on October 22, 1915, as the Wabash Railway Company. It was this company that went into bankruptcy during the Depression.

After World War II, the Wabash Railroad Company commenced, in 1949, its program of fully replacing steam with diesel-electric locomotives. At that time it owned two diesel passenger locomotives and 40 diesel switchers. The Wabash retired its last steam locomotive from service on August 11, 1955, completing conversion to diesel motive power. By December 31, 1961, the company had 322 diesel units, including 22 passenger, 141 freight, 53 road switchers, and 106 switchers, representing an investment of $47,000,000. At that time the railroad operated in Michigan, Ohio, Indiana, Illinois, Missouri, and Iowa a total of 1,995.11 miles of main line, with trackage rights over 424 more. The east-west main line extended from Buffalo, New York, westward north of Lake Erie to St. Louis and Kansas City, Missouri, with other main lines to Chicago, Toledo, Des Moines, and Omaha. By 1961 a Pennsylvania Railroad subsidiary owned a controlling 62 percent of Wabash stock.

Among the 106 diesel switchers the Wabash had acquired, nine were EMD Model SW-8 800-horsepower diesel-electrics that the Wabash classed as D-6 type. Numbered among the series 120 through 132, along with some locomotives from another builder, the first two of these came out of the Electro-Motive Division Shop in October 1950, two in September 1951, and the last five in February 1953. One of the last group, possibly No. 132, photographed in St. Louis, Missouri, on November 27, 1965, is believed to be the locomotive now at Steamtown. Rated at 800 horsepower at 800 revolutions per minute, this was a standard "BB" or two four-wheeled-truck switching locomotive.

On October 15, 1964, the Wabash Railroad merged with the New York, Chicago & St. Louis Railroad (the "Nickel Plate Road") and the Norfolk and Western Railway under the name of the latter. In the reorganized motive power roster of the Norfolk and Western, No. 132 is believed to have become No. 3132.

LOCOMOTIVE MODEL SW-8 | ELECTRO-MOTIVE DIESEL – CLASS D8



NO. OF ENGINES– 9	
ENGINE NO'S.	120, 121, 125, 126, 128-132 INC.
BUILDER– ELECTRO-MOTIVE DIV. OF GMC.	
YEAR BUILT	SEE PAGE 5.
TRACTIVE POWER	
FACTOR OF ADHESION	
LOADED WEIGHT	
TRUCK JOURNAL SIZE– 6½" x 12"	

TANK CAPACITIES IN GALLONS		
	FUEL OIL	600
	LUBRICATING OIL	148
	COOLING WATER	190

SAND BOX CAPACITY– 28 CU. FT.
MINIMUM CURVE RADIUS– 100 FT.
MAXIMUM PERMISSIBLE SPEED– 65 MPH.

ENGINE	
	BUILDER– ELECTRO-MOTIVE DIV.
	RATING– 800 HP. AT 800 RPM.
	MODEL– 8-567B – 45°-"V" FORM
	2 CYCLE– SINGLE-ACTING
	8 CYL'S.– 8½" DIA. x 10" STROKE
	SOLID INJECTION– UNIT TYPE
	ROOTS' TYPE BLOWER SCAVENGING

GENERATORS– ELECTRO-MOTIVE DIV.
TRACTION MOTORS– ELECTRO-MOTIVE DIV.
GEARS– 62 TEETH. PINION– 15 TEETH.
GEAR RATIO– 4.13 TO 1.

STORAGE BATTERIES		
	EXIDE	ENG'S. 120, 121, 125, 126
	GOULD	ENG'S. 128-132 INC.

AIR BRAKE EQUIPMENT		
	WESTINGHOUSE 6-BL	
	AIR RESERVOIRS– 2– 22½" x 84"	
	CYL'S.– 4– 10" x 6". DOUBLE-ACTING	
	CLASP TYPE SHOES– 2 PER WHEEL	
	COMPRESSOR	GARDNER-DENVER
		3 CYL. – TYPE WXE
		2 STAGE.
BRAKING POWER	TOTAL PRESSURE– 342,000 LBS.	
	PER CENT– 148	
	CYL. PRESSURE– 100 LBS.	

DRAFT GEAR– NATIONAL MALLEABLE M-375
SANDERS– GRAHAM-WHITE
IMMERSION HEATERS– SEE PAGE 2-1.
HEADLIGHTS– PYLE NATIONAL– C-14685

REVISED 1951 1952 1954 1956 1957 1958 1961 1963

A Wabash Railroad locomotive diagram providexl the statistics on Class D8 EMD SW-8 diesels in 1963.

Like the Wabash, the Nickel Plate Road had a long history in the 19th century, and also like the Wabash, had been in and out of reorganizations symbolized, as often was the case, by the change in the last word of the railway's name from "rail*road*" to "rail*way*" and vice versa through the years. The New York, Chicago & St. Louis Rail*way* of the 19th century went into bankruptcy in the depression of the 1880s, and on May 19, 1887 was sold to investors who on September 17, 1887, incorporated the New York, Chicago & St. Louis Rail*road* in New York, Pennsylvania, Ohio, and Indiana. The New York Central owned a controlling block of stock for many years, until on July 6, 1916, the New York Central sold the Nickel Plate to interests represented by the brothers O. P. and M. J. Van Sweringen. The Van Sweringens reorganized the company as the New York, Chicago & St. Louis Rail*way*, resurrecting the pre-1887 name, in April 1923 in order to swallow a number of subsidiary railroads. The Nickel Plate Road operated trains from Buffalo, New York, to St. Louis, Missouri, touching at Wheeling, West Virginia; Chicago and Peoria, Illinois; Indianapolis, Fort Wayne, and Muncie, Indiana; and Canton, Cleveland, Toledo, and Zanesville, Ohio.

Under an Interstate Commerce Commission plan for nationwide railroad consolidation, the Chesapeake & Ohio Railroad obtained control of the New York, Chicago & St. Louis, but disposed of that control in 1947. For a while, in connection with the Erie-Lackawanna, the Nickel Plate offered the shortest rail route from Buffalo to St. Louis.

Similarly, the Norfolk and Western Railway had played corporate musical chairs with its name, though not as many times as the Nickel Plate. The old rail*road* had gone under during the depression of the Gay Nineties, a Norfolk and Western Rail*way* having emerged on September 24, 1896. It operated 2,747.56 miles of track from Norfolk, Virginia, west through the soft coal fields of West Virginia on to Columbus, Ohio, with branches to Hagerstown, Maryland; Norton, Virginia; Winston-Salem and Durham, North Carolina; Bristol, Tennessee; and Cincinnati, Ohio. During the late 1950s, the N&W dieselized faster than any other Class 1 railroad in the United States, and in a mere five years dropped the fires forever on one of the most modern fleets of steam locomotives in the United States.

The Interstate Commerce Commission consolidation plan assigned the Norfolk and Western Railway to the Pennsylvania Railroad group, under whose control the N&W fell for a number of years. On May 14, 1959, the N&W merged the proud old Virginian Railway into its system, and another famed railway name vanished from the pages of the *Official Guide*.

By the end of 1961, the company had 576 diesel-electric locomotives (and 19 electric from the old Virginian). On March 17 of that year, the Norfolk and Western Railway filed an application with the Interstate Commerce Commission, asking sanction for a merger of the N&W and the Nickel Plate Road. What emerged on October 16, 1964, was the merger of the Norfolk & Western not only with the New York, Chicago & St. Louis, but also with the Wabash and the Pittsburgh and West Virginia, the enlarged company to operate under the Norfolk and Western Railway name. Thus, more names of major railroads faded from the pages of American industrial history.

The history of the little SW-8 switching locomotive built in February 1953 has not been researched, but its character limited it pretty much to the role of yard switcher. In 1983, the N&W renumbered it 3732 to avoid numbers conflicting with those of an SD-45. Whether the merged company used it much, or moved it to serve elsewhere than St. Louis, if in fact that was its home station, is unknown. Nor does the record indicate its later disposition until in 1987 it came to Steamtown, where the Steamtown Foundation repainted it in Lackawanna colors and gave it the number 500, a fictional number and color scheme for a locomotive that had no historic connection with the Delaware, Lackawanna & Western Railroad.

Condition: This locomotive is repairable for use in switching.

Recommendation: When required, this diesel-electric switcher will prove useful around the Scranton railroad yard, for a diesel can be started much more easily than a cold steam switcher can be steamed up. It should be repainted in its original Wabash color and lettering scheme.

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INDEX TO LOCOMOTIVES BY NAMES OF OWNING COMPANIES
American and Canadian Locomotives

INDEX BY LOCOMOTIVE NUMBER FOR ALL COMPANIES
American and Canadian Locomotives

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