

R&LHS Newsletter

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Annual Meeting Official Notice

The Annual Meeting of the Railway & Locomotive Historical Society, Inc. will be held on the morning of June 13, 2004, from 9:00 AM to 11:00 AM at the Marriott Hotel, 247 24th St, Ogden, Utah. A slate of Directors will be presented for approval by R&LHS members in attendance. A full breakfast will be available at the beginning of the Annual Meeting at a charge of \$15.00 per person, payable in advance or at the door.

This year, the R&LHS Annual Meeting is being held at the Marriott Hotel in downtown Ogden, Utah, with trips to Promontory Summit for a private reenactment of the Golden Spike Ceremony, to Heber Valley RR and to other historical locations in the area. R&HS

Membership Matters

Membership applications, change of address and other membership status inquiries should be sent to R&LHS - Membership, William H. Lugg, Jr., PO Box 292927, Sacramento CA 95829-2927.

Research Inquiries, back issues, rosters, etc.

Source materials printed, manuscript and graphic are included in the Society's Archives. Inquiries concerning these materials should be addressed to R&LHS Archives Services, PO Box 600544, Jacksonville, Florida 32260-0544. To help expedite our response, please indicate a daytime telephone number where you can normally be reached.

Full membership services listing will again appear in the next issue.

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Newsletter Notes

Welcome to the new size which will now fit between your copies of RRH. This size permits increased area and better paper for the same cost due to the economy of signature (8 or 16 pages at once) printing. The text is still the same size for easy reading. Most illustrations are the same size although some are rotated, or slightly reduced in size (6 instead of 7½ inches in width).

It also allows more space for articles, either in length or in quantity. Now there's a hint if I ever saw one! Need end notes, tables, bibliography? No problem. Go for it!

The late John F. Humiston sent me the article on closed loops with the last update on March 20, 2003. As he did not get a chance to proofread my editing, I hope that this is the way he wanted it. A well deserved tribute to the man.

The R&LHS Awards presentations will probably be in Kansas City, Missouri, during the Lexington Group convention September 29 through October 2, 2004. More info later. Forms for the Awards are in this issue.

There is still time to get in front of the camera at Promontory Summit, so register now and make plans to go. Free drawing for cab rides at Promontory, vouchers for Trains

COVER PHOTO: AMC designed Pere Marquette Berkshire #1215, leads two PM stock cars, on a westbound freight out of Oak Yard, Detroit, heading for Grand Rapids. In the foreground are dwarf signals and electrically operated derails. Photo by Robert A. Hadley, ca. 1946. Clifford J. Vander Yacht collection. Note: The platform, seventeen inches above the pilot beam, was a "signature" of designer Trumbull. It appears on the Erie, NKP and PM 2-8-4s, on the C&O T-1s and on the first order of C&O 4-8-4s (class J-3). By having it, Trumbull was conforming to the 1915 ARA rule stating "Locomotives having headlights which cannot be safely and conveniently reached from the pilot beam ... shall be equipped with ... steps suitable for getting to and from such headlights." Also note the substantial step near the lower smokebox hinge (and on the other side) for access to the classification lights.

Unlimited Tours, and maybe some tickets to the Northern Nevada railroad at Ely. Both shuttle transportation companies listed in the convention announcement also pick up at the Amtrak terminal as well as the airport. In addition there is another shuttle service: Utah Shuttle Services <www.utahshuttle.com> (801) 393-5438, . To have transportation, one needs reservations ahead of time. The shuttle services make it a point to keep track of Amtrak arrival times.

A. G. Trumbull: Locomotive Designer

by Eugene L. Huddleston

"An institution is the lengthened shadow of one man." — Ralph Waldo Emerson, 1841



Alonzo. G. Trumbull upon retirement in 1947.

EMERSON'S ESSAY on self-reliance might seem out of date in the twenty-first century, for many admirers of steam locomotives today look at these skillfully crafted machines quite unaware of their designers as individuals. This is to be expected because most steam locomotive designs in twentieth century America were either borrowed or originated by difficult-to-identify engineers representing both railroad company and locomotive manufacturer. But self-reliant individuals are rightfully associated with some outstanding designs, such as Paul W. Kiefer of the New York Central, Otto Jabelmann of the Union Pacific, William F. Kiesel of the Penn-

sylvania, John Pilcher of the Norfolk & Western, and Will Woodard of the Lima Locomotive Works. The stories of these American designers, known and unknown, deserve telling more than they have, especially those designers working under the mysterious rubric of the "Advisory Mechanical Committee" (AMC).

The AMC was formed in the late 1920s for the four major roads under control of the Van Sweringen brothers of Cleveland in order to standardize and rationalize the mechanical procedures and designs of the four roads, which otherwise operated independently of each other. Even though in 1947 the Pere Marquette (PM) had just been merged into Chesapeake & Ohio (C&O), the Nickel Plate (NKP) had gone its own way the same year and the Erie had become bankrupt in 1938, documents show the AMC lasting into 1949. The AMC was far from being just a pipe smoking bunch of distinguished but nondescript senior engineers. Investigation discloses it left a "paper trail" which traced down today reveals a structure requiring a formal chain of command and an extensive body of employees to assure smooth flow of data. And what a collection of data it was! The "Standard Maintenance Equipment Instructions" (known as

SMEI'S) showed that the "Committee," between projects, was busy turning out detailed descriptions covering every aspect of car and locomotive upkeep, construction, and operation. What is more, the AMC's collection of drawings and printed matter shows that the committee had practically complete control over construction of rolling stock and locomotives for C&O, Erie, NYC&STL (NKP), and PM (in the order presented on AMC plans and documents).

Among the most notable of the locomotive designs were 40 Texas and 60 Allegheny type locomotives for C&O, plus 80 Berkshires (2-8-4) for the Nickel Plate, built by Alco and Lima, that were copied so often and so successfully that in the words of English locomotive historian Philip Atkins, the Van Sweringen Berkshires came nearest to "a modern U. S. standard steam locomotive design, although individual batches varied considerably in detail."1 Yet most historical accounts of locomotive development either fail to mention the committee or mention it without identifying its members. Because so little is known about the Advisory Mechanical Committee, the question naturally arises as to the identity of the selfreliant individual on that committee most responsible for its great design achievements.

That person is Alonzo G.

Trumbull, chief mechanical engineer of the committee from its formation to 1947. But one would never know this from reading most accounts of the histories of the locomotives turned out under the auspices of the AMC. Either the accounts fail to mention the AMC, thereby assuming the road's own mechanical department was in charge of the design, or since its chief designs were in the Super Power category — and built by Lima Locomotive Works — that the Super Power originator at Lima Locomotive Works, Will Woodard, was responsible. Or, some accounts, genuinely trying to give the AMC its due, look to William G. Black because of releases from C&O's publicity department that put him in the forefront.

Alonzo G. Trumbull had the education and experience to stand out from other men on the Committee, whether college trained or selfeducated. He was also the only member of the committee having the continuity of tenure to participate in the designs of all the Super Power locomotives that have the stamp of the AMC on them. Born in Hornell, New York, he attended Cornell University, where he was a member of Sigma Chi fraternity and where he met his future wife. He obtained his degree in mechanical engineering in 1899 and entered railroad service on the Erie.² Cornell

must have had a fine engineering program, for getting their degrees there in the same general period were Ralph Johnson, future chief engineer at Baldwin Locomotive Works and author of The Steam Locomotive (1944), and William G. Woodard, designer of the first Super Power steam locomotive as well as innovative inventor. In 1903 Trumbull was promoted to Mechanical Engineer and in 1905 became assistant mechanical superintendent at the Meadville, Pennsylvania, shops. From there, beginning in 1907, he worked his way up in the motive power department to general mechanical superintendent. In 1922 he was named chief mechanical engineer, headquartered in New York. He kept the same title, when early in 1929 he moved to Cleveland to serve on the AMC until 1947, when he retired.3 Railmay Mechanical Engineer for December, 1929, documents

Trumbull's authority: "Mr. Trumbull will have supervision over the mechanical engineering forces for the advisory mechanical committee, with headquarters at Cleveland, Ohio."

One might wonder why Trumbull did not participate in the fanfare accompanying completion of Lima's largest locomotive and one that proved in 1943 to have produced the highest horsepower in the field of any steam locomotive. The reason probably is that Trumbull was uncomfortably aware of the weight problem that had developed with the first ten 2-6-6-6s under construction. Certainly he was present for group pictures on completion of the second order of Pere Marquette Berkshires earlier in 1941. One must assume Trumbull had no part in the weight deception practiced by his boss D. S. Ellis, for C&O's assistant general attorney of law left Trumbull's name out of his lengthy official account of the scheme to falsify the weights at the Lima plant.5

Fortifying the contention that Trumbull was the man behind the superior designs of the AMC requires clarifying the roles of two men on the Committee who might be construed as Trumbull's "boss."



D. S. Ellis

One is of course Daniel Ellis. For the years 1932 to 1943, Ellis's signature appears on AMC document approval pages right below Trumbull's. "Chief Mechanical Officer" would seem to be an administrative post, and Ellis's role in overseeing construc-

tion of the first 2-6-6-6s (as presented in *The Allegheny, Lima's Finest*) bears that out. Ellis was a selfmade industrial executive, and often gave papers at national engineering conventions. Ellis graduated from high school in Warwick, New

York. After a stint as clerk on the Lehigh and Hudson River, he moved on to the New York Central as clerk in the office of auditor of freight accounts. Later he became a machinist, then "assistant engineer of motive power" for NYC. In 1929 he was named



William G. Black

sales manager of the Railroad Division of Worthington Pump and Machinery Co. According to his entry in Who's Who in Railroading, in 1932 he became "engineer of motive power" (standard title for entry into AMC upper ranks) for AMC, and in 1936 (by his own account) "mechanical assistant to vice-president, C&O, NKP, and PM. (Since the Chief Mechanical Officer reported to a vice-president, he could presumably honestly use this title.) On April 30, 1943, Ellis left C&O (and AMC) and became Vice-President Manufacturing for Lima Locomotive Works, keeping his Cleveland address.6 One can guess that Ellis's rise in locomotive manufacturing industry was predicated more on his function as an "efficiency expert" than on being a creative engineer.

The same guess holds true for the only other man to hold a position superior to Trumbull's. William G. Black apparently held firmly

to the coattails of the famed "Doctor of Sick Railroads," John J. Bernet, for he went with him to the Erie when Bernet (who had been President of the NKP since 1916) assumed its Presidency January 1, 1927. Black is important enough to the story of the AMC de-

signers to require quoting background on him (from Railway Mechanical Engineer) prior to Bernet's naming him "mechanical assistant to the president" on assuming the Erie's Presidency: "His early education was received in the grammar schools and supplemented with a business education at Metropolitan Business College, Chicago. In 1893 Mr. Black entered the service of the Nickel Plate and served a machinist apprenticeship at its Stony Island shops, Chicago. After completing his apprenticeship he entered Armour Institute, Chicago, in 1897 for the purpose of taking a post graduate mechanical course. ... On February 10, 1893, Mr. Black reentered the service of the Nickel Plate as a machinist and was promoted to machine shop foreman July 1, 1903." In the next twenty years Black rose to be superintendent of motive power for the Nickel Plate.⁷

We know nothing objectively of

Black's career from his going to the Erie with Bernet to his death. We do know something, but it is strongly colored by the "spin" given it by a well known Van Sweringen lines publicist. Black died in 1936 at age 59, following a two-month



John J. Bernet

illness. Writing a full page obituary in the C&O employees' magazine The Rail was L. C. Probert, brilliant public relations man (with title of a C&O Vice-President) who originated the "Chessie Cat" logo and the slogan "Sleep like a kitten." Probert put the best light possible on Black's career, perhaps as a kindness to Black's son and widow. For example, Probert wrote: "Black first came to the notice of the late John J. Bernet, when the latter, as president of the Nickel Plate Road, engaged in its rehabilitation, wanted some locomotives designed. The two men saw eye to eye for higher steam pressures, greater boiler capacity, greater coal and water capacity, higher speeds, and greater pulling power." This makes NKP's improvements in motive power in the 1920s more progressive than they really were. When in 1923 Black became head of NKP power, the road had already started buying copies of the USRA light Mikado, which it

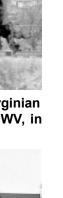
had received as originals in 1918. According to George Drury, NKP bought 61 copies between 1920 and 1924. "The first five," he added, " carried minor improvements in the boiler and firebox, plus cast trailing trucks." The biggest improvements were

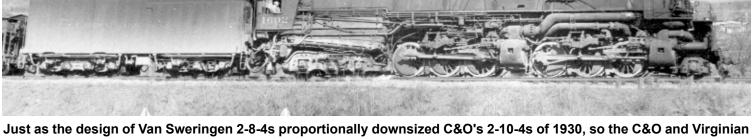
on engines 616-671: booster engines on the trailing axle. These achievements in motive power hardly justify Probert's claims, either about Black's tenure as head of Nickel Plate power, or his time on the Erie, or on the AMC, where he supposedly "worked wonders on motive power and equipment," according to Probert.

The main reasons for ruling out Black as designer of AMC motive power is his being "kicked upstairs" to vice-president of C&O, NKP, and PM following his appointment to the AMC, the absence of his name on approval forms issued by the AMC, and the Erie influence in the styling of the locomotives designed by the AMC during the 1930s from the C&O T-1 through the NKP and PM 2-8-4s, and first order of C&O 4-8-4s. When Black went to the Erie with Burnet early in 1927, his title was "mechanical assistant" to Burnet. When Black went with Burnet to Cleveland in May, 1929, he kept the same title, with Burnet assuming Presidency of the C&O, NKP, and PM, a position he held until his death in 1936. The next change in Black's status, as reported in Railway Mechanical Engineer was in November of 1931 with his appointment as "assistant vice-president of the C&O and Pere Marquette [and later NKP] with jurisdiction over purchases and stores matters."10 Trumbull and Black had given papers at the June 1931 Convention in Chicago of the Mechanical Division of the ARA, Black as "Mechanical Asst. to President, C&O," Trumbull as "Chief Mechanical Engineer, C&O." By November of 1931, Black had gone to Purchases and Stores. For a mechanical man, whose career focus had been on the workings of machinery, to be suddenly transferred to a chief bookkeeping job must have been disheartening. That he was no longer in the loop regarding motive power is confirmed by absence of his name on project approval forms from the AMC, either as a railroad representative or as an officer of the AMC. In tracing the

interesting presence of Erie design details (and Erie class designations) in the first two jobs for the AMC — the C&O 2-10-4 of 1930 and the NKP 2-8-4 of 1934 — we can see the hand of Trumbull, not Black. The Erie had been good to Trumbull. Regardless of his new salary as CME of the AMC, it must have been hard to take up roots and move to Cleveland. If Black had allegiance, it must have been to the NKP, where he had risen from machinist apprentice to superintendent of motive power. It is only speculation, but there could have been tension between Trumbull and Black over the direction of the AMC. Trumbull's temperament is unknown, but Probert's fulsome obituary speaks of Black's "brusque exterior and a great and tender heart."

Further supporting Trumbull as the "brains" behind the outstanding AMC designs is the similarity in appearance (and in class designation) of C&O's 2-10-4 of 1930 with the huge 2-8-4s he had designed for the Erie beginning in 1927, for that is where his loyalty was, probably until the bankruptcy of the Erie in 1938. The fact, too, that Erie clearances (originally graded for 6 ft. gauge) permitted Trumbull to "think big" in designing steam engines is another bit of evidence supporting Trumbull. An impressive item on Trumbull's resume that might be overlooked is his appoint-





Just as the design of Van Sweringen 2-8-4s proportionally downsized C&O's 2-10-4s of 1930, so the C&O and Virginian 2-6-6-6s of 1941-48 proportionally enlarged them. This 2-6-6-6, 1602, heads up Kanawha River at Mt. Carbon, WV, in March 1953. Photo by E. L. Huddleston, Collection C&O Historical Society #448.



Class K-4, 2709, built by Alco in 1943, runs west along the Ohio River west of Greenup, Kentucky, in April 1953. Cab on C&O's 2-8-4 is slightly larger than on NKP's or PM's 2-8-4. Photo by E. L. Huddleston, Collection C&O Historical Society #1790.

ment in 1918 to a committee, representing fourteen railroads, to help design the twelve classes of steam locomotives for allotment to the nation's railroads during World War I under auspices of the United States Railroad Administration.¹¹

The prominence of the Erie in the first work of the AMC is evident not just in locomotives but in freight cars as well. Who was specifically responsible for these designs is unknown, but from the start the AMC turned out plans and data on freight cars as well as locomotives. And Jeffrey Koeller has noted, 'The Erie mechanical department had already [before-founding of the AMC] developed their version of the 1923 ARA box car design, which became the prototype for the Erie-PM-C&O cars built in 1930 [under auspices of the AMC]."12

The only competitor remaining to contest Alonzo Trumbull for title of chief designer for the Advisory Mechanical Committee is Will Woodard of Lima Locomotive Works of Lima, Ohio. For many locomotive historians, Lima Locomotive rises above its competitors, Baldwin of Philadelphia and American (Alco) of Schenectady, New York, by virtue of its inventing "Super Power" locomotives and in adhering to a Midwestern work ethic that prized quality over volume. To these historians, Lima must have had a big hand in the C&O, PM, and NKP designs because almost all Super Power steamers produced for these roads came from Lima. True, Lima engineers worked closely with AMC engineers. AMC staff could take turns riding a business car from a siding at Cleveland's Terminal Tower to a spur near Lima's office building reserved for office cars. Certainly it was a privileged way to travel. Eric Hirsimaki, in his history of Lima, gives another reason for AMC usually granting Lima its locomotive contracts: "While the builder's bid was important," Eric noted, "it wasn't necessarily the deciding factor." Sometimes a builder would be on the railroad's lines, and thus be both a potential supplier and shipper.¹³ Such was the case with Lima. The fact that Will Woodard had originated the concept of Super Power at Lima in 1925 leads some historians to assume he had a hand in the specific designs of the AMC. (Of course, Lima had its own in-house designs that Woodard did have a hand in.) However, Woodard (who died in 1942) made a condition of his employment as Lima Vice-President that he work out of New York City. His assistant, J. Edgar Smith (Railroad, 1974) told of productive days - mostly with poppet valves not with specific contracts — at their office at 17 East 42nd St. Woodard was a restless experimenter, having been awarded 92 patents on various mechanical fea-



tures of steam and electric locomotive design. 14 Among achievements that led to his honoring by the National Association of Manufacturers in 1940 were development of lateral motion driving boxes and "constant resistance" engine and trailing trucks.

If that "lengthened shadow" at the AMC is cast by Alonzo Trumbull, it would be carrying self-reliant individualism too far in not giving credit to those men (there were no women so far as we know) who worked with and under Trumbull in designing AMC's "giants of the rails." It is hard to trace down the engineering staff of the AMC, but besides Black, Trumbull, and Ellis, there were at least the following serving at one time or another during the existence of the AMC: D. J. Sheehan, F. J. Herter, J. B. Blackburn, Mike Donovan, T. P. Irving, and E. R. Hauer (not necessarily in that order). Herter and Irving held the title of "engineer of rolling stock" later changed to "engineer car construction." The rest entered AMC service as "engineer [of] motive power." Probably the most impressive of these lesser men was Ed Hauer, who took over Trumbull's job (for the short time it existed) after Trumbull's retirement. Hauer, graduate of the Mechanics Institute in Richmond, Virginia, worked for both Lima and C&O before joining the AMC. He took leave from the AMC to serve as Assistant and Associate Director of the Office of Defense Transportation from April 1942 to July 1944.¹⁵

While credit is being given, it is well to note that there would have been no AMC without John J. Bernet. Certainly the Van Sweringen brothers of Cleveland in putting together their railroad empire could sense that he was the right man at the right time and made him president of the Nickel Plate. They knew nothing about railroad operations and management. Bernet did. And upon going to the Erie, he made motive power central to his rehabilitation of the road. Herb Harwood, in *Invisible Giants* (2002), makes this clear: "From his earliest Nickel Plate days, Bernet was an emphatic believer in running heavier trains faster. In 1925, the Lima Locomotive Works ... had developed a new high-horsepower design, the 2-8-4 [Woodard designed] "Berkshire" type ... Bernet immediately saw its possibilities and ordered fifty [of larger design] for the Erie in 1927 and fifty-five more in the following two years ... Their effect on Erie operations was astonishing; ... compared to their predecessors, the new [Erie] Berkshires hauled 17 percent heavier trainloads using 32 percent less fuel — and improved running time by 34 percent."16 True, without the orders from Bernet there would have been no new designs. With the orders, as

C&O K-4 #2737 Alco 1943. Leaving Russell, Kentucky, eastbound with a set off and pick up manifest. Conductor rides behind engineer, head brakeman behind the fireman. October 1949. Photo by E. L. Huddleston, Collection C&O Historical Society #1357.



executed by Trumbull, there came into being the vaunted "Van Sweringen superpower" — to use Harwood's words — "that occupied the first ranks of steam design until steam gave way to diesel power."

Notes

- ¹ Philip Atkins, *Dropping the Fire: the Decline and Fall of the Steam Lo-comotive* (Irwell Press, 1999), p. 12.
- ²Who's Who in Railroading, 1946 ed. (New York: Simmons-Boardman, 1947), p. 704.
 - ³ Railway Age 122 (May 24,1947), 1103.
 - ⁴ Railway Mechanical Engineer, 103 (December 1929), 761.
- ⁵ Eugene L. Huddleston, "Doctoring the Scales: the Case of the Overweight Alleghenies," *Trains* 58 (December 1998), 78-85.
- ⁶ Who's Who in Railroading, 1946 ed. (New York: Simmons-Boardman, 1947), p. 205. See also Railway Mechanical Engineer 110 (March 1936), 133.
- ⁷ Railway Mechanical Engineer 101 (March 1927), 191. See also obituary in Railway Mechanical Engineer 110 (July 1936), 330.
- ⁸ The Rail (1936, n. p.). C&O and allied roads' publicity department "published Chesapeake & Ohio Lines Magazine, which later changed its name to The Rail and later to Tracks." (cited in Turner's Chessie's Road). See also in Chessie's Road (revised ed.) T. W. Dixon's account of Probert's creative publicity work.
- ⁹ George Drury, *Guide to North American Steam Locomotives* (Kalmbach Publishing Co., 1993), p. 281.
- ¹⁰ Railway Mechanical Engineer 101 (March 1927), 191. See also RME 105 (November 1931), 568, and RME 107 (June 1933), 231.
- ¹¹ Eugene L. Huddleston, *Uncle Sam's Locomotives: The USRA and the Nation's Railroads* (Bloomington: Indiana University Press, 2002), p. 7.
- ¹² Jeffrey M. Koeller, "C&O 1930 Box Car: Advisory Mechanical Committee—Part 3," *Mainline Modeler* 22 (July 2001), 42-49.
- ¹³ Eric Hirsimaki, *Lima: The History* (Edmonds, WA: Hundman Publishing, 1986), p. 290.
- ¹⁴ J. Edgar Smith, "Super-Power Steam Locomotives," *Railroad* 96 (August 1974), 24-32. See also obituary in *Railmay Age* 112 (January-June 1942), 677-78.
- ¹⁵ Biographical sketches of Hauer and most other AMC officials are in *Who's Who in Railroading*, 1946 edition.
- ¹⁶ Herbert H. Harwood, Jr., *Invisible Giants: The Empires of Cleveland's Van Smeringen Brothers* (Bloomington: Indiana University Press, 2002), pp. 131-2. R&HS

Closed Loops

by John F. Humiston

LOOPS ARE USED on railroads to reduce gradients. Open loops are quite common, the best known probably being the Horseshoe Curve above Altoona, PA, ascending/descending the east slope of Cresson Ridge. Closed loops, where the track crosses under or over itself using a tunnel or bridge, are less common. There are, or were, at least fifteen in the United States and Canada listed here by railroads.

Alaska RR. - The Loop, Seward Sub., Mile 50.5. Crossing by bridge. Grade 1½% ascending southward toward Seward. Standard Gauge. Loop eliminated in realignment about 1950 when Bartlett Glacier retreated.¹

Hiwassee Loop, Etowah Sub., Atlanta Division, between Appalachia, TN, Mile KX360.1, and Farner, Mile KX366.1. Crossing by trestle and bridge, 60' high by 195' long. Standard Gauge. Loop about 8000' in length. Line climbs 426 feet in 6 miles. From the south, leaving

Farner downgrade, the line goes completely around Bald Mountain, crosses under itself and continues farther around the mountain till it reaches the Hiwassee River, then follows the river for 15 miles to a crossing at Alliance, Mile KX345.4. Constructed 1898 to replace switchback. Formerly L&N. Knoxville -Atlanta line known as "The Hook and Eye", the hook being an open loop at Tate Mountain in Georgia. CSXT's last train on the loop operated March 6, 2001. Now out of service, the line will be abandoned or sold. On July 11, 2002, announced that 43.4 mile Copperhill branch, Etowah to Copperhill, to be sold to Southeast Local Development Corp. of Tennessee with help from Glenn Springs Holdings, Inc., division of Occidental Petroleum Corp. per CTC Board, October 2002. Also see CTCB July 2001. Also Trains November 2002, p.18.²

Canadian Pacific Railway -Upper Spiral Tunnel, Laggan Sub., Mile 128.8 between Partridge and Yoho, BC. Standard Gauge. Tunnel is 3255' long, curves 250 degrees on 1.66% grade changing elevation 56' ascending eastward.³

Canadian Pacific Railway – Lower Spiral Tunnel, Laggan Sub., Mile 131.1 between Yoho and Cathedral, BC. Standard Gauge. Tunnel is 2922' long, curves 226 degrees on 1.62% grade changing elevation 50' ascending eastward.

Denver and Rio Grande Western Railroad - Double Circle or Laguna Loop, Tintic Branch, Springville to Eureka, Utah at Mile 32, built 1891 to reach mines beyond 6574 feet summit. Standard Gauge. Crossing by 462 feet long wood trestle 90 feet high at crossing and higher over Pinion Creek. Pinion Creek is also crossed on two other bridges, one 94 feet long and one 104 feet long, both within loop. Loop turns approximately 460 degrees central angle with 12 degree curves. Line climbs 2032 feet in a fraction under 17 miles on a grade of 2.2% to as much as 2.64%. Line abandoned beyond Pearl prior to 1972.4

Denver & Salt Lake Railroad - Rifle Sight Notch Loop - Tunnel 33, at Loop, CO, station, Mile 69, elevation 10980', west of Corona Pass, Mile 65, elevation 11660', ascending eastward. Standard Gauge. Line eliminated by completion of

the Moffat Tunnel in 1928.5

Georgetown Loop Railroad -Georgetown, Georgetown, CO. 36" Gauge. Crossing by Devil's Gate steel viaduct. Portion of Georgetown, Breckenridge, & Leadville Railway; Colorado Central between Silver Plume and Georgetown restored by the State Historical Society of Colorado. Loop originally built in 1884. Arthur M. Wellington in The Economic Theory of the Location of Railways, John Wiley & Sons, New York, 1887, has a view of this loop and a track diagram and states that it is the only Bridge Spiral in the United States, spiral being his term for a closed loop. The bridge is on a curve of 311 feet radius while the other end of the loop has a radius of 206.67 feet. 36" Gauge.6

The Morenci Southern Railway, 36" Gauge, was completed in January 1901 from a connection with the standard gauge Arizona & New Mexico Railway at Guthrie, AZ, for 18 miles to the Phelps Dodge copper mine at Morenci, AZ. The approach to Morenci was up a narrow cañon with a natural grade of about 6%. To obtain a railway grade of 3.5% up the cañon, four loops were used in an actual distance of about 11/2 miles. A fifth loop was used farther down. Continual changes in topography as the mining progressed, resulted in abandonment of the Morenci Southern in 1922. The Phelps Dodge operations now connect to the Union Pacific Railroad at Clifton, AZ, instead of Guthrie.

Morenci Southern Railway - First Loop - At Morenci, AZ. Crossing by timber trestle 259 feet long.

Morenci Southern Railway -Second Loop - At Morenci. Crossing by timber trestle.

Morenci Southern Railway -Third Loop - At Morenci. Crossing by timber trestle.

Morenci Southern Railway – Fourth Loop – At Morenci. Crossing by timber trestle. The Second, Third, and Fourth Loops were replaced by two pair of switch backs around 1914 – 1915 and with other line relocations increased the milage to 18.82.

Morenci Southern Railway - Fifth Loop - At Frisco, AZ. Crossing by 420 foot tunnel about Mile Post 9.2 measured from Guthrie.⁷

Newfoundland Railway/later Canadian National Railways - Trinity Loop, Bonavista Sub. about Mile 53, Clarenville - Bonavista line, 42" Gauge. Crossing by steel girder bridge. Abandoned June 20, 1984. Preserved as historic site, Clayton Cook's Trinity Loop Fun Park, circumference 6600 feet turning approximately 310 degrees changing elevation 34 feet 4 inches. Clayton Cook is a retired CN Conductor active in local railway preservation.

Union Pacific Railroad - Williams Loop, Canyon Sub, about Mile 294, west of Spring Garden, CA, Mile 296, Oakland - Portola line. Standard Gauge. Grade 1% compensated ascending eastward. Crossing by culvert underpass. Formerly Western Pacific Railroad.9

Union Pacific, BNSF trackage rights - Tehachapi Loop, Mojave Sub., Tunnel 9, at Walong Siding, CA, Mile 351.8. Standard Gauge. Grade 2.1% ascending eastward. Bakersfield - West Colton Line. Formerly Southern Pacific.¹⁰

— JFH – 2 September 1998, 6 September 1998, 10 September 2002, 20 October 2002, 18 January 2003, 13 February 2003, 19 March 2003.

Notes

¹Profiles and maps in Reports of Alaskan Engineering Commission for period March 12, 1914, to December 31, 1915. Alaska R.R. TT. No. 44, 16 June 1946: Location of overhead structures table shows railroad track overhead crossing at Mile Post 50.7, Seward Subdivision.

² CSXT System TT No. 1, 1 April 1989.

The L. & N. – 1850–1942, Kincaid Herr, L.& N. Magazine, 1943. L.& N., Knoxville & Atlanta Div., TT. No. 21, April 8, 1941. CTC Board December 2001 note, July 2001 article, CSXT Hiwassee Loop.

CSXT Etowah Sub., Milage Locations.

Etowah C335.2 *
Wetmore KX339.4
Oswald Dome KX342.7
Reliance KX345.4
Hiwassee KX347.7 *
McFarland KX355.0 *
Apalachia KX360.1 *
Farner KX366.1
Turtletown KX368.7
Harbuck KX372.3
Ducktown KX376.6
McHarg KX380.2
Copperhill KX382.1 *
Blue Ridge KX395.5 *

* Milage from CSXT Timetable, others calculated from L&N Timetable. Distance is apparently from Cincinnati.

From Elizabeth, GA, Georgia Northeastern R.R. Co. north to Ellijay 65.8 miles. GA DOT buying CSXT line Ellijay to Blue Ridge. (E.A.Lewis Shortline Ry. Guide.)

³ Railway Mileposts: British Columbia, Vol. 1, Roger G. Burrows.

⁴ LeMassena, *Rio Grande To The Pacific*, p. 92, p. 102. The *Railway and Engineering Review*, 24 Feb. 1900, p. 101. Steam Powered Video Atlas of North America, Colorado-Utah.

⁵ LeMassena, *Rio Grande To The Pacific*, p. 237.

⁶ LeMassena, *Colorado's Mountain Railroads*, p. 45, p. 48, p. 234.

⁷ The Railway and Engineering Review, April 26, 1902. Railroads of Arizona, Volume 3, David Myrick, Chapter 8, Morenci Southern Railway. Railroad Atlas of North America - Arizona & New Mexico, Mike Walker, Page 23, Steam Powered Publishing, England, 1995.

⁸ Trinity Loop Fun Park advertisement. C.N. Atlantic Region, Newfoundland Area TT. No. 13, 27 April 1969.

⁹ Steam Powered Video Atlas of North America, California-Nevada.

10 S.P Northern Region TT. No. 2, 27 April, 1986, San Joaquin Division, Mojave Subdivision, p. 156, p.183. R&HS

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SEEKING - Photos, details of disposition, PRR Business Car WILLIAMSPORT. Also pictures of passenger/freight/coal trains enroute Williamsport, PA., north through Elmira, Watkins Glen, Penn Yan to Canandaigua and Sodus Point, all in New York state. Frank Luppino, Jr., 1455 Sunset Ridge Road, Glenview IL 60025-2243.

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