



Collection of E. J. Bailey



W. H. Jackson, collector of E. J. Bailey

THE GREAT SNOWPLOW TRIALS of April 1890 on the Denver, Leadville & Gunnison Leslie rotary (above) at Atlantic siding on April 18, working from East Portal to Alpine Tunnel and Jull Centrifugal Excavator (left) stalled in a cut above Hancock and (below) serving as backdrop for a party of test observers. In retrospect, the test results seemed inconclusive.



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[It] meets with less resistance in excavating snow than any other device.

The winter of 1889-1890 proved to be most severe. One storm blocked the Denver, Texas & Fort Worth, which had to borrow a rotary from the Colorado Midland. The Rock Island suffered likewise and heavily relied on its two rotaries. Up in the Rockies, the Denver, South Park & Pacific, Colorado Midland, and Denver & Rio Grande were plagued with snowdrifts and slides—some as deep as 20 feet. Steep grades and sharp curves made work difficult, but generally the rotaries were relentless. The South Park had particular

trouble with trees and rocks brought down by slides. On the Central Pacific and the Northern Pacific, blockades were limited to a few hours' duration, thanks to their rotaries.

The stage was set for an interesting horn-locking competition between challenger Jull and defending champion Leslie rotary. UP's sole narrow-gauge rotary had been busy during March 1890 opening up the Breas Pass portion of UP's Denver, Leadville & Gunnison (former D&P&P). While working between Como and Leadville, the Leslie broke several blades and suffered other mechanical problems when

it struck slides containing rocks and trees. It was rushed to Denver for repair and redispached within 31 hours, with broken blades still attached. The UP decided to compare the Jull directly with Leslie by conducting a competition on its Alpine Tunnel line, which had been blocked for months.

The Jull Excavator arrived in Denver in late March and was limbered up for the fight under direct supervision of Jull himself. On Sunday, April 12, 1890, the Jull left Denver for St. Elmo. In the course of its 155-mile trip, the heavy excavator left a trail of bent and spread rails and even broke stringers

A ROTARY RUNDOWN

Sales by the Leslie Brothers Manufacturing Co., Paterson, N.J., 1887-1903

Const. No.	Builder	Date Shipped	Purchaser	Road No. - Remarks
1	Cooke	11-1887	Union Pacific	861, later E2088, CP, retired November 1938
2	Cooke	11-1887	Union Pacific	862, later E2081, CP, retired November 1938
3	Cooke	12-1887	Union Pacific	863, later E2082, CP, 30802, retired October 1969
4	Cooke	11-1887	Oregon Ry. & Navigation Co.	822, later UP 20820, retired June 1955
5	Cooke	12-1887	Southern Pacific	1, later 11, 711, 701, 7202, retired January 1958, sold for scrap, Pa. State Metals, Los Angeles
6	Cooke	11-1887	Northern Pacific	1, retired before 1962
7	Cooke	12-1887	Northern Pacific	2, retired, sold to Steam-Refractor Society, Lake City, Blch., April 19, 1968, to Lake Superior Museum of Transportation, Duluth, Minn., February 26, 1970
8	Cooke	12-1887	Northern Pacific	3, retired by Burlington Northern, 1971, sold for scrap
9	Cooke	12-1887	Northern Pacific	4, retired before 1962
10	Cooke	12-1887	Colorado Midland	38, later A to Midland Terminal A in 1922, scrapped by MT, Colorado Springs, in 1949
11	Cooke	11-1888	Chicago, Milwaukee & St. Paul	Believed to be 898202
12	Cooke	11-1888	Ch., St. Paul, Minneapolis & Omaha	Omaha Road, R-50, later R-280, 2075, 109726, rebuilt St. Paul Shops 1907, later No. 199026, retired September 20, 1957
13	Cooke	11-1888	Chicago & North Western	8, later 801, stationed at Huron, S. D., retired October 21, 1954, dismantled August 18, 1955, sold for scrap September 7, 1955
14	Cooke	11-1888	Chicago & North Western	9, later 802, boiler explosion at Gettysburg, S. D., April 7, 1952; retired December 31, 1951, dismantled at Huron, April 22, 1953
15	Cooke	11-1888	Minneapolis & Pacific	1, later New Line (MSP/NSM) 1, K 16, dismantled November 1938
16	Cooke	12-1888	Chicago, Santa Fe & California	95507, 1117 to 120007, later ATOP 195307 in 1921, scrapped L.A. Juna, Calif., March 1952
17	Cooke	11-1888	Chicago, Milwaukee & St. Paul	Retired incomplete
18	Cooke	11-1888	Oregon Ry. & Navigation Co.	260, later GP 20800, retired August 1968
19	Cooke	12-1888	St. Paul, Minneapolis & Manitoba	28, later Great Northern X-251, 1-803 (1802), wrecked March 13, 1913, at Allen, Wis., in Wellington disaster, shifton property in January 1915, assigned No. 95209, but not rebuilt
20	Cooke	12-1888	St. Paul, Minneapolis & Manitoba	29, to GP X-212, 4-824, 95208, 3-1500 (110), retired Nov. 1936
21	Cooke	12-1888	Chicago, Kansas & Nebraska	Financed by parent Chicago, Rock Island & Pacific, 10/9 in 1890, became R 35355, converted to oil-burning in 1942, believed scrapped in late 1950's
22	Cooke	12-1888	Chicago, Kansas & Nebraska	Financed by parent R. 12, R 1 in 1891, became R 95266, believed scrapped in late 1950's
23	Cooke	12-1888	Quinn, South Shore & Atlantic	711, sold to Leslie Brothers for scrap, 1933
24	Cooke	1-1889	Denver & Rio Grande	3M, 3-foot gauge, to Caribee & Tobac Socie., 1879
25	Cooke	2-1889	Denver & Rio Grande	3V, 3-foot gauge, requisitioned by U.S. War Department, October 1942, moved to White Pass & Yukon, to WP572, scrapped 1968
26	Cooke	2-1889	Denver, South Park & Pacific	071, 3-foot gauge, later Denver, Leadville & Gunnison 084, Colorado & Southern 09200, retired April 1951
27	Cooke	1-1889	Alton, Watertown & Ogdensburg	Later New York Central
28	Cooke	1-1889	New York Central & Hudson River	X-809, later 707, converted to electric, power, later Penn Central, now Central 80021, stationed at Solihull Yard, Albany, N.Y., September 1985
29	Grant	2-1890	Southern Pacific	2, later 12, 711, 701, 7201, retired February 1938
30	Grant	3-1890	Minneapolis & St. Louis	Verified in use at Conde, S. Dak., in 1922, road number unidentified in rotary catalog 1894, in use in 1936 was Pack (hand?)
31	Grant	9-1890	Milwaukee, Lake Shore & Western	Later Chicago & North Western C. 6425, stationed at Milwaukee, Wis., retired October 21, 1954, sold for scrap September 13, 1955
32	Grant	3-1890	Southern Pacific	4, later 14, 712, 702, 7202, retired February 1949
33	Grant	9-1890	Southern Pacific	5, retired before 1962
34	Portland	1-1891	Northern Pacific	6, later Central Pacific 24, retired 1874
35	Portland	1-1891	Rio Grande Southern	1, 3-foot gauge, sold December 21, 1896, to Kays & Sloan (S. C.) to CP 40817, June 1914 (and station gauged?), retired July 1938
36	Portland	10-1891	Denver & Rio Grande	3, standard gauge, to O7 in 1908, to 870, July 19, 1911, used on Beck & Lyallton, scrapped March 1946
37	Portland	1-1892	Rio Grande Southern	2, 3-foot gauge, suffered boiler explosion January 4, 1908, at Vance Junction, Colo., scrapped ca. 1952
38	Portland	1-1892	Chicago, Rock Island & Pacific	95357, converted to oil-burning, 1949, believed scrapped, 1956
39	Portland	1-1892	Fremont, Elkhorn & Missouri Valley	Later C&NW E. 6417, stationed at Chadron, Neb., retired October 21, 1954, sold for scrap July 28, 1955
40	Cooke	12-1892	Burlington, Cedar Rapids & Northern	To CR&N in 1903, became R 95258, off roster in 1905
41	Cooke	1-1893	Great Northern	K-232, later X-805, 95061, X-1581, retired October 13, 1959
42	Cooke	1-1893	Great Northern	X-254, later X-806, 95062, X-1582, retired July 1954
43	Cooke	1-1893	Philadelphia & Reading	...
44	Cooke	12-1892	Atchison, Topeka & Santa Fe	99502, in 1900 in 1911, 19526 in 1924, 99861 in 1935, rebuilt November 1959 to electric, No. 190208, using boiler from C-6-4 2765, assigned Argentine Road, Kansas City, Kans., September 1898
45	Cooke	10-1893	Great Northern	K-260, later X-807, 96044, X-1583, rebuilt by GN, 1954, retired October 1961
46	Cooke	10-1893	Great Northern	K-258, later X-808, 95063, X-1582, retired July 1960
47	Cooke	11-1894	Spokane Falls & Northern	1, later SA X-802, 95063, X-1582, rebuilt by GN, 1934, retired May 1950, parts sold to build SA X-1511
48	Cooke	12-1894	Fuel & Monte Carlo	Later NP 8, retired before 1962
49	Cooke	12-1894	Southern Pacific	714, later 703, 7263, 203, converted to electric, retired in 1950's
50	Cooke	12-1895	Oregon Short Line	02012, later GP 810, 908014, retired June 1965
51	Cooke	11-1895	Southern Pacific	2nd 712, later 704, 7264, retired February 1949
52	Cooke	12-1895	Erie	3411, later 62475
53	Cooke	12-1896	Northern Pacific	7, retired before 1962
54	Cooke	1897	Pennsylvanian Government	Coke Ferrie Remains (Pennsylvanian Railroad)
55	Cooke	11-1898	Long Island	135, retired 1967, sold to Port Zee, stored in New Jersey, 1986
56	Cooke	71	White Pass & Yukon	1, 3-foot gauge, in display at Shipway, Ast
57	Cooke	71	Ore	3413, later 62476
58	Schenck	1-1899	Colorado Midland	8, to Midland Terminal 8 in 1925, to Ataska Engineering Commission in 1945, became Ataska Railroad 2, and scrapped after 1946, believed in 1964 and dismantled by APB for scrap, 1969
59	Cooke	1-1900	Colorado & Southern	03 (1st), later 6276 (or 271), 99301, built as standard gauge, to 3-foot gauge, 1925, to standard gauge, 1943, rebuilt by C&S, December 1943, to Colorado Railroad Museum, Golden, October 15, 1972
60	Cooke	3-1900	Colorado Fuel & Iron	CP&S Crystal River Railroad A&I, 3-foot gauge, to O&P 03 October 1903, scrapped in 1950 in Canonville, Colo.
61	Cooke	9-1900	White Pass & Yukon	2, 3-foot gauge, now at Baker, Ore.
62	Cooke	10-1900	Buenos Aires & Valparaiso	Metre gauge, later Transandean Railway, Argentina

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on two bridges. Reportedly the great weight over the front truck caused the Jull to swing and sway back and forth; extra care was taken on the South Park's 24-degree curves. The rotary arrived at St. Elmo (still with broken blades) on Monday, and all was ready.

Wednesday, a trainload of UP officials, other railroad people, press, and UP photographer W.H. Jackson arrived. Work began at 8 a.m. sharp. Alternately, Jull and Leslie took turns battling the deep, encrusted snow of Alpine. Each plow was accompanied by its own pusher locomotives and crews to expedite the trials. For three days, rivalry came to a head as the rotary seemingly outperformed the excavator. The excavator had a tendency to derail on sharp curves and primitive track as well as plug with snow. At one point, the excavator could only throw snow to the right. Each time the Jull retreated, the Leslie Rotary took its place where it had left off. An excerpt from the May 23 *Railroad Gazette* hinted of the warfare:

The [Jull] was put into the snow where there was about three feet depth on one rail and 18 inches on the other, and considerable ice. The snow was shoveled off from one rail, and the ice picked out to leave that rail clear. Nevertheless, the 'Excavator' was derailed after going but a few feet. This happened, we believe, three times. The Rotary was then brought up. After it had gone 100 yards it was backed out in order to examine the condition of the track. It was found that the machine was cutting its way through from one to three inches of solid ice, over the top of the rail, under the snow.

This account continued, but suspiciously slanted in favor of the rotary. The *Gazette* had, in fact, printed a disclaimer noting that its information was supplied by Leslie Brothers Manufacturing. A rebuttal then appeared in the next *Gazette* on behalf of Jull. Charles H. Otis, who was treasurer of Jull Manufacturing then attacked the previous report:

I have read with interest and amusement the article, published in the issue of your paper of May 23, 1890. . . . It is entertaining to observe that, according to Mr. Leslie, whenever the Rotary went into the snow, the rails were covered with ice and the snow was deep and hard; but when the Jull Excavator was brought forward, the rails were free from ice, the snow not deep and of a lighter quality.

Also featured in this May 30 *Gazette* were extracts from a report by Orange Jull himself. His tone was more peaceable and seemingly truthful. He attributed the derailment problem to a combination of rough track conditions and the rigidity of the excavator's truck