

INTERSTATE COMMERCE COMMISSION

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SECOND ANNUAL REPORT

OF THE

Chief Inspector of Locomotive  
Boilers

TO THE

INTERSTATE COMMERCE COMMISSION

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NOVEMBER 1, 1913



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ANNUAL REPORT  
OF THE  
CHIEF INSPECTOR OF LOCOMOTIVE BOILERS.

INTERSTATE COMMERCE COMMISSION,  
DIVISION OF LOCOMOTIVE BOILER INSPECTION,  
*Washington, November 1, 1913.*

*To the Interstate Commerce Commission.*

In compliance with section 7 of the act of February 17, 1911, Public, No. 383, commonly known as the locomotive boiler inspection law, the annual report of chief inspector of locomotive boilers, John F. Ensign, for the fiscal year ending June 30, 1913, is respectfully submitted.

The tabulated data contained in this report shows a marked decrease in the number of casualties due to failure of locomotive boilers and their appurtenances and a substantial improvement in the condition of such equipment, when compared with the report for the preceding fiscal year.

Knowing that it would be impossible to correct at once all defective and improper conditions existing and that improvement must come as the result of a process of evolution rather than revolution, attention was first concentrated on the more serious accidents in an effort to reduce the number of fatalities; although no minor defect that could be remedied was neglected.

The result of this policy is shown by a reduction of over 60 per cent in the number killed and 10 per cent in the number injured by failures of locomotive boilers and their appurtenances during the fiscal year ending June 30, 1913, as compared with the preceding year.

In accordance with the provisions of section 8 of the law, 592 accidents resulting from failure of locomotive boilers and their appurtenances were investigated by this division during the year; 228 accidents, most of which were of a minor character, were not properly reported to this division by the carriers, therefore a proper investigation could not be made. In such cases the cause assigned by the carriers in the reports to the accident division has been used in our compilation. Failure to make a proper report has usually been found to be due to the fact that the requirements of the locomotive boiler inspection law were not fully understood by all carriers. It is believed that all are now fully conversant with these require-

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ments, as practically all accidents are now properly reported and investigated.

The practice of conducting a rigid, searching investigation of all accidents sufficiently serious to justify a report, with the sole object in view of determining the exact cause and having the proper remedy applied, has done much to reduce the list of casualties. The knowledge that such an investigation will follow every accident is an incentive to the railroad companies to maintain their equipment so that its condition can not be shown to have caused accidents, and is also an incentive to the employees to perform their work in the most efficient and careful manner. Therefore, we have followed the policy of investigating every accident reported to this division. The investigation of accidents by Government inspectors whose only object is to promote safety, and who are therefore impartial, has directed attention to conditions which previously have been overlooked or ignored.

The period since the law became effective has been too brief to permit a comparison to be made which will accurately show its value. It is believed, however, that the following comparison of some of the most serious as well as some of the most frequent accidents during the first and last quarters of the fiscal year ending June 30, 1913, fairly represents the benefits which result from Government supervision over the condition of locomotive boilers and their appurtenances.

	Accidents during first quarter, 1913.	Accidents during last quarter, 1913.
Crown-sheet failures.....	18	9
Water glasses bursting.....	36	16
Lubricator glasses bursting.....	11	6
Squirt-hose failures.....	161	64
Flue failures.....	15	11

A summary of the inspection work performed during the year shows the following:

Number of locomotives inspected.....	90,346
Number found defective.....	54,522
Number ordered out of service.....	4,676
Number having pressure reduced to insure proper factor of safety.....	472
Number having seams reinforced by welt plates to insure proper factor of safety.....	561
Number having the lowest reading of the waterglass raised to comply with the law.....	381
Number having the lowest gage cock raised to comply with the law.....	172
Number strengthened by having braces of greater sectional area applied.....	281
Number requiring additional support of crown sheet.....	147

It will thus be seen that during the year 6,690 locomotives were either held out of service for repairs or ordered changed and strengthened to conform to the requirements of the law.

The number of locomotives found defective as shown above, viz., 54,522, does not indicate that this number of locomotives were found to be in violation of the law, but they were found to contain defects which should be remedied before the locomotives were again placed in service. The number found in direct violation of the law is represented by the number ordered out of service in accordance with section 6 of the law, which requires the district inspectors to issue a written order holding the locomotive for repairs when one is found that does not meet the requirements of the law or rules. No formal appeal from the action of any district inspector has been filed during the year. This, in view of the vast amount of work performed and the number of locomotives on which repairs were ordered, shows that while the inspectors have been diligent they have also used discretion and good judgment in the enforcement of the law. It is believed that it also shows the existence of a spirit of cooperation and an earnest effort to comply with the requirements of the law on the part of a large majority of railroad officials.

Specifications for practically all locomotive boilers in service were filed within the time prescribed by the law, but the variation in design and the widely different methods of calculation followed by the various railroads has delayed the work of checking them. Very satisfactory progress is being made in this important work, and it will soon be possible to show accurately the stresses on each part of every locomotive boiler in service.

The results obtained indicate that when the checking is complete it will be necessary in some instances to compare the data shown on the specification cards with actual measurements in order to insure the accuracy of the information furnished.

Specifications are filed for all new locomotive boilers before they are put in service, and when repairs are made on boilers now in service which in any way affect their strength, the changes are reported on a suitable form; therefore our records are kept up to date.

Shortly after our inspectors were placed in the field they frequently advised that they were finding locomotives in service with serious defects, such as sharp or badly worn flanges, flat wheels, cracked or broken wheels, loose wheels or tires, thin or badly worn tires, excessive lateral motion in engine trucks, drivers, and trailers, broken frames, broken arch bars, broken springs, and other defects, all of which are a fruitful source of accidents and derailments, but which are not covered by the locomotive boiler inspection law, or any other law. In fact, it was found to be a common practice on some railroads to continue in service on their own line equipment which if offered in interchange by a connecting line would be refused on account of its defective condition.

Although this division has no legal authority to act in such cases, we believe that travelers and employees on railroads are entitled to

all the protection against accidents that can be provided. Therefore our inspectors were instructed while making their regular inspections to note any defective conditions on locomotives which were apt to cause accidents, and when any were found to advise the railroad official in charge, and if proper repairs were not promptly made to wire the chief inspector, who would bring it to the attention of higher officials. During the past year 1,568 locomotives having defects of the above-mentioned character, 1,052 of which were defective wheels, have been reported to this division and to the railroad officials. These defects have been discovered by such casual inspection of the different parts of the locomotives as could be made while our inspectors were engaged in their regular work of inspecting locomotive boilers and their appurtenances as required by law. There can be no doubt, therefore, that many more would have been found had a more thorough inspection been made. It is extremely gratifying to be able to state that a large percentage of the railroad officials appreciate this action on the part of our inspectors and take prompt action to remedy the defects to which their attention has been thus directed.

In some instances, however, railroad officials have objected to this division requesting repairs to defects not covered by the law, have advised us that we have no authority over such matters, and have failed to make the repairs, even though the defects were of a nature that might cause serious accidents. For this reason the provisions of section 6 of the locomotive-boiler inspection law should be made to apply to every part of locomotives and tenders, as well as to locomotive boilers and their appurtenances, so that our inspectors would have legal authority to require proper repairs to be made to any part of the locomotive or tender when it is found to be in an unsafe or improper condition for service.

It is respectfully recommended, therefore, that Congress be requested to enact necessary legislation to confer upon this division the authority to require repairs to be made to any part of a locomotive or tender when it is found to be in an unsafe or improper condition to operate in the service to which the same is put.

Such an inspection would to a certain extent increase the work and responsibility of this division, but it would be a safeguard to travelers and employees upon railroads that would amply repay the effort, and as this division already has an organization of mechanical experts fully qualified to perform such work, a small increase in this force would enable us to conduct a very efficient locomotive inspection without increasing the cost beyond the maximum fixed by section 10 of the locomotive-boiler inspection law.

Respectfully submitted.

FRANK McMANAMY,  
Chief Inspector Locomotive Boilers.

Accidents and casualties resulting from failures of locomotive boilers and their appurtenances.

Nature of failure or defect.	Year ended June 30—					
	1913			1912		
	Accidents.	Killed.	Injured.	Accidents.	Killed.	Injured.
Arch-tube failures.....	20	3	27	18	.....	23
Arch-tube plugs defective.....	.....	.....	.....	2	.....	4
Ash-pan blowers defective.....	14	1	14	3	.....	3
Blowers defective.....	13	.....	13	11	.....	12
Blow-off cocks defective.....	16	.....	18	23	2	22
Boiler checks defective.....	11	.....	12	11	1	11
Boiler explosions:						
A—Shell explosions.....	.....	.....	.....	3	27	41
B—Crown-sheet failures due to low water where no contributory causes were found.....	44	23	67	69	35	129
C—Crown-sheet failures due to low water where contributory causes or defects were found.....	28	6	50	23	15	38
D—Fire-box failures due to defective stay bolts, crown stays, or sheets.....	5	.....	8	1	1	1
E—Fire-box failures due to water foaming.....	1	2	.....	1	3	.....
Crown stay defective.....	1	.....	3	.....	.....	.....
Crown stays defective.....	1	.....	1	.....	.....	.....
Dome caps defective.....	2	.....	2	2	.....	2
Draft appliances defective.....	4	.....	4	3	.....	4
Exhaust nozzle breaking.....	1	.....	1	.....	.....	.....
Fire doors defective.....	2	.....	2	.....	.....	.....
Flue failures.....	54	1	63	56	1	62
Flue-plug failures.....	.....	.....	.....	7	.....	8
Flue pockets defective.....	2	.....	2	3	.....	4
Flue sheets defective.....	1	.....	1	2	.....	2
Gage cocks defective.....	2	.....	2	4	.....	4
Grates defective.....	1	.....	1	.....	.....	.....
Handhole plate defective.....	.....	.....	.....	1	.....	1
Injectors and connections defective (not including injector steam pipes).....	28	.....	28	47	.....	48
Injector steam-pipe failures.....	36	.....	47	31	.....	38
Lubricators defective.....	11	.....	12	11	.....	12
Lubricator glasses bursting.....	45	.....	45	49	.....	49
Lubricator piping defective.....	4	.....	5	.....	.....	.....
Mud ring defective.....	.....	.....	.....	1	.....	1
Patch bolts defective.....	.....	.....	6	1	.....	1
Plugs in fire-box sheets defective.....	1	.....	1	1	.....	1
Plugs (fusible) defective.....	1	.....	1	.....	.....	.....
Plug in steam chest defective.....	20	.....	23	11	2	14
Plugs (washout) defective.....	2	.....	2	.....	.....	.....
Rivets defective.....	1	.....	1	.....	.....	.....
Safety valves defective.....	.....	.....	.....	.....	.....	.....
Squirt-hose failures.....	266	.....	267	243	.....	245
Stay bolts defective.....	2	.....	3	9	.....	11
Steam-heat hose defective.....	1	.....	1	.....	.....	.....
Steam leaks obscuring view of enginemen.....	.....	.....	.....	1	1	.....
Studs defective.....	20	.....	21	14	.....	16
Superheater-tube failures.....	5	.....	6	11	2	11
Tank hose defective.....	1	.....	2	1	.....	1
Throttle glands defective.....	3	.....	4	.....	.....	.....
Valves defective (not including safety valves).....	6	.....	6	5	.....	6
Water-bar failures.....	1	.....	1	3	.....	4
Water glasses bursting.....	128	.....	128	165	1	168
Water-glass fittings defective.....	7	.....	7	8	.....	8
Total.....	820	36	911	856	91	1,005

Classification by occupation of persons killed and injured in locomotive boiler accidents.

Occupation.	Year ended June 30—			
	1913		1912	
	Killed.	In-jured.	Killed.	In-jured.
<b>Members of train crews:</b>				
Engineers.....	12	268	22	310
Firemen.....	12	478	19	491
Brakemen.....	6	79	8	79
Conductors.....	2	7	4	16
Switchmen.....		2		7
<b>Roundhouse and shop employees:</b>				
Boiler makers.....		10	2	3
Machinists.....		11	7	11
Foremen.....		4	1	4
Inspectors.....		3	1	2
Watchmen.....		8	3	6
Boiler washers.....		4	1	4
Hostlers.....	1	6		5
Other roundhouse and shop employees.....	1	24	14	62
Other employees.....		4	3	3
Nonemployees.....	2	3	6	2
<b>Total.....</b>	<b>36</b>	<b>911</b>	<b>91</b>	<b>1,005</b>

### ACCIDENTS RESULTING FROM THE FAILURE OF LOCOMOTIVE BOILERS AND THEIR APPURTENANCES DURING THE FISCAL YEAR ENDED JUNE 30, 1913.

[A star (\*) indicates accidents taken from records of the accident division of the Interstate Commerce Commission. Investigation thereof was impracticable inasmuch as this division was not apprised thereof until 30 to 90 days subsequent to their occurrence, which was too late to permit an intelligent investigation.]

#### ALABAMA & VICKSBURG RAILWAY:

\*September 6, 1912, Urbo, Miss. Squirt hose blew off; 1 injured.  
One accident; 1 injured.

#### ALABAMA, TENNESSEE & NORTHERN RAILROAD:

June 11, 1913, engine 62, Seaboard, Ala. Crown sheet failed; crown bolts defective; 1 injured.

One accident; 1 injured.

#### ALABAMA GREAT SOUTHERN RAILROAD:

\*March 21, 1913, Irondale, Ala. Squirt hose burst; 1 injured.

One accident; 1 injured.

#### ARKANSAS CENTRAL RAILROAD:

December 18, 1912, engine 4, Paris, Ark. Plug blew out of crown sheet; plug defective and not stayed; 2 injured.

One accident; 2 injured.

#### ATCHISON, TOPEKA & SANTA FE RAILWAY Co.:

July 6, 1912, engine 3203, Peach Springs, Ariz. Squirt hose blew off; insecurely applied; 1 injured.

July 7, 1912, engine 2048, Barstow, Cal. Squirt hose blew off; insecurely applied; 1 injured.

\*July 9, 1912, engine 1801, Sibley, Mo. Squirt hose blew off; 1 injured.

July 13, 1912, engine 1166, Amarillo, Tex. Squirt hose blew off; insecurely applied; 1 injured.

July 15, 1912, engine 845, Gallup, N. Mex. Squirt hose blew off; insecurely applied; 1 injured.

August 17, 1912, engine 1857, near Newton, Kans. Squirt hose burst; defective hose; 1 injured.

August 28, 1912, engine 1459, Argentine, Kans. Squirt hose blew off; insecurely applied; 1 injured.

September 9, 1912, engine 1837, near Emporia, Kans. Squirt hose burst; defective hose; 1 injured.

\*September 11, 1912, engine 731, Winfield, Kans. Squirt hose burst; 1 injured.

September 22, 1912, engine 590, Toluca, Ill. Squirt hose parted at splice; 1 injured.

\*December 3, 1912, engine 223, Englewood, Kans. Water glass burst; 1 injured.

December 10, 1912, engine 859, Belen, N. Mex. Water glass burst; inefficient shield; 1 injured by flying glass.

December 18, 1912, engine 1430, Ellinwood, Kans. Squirt hose burst; defective hose; 1 injured.

\*January 2, 1913, engine 472, near Noria, Kans. Squirt hose burst; 1 injured.

January 3, 1913, engine 1670, Newberry, Cal. Blow-off cock blew out; not properly screwed into sheet; 1 injured.

January 9, 1913, engine 2416, Guthrie, Okla. Washout plug blew out; 1 injured.

January 22, 1913, engine 725, Corona, Cal. Water glass burst; inefficient shield; 1 injured by flying glass.

February 8, 1913, engine 850, Gallup, N. Mex. Water glass burst; inefficient shield; 1 injured by flying glass.

February 10, 1913, engine 1158, Buchanan, N. Mex. Lubricator filling plug blew out; threads stripped; 1 injured.

\*February 20, 1913, engine 1002, Dodge City, Kans. Water glass burst; 1 injured.

March 14, 1913, engine 703, Gallup, N. Mex. Right injector overflow pipe dropped down; not properly clamped; 1 injured.

March 23, 1913, engine 2111, Chicago, Ill. Squirt hose blew off; insecurely applied; 1 injured.

April 11, 1913, engine 0242, near Ralph, Tex. Lubricator glass burst; shield removed at time of accident; 1 injured by flying glass.

May 6, 1913, engine 1944, Argentine, Kans. Spindle blew out of lower water-glass cock; 1 injured.

June 5, 1913, engine 1068, Arkansas City, Kans. Boiler washer scalded by removing washout plug before water had drained from boiler; 1 injured.

June 26, 1913, engine 338, Rosedale, Cal. Squirt hose burst; 1 injured.

Twenty-six accidents; 26 injured.

#### ATLANTA, BIRMINGHAM & ATLANTIC RAILWAY:

August 2, 1912, engine 1504, Alma, Ga. Crown sheet failed, due to low water; bottom gage cock only 2 inches above highest point of crown sheet; 1 injured.

One accident; 1 injured.

#### ATLANTIC COAST LINE RAILROAD Co.:

\*July 9, 1912, Adams Run, S. C. Squirt hose blew off; 1 injured.

\*July 11, 1912, engine 720, Sharpsburg, N. C. Squirt hose blew off; 1 injured.

\*September 5, 1912, engine 355, Sumter, S. C. Petticoat pipe dropped down, causing back draft; 1 injured.

October 7, 1912, engine 232, Charleston, S. C. Arch tube pulled out of back flue sheet; improperly applied; 2 injured.

December 12, 1912, engine 918, near Romeo, Fla. Crown sheet failed, due to low water; 1 injured.

December 19, 1912, engine 1286, Waycross, Ga. Washout plug blew out; threads defective; 1 injured.

January 16, 1913, engine 556, Twin Lake, Fla. Injector steam-pipe collar pulled off turret connection; 2 injured.

March 27, 1913, engine 271, Rennert, N. C. Crown sheet failed, due to low water; 2 injured.

April 6, 1913, engine 919, Trilby, Fla. Squirt hose blew off; insecurely applied; 1 injured.

May 20, 1913, engine 375, near Pidcock, Ga. Squirt-hose pipe blew out; threads on pipe defective; 1 injured.

Ten accidents; 13 injured.

#### BALTIMORE & OHIO RAILROAD Co.:

\*July 7, 1912, Grafton, W. Va. Lubricator glass burst; 1 injured by escaping steam.

\*July 9, 1912, Deshler, Ohio. Squirt hose burst; 1 injured.

July 16, 1912, engine 4114, Belcamp, Md. Injector steam-pipe collar broke; collar too light and not securely brazed to pipe; 2 injured.

\*July 30, 1912, Canton, Ohio. Squirt hose blew off; 1 injured.

August 10, 1912, engine 4126, Bartholows, Md. Injector steam-pipe collar broke; collar too thin and not securely brazed to pipe; 2 injured.

August 18, 1912, engine 2237, Bakerstown, Pa. Squirt hose blew off; insecurely applied; 1 injured.

\*August 20, 1912, Kent, Ohio. Squirt hose blew off; 1 injured.

\*August 25, 1912, Walkerton, Ind. Squirt-hose valve worked open; 1 injured.

September 5, 1912, engine 1903, Glenford, Ohio. Squirt hose blew off; insecurely applied; 1 injured.

\*October 25, 1912, engine 166, Bridgeport, Ohio. Gage cock blew out; 1 injured.

January 13, 1913, engine 2048, Salem, W. Va. Crown sheet failed, due to low water; 1 injured.

January 18, 1913, engine 2401, Hardman, W. Va. Lubricator glass burst; no shield; 1 injured by flying glass.

January 19, 1913, engine 4123, Baltimore, Md. Bonnet blew off blower valve; nut improperly fitted; 1 injured.

\*February 8, 1913, Duffields, W. Va. Filling plug blew out of lubricator, due to defective threads; 1 injured.

February 13, 1913, engine 4184, near McCoys Ferry, W. Va. Crown sheet failed, due to low water; 1 injured.

\*March 9, 1913, engine 1659, Chicago, Ill. Lubricator glass burst; 1 injured by flying glass.

\*March 13, 1913, engine 1279, Matamoras, W. Va. Boiler check stuck; 1 injured.

April 16, 1913, engine 1243, Foxburg, Pa. Inspector unscrewed stud in fire box while making repairs with pressure on boiler; 1 injured.

\*April 16, 1913, engine 2802, New Castle Junction, Ohio. Lubricator glass burst; 1 injured by flying glass.

April 17, 1913, engine 4200, McKenzie, Md. Arch tube blew out; not properly applied; 1 injured.

April 20, 1913, engine 569, Rockwood, Pa. Washout plug blew out; defective threads on plug; 1 injured.

May 13, 1913, engine 2855, Defiance, Ohio. Injector applied with squirt-hose valve open; 1 injured.

May 14, 1913, engine 4113, Bascom, Ohio. Squirt-hose valve worked open; 1 injured.

May 19, 1913, engine 2139, Midway, Ohio. Blower pipe defective; 1 injured.

May 20, 1913, engine 2606, Wheeling Junction, W. Va. Squirt-hose pipe blew out of branch pipe; 1 injured.

May 21, 1913, engine 1794, near M. & K. Junction, W. Va. Quadrant bracket stud pulled out; 1 injured.

June 7, 1913, engine 2601, Jacksonburg, W. Va. Arch tube pulled out of flue sheet; improperly applied; 3 injured.

June 11, 1913, engine 1234, Parkersburg, W. Va. Washout plug blew out while boiler maker was attempting to tighten same with pressure on boiler; threads on plug defective; 1 injured.

June 18, 1913, engine 4195, Back Creek Bridge, W. Va. Superheater tube collapsed; tube, originally  $\frac{1}{4}$  inch thick, was allowed to waste away in welding furnace until metal was less than one-tenth of its original thickness; 2 injured.

June 25, 1913, engine 2907, near Markleton, Pa. Squirt-hose pipe broke off; engineer attempted to bend pipe with injector applied; 2 injured.

Thirty accidents; 36 injured.

#### BALTIMORE & OHIO CHICAGO TERMINAL RAILROAD:

\*September 5, 1913, engine 1971, Roby, Ill. Defective union on injector delivery pipe; 1 injured.

One accident; 1 injured.

#### BELLINGHAM & NORTHERN RAILWAY Co.:

March 13, 1913, engine 4, Sumas, Wash. Crown sheet failed, due to low water; fireman had been required for several days to act as fireman during the day and engine watchman at night; crown sheet failed during the night while locomotive was in his charge as watchman; 1 killed.

One accident; 1 killed.

#### BOSTON & ALBANY RAILROAD:

August 20, 1912, engine 1162, Milford, Mass. Water glass burst; inefficient shield; 1 injured by flying glass.

September 12, 1912, engine 2612, Russell, Mass. Flue burst, due to defective weld. 2 injured.

September 13, 1912, engine 2674, West Springfield, Mass. Expansion pad stud blew out; threads in sheet and on stud badly corroded; 1 injured.

November 3, 1912, engine 1908, West Brimfield, Mass. Flue burst; fireman injured jumping from locomotive; 1 injured.

November 13, 1912, engine 2593, Athol Junction, Mass. Flue burst, due to defective weld; 1 injured.

February 18, 1913, engine 967, Chester, Mass. Injector steam-pipe collar pulled off; collar insecurely brazed to pipe; 2 injured.

Six accidents; 8 injured.

#### BOSTON & MAINE RAILROAD:

\*July 1, 1912, East Cambridge, Mass. Squirt hose blew off; 1 injured.

July 3, 1912, engine 1493, Reading Highlands, Mass. Crown sheet failed, due to low water; 2 injured.

July 16, 1912, Turners Falls, Mass. Union on injector overflow pipe worked loose; 1 injured.

July 30, 1912, engine 3628, Waverly, Mass. Flue burst, flue defective, due to excessive working; 1 injured.

\*August 8, 1912, Zoar, Mass. Squirt hose blew off; 1 injured.

\*August 14, 1912, East Portal, Mass. Squirt hose blew off; 1 injured.

August 15, 1912, engine 2384, North Adams, Mass. Squirt hose burst; defective hose; 1 injured.

\*August 22, 1912, Northampton, Mass. Lubricator glass burst; 1 injured by flying glass.

September 2, 1912, engine 1140, Peterboro, N. H. Water glass burst; 1 injured by escaping steam.

September 7, 1912, engine 2338, Royalston, Mass. Squirt hose blew off; insecurely applied; 1 injured.

September 9, 1912, engine 2602, Charlemont, Mass. Crown sheet failed, due to low water; second gage cock stopped up and obstruction in right tank-hose strainer; 3 injured.

September 17, 1912, engine 1114, Stoneham, Mass. Water glass burst; 1 injured by escaping steam.

\*September 18, 1912, Portland, Me. Squirt-hose nipple broke off; 1 injured.

\*October 22, 1912, East Deerfield, Mass. Lubricator glass burst; 1 injured by flying glass.

October 25, 1912, engine 1353. Lubricator glass burst; no shield; 1 injured by escaping steam.

October 27, 1912, engine 2329, Hatfield, Mass. Squirt-hose valve blew off; improperly applied 1 injured.

November 22, 1912, engine 2318, near Claremont Junction, N. H. Crown sheet failed; due to low water; 3 injured.

December 6, 1912, engine 778, near Woodstock, N. H. Water glass burst; inefficient shield; 1 injured by flying glass.

December 17, 1912, engine 919, near Wamesit Junction, Mass. Crown sheet failed, due to low water; lowest reading of water glass and gage cock only  $2\frac{1}{2}$  inches above highest point of crown sheet; 2 injured.

December 17, 1912, engine 2377, near Wendell, Mass. Squirt hose blew off; insecurely applied; 1 injured.

December 23, 1912, engine 2415, Williamstown, Mass. Squirt hose blew off; insecurely applied; 1 injured.

December 26, 1912, engine 1439, North Leominster, Mass. Squirt-hose valve worked open; defective valve; 1 injured.

January 9, 1913, engine 942, Woburn, Mass. Flue sheet cracked; fireman injured jumping from engine; 1 injured.

January 10, 1913, engine 1975, near Harrisville, N. H. Water glass burst; 1 injured by escaping steam.

\*February 27, 1913, engine 2041, East Somerville, Mass. Lubricator glass burst; 1 injured by flying glass.

March 13, 1913, engine 1496, Summit Siding, Vt. Water glass burst; 1 injured by escaping steam.

March 17, 1913, engine 696, Westboro, N. H. Water glass burst; 1 injured; fell from engine in avoiding steam.

March 19, 1913, engine 2322, near Hatfield, Mass. Water glass burst; inefficient shield; 1 injured by flying glass.

April 14, 1913, engine 2628, Northampton, Mass. Squirt hose blew off; insecurely applied; 1 injured.

May 11, 1913, engine 2317, Weirs, N. H. Squirt hose blew off; insecurely applied; 1 injured.

May 14, 1913, engine 2397, Ipswich, Mass. Squirt hose blew off; insecurely applied; 1 injured.

May 15, 1913, engine 941, near Berlin, Mass. Bonnet blew out of steam heat valve; improperly fitted; 1 injured.

June 3, 1913, engine 1490, Lyndonville, Vt. Squirt hose blew off; insecurely applied; 1 injured.

Thirty-three accidents; 39 injured.

#### BUFFALO & SUSQUEHANNA RAILWAY:

\*July 12, 1912, Blasdel, N. Y. Water glass burst; 1 injured.

One accident; 1 injured.

#### BUTTE, ANACONDA & PACIFIC RAILWAY:

\*September 7, 1912, Butte Hill, Mont. Squirt hose burst; defective hose; 1 injured.

May 11, 1913, engine 22, Anaconda, Mont. Cap blew off washout bushing while being tightened with pressure on boiler; defective threads on cap; 1 injured.

Two accidents; 2 injured.

#### CENTRAL OF GEORGIA RAILWAY:

\*October 15, 1912, Atlanta, Ga. Squirt hose blew off; 1 injured.

\*March 12, 1913, engine 1804, Smiths, Ala. Squirt hose burst; defective hose; 1 injured.

May 10, 1913, engine 1054, near Cedartown, Ga. Steam-ram bonnet blew out of right injector; bonnet improperly fitted; 1 injured.

May 29, 1913, engine 1352, Leary, Ga. While blowing out ash pan, engineer was badly burned by fire blown from fire door; due to defective condition of grates; 1 injured.

June 4, 1913, engine 1054, Cedartown, Ga. Squirt-hose valve blew off; insecurely applied to pipe; 1 injured.

Five accidents; 5 injured.

#### CENTRAL RAILROAD OF NEW JERSEY:

November 12, 1912, engine 5, Jersey City, N. J. Lubricator glass burst; no shield; 1 injured by flying glass.

One accident; 1 injured.

#### CENTRAL VERMONT RAILWAY:

October 11, 1912, engine 216, St. Albans, Vt. Arch tube pulled out of flue sheet; improperly applied; 1 killed; 3 injured.

November 18, 1912, engine 215, East Swanton, Vt. Steam-heat valve disconnected; valve improperly fitted; 1 injured.

March 6, 1913, engine 210, Evarts, Vt. Flue burst; 2 injured.

Three accidents; 1 killed; 6 injured.

#### CHESAPEAKE & OHIO RAILWAY CO. OF INDIANA:

\*July 13, 1912, engine 570, Twelve Mile, Ind. Steam pipe to left injector burst, boiler check sticking; 1 injured.

\*December 2, 1912, engine 458, Kewanna, Ind. Arch tube pulled out of sheet; 1 injured.

Two accidents; 2 injured.

#### CHICAGO & ALTON RAILROAD:

January 17, 1913, engine 332, Girard, Ill. Squirt-hose valve worked open; 1 injured.

January 25, 1913, engine 1483, Peoria, Ill. Water glass burst; no shield; 1 injured by flying glass.

August 16, 1912, engine 504, Ryder, Mo. Stud blew out of boiler head; defective threads; 2 injured.

April 30, 1913, engine 827, near Funks Grove, Ill. Crown sheet came down, due to crown stays failing; 2 injured.

Four accidents; 6 injured.

#### CHICAGO & EASTERN ILLINOIS RAILROAD:

July 8, 1912, engine 623, St. Anne, Ill. Crown sheet failed, due to low water; 2 injured.

\*July 12, 1912, Villa Grove, Ill. Squirt hose blew off; 1 injured.

\*August 31, 1912 engine 886 Gerald, Ill. Squirt hose burst; 1 injured.

\*September 2, 1912, engine 886, Momence, Ill. Squirt hose blew off; 1 injured.

\*September 20, 1912, engine 1718, Danville, Ill. Squirt hose blew off; 1 injured.

December 1, 1912, engine 613, Salem, Ill. Arch tube pulled out of flue sheet; improperly applied; 1 injured.

\*December 23, 1912, engine 1717, Clinton, Ind. Steam pipe to injector became loosened; 2 injured jumping from engine to avoid steam.

June 26, 1913, engine 890, West Frankfort, Ill. Squirt hose burst; defective hose; 1 injured.

Eight accidents; 10 injured.

#### CHICAGO & NORTH WESTERN RAILWAY:

\*July 4, 1912, engine 747, Chicago, Ill. Squirt hose blew off; 1 injured.

\*July 5, 1912, engine 1116, Helena, Mich. Squirt hose blew off; 1 injured.

\*July 8, 1912, Ireton, Iowa. Squirt hose blew off; 1 injured.

\*July 23, 1912, engine 2008, Chicago, Ill. Cap blew off lubricator; 1 injured.

September 5, 1912, engine 1127, Chicago, Ill. Water glass burst while shield was removed; 1 injured by flying glass.

September 6, 1912, engine 530, Tracy, Minn. Lubricator glass burst; 1 injured.

September 27, 1912, engine 928, Chicago, Ill. Water glass burst; 1 injured by escaping steam.

October 25, 1912, engine 1337, Waseca, Minn. Water glass burst; 1 injured by escaping steam.

October 26, 1912, engine 373, Chicago, Ill. Water glass burst; 1 injured by escaping steam.

\*November 2, 1912, engine 645, Madison, Wis. Squirt hose blew off; 1 injured.

November 6, 1912, engine 1033, Waukegan, Ill. Lubricator glass burst; inefficient shield; 1 injured by flying glass.

\*November 8, 1912, engine 116, Escanaba, Mich. Squirt hose blew off; 1 injured.

November 9, 1912, engine 458, Wales, Wis. Water glass burst; inefficient shield; 1 injured by flying glass.

November 10, 1912, engine 491, near Owatonna, Minn. Flue burst; 1 injured.

November 23, 1912, engine 1577, Skokie Junction, Ill. Water glass burst; 1 injured by escaping steam.

December 16, 1912, engine 1752, Chicago, Ill. Water glass burst; 1 injured by escaping steam.

December 16, 1912, engine 462, Fond du Lac, Wis. Water glass burst; inefficient shield; 1 injured by flying glass.

December 20, 1912, engine 944, Chicago, Ill. Water glass burst; inefficient shield; 1 injured by flying glass.

December 31, 1912, engine 344, Traer, Iowa. Flue burst, due to excessive expanding; 1 injured.

January 8, 1913, engine 366, Chicago, Ill. Water glass burst; 1 injured by escaping steam.

January 25, 1913, engine 199, Fond du Lac, Wis. Water glass burst; inefficient shield; 1 injured by flying glass.

February 11, 1912, engine 806, Aurora, Ill. Washout plug blew out; defective threads; 2 injured.

March 11, 1913, engine 523, Fond du Lac, Wis. Water glass burst; inefficient shield; 1 injured by flying glass.

March 25, 1913, engine 262, Spring Valley, Ill. Steam pipe to lubricator blew off. 1 injured.

March 26, 1913, engine 915, near Bagley, Mich. Collar pulled off left injector steam pipe; due to defective brazing; 1 injured.

April 15, 1913, engine 1765, Proviso, Ill. Crown sheet failed, due to low water; opening in bottom water-glass cock partially obstructed and opening through top cock greatly obstructed; 1 injured.

April 18, 1913, engine 1190, Chicago, Ill. Boiler maker scalded while removing blow-off cock, due to defective threads on nipple; 1 injured.

April 19, 1913, engine 1324, near Butler, Wis. Washout plug blew out; improperly applied; 1 injured.

April 23, 1913, engine 201, Sioux Valley Junction, S. Dak. Blow-off cock leaking; 1 injured.

April 24, 1913, engine 1769, Proviso, Ill. Crown sheet failed, due to low water; top water-glass cock obstructed; 1 injured.

April 28, 1913, engine 580, Escanaba, Mich. Blower valve leaking; 1 injured.

April 30, 1913, engine 14, Ironwood, Mich. Squirt hose blew off; insecurely applied; 1 injured.

May 1, 1913, engine 1326, Elmhurst, Ill. Squirt hose blew off; insecurely applied; 1 injured.

May 7, 1913, engine 824, Baraboo, Wis. Lubricator glass burst; 1 injured by hot oil.

June 4, 1913, engine 12, Eagle Grove, Iowa. Bushing broke off ash-pan sprinkler; defective bushing; 1 killed; 1 injured.

June 11, 1913, engine 1363, near Marion, Wis. Flue burst; defective flue, due to overheating in welding; 1 injured.

June 14, 1913, engine 806, Aurora, Ill. Running board bracket stud blew out; 1 injured.

June 23, 1913, engine 1383, California Junction, Iowa. Washout plug blew out, due to defective threads; 2 injured.

June 26, 1913, engine 775, Watertown, Wis. Squirt hose parted at splice; 1 injured.

Thirty-nine accidents; 1 killed; 41 injured.

CHICAGO, BURLINGTON & QUINCY RAILROAD:

July 2, 1912, engine 1979, near Hamburg, Iowa. Squirt hose blew off; insecurely applied; 1 injured.

July 6, 1912, engine 3168, Galesburg, Ill. Water glass burst; shield removed at time of accident; 1 injured by flying glass.

July 10, 1912, engine 2008, Rushville, Mo. Squirt hose blew off; insecurely applied; 1 injured.

July 11, 1912, engine 1204, Norwalk, Iowa. Flue burst at weld; 1 injured.

July 17, 1912, engine 2208, Annada, Mo. Squirt hose blew off; insecurely applied; 1 injured.

July 23, 1912, engine 1169, Davis Junction, Ill. Squirt hose blew off; insecurely applied; 1 injured.

July 25, 1912, engine 2146, Balfour, Iowa. Squirt hose blew off; insecurely applied; 1 injured.

July 27, 1912, engine 642, Oakland, Nebr. Squirt hose blew off; insecurely applied; 1 injured.

July 30, 1912, engine 1318, Wymore, Nebr. Squirt hose blew off; insecurely applied; 1 injured.

August 3, 1912, engine 5008, Lincoln, Nebr. Squirt hose blew off; insecurely applied; 1 injured.

August 5, 1912, engine 4000, Walshville, Ill. Squirt hose burst where kinked; 1 injured.

August 18, 1912, engine 2208, Annada, Mo. Squirt hose blew off; insecurely applied; 1 injured.

August 23, 1912, engine 1969, East St. Louis, Ill. Squirt hose blew off; insecurely applied; 1 injured.

August 31, 1912, engine 2109, Canton, Ill. Squirt hose blew off; insecurely applied; 1 injured.

September 9, 1912, engine 1202, near Red Oak, Iowa. Squirt hose blew off; insecurely applied; 1 injured.

September 9, 1912, engine 5036, Chariton, Iowa. Squirt hose blew off; insecurely applied; 1 injured.

October 10, 1912, engine 5043, Galesburg, Ill. Spanner nut on left injector steam pipe broke; defective spanner nut; 1 injured.

October 10, 1912, engine 2203, near Story, Colo. Flue burst in weld; 1 injured.

October 22, 1912, engine 1233, Sioux City, Iowa. Water glass burst; shield removed at time of accident; 1 injured by flying glass.

October 26, 1912, engine 1429, Morton Park, Ill. Water glass burst; 1 injured falling from engine in avoiding steam.

November 2, 1912, engine 1686, Denver, Colo. Blow-off cock leaking; 1 injured.

November 11, 1912, engine 1516, Beardstown, Ill. Water glass burst; 1 injured by escaping steam.

November 17, 1912, engine 2002, McCartney, Wis. Union nut broke on left steam-chest oil pipe, due to defective brazing; 1 injured.

November 21, 1912, engine 86, Percival, Iowa. Steam-heat hose blew off; insecurely applied; 1 injured.

December 5, 1912, engine 1716, Beardstown, Ill. Water glass burst; inefficient shield; 1 injured by flying glass.

January 7, 1913, engine 1425, Galesburg, Ill. Water glass burst; 1 injured by escaping steam.

January 18, 1913, engine 1311, Sheridan, Wyo. Lubricator glass burst; inefficient shield; 1 injured by flying glass.

January 21, 1913, engine 2808, near Harvard, Nebr. Injector steam pipe broke; 1 injured.

January 22, 1913, engine 2825, near Burnham, Nebr. Squirt-hose valve jarred open; 1 injured.

February 15, 1913, engine 5020, near Provo, S. Dak. Crown sheet failed, due to low water; 3 killed.

March 6, 1913, engine 2052, La Salle, Ill. Flue burst at weld; metal in safe end not of sufficient thickness; 2 injured.

March 7, 1913, engine 2092, Farmington, Ill. Water glass burst; inefficient shield; 1 injured by flying glass.

March 31, 1913, engine 1457, St. Joseph, Mo. Water glass burst; 1 injured by escaping steam.

April 10, 1913, engine 2186, near Lucas, Iowa. Flue burst; flue defective, due to overheating in welding; 1 injured.

April 15, 1913, engine 964, Litchfield, Ill. Water glass burst; shield removed at time of accident; 1 injured by flying glass.

May 1, 1913, engine 2172, Calvert, Wis. Squirt hose blew off; insecurely applied; 1 injured.

June 2, 1913, engine 1137, Francis, Mo. Water glass burst; inefficient shield; 1 injured by flying glass.

June 6, 1913, engine 1046, Orleans, Nebr. Handle pulled off connecting rod operating blow-off cock, due to defective threads on rod and in handle; 1 injured falling from engine.

June 30, 1913, engine 2158, Beardstown, Ill. Squirt hose blew off; insecurely applied; 1 injured.

Thirty-nine accidents; 3 killed; 39 injured.

CHICAGO GREAT WESTERN RAILROAD:

\*July 11, 1912, engine 338, Oelwein, Iowa. Lubricator plug blew out while being tightened; 1 injured.

\*July 22, 1912, Bondurant, Iowa. Squirt hose burst; 1 injured.

February 13, 1913, engine 277, Savanna, Mo. Flue burst; defective weld; 1 injured.

May 30, 1913, engine 333, near Dundee, Iowa. Crown sheet failed, due to low water; bottom water-glass cock partially obstructed by gasket; 1 injured.

Four accidents; 4 injured.

CHICAGO, INDIANA & SOUTHERN RAILROAD:

July 16, 1912, engine 5400, Gibson, Ind. Water glass burst; inefficient shield; 1 injured by flying glass.

February 18, 1913, engine 5277, Kankakee, Ill. Water glass burst; inefficient shield; 1 injured by flying glass.



March 31, 1913, engine 5463, near Danville, Ill. Water glass burst; inefficient shield; 1 injured by flying glass.

Three accidents; 3 injured.

**CHICAGO, MILWAUKEE & PUGET SOUND RAILWAY:**

\*August 21, 1912, engine 1942, Melstone, Mont. Water glass burst; 1 injured by flying glass.

September 24, 1912, engine 2089, Pacific City, Wash. Crown sheet failed, due to low water; appurtenances lost in explosion and could not be inspected; 4 killed.

October 29, 1912, engine 5616, near Lemmon, S. Dak. Crown sheet failed, due to low water; 2 killed; 1 injured.

Three accidents; 6 killed; 2 injured.

**CHICAGO, MILWAUKEE & ST. PAUL RAILWAY:**

\*July 3, 1912, Deerfield, Ill. Squirt hose blew off; 1 injured.

July 9, 1912, engine 1611, near Rockton, Ill. Squirt hose blew off; insecurely applied; 1 injured.

July 25, 1912, engine 1846, Summit, S. Dak. Water glass burst; inefficient shield; 1 injured by flying glass.

\*August 6, 1912, engine 438, Ridley, Iowa. Squirt hose blew off; 1 injured.

August 10, 1912, engine 1215, Milwaukee, Wis. Water glass burst; 1 injured by escaping steam.

\*August 23, 1912, engine 207, Libertyville, Ill. Squirt hose blew off; 1 injured.

August 27, 1912, engine 1309, Wabasha, Wis. Washout plug blew out of front flue sheet; engineer scalded by water escaping through stack; 1 injured.

September 10, 1912, engine 371, near Channing, Mich. Crown sheet failed, due to low water; fusible plug defective; water glass dirty, making it difficult to see water; 3 injured.

September 18, 1912, engine 144, Vermillion, S. Dak. Packing nut blew off injector steam ram, due to defective threads; 1 injured.

\*October 2, 1912, engine 1239, Green Bay, Wis. Petticoat pipe blew out; 1 injured.

\*October 18, 1912, engine 108, Arlington, Iowa. Lubricator plug blew out; 1 injured.

\*November 15, 1912, engine 2800, Spaulding, Ill. Blow-off cock blew off at union; 1 injured.

November 21, 1912, engine 1176, Mannheim, Ill. Water glass burst; 1 injured by escaping steam.

December 22, 1912, engine 866, Middleton, Wis. Water glass burst; 1 injured by escaping steam.

December 24, 1912, engine 7108, Brownton, Minn. Fusible plug blew out; threads in crown sheet badly corroded; 1 injured.

December 31, 1912, engine 7046, Thiensville, Wis. Spanner nut broke on injector-delivery pipe; nut defective; 1 injured.

December 31, 1912, engine 1110, Janesville, Wis. Water glass burst; 1 injured by escaping steam.

\*January 6, 1913, engine 5632, Mobridge, S. Dak. Tank hose blew off; 1 injured.

January 9, 1913, engine 7057, Hilbert Junction, Wis. Engineer scalded by water escaping from overflow; injector inoperative, due to steam ram being packed too tight; overflow pipe not coupled to injector; 1 injured.

January 11, 1913, engine 730, near Bridgeport, Wis. Injector packing nut blew off; defective threads on nut; 1 injured.

February 23, 1913, engine 4206, Elkhorn, Wis. Water glass burst; inefficient shield; 1 injured by escaping hot water.

March 5, 1913, engine 7118, Milwaukee, Wis. Water glass burst; inefficient shield; 1 injured by escaping hot water.

March 12, 1913, engine 1507, Chicago, Ill. Stem blew out of bottom water-glass cock; 1 injured.

March 18, 1913, engine 4004, Darlington, Wis. Injector packing nut blew out, due to defective threads; 1 injured.

March 20, 1913, engine 4327, Bettendorf, Iowa. Lubricator glass burst; 1 injured by escaping hot oil.

\*March 24, 1913, engine 9605, Piedmont, Mont. Cylinder-cock valve disconnected, due to defective threads; 1 injured.

April 1, 1913, engine 7211, near Franksville, Wis. Crown sheet failed, due to low water; 3 injured.

June 20, 1913, engine 2302, near Ruthven, Iowa. Bonnet blew off injector; defective bonnet; 1 injured.

Twenty-eight accidents; 32 injured.

**CHICAGO, PEORIA & ST. LOUIS RAILWAY OF ILLINOIS:**

July 29, 1912, engine 67, near McCluskey, Ill. Squirt hose blew off; insecurely applied; 1 injured.

\*December 16, 1912, engine 45, Pekin, Ill. Engineer scalded by steam escaping through hole in blower pipe; 1 injured.

\*February 3, 1913, engine 44, Springfield, Ill. Flue burst; 1 injured.

Three accidents; 3 injured.

**CHICAGO, ROCK ISLAND & GULF RAILWAY:**

\*August 13, 1912, engine 220, Fort Worth, Tex. Squirt hose burst; 1 injured.

\*September 19, 1912, engine 1444, Amarillo, Tex. Water glass burst; 1 injured by flying glass.

Two accidents; 2 injured.

**CHICAGO, ROCK ISLAND & PACIFIC RAILWAY:**

July 13, 1912, engine 1499, near Palo, Iowa. Crown sheet failed, due to low water; 1 injured.

\*August 25, 1912, engine 211, Haileyville, Okla. Water glass burst; inefficient shield; 1 injured by flying glass.

September 7, 1912, engine 1860, Brinkley, Ark. Crown sheet failed, due to low water; 2 injured.

\*September 13, 1912, Mineral, Ill. Steam pipe to injector burst; 1 injured.

\*October 6, 1912, El Reno, Okla. Steam pipe to left injector gave way; 1 injured.

December 20, 1912, engine 1958, Albert Lea, Minn. Water glass burst; inefficient shield; 1 injured by flying glass.

January 4, 1913, engine 1494, Herington, Kans. Water glass burst; inefficient shield; 1 injured by flying glass.

\*January 13, 1913, engine 2116, Bison, Okla. Bullseye-lubricator glass burst; 1 injured.

\*January 14, 1913, engine 1681, Chicago, Ill. Lubricator glass burst; no shield; 1 injured by flying glass.

February 1, 1913, engine 2019, Bureau, Ill. Water glass burst; 1 injured by flying glass.

February 11, 1913, engine 1958, near Greene, Iowa. Flue pulled out of back-flue sheet; improperly applied; 2 injured.

June 19, 1913, engine 415, Waurika, Okla. Machinist scalded by-steam escaping from injector overflow, due to defective boiler check; 1 injured.

June 24, 1913, engine 1859, Leola, Ark. Blow-off cock blew out; not properly screwed into sheet; 2 injured.

Thirteen accidents; 16 injured.

**CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA RAILWAY:**

April 8, 1913, engine 127, Mankato, Minn. Defective flue pocket knocked out by boiler maker repairing flues; 1 injured.

One accident; 1 injured.

**CHICAGO, TERRA HAUTE & SOUTHEASTERN RAILWAY:**

July 16, 1912, engine 309, Terra Haute, Ind. Water glass burst; inefficient shield; 1 injured by flying glass.

One accident; 1 injured.

**CINCINNATI, HAMILTON & DAYTON RAILWAY:**

\*July 5, 1912, engine 417, Ivorydale, Ohio. Squirt-hose valve worked open; 1 injured.

\*July 30, 1912, engine 614, North Dayton, Ohio. Squirt hose blew off; 1 injured.

December 1, 1912, engine 417, near Stockton, Ohio. Crown sheet failed, due to low water; 1 killed; 1 injured.

\*December 14, 1912, engine 346, Irvington, Ind. Flue burst; 1 injured.

January 5, 1913, engine 408, Irvington, Ind. Crown sheet failed, due to low water; flues, right side sheet and door ring leaking; 4 injured.

\*January 27, 1913, engine 385, Oxford, Ohio. Flue burst; 1 injured.

Six accidents; 1 killed; 9 injured.

**CINCINNATI, NEW ORLEANS & TEXAS PACIFIC RAILWAY:**

\*November 8, 1912, engine 533, Sadieville Ky. Expansion pad stud blew out; 1 injured.

November 18, 1912, engine 718, near Williamstown, Ky. Crown sheet failed, due to low water; injectors defective; 1 injured.

May 5, 1913, engine 746, Robbins, Tenn. Ash-pan blower pipe blew off connection at blower valve; 1 injured.

Three accidents; 3 injured.

## CLEVELAND, CINCINNATI, CHICAGO &amp; ST. LOUIS RAILWAY:

July 1, 1912, engine 6900, near Carlisle Junction, Ohio. Squirt hose blew off; insecurely applied; 1 injured.

July 7, 1912, engine 7357, Ivorydale, Ohio. Squirt hose blew off; insecurely applied; 1 injured.

\*July 11, 1912, engine 6196, Benton Harbor, Mich. Squirt hose blew off; 1 injured.

July 16, 1912, engine 6841, Cleveland, Ohio. Squirt hose blew off; insecurely applied; 1 injured.

July 22, 1912, engine 7336, Cincinnati, Ohio. Squirt hose blew off; insecurely applied; 1 injured.

August 26, 1912, engine 6823, La Grange, Ohio. Squirt hose blew off; insecurely applied; 1 injured.

September 13, 1912, engine 7254, Anderson, Ind. Blower-pipe collar broke at blower throttle; defective collar; 1 injured.

September 26, 1912, engine 6328, Springfield, Ohio. Spindle blew out of top water-glass cock; engineer scalded in attempting to replace it; 1 injured.

October 4, 1912, engine 6867, Paris, Ill. Squirt hose blew off; insecurely applied; 1 injured.

October 18, 1912, engine 6654, near Embarrass, Ill. Injector steam pipe disconnected, due to defective brazing and pipe not being securely clamped; 1 injured.

October 25, 1912, engine 6530, Mount Carmel, Ill. Lubricator glass burst; 1 injured by flying glass.

November 19, 1912, engine 6733, near Taft, Ind. Crown sheet failed, due to low water; dirty condition of water glass and type of shield used made it impossible to see water in glass; 3 injured.

November 21, 1912, engine 7340, Linndale, Ohio. Water glass burst; 1 injured by escaping steam.

November 23, 1912, engine 6836, Linndale, Ohio. Squirt hose blew off; defective hose; 1 injured.

December 16, 1912, engine Peoria & Eastern 6505, Indianapolis, Ind. Squirt hose blew off; defective threads on reducer; 1 injured.

January 4, 1913, engine 6849, Indianapolis, Ind. Arch tube pulled out; improperly applied; 3 injured.

January 11, 1913, engine 7285, East St. Louis, Ill. Crown sheet failed, due to low water; 1 injured.

January 22, 1913, engine 6549, near Monroe, Ohio. Collar pulled off left injector steam pipe; collar insecurely brazed to pipe; 1 injured.

March 20, 1913, engine 6428, Avon, Ind. Squirt hose blew off; insecurely applied; 1 injured.

\*April 4, 1913, engine 6691, Middlesworth, Ill. Squirt hose blew off; insecurely applied; 1 injured.

April 17, 1913, engine 6540, Sharonville, Ohio. Water glass burst; inefficient shield; 1 injured by flying glass.

April 18, 1913, engine 7345, Columbus, Ohio. Water glass burst; inefficient shield; 1 injured by flying glass.

May 20, 1913, engine 6423, Linndale, Ohio. Ash-pan blower pipe blew off; defective threads; 1 injured.

June 5, 1913, engine 6548, Riverside, Ohio. Staybolt blew out, due to improper application of the bolt; 2 injured.

June 26, 1913, engine 6551, Harrisburg, Ill. Water glass burst; 1 injured by flying glass.

Twenty-five accidents; 30 injured.

## COLORADO &amp; SOUTHERN RAILWAY:

August 31, 1912, engine 620, Bunker Hill, Colo. Crown sheet failed, due to low water; appurtenances too badly damaged in explosion to permit satisfactory investigation; 2 killed; 1 injured.

One accident; 2 killed; 1 injured.

## COLORADO MIDLAND RAILWAY:

October 9, 1912, engine 301, near Sellar, Colo. Crown sheet failed, due to low water; tank hose strainers partially stopped up; 2 killed.

One accident; 2 killed.

## CUMBERLAND VALLEY RAILROAD:

January 17, 1913, engine 103, near Martinsburg, W. Va. Flue burst; 1 injured.

May 21, 1913, engine 89, near Berkeley, W. Va. Squirt hose blew off; insecurely applied; 1 injured.

Two accidents; 2 injured.

## DELAWARE &amp; HUDSON Co.:

September 13, 1912, engine 450, near Ballston, N. Y. Crown sheet failed, due to low water; injectors defective due to coal and dirt in tank; 1 injured.

February 17, 1913, engine 838, Mechanicsville, N. Y. Crown sheet failed, due to low water; 2 injured.

Two accidents; 3 injured.

## DELAWARE, LACKAWANNA &amp; WESTERN RAILROAD:

\*July 17, 1912, engine 904, Ithaca, N. Y. Water glass burst; inefficient shield; 1 injured by flying glass.

August 14, 1912, engine 332, Vestal, N. Y. Stud blew out of back head, due to defective threads and improper application of stud; 1 injured.

\*August 15, 1912, engine 617, South Granby, N. Y. Flue burst; 1 injured.

\*October 11, 1912, engine 855, Cresco, Pa. Flue burst; 1 injured.

\*November 13, 1912, engine 1104, Lehigh, Pa. Flue burst; 1 injured.

May 11, 1913, engine 1109, near Lehigh, Pa. Flue burst; flue defective, due to overheating in welding; 2 injured.

June 1, 1913, engine 1108, near Hallstead, Pa. Flue burst; flue defective, due to overheating in welding; 1 injured.

Seven accidents; 8 injured.

## DENVER &amp; RIO GRANDE RAILROAD:

July 3, 1912, engine 1138, Denver, Colo. Boiler maker scalded in attempting to work defective flues with boiler under pressure; 1 injured.

July 19, 1912, engine 901, Soldier Summit, Utah. Squirt hose burst; defective hose; 1 injured.

July 30, 1912, engine 1153, Thompson, Utah. Squirt hose parted at splice; 1 injured.

October 6, 1912, engine 1165, near Americus, Colo. Crown sheet failed, due to low water; 2 injured.

\*November 5, 1912, engine 742, Salt Lake City, Utah. Bottom water-glass cock blew out; 1 injured.

December 16, 1912, engine 633, Garfield, Utah. Lubricator glass burst, escaping oil ignited from flame of torch; 1 injured.

March 27, 1913, engine 557, Salt Lake City, Utah. Staybolt blew out of firebox sheet; staybolt broken, and had been improperly applied; 1 injured.

Seven accidents; 8 injured.

## DENVER, NORTHWESTERN &amp; PACIFIC RAILWAY:

June 16, 1913, engine 119, Phippsburg, Colo. Crown sheet failed, due to low water; water-glass cocks had been shut off prior to accident on account of defective gasket; 2 injured.

One accident; 2 injured.

## DETROIT &amp; TOLEDO SHORE LINE RAILROAD:

January 5, 1913, engine 2, Detroit, Mich. Crown sheet failed, due to low water; 44 crown stays were found to have been broken prior to accident, and the bottom water-glass cock was closed with scale; 1 killed; 5 injured.

One accident; 1 killed; 5 injured.

## DULUTH &amp; NORTHERN MINNESOTA RAILWAY Co.:

January 4, 1913, engine 7, Knife River, Minn. Fire box failure, due to broken stay bolts. Ninety-seven broken stay bolts in right side sheet, 1 in flue sheet, and 8 in back head; 2 injured.

One accident; 2 injured.

## DULUTH, MISSABE &amp; NORTHERN RAILWAY:

\*August 30, 1912, engine 337, Alborn, Minn. Water glass burst; 1 injured by flying glass.

One accident; 1 injured.

## EL PASO &amp; SOUTHWESTERN SYSTEM:

\*August 5, 1912, Fort Bliss, Tex. Water glass burst; 1 injured by flying glass.

April 20, 1913, engine 406, El Paso, Tex. Water glass burst; 1 injured by escaping steam.

June 21, 1913, engine 121, Fairbanks, Ariz. Crown sheet failed, due to low water; 2 killed; 1 injured.

Three accidents; 2 killed; 3 injured.

## Erie RAILROAD:

\*July 15, 1912, engine 939, Jersey City, N. J. Squirt hose blew off; 1 injured.

August 31, 1912, engine 1838, Spring Tank, N. Y. Flue burst, due to defective work; 2 injured.

\*September 24, 1912, engine 1302, Marion, Ohio. Lubricator glass burst; 1 injured by flying glass.

## CLEVELAND, CINCINNATI, CHICAGO &amp; ST. LOUIS RAILWAY:

July 1, 1912, engine 6900, near Carlisle Junction, Ohio. Squirt hose blew off; insecurely applied; 1 injured.

July 7, 1912, engine 7357, Ivorydale, Ohio. Squirt hose blew off; insecurely applied; 1 injured.

\*July 11, 1912, engine 6196, Benton Harbor, Mich. Squirt hose blew off; 1 injured.

July 16, 1912, engine 6841, Cleveland, Ohio. Squirt hose blew off; insecurely applied; 1 injured.

July 22, 1912, engine 7336, Cincinnati, Ohio. Squirt hose blew off; insecurely applied; 1 injured.

August 26, 1912, engine 6823, La Grange, Ohio. Squirt hose blew off; insecurely applied; 1 injured.

September 13, 1912, engine 7254, Anderson, Ind. Blower-pipe collar broke at blower throttle; defective collar; 1 injured.

September 26, 1912, engine 6328, Springfield, Ohio. Spindle blew out of top water-glass cock; engineer scalded in attempting to replace it; 1 injured.

October 4, 1912, engine 6867, Paris, Ill. Squirt hose blew off; insecurely applied; 1 injured.

October 18, 1912, engine 6654, near Embarrass, Ill. Injector steam pipe disconnected, due to defective brazing and pipe not being securely clamped; 1 injured.

October 25, 1912, engine 6530, Mount Carmel, Ill. Lubricator glass burst; 1 injured by flying glass.

November 19, 1912, engine 6733, near Taft, Ind. Crown sheet failed, due to low water; dirty condition of water glass and type of shield used made it impossible to see water in glass; 3 injured.

November 21, 1912, engine 7340, Linndale, Ohio. Water glass burst; 1 injured by escaping steam.

November 23, 1912, engine 6836, Linndale, Ohio. Squirt hose blew off; defective hose; 1 injured.

December 16, 1912, engine Peoria & Eastern 6505, Indianapolis, Ind. Squirt hose blew off; defective threads on reducer; 1 injured.

January 4, 1913, engine 6849, Indianapolis, Ind. Arch tube pulled out; improperly applied; 3 injured.

January 11, 1913, engine 7285, East St. Louis, Ill. Crown sheet failed, due to low water; 1 injured.

January 22, 1913, engine 6549, near Monroe, Ohio. Collar pulled off left injector steam pipe; collar insecurely brazed to pipe; 1 injured.

March 20, 1913, engine 6428, Avon, Ind. Squirt hose blew off; insecurely applied; 1 injured.

\*April 4, 1913, engine 6691, Middlesworth, Ill. Squirt hose blew off; insecurely applied; 1 injured.

April 17, 1913, engine 6540, Sharonville, Ohio. Water glass burst; inefficient shield; 1 injured by flying glass.

April 18, 1913, engine 7345, Columbus, Ohio. Water glass burst; inefficient shield; 1 injured by flying glass.

May 20, 1913, engine 6423, Linndale, Ohio. Ash-pan blower pipe blew off; defective threads; 1 injured.

June 5, 1913, engine 6548, Riverside, Ohio. Staybolt blew out, due to improper application of the bolt; 2 injured.

June 26, 1913, engine 6551, Harrisburg, Ill. Water glass burst; 1 injured by flying glass.

Twenty-five accidents; 30 injured.

## COLORADO &amp; SOUTHERN RAILWAY:

August 31, 1912, engine 620, Bunker Hill, Colo. Crown sheet failed, due to low water; appurtenances too badly damaged in explosion to permit satisfactory investigation; 2 killed; 1 injured.

One accident; 2 killed; 1 injured.

## COLORADO MIDLAND RAILWAY:

October 9, 1912, engine 301, near Sellar, Colo. Crown sheet failed, due to low water; tank hose strainers partially stopped up; 2 killed.

One accident; 2 killed.

## CUMBERLAND VALLEY RAILROAD:

January 17, 1913, engine 103, near Martinsburg, W. Va. Flue burst; 1 injured.

May 21, 1913, engine 89, near Berkeley, W. Va. Squirt hose blew off; insecurely applied; 1 injured.

Two accidents; 2 injured.

## DELAWARE &amp; HUDSON CO.:

September 13, 1912, engine 450, near Ballston, N. Y. Crown sheet failed, due to low water; injectors defective due to coal and dirt in tank; 1 injured.

February 17, 1913, engine 838, Mechanicsville, N. Y. Crown sheet failed, due to low water; 2 injured.

Two accidents; 3 injured.

## DELAWARE, LACKAWANNA &amp; WESTERN RAILROAD:

\*July 17, 1912, engine 904, Ithaca, N. Y. Water glass burst; inefficient shield; 1 injured by flying glass.

August 14, 1912, engine 332, Vestal, N. Y. Stud blew out of back head, due to defective threads and improper application of stud; 1 injured.

\*August 15, 1912, engine 617, South Granby, N. Y. Flue burst; 1 injured.

\*October 11, 1912, engine 855, Cresco, Pa. Flue burst; 1 injured.

\*November 13, 1912, engine 1104, Lehigh, Pa. Flue burst; 1 injured.

May 11, 1913, engine 1109, near Lehigh, Pa. Flue burst; flue defective, due to overheating in welding; 2 injured.

June 1, 1913, engine 1108, near Hallstead, Pa. Flue burst; flue defective, due to overheating in welding; 1 injured.

Seven accidents; 8 injured.

## DENVER &amp; RIO GRANDE RAILROAD:

July 3, 1912, engine 1138, Denver, Colo. Boiler maker scalded in attempting to work defective flues with boiler under pressure; 1 injured.

July 19, 1912, engine 901, Soldier Summit, Utah. Squirt hose burst; defective hose; 1 injured.

July 30, 1912, engine 1153, Thompson, Utah. Squirt hose parted at splice; 1 injured.

October 6, 1912, engine 1165, near Americus, Colo. Crown sheet failed, due to low water; 2 injured.

\*November 5, 1912, engine 742, Salt Lake City, Utah. Bottom water-glass cock blew out; 1 injured.

December 16, 1912, engine 633, Garfield, Utah. Lubricator glass burst, escaping oil ignited from flame of torch; 1 injured.

March 27, 1913, engine 557, Salt Lake City, Utah. Staybolt blew out of firebox sheet; staybolt broken, and had been improperly applied; 1 injured.

Seven accidents; 8 injured.

## DENVER, NORTHWESTERN &amp; PACIFIC RAILWAY:

June 16, 1913, engine 119, Phippsburg, Colo. Crown sheet failed, due to low water; water-glass cocks had been shut off prior to accident on account of defective gasket; 2 injured.

One accident; 2 injured.

## DETROIT &amp; TOLEDO SHORE LINE RAILROAD:

January 5, 1913, engine 2, Detroit, Mich. Crown sheet failed, due to low water; 44 crown stays were found to have been broken prior to accident, and the bottom water-glass cock was closed with scale; 1 killed; 5 injured.

One accident; 1 killed; 5 injured.

## DULUTH &amp; NORTHERN MINNESOTA RAILWAY CO.:

January 4, 1913, engine 7, Knife River, Minn. Fire box failure, due to broken stay bolts. Ninety-seven broken stay bolts in right side sheet, 1 in flue sheet, and 8 in back head; 2 injured.

One accident; 2 injured.

## DULUTH, MISSABE &amp; NORTHERN RAILWAY:

\*August 30, 1912, engine 337, Alborn, Minn. Water glass burst; 1 injured by flying glass.

One accident; 1 injured.

## EL PASO &amp; SOUTHWESTERN SYSTEM:

\*August 5, 1912, Fort Bliss, Tex. Water glass burst; 1 injured by flying glass.

April 20, 1913, engine 406, El Paso, Tex. Water glass burst; 1 injured by escaping steam.

June 21, 1913, engine 121, Fairbanks, Ariz. Crown sheet failed, due to low water; 2 killed; 1 injured.

Three accidents; 2 killed; 3 injured.

## ERIE RAILROAD:

\*July 15, 1912, engine 939, Jersey City, N. J. Squirt hose blew off; 1 injured.

August 31, 1912, engine 1838, Spring Tank, N. Y. Flue burst, due to defective weld; 2 injured.

\*September 24, 1912, engine 1302, Marion, Ohio. Lubricator glass burst; 1 injured by flying glass.

\*October 3, 1912, engine 335, Sparta, N. J. Lubricator glass burst; 1 injured by flying glass.

January 9, 1913, engine 3028, Kenmore, Ohio. Arch tube pulled out of flue sheet; tube improperly applied and very dirty; 2 injured.

January 19, 1913, engine 1619, Marion, Ohio. Collar pulled off left injector steam pipe; collar insecurely brazed to pipe; 1 injured.

Six accidents; 8 injured.

**FORT SMITH & WESTERN RAILROAD:**

\*January 4, 1913, engine 3, Kinta, Okla. Bonnet blew off main valve to left injector; 1 injured.

One accident; 1 injured.

**GALVESTON, HARRISBURG & SAN ANTONIO RAILWAY:**

August 25, 1912, engine 85, San Antonio, Tex. Boiler-washer helper scalded while removing washout plug with pressure on boiler; 1 injured.

March 6, 1913, engine 827, Spofford, Tex. Tank hose blew off, due to defective threads on union nut; 1 injured.

March 17, 1913, engine 421, Waelder, Tex. Squirt hose burst; defective hose; 1 injured.

May 20, 1913, engine 75, Eagle Pass, Tex. Right injector primer bonnet blew out, due to defective threads on bonnet; 1 injured.

June 10, 1913, engine 206, near Goliad, Tex. Collar broke on left injector steam pipe; collar defective; 1 injured.

Five accidents; 5 injured.

**GRAND RAPIDS & INDIANA RAILWAY:**

August 28, 1912, engine 76, Grand Rapids, Mich. Steam pipe to left injector blew off, due to defective collar; 1 injured.

One accident; 1 injured.

**GRAND TRUNK RAILWAY SYSTEM:**

\*July 2, 1912, Durand, Mich. Squirt hose blew off; 1 injured.

\*July 5, 1912, Flint, Mich. Squirt hose blew off; 1 injured.

July 20, 1912, engine 1451, Durand, Mich. Arch tube burst; tube overheated account of not being properly cleaned; 1 injured.

August 11, 1912, engine 2375, near Goodells, Mich. Crown sheet failed, due to low water; lowest reading of water glass only 1 inch above highest point of crown sheet; 1 injured.

\*August 12, 1912, West Milan, N. H. Steam pipe to right injector burst; 2 injured.

\*November 16, 1912, engine 1443, Nichols, Mich. Water glass burst; 1 injured by flying glass.

January 11, 1913, engine 2179, near Pontiac, Mich. Water glass burst; inefficient shield; 1 injured by flying glass.

May 14, 1913, engine 102, Elsdon, Ill. Water glass burst; inefficient shield; 1 injured by flying glass.

May 22, 1913, engine 1379, near Olivers, Mich. Squirt hose blew off; insecurely applied; 1 injured.

June 14, 1913, engine 105, Perry, Mich. Squirt hose burst; hose too light to withstand pressure; 1 injured.

June 18, 1913, engine 505, Millett, Mich. Squirt hose burst; hose too light to withstand pressure; 1 injured.

Eleven accidents; 12 injured.

**GREAT NORTHERN RAILWAY:**

\*September 28, 1912, engine 1806, Paola, Mont. Water glass burst; 1 injured by escaping steam.

\*December 6, 1912, engine 1624, Brockton, Mont. Plug in crown sheet leaking; engineer scalded while working on flues; 1 injured.

\*May 30, 1913, engine 2009, Glacier Park, Mont. Squirt hose burst; 1 injured.

Three accidents; 3 injured.

**GULF & SHIP ISLAND RAILROAD:**

July 29, 1912, engine 63, near Hattiesburg, Miss. Squirt hose blew off; insecurely applied; 1 injured.

November 2, 1912, engine 53, near Magee, Miss. Crown sheet failed, due to low water; no water glass on locomotive; safety valves set 15 and 20 pounds above working pressure; 2 injured.

Two accidents; 3 injured.

**GULF, COLORADO & SANTA FE RAILWAY:**

September 2, 1912, engine 677, Goldthwaite, Tex. Boiler check stuck; engineer scalded while attempting to make repairs; 1 injured.

\*December 20, 1912, engine 706, Manvel, Tex. Right blowoff cock broke; 1 injured.

June 7, 1913, engine 674, Temple, Tex. Washout plug blew out; defective plug; 2 injured.

Three accidents; 4 injured.

**LOCKING VALLEY RAILWAY:**

\*August 6, 1912, engine 230, Columbus, Ohio. Nut on lubricator glass blew out; 1 injured.

\*October 10, 1912, engine 157, Columbus, Ohio. Squirt hose blew off; 1 injured.

May 11, 1913, engine 153, Mortimer, Ohio (on Toledo & Ohio Central Railway). Squirt hose blew off; insecurely applied; 1 injured.

May 28, 1913, engine 112, Columbus, Ohio. Bull's-eye lubricator glass blew out, due to defective threads on packing nut; 1 injured.

Four accidents; 4 injured.

**HUNTINGTON & BROAD TOP MOUNTAIN RAILROAD:**

\*September 29, 1912, engine 17, Saxton, Pa. Water glass burst; 1 injured by flying glass.

One accident; 1 injured.

**ILLINOIS CENTRAL RAILROAD:**

\*July 6, 1912, Brookhaven, Miss. Water glass burst; 1 injured.

\*July 6, 1912, Millington, Tenn. Flue burst; 1 injured.

\*July 10, 1912, Central City, Ky. Squirt hose blew off; 1 injured.

\*July 14, 1912, Lead Hill, Ky. Squirt hose blew off; 1 injured.

\*July 15, 1912, Battys, Miss. Lubricator glass burst; 1 injured by flying glass.

\*July 23, 1912, Fulton, Ky. Squirt hose blew off; 1 injured.

\*August 8, 1912, Hammond, La. Flue burst; 1 injured.

\*August 13, 1912, Paducah, Ky. Water glass burst; 1 injured by flying glass.

\*September 4, 1912, Fulton, Ky. Squirt hose blew off; 1 injured.

\*September 4, 1912, Carbondale, Ill. Squirt hose burst; 1 injured.

\*September 7, 1912, Paducah, Ky. Squirt hose blew off; 1 injured.

\*September 9, 1912, Obion, Tenn. Squirt hose blew off; 1 injured.

\*September 11, 1912, Canton, Miss. Squirt hose blew off; 1 injured.

\*September 15, 1912, Canton, Miss. Squirt hose burst; 1 injured.

September 17, 1912, engine 915, Oakfield, Tenn. Flue burst; flue weakened by repeated working; 2 injured.

\*September 21, 1912, Grenada, Miss. Relief valve on right steam chest blew out; 1 injured.

\*September 30, 1912, Church, Ill. Water glass burst; 1 injured by escaping steam.

\*October 3, 1912, Birmingham, Ala. Water glass burst; 1 injured by escaping steam.

\*October 4, 1912, Woodbine, Iowa. Nut blew off boiler check; 1 injured.

\*October 8, 1912, engine 1038, near Trimbel, Tenn. Flue burst, due to defective weld; 1 injured.

\*October 12, 1912, Central City, Ky. Squirt hose blew off; 1 injured.

October 17, 1912, engine 756, Mounds, Ill. Water glass burst; inefficient shield; 1 injured by flying glass.

\*October 17, 1912, Pulaski, Ill. Squirt hose burst; 1 injured.

\*October 29, 1912, New Orleans, La. Lubricator glass burst; 1 injured by flying glass.

\*November 11, 1912, Carbondale, Ill. Squirt hose blew off; 1 injured.

\*November 17, 1912, Fulton, Ky. Lubricator glass burst; 1 injured by escaping steam.

November 25, 1912, engine 204, Memphis, Tenn. Crown sheet failed, due to low water; 1 injured.

December 8, 1912, engine 882, Center Grove, Iowa. Packing nut blew off blower throttle; 1 injured.

December 12, 1912, engine 1033, near Balcom, Ill. Crown sheet failed, due to low water; injector defective; line on badge plate indicating highest point of crown sheet was found to be 3 inches below highest point of crown sheet; 1 injured.

December 19, 1913, engine 2, Bogue Chitto, Miss. Flue burst; 1 injured.

December 23, 1912, engine 849, Mounds, Ill. Water glass burst; shield not in place at time of accident; 1 injured by flying glass.

\*December 27, 1912, Loda, Ill. Company's report states, "Grease cup exploded while top was being screwed on"; 2 injured.

January 12, 1913, engine 814, Carbondale, Ill. Packing blew out of main throttle stuffing box; defective threads on stuffing box spanner nut; 2 injured.

February 7, 1913, engine 1834, Central City, Ky. Lubricator glass burst; 1 injured by hot oil and steam.

February 10, 1913, engine 459, Mulkeytown, Ill. Crown sheet failed, due to low water; a satisfactory investigation could not be made owing to appurtenances having been disturbed by railroad's inspector; 1 injured.

February 20, 1913, engine 727, Pratt City, Ind. Flue burst, due to defective weld; 1 injured.

March 9, 1913, engine 2014, near Tunica, Miss. Flue burst at weld; 1 injured.

March 9, 1913, engine 1711, Harahan, La. Lubricator glass burst; inefficient shield; 1 injured by flying glass.

April 5, 1913, engine 922, near Dexter, Mo. (operating over St. Louis & San Francisco Ry. tracks). Flue burst; flue defective, due to overheating in welding; 1 injured.

April 11, 1913, engine 444, New Orleans, La. Squirt hose blew off; 1 injured.

April 23, 1913, engine 421, Newton, Ill. Squirt hose burst; defective hose; 1 injured.

Forty-one accidents; 44 injured.

**INDIANA HARBOR BELT RAILROAD:**

August 15, 1912, engine 4610, Blue Island, Ill. Squirt hose burst; defective hose; 1 injured.

September 27, 1912, engine 11, Bellewood, Ill. Arch tube pulled out of flue sheet; improperly applied; 1 injured.

\*April 12, 1913, engine 4611, Indiana Harbor, Ind. Water glass burst; 1 injured by escaping steam.

May 11, 1913, engine 4607, Gibson, Ind. Water glass burst; inefficient shield; 1 injured by flying glass.

Four accidents; 4 injured.

**KANSAS CITY SOUTHERN RAILWAY:**

\*September 4, 1912, engine 360, Joplin, Mo. Squirt hose blew off; insecurely applied; 1 injured.

\*October 16, 1912, engine 88, Shreveport, La. Steam pipe to left injector burst; defective pipe; 1 injured.

November 10, 1912, engine 517, near Westville, Ark. Water glass burst; no shield; 1 injured by flying glass.

Three accidents; 3 injured.

**LAKE ERIE & WESTERN RAILROAD:**

September 9, 1912, engine 5398, Yuton, Ill. Squirt hose burst; 1 injured.

One accident; 1 injured.

**LAKE SHORE & MICHIGAN SOUTHERN RAILWAY:**

July 16, 1912, engine 5947, near Marcy, Ohio. Squirt hose blew off; insecurely applied; 1 injured.

July 18, 1912, engine 4362, Jackson, Mich. Stud blew out of back boiler head, account of threads stripping on stud; 1 injured.

July 26, 1912, engine 5669, Elkhart, Ind. Water glass burst; inefficient shield; 1 injured by flying glass.

August 14, 1912, engine 4443, Ashtabula, Ohio. Water glass burst; inefficient shield; 1 injured by flying glass.

September 17, 1912, engine 5036, near Albion, Mich. Spanner nut on right injector steam pipe broke, due to old defect in nut; 1 injured.

September 30, 1912, engine 4506, West Seneca, N. Y. Injector overflow pipe disconnected; pipe not properly clamped; 1 injured.

November 12, 1912, engine 4663, near Andover, Ohio. Collar on steam pipe to right injector broke; collar not of sufficient thickness; 1 injured.

December 14, 1912, engine 5651, Elkhart, Ind. Washout plug blew out, due to defective threads on plug; 1 injured.

December 30, 1912, engine 4595, Elkhart, Ind. Water glass burst; 1 injured by escaping steam.

January 8, 1913, engine 5988, Collinwood, Ohio. Water glass burst; inefficient shield; 1 injured by flying glass.

January 10, 1913, engine 5736, Englewood, Ill. Water glass burst; inefficient shield; 1 injured by flying glass.

January 27, 1913, engine 4801, Air Line Junction, Ohio. Water glass burst; 1 injured by escaping steam.

February 15, 1913, engine 5999, Collinwood, Ohio. Lubricator throttle valve leaking; 1 injured.

March 2, 1913, engine 4808, near Painesville, Ohio. Steam heat pipes became disconnected in cab; due to defective union nut; 1 injured.

March 11, 1913, engine 5746, Monroe, Mich. Water glass burst; shield removed at time of accident; 1 injured by flying glass.

April 10, 1913, engine 4885, Collinwood, Ohio. Washout plug blew out; plug improperly applied; 1 injured.

April 29, 1913, engine 5625, Waterloo, Ind. Squirt hose blew off; insecurely applied; 1 injured.

May 8, 1913, engine 5945, Newton Falls, Ohio. Squirt hose blew off; insecurely applied; 1 injured.

May 30, 1913, engine 5832, Fremont, Ohio. Injector check valve leaking; 1 injured.

June 25, 1913, engine 5774, near La Salle, Mich. Water glass burst; inefficient shield; 1 injured by flying glass.

Twenty accidents; 20 injured.

**LEHIGH & HUDSON RIVER RAILWAY:**

\*September 24, 1912, engine 33, Warwick, N. Y. Spindle dropped out of bottom water-glass cock; improperly applied; 1 injured.

One accident; 1 injured.

**LEHIGH COAL & NAVIGATION CO.:**

March 8, 1913, engine 1, Lansford, Pa. Stud blew out of back boiler head, due to defective threads; 1 injured.

One accident; 1 injured.

**LEHIGH VALLEY RAILROAD:**

July 1, 1912, engine 759, Lost Creek, Pa. Injector delivery pipe disconnected; insecurely brazed; 1 injured.

July 3, 1912, engine 251, Old Penn Haven, Pa. Flue burst; 1 injured.

\*September 22, 1912, Engine 912, Manchester, N. Y. Squirt hose burst; 1 injured.

November 19, 1912, engine 1553, near Athens, Pa. Collar on injector steam pipe broke; insecurely brazed to pipe; 1 injured.

December 5, 1912, engine 1054, Allentown, Pa. Lubricator glass burst; 1 injured by escaping steam and hot oil.

March 10, 1913, engine 673, Mauch Chunk, Pa. Stud pulled out of fire-box sheet; 1 injured.

March 17, 1913, engine 1613, Alpha, N. J. Water bar burst; tube defective, due to corrosion; 1 injured.

April 8, 1913, engine 1610, La Grange, Pa. Petticoat pipe dropped down, causing back draft, due to hanger breaking; 1 injured.

May 24, 1913, engine 1632, Easton, Pa. Lubricator pipe disconnected at union; 1 injured.

Nine accidents; 9 injured.

**LOUISIANA RAILWAY & NAVIGATION CO.:**

\*August 6, 1912, engine 74, Aloha, La. Squirt hose blew off; 1 injured.

One accident; 1 injured.

**LOUISVILLE & NASHVILLE RAILROAD:**

\*August 15, 1912, engine 1046, Sulphur, Ky. Ash-pan blower pipe blew out, due to threads on pipe stripping; 1 injured.

September 4, 1912, engine 274, near Nashville, Ill. Cab bracket stud blew out; threads on stud stripped; 1 injured.

\*October 4, 1912, engine 1023, Amboy, Ky. Blow-off cock leaking; defective cock; 1 injured.

November 10, 1912, engine 1162, near Arkle, Ky. Crown sheet failed, due to low water; 1 killed, 2 injured.

\*January 7, 1913, engine 1132, Pruden, Tenn. Klinger water glass burst; 1 injured by flying glass.

\*January 17, 1913, engine 1314, Gethsemane, Ky. Ash-pan blower throttle leaking; defective throttle; 1 injured.

April 13, 1913, engine 195, Riversburg, Tenn. Gasket blew out of water glass; 1 injured.

May 15, 1913, engine 1062, Bessemer, Ala. Water glass burst; 1 injured jumping from engine.

Eight accidents; 1 killed; 9 injured.

**LOUISIANA WESTERN RAILROAD:**

June 24, 1913, engine 56, La Fayette, La. Washout plug blew out; defective threads on plug; 1 injured.

One accident; 1 injured.

**MAINE CENTRAL RAILROAD:**

August 7, 1912, engine 504, Pennys Road, Me. Crown sheet failed; defective crown sheet; 2 injured.

One accident; 2 injured.

**MARYLAND, DELAWARE & VIRGINIA RAILWAY:**

September 6, 1912, engine 7, Lewes, Del. Plug blew out of crown sheet; not sufficiently screwed into sheet; 1 injured.

One accident; 1 injured.

**MICHIGAN CENTRAL RAILROAD:**

September 4, 1912, engine 7856, near Dowagiac, Mich. Crown sheet failed, due to low water; 1 killed; 2 injured.

December 30, 1912, engine 8675, Monitor, Mich. Water glass burst; inefficient shield; 1 injured by flying glass.

January 21, 1913, engine 7801, Michigan City, Ind. Spanner nut on injector steam pipe burst; nut of insufficient thickness; 1 injured.

May 14, 1913, engine 8106, Joliet, Ill. Arch tube pulled out of flue sheet; improperly applied; 1 injured.

May 18, 1913, engine 7872, Marshall, Mich. Crown sheet failed, due to low water; top water-glass cock found closed at time of inspection; 1 injured.

June 7, 1913, engine 8286, near Galien, Mich. Sunflower plug blew out of back flue sheet; threads on plug and in sheet defective; 1 injured.

Six accidents; 1 killed; 7 injured.

**MINNEAPOLIS & ST. LOUIS RAILROAD:**

\*July 3, 1912, engine 155, Albia, Iowa. Lubricator glass burst; 1 injured by escaping steam.

\*July 5, 1912, engine 440, near New Sharon, Iowa. Squirt hose burst; 1 injured.

\*September 14, 1912, engine 425, Marshalltown, Iowa. Water glass burst; 1 injured by flying glass.

October 4, 1912, engine 59, Minneapolis, Minn. Water glass burst; inefficient shield; 1 injured by flying glass.

November 28, 1912, engine 317, Hill Top, Minn. Crown sheet failed, due to low water; bottom and middle gauge cocks stopped up; water glass obstructed; 3 injured.

March 25, 1913, engine 438, near Maxwell, Ill. Water glass burst; inefficient shield; 1 injured by flying glass.

Six accidents; 8 injured.

**MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE RAILWAY:**

\*July 17, 1912, Neenah, Wis. Squirt hose burst; 1 injured.

\*September 7, 1912, Port Edwards, Wis. Squirt hose blew off; 1 injured.

\*September 16, 1912, engine 2423, Owen, Wis. Squirt hose blew off; 1 injured.

November 17, 1912, engine 2649, Thorpe, Wis. Crown sheet failed, due to low water; water glass shut off on account of leak at top of casing; gauge-cock dripper stopped up; 1 safety valve found inoperative; 1 injured.

November 28, 1912, engine 147, Balfour, N. Dak. Crown sheet failed, due to low water; 1 injured.

February 1, 1913, engine 2702, Fond du Lac, Wis. Water glass burst; shield removed at time of accident; 1 injured by flying glass.

Six accidents; 6 injured.

**MISSOURI & NORTH ARKANSAS RAILROAD.**

July 27, 1912, engine 3, Gilbert, Ark. Lubricator glass burst; 1 injured by flying glass.

One accident; 1 injured.

**MISSOURI, KANSAS & TEXAS RAILWAY SYSTEM:**

July 29, 1912, engine 491, near Little River, Tex. Flue burst, due to defective weld; 1 injured.

\*August 19, 1912, engine 577, Black Walnut, Mo. Lubricator glass burst; 1 injured by flying glass.

\*August 22, 1912, engine 350, Matson, Mo. Pop valve stud defective; injured person scalded while attempting to make repairs; 1 injured.

\*March 6, 1913, engine 650, Muskogee, Okla. Blowoff cock lever defective; 1 injured.

May 30, 1913, engine 286, near Whitesboro, Tex. Flue burst in back flue sheet, due to deteriorated condition of flue; 1 injured.

Five accidents; 5 injured.

**MISSOURI PACIFIC RAILWAY SYSTEM:**

July 26, 1912, engine 160, Kansas City, Mo. Squirt hose burst; defective hose; 1 injured.

\*August 18, 1912, engine 118, Jefferson City, Mo. Squirt hose burst; 1 injured.

\*August 20, 1912, engine 1246, Dodson, Mo. Squirt hose burst; 1 injured.

August 24, 1912, engine 5517, Smithton, Mo. Water glass burst; inefficient shield; 1 injured by flying glass.

\*August 28, 1912, engine 6505, Council Grove, Kans. Squirt hose blew off; 1 injured.

\*September 6, 1912, engine 2671, Roper, Kans. Squirt hose blew off; 1 injured.

\*September 18, 1912, engine 3501, Stella, Nebr. Squirt hose blew off; 1 injured.

\*October 4, 1912, engine 2604, Wetmore, Kans. Blowoff cock leaking; fireman scalded while cleaning ash pan; 1 injured.

October 24, 1912, engine 7503, Warrensburg, Mo. Crown sheet failed, due to low water; engineer unable to see water owing to the type of water-glass shield used; 1 injured.

October 24, 1912, engine 424, Cornell, Kans. Throttle packing nut blew off; threads on nut defective; stuffing box improperly packed; 1 injured.

\*December 4, 1912, engine 9443, Kansas City, Mo. Water glass burst; shield removed at time of accident; 1 injured by flying glass.

December 6, 1912, engine 427, Pacific, Mo. Water glass burst; shield removed at time of accident; 1 injured by flying glass.

February 18, 1913, engine 166, Nevada, Mo. Flue burst, due to defective weld; scalding boiler maker who was working on same; 1 injured.

\*April 28, 1913, engine 505, Fall City, Nebr. Water glass burst; 1 injured by escaping steam.

May 4, 1913, engine 93, near Tipton, Mo. Crown sheet failed due to low water; 1 injured.

June 16, 1913, engine 2397, Berlin, Nebr. Water glass burst; inefficient shield; 1 injured by flying glass.

June 22, 1913, engine 2515, La Platte, Nebr. Frost cock broke off, due to corroded condition of pipe; 1 injured.

June 23, 1913, engine 486, near Sedalia, Mo. Water glass burst; 1 injured by escaping steam.

June 26, 1913, engine 2365, Grand Pass, Mo. Fire-door latch defective, causing injury to fireman attempting to open fire door; 1 injured.

Nineteen accidents; 19 injured.

**MOBILE & OHIO RAILROAD:**

March 19, 1913, engine 332, near Hackleburg, Ala. Crown sheet failed, due to low water; 3 injured.

One accident; 3 injured.

**MORGANS, LOUISIANA & TEXAS RAILROAD:**

July 9, 1912, engine 123, near Midland, La. Blowoff cock blew out; threads on cock stripped; 2 injured.

One accident; 2 injured.

**NEW JERSEY & NEW YORK RAILROAD:**

\*October 4, 1912, engine 1087, Woodbine, N. Y. Lubricator gasket blew out; 1 injured.

One accident; 1 injured.

**NEW ORLEANS, MOBILE & CHICAGO RAILROAD:**

August 21, 1912, engine 57, Dancy, Miss. Water glass burst; 1 injured by escaping steam.

October 19, 1912, engine 75, Bay Springs, Miss. Quadrant stud blew out; 1 injured. Two accidents; 2 injured.

**NEW ORLEANS, TEXAS & MEXICO RAILROAD:**

April 5, 1913, engine 521, near Reaves, La. Flue pulled out of back flue sheet; improperly applied; 1 injured.

One accident; 1 injured.

**NEW YORK CENTRAL & HUDSON RIVER RAILROAD:**

July 9, 1912, engine 1982, Canton, N. Y. Squirt hose blew off; insecurely applied; 1 injured.

July 12, 1912, engine 3430, Dellwood, N. Y. Steam pipe to left injector burst; 1 injured.

July 13, 1912, engine 111, New York, N. Y. Water glass burst; inefficient shield; 1 injured by flying glass.

August 1, 1912, engine 1729, Ravena, N. Y. Water glass burst; inefficient shield; 1 injured by flying glass.

August 3, 1912, engine 2084, Scarborough, N. Y. Squirt hose blew off; 1 injured.

August 9, 1912, engine 2945, West Albany, N. Y. Flue burst; flue defective, due to overheating in welding; 1 injured.

August 11, 1912, engine 3410, High Bridge, N. Y. Water glass burst; 1 injured by flying glass.

August 18, 1912, engine 2826, near Woodard, N. Y. Steam pipe burst in smokebox; pipe too light to withstand pressure; 1 injured.

August 19, 1912, engine 896, Pittsford, N. Y. Lubricator feed to steam chest broke off; 2 injured.

September 3, 1912, engine 127, New York, N. Y. Squirt hose blew off; insecurely applied; 1 injured.

September 4, 1912, engine 483, Buffalo, N. Y. Squirt hose blew off; insecurely applied; 1 injured.

September 7, 1912, engine 1776, Denly, N. Y. Squirt hose blew off; insecurely applied; 1 injured.

September 12, 1912, engine 3045, Fort Plain, N. Y. Squirt hose blew off; insecurely applied; 1 injured.

September 30, 1912, engine 375; Charlotte, N. Y. Water glass burst; inefficient shield; 1 injured by flying glass.

October 1, 1912, engine 2819, Corning, N. Y. Water glass burst; inefficient shield; 1 injured by escaping hot water.

November 5, 1912, engine 1966, Watertown Junction, N. Y. Squirt hose blew off; insecurely applied; 1 injured.

December 28, 1912, engine 2786, East Syracuse, N. Y. Fire door leaking; 1 injured.

January 1, 1913, engine 3381, Hyde Park, N. Y. Collar on injector steam pipe broke; collar insecurely brazed to pipe; 2 injured.

January 28, 1913, engine 1783, Oswego, N. Y. Rivet head broke off in flue sheet; 1 injured.

February 3, 1913, engine 2113, Sea Breeze, N. Y. Flue burst, due to defective weld; 1 injured.

February 13, 1913, engine 3468, Fairport, N. Y. Spanner nut on injector pipe broke; 1 injured.

February 22, 1913. Engine 3586, near Tarrytown, N. Y. Left injector steam pipe disconnected from nipple at turret valve connection; pipe insecurely brazed to nipple; 2 injured.

February 22, 1913, engine 152, West Albany, N. Y. Spanner nut blew off left boiler check; improperly fitted nut; 2 injured.

February 28, 1913, engine 1582, Potsdam, N. Y. Waterglass burst; 1 injured by escaping steam.

March 4, 1913, engine 3431, Utica, N. Y. Spanner nut on check pipe disconnected, due to defective threads on nut; 1 injured.

March 6, 1913, engine 1650, Earlville, N. Y. Collar pulled off steam pipe to steam heat regulator; collar insecurely brazed to pipe; 1 injured.

March 26, 1913, engine 3387, Greenway, N. Y. Squirt-hose pipe blew out of left injector delivery pipe; 1 injured.

April 11, 1913, engine 544, East Buffalo, N. Y. Water glass burst; inefficient shield; 1 injured by flying glass.

May 2, 1913, engine 3473, Syracuse, N. Y. Squirt hose blew off; insecurely applied; 1 injured.

June 3, 1913, engine 3156, De Witt, N. Y. Squirt hose blew off; insecurely applied; 1 injured.

June 6, 1913, engine 122, Rochester, N. Y. Squirt hose blew off; insecurely applied; 1 injured.

June 13, 1913, engine 2793, near Dresden, N. Y. Squirt hose parted at splice; 1 injured.

June 16, 1913, engine 3417, Staatsburg, N. Y. Squirt-hose valve accidentally opened; valve improperly located; 1 injured.

June 20, 1913, engine 1867, Putnam Junction, N. Y. Squirt hose blew off; 1 injured.

June 23, 1913, engine 2787, Genesee Junction, N. Y. Squirt hose burst; defective hose; 1 injured.

June 23, 1913, engine 1778, near Watertown Junction, N. Y. Brick arch stud blew out of right side sheet; threads in sheet defective and stud improperly applied; 1 injured.

June 26, 1913, engine 1693, Benson Mines, N. Y. Squirt-hose valve worked open; 1 injured.

June 27, 1913, engine 2901, Troy, N. Y. Squirt hose blew off; insecurely applied; 1 injured.

Thirty-eight accidents; 42 injured.

#### NEW YORK, CHICAGO & ST. LOUIS RAILROAD:

August 3, 1912, engine 400, Sidney, Ind. Squirt hose burst; 1 injured.

September 2, 1912, engine 337, Conneaut, Ohio. Squirt hose burst; defective hose; 1 injured.

November 14, 1912, engine 407, Farnham, N. Y. Relief valve blew out of right valve chamber; improperly applied; 1 injured.

February 16, 1913, engine 45, Cleveland, Ohio. Water glass burst; inefficient shield; 1 injured by flying glass.

March 10, 1913, engine 47, Chicago, Ill. Water glass burst; inefficient shield; 1 injured by flying glass.

May 4, 1913, engine 426, Dernfee, Ind. Broken crown stay blew out of sheet; defective threads on stay and in sheet; 1 injured.

May 11, 1913, engine 306, Fort Wayne, Ind. Boiler maker injured while working in fire box, due to flues leaking; 1 injured.

Seven accidents; 7 injured.

#### NEW YORK, NEW HAVEN & HARTFORD RAILROAD:

August 3, 1912, engine 1278, Bridgeport, Conn. Blower pipe turned over in front end causing back draft; pipe not securely clamped; 1 injured.

December 26, 1912, engine 1105, Canton Junction, Mass. Drifting pipe became disconnected in cab, due to collar pulling through nut; nut bored out  $\frac{1}{4}$ -inch diameter; collar  $1\frac{1}{2}$ -inch diameter, leaving a shoulder of only  $\frac{1}{2}$  inch for nut to draw against; 2 injured.

January 25, 1913, engine 817, South Lyme, Conn. Collar to right injector steam pipe broke; collar was only  $\frac{1}{4}$  inch thick and was not properly brazed; 1 injured.

April 16, 1913, engine 1691, Providence, R. I. Stem of ash-pan blow-off valve broken and bent, preventing valve from closing properly; 1 injured.

April 17, 1913, engine 1780, Cedar Hill, Conn. Exhaust nozzle broke while joints were being tested; 1 injured.

May 13, 1913, engine 2443, New Haven, Conn. Squirt hose blew off; 1 injured.

May 19, 1913, engine 296, Pomfret, Conn. Flue burst, due to defective weld; 1 killed.

June 12, 1913, engine 2302, Cedar Hill, Conn. Filling glass on lubricator burst; 1 injured.

Eight accidents; 1 killed, 8 injured.

#### NEW YORK, PHILADELPHIA & NORFOLK RAILROAD:

August 10, 1912, engine 31, Lecato, Va. Cap on right boiler check blew off; 1 injured.

October 3, 1912, engine 34, Pocomoke, Md. Flue burst, due to poor weld; 1 injured.

February 8, 1913, engine 21, Costen, Md. Sight feed glass auxiliary lubricator to air pump blew out, due to improperly fitting nut; 1 injured.

Three accidents; 3 injured.

#### NORFOLK & WESTERN RAILWAY:

July 22, 1912, engine 487, Kenova, W. Va. Blower pipe disconnected in smoke box, causing back draft; defective connection; 1 injured.

August 14, 1912, engine 593, Williamson, W. Va. Squirt hose burst; defective hose; 1 injured.

February 6, 1913, engine 1059, near Williamson, W. Va. Flue-burst, due to defective weld; 1 injured.

February 22, 1913, engine 1049, near Fort Gay, W. Va. Crown sheet failed, due to low water; left tank valve inoperative; chip found lodged under right boiler check; no strainer in right tank hose; 1 injured.

April 26, 1913, engine 387, Huger, W. Va. Flue burst, due to defective weld; 1 injured.

Five accidents; 5 injured.

#### NORTHERN PACIFIC RAILWAY:

July 2, 1912, engine 1598, Eagle Gorge, Wash. Squirt hose blew off; insecurely applied; 1 injured.

\*July 15, 1912, Ellensburg, Wash. Squirt hose burst; 1 injured.

\*July 19, 1912, engine 1500, Thorp, Wash. Squirt-hose valve worked open; 1 injured.

\*July 27, 1912, engine 556, Little Canada, Minn. Water glass burst; 1 injured.

\*August 10, 1912, engine 230, Brainerd, Minn. Squirt hose blew off; 1 injured.

\*August 28, 1912, engine 1086, Helena, Mont. Water glass burst; 1 injured by flying glass.

September 12, 1912, engine 1647, Lime Spur, Mont. Left injector delivery pipe burst, boiler check sticking; 1 injured.

\*September 14, 1912, engine 158, Little Rock, Wash. Squirt hose blew off; 1 injured.

\*September 26, 1912, engine 2121, Livingston, Mont. Squirt hose blew off; 1 injured.

\*November 14, 1912, engine 2321, Staples, Minn. Squirt hose burst; 1 injured.

December 28, 1912, engine 1580, Livingston, Mont. Blow-off cock blew out while being repaired; 1 injured.

February 8, 1913, engine 1044, Northtown, Minn. Water glass burst; inefficient shield; 1 injured by escaping steam.

April 4, 1913, engine 42, near Wallace, Idaho. Arch tube split in fire box; 1 injured.

April 24, 1913, engine 212, Tacoma, Wash. Lubricator glass burst; shield removed at time of accident; 1 injured by flying glass.

June 9, 1913, engine 138, near Moulton, Wash. Squirt-hose valve open; 1 injured.  
June 25, 1913, engine 1637, Blossburg, Mont. Squirt hose burst; hose too light; 1 injured.

Sixteen accidents; 16 injured.

OREGON SHORT LINE RAILROAD:

\*July 19, 1912, engine 1055, Pocatello, Idaho. Washout plug blew out while being tightened with boiler under pressure; 1 injured.

June 30, 1913, engine 724, Pocatello, Idaho. Washout plug blew out while being tightened with boiler under pressure; 1 injured.

Two accidents; 2 injured.

PENNSYLVANIA LINES WEST OF PITTSBURGH:

\*July 1, 1912, engine 7726, Conway, Pa. Squirt hose blew off; 1 injured.

\*July 2, 1912, engine 8533, Scully, Pa. Squirt hose blew off; 1 injured.

\*July 4, 1912, engine 8331. Squirt hose burst; 1 injured.

July 6, 1912, engine 9090, near Westford, Pa. Crown sheet failed, due to low water; water glass obstructed by gasket; 3 injured.

July 22, 1912, engine 7722, Cleveland, Ohio. Squirt hose blew off; insecurely applied; 1 injured.

July 25, 1912, engine 9842, Gilbert, Ohio. Flue burst at weld; 1 injured.

July 27, 1912, engine 7715, Fort Wayne, Ind. Squirt hose blew off; insecurely applied; 1 injured.

\*August 1, 1912, engine 8588, Logansport, Ind. Squirt hose blew off; 1 injured.

\*August 2, 1912, engine 7153, Ada, Ohio. Cab stud on boiler head broke; 1 injured.

\*August 5, 1912, engine 8547, La Crosse, Ind. Squirt hose blew off; 1 injured.

\*August 6, 1912, engine 9864, South Akron, Ohio. Lubricator glass burst; 1 injured by escaping hot oil.

August 18, 1912, engine 7753, Orrville, Ohio. Crown sheet failed, due to low water; 3 injured.

August 26, 1912, engine 7744, Niles, Ohio. Klinger water glass burst; 1 injured jumping from engine.

September 3, 1912, engine 7359, Adams, Ind. Squirt hose blew off; insecurely applied; 1 injured.

\*September 6, 1912, engine 9385, Grogan, Ohio. Squirt hose blew off; 1 injured.

\*September 17, 1912, engine 9249, New Brighton, Pa. Squirt hose burst; 1 injured.

October 26, 1912, engine 8099, Bradford, Ohio. Gage cock blew out; 1 injured.

\*December 6, 1912, engine 8013, Windfall, Ind. Blower pipe became disconnected in smoke box causing back draft; 1 injured.

December 15, 1912, engine 8968, Xenia, Ohio. Plug blew out of steam chest; plug improperly applied; 1 injured.

December 25, 1912, engine 7127, Wellsville, Ohio. Lubricator glass burst; no shield; 1 injured by ignition of escaping oil.

January 3, 1913, engine 7378, Allegheny, Pa. Flue burst; flue defective due to overheating in welding; 1 injured.

April 16, 1913, engine 8545, Redkey, Ind. Cap blew off boiler check; defective threads on check; 1 injured.

April 24, 1913, engine 7486, Alliance, Ohio. Squirt hose blew off; insecurely applied; 1 injured.

\*May 6, 1913, Clarksville, Ind. Defective blow-off cock; 1 injured.

May 18, 1913, engine 8289, Logansport, Ind. Washout cap blew off; defective threads on cap; 1 injured.

June 18, 1913, engine 9953, Geneva, Pa. Squirt hose burst; defective hose; 1 injured.

June 20, 1913, engine 9884, Columbus, Ohio. Squirt hose burst; defective hose; 1 injured.

June 25, 1913, engine 8955, Cincinnati, Ohio. Squirt hose parted at splice; 1 injured.

June 28, 1913, engine 7178, near Allegheny, Pa. Squirt hose parted at splice; 1 injured.

Twenty-nine accidents; 33 injured.

PENNSYLVANIA RAILROAD:

July 4, 1912, engine 126, near Grove, Pa. Squirt hose blew off; insecurely applied; 1 injured.

\*July 14, 1912, engine West Jersey & Seashore R. R. 498, Atlantic City, N. J. Squirt hose blew off; 1 injured.

July 24, 1912, engine 3059, Nanticoke, Pa. Squirt hose blew off; insecurely applied; 1 injured.

July 27, 1912, engine 1137, Chestnut Hill, Pa. Squirt hose blew off; insecurely applied; 1 injured.

July 31, 1912, engine 2016, Delmar, Del. Squirt hose burst; defective hose; 1 injured.

August 9, 1912, engine 6293, near Portage, N. Y. Left injector delivery pipe burst; pipe probably weakened by having patch brazed on near point of break; 1 injured.

\*August 10, 1912, engine 177, Dunbar, Pa. Squirt hose blew off; 1 injured.

August 20, 1912, engine 1112, West Philadelphia, Pa. Squirt hose blew off; insecurely applied; 1 injured.

\*August 20, 1912, engine 2717, Pitcairn, Pa. Squirt hose burst; 1 injured.

\*August 29, 1912, engine 2569, Bald Eagle, Pa. Squirt hose burst; 1 injured.

September 1, 1912, engine 3047, Wilmington, Del. Stuffing box broke off bonnet of water valve to lubricator; 1 injured.

September 6, 1912, engine 5243, Chester, Pa. Squirt-hose valve leaking; 1 injured.

September 7, 1912, engine 5056, Wilmington, Del. Squirt hose blew off; insecurely applied; 1 injured.

September 14, 1912, engine 3100, Olean, N. Y. Right injector delivery pipe burst; due to old defect in pipe; 1 injured.

September 26, 1912, engine 2072, Stony Creek, Pa. Flue burst, due to defective weld; 1 injured.

October 9, 1912, engine 4162, Baltimore, Md. Arch tube pulled out of fire-box sheet; 1 injured.

October 30, 1912, engine 2262, West Morrisville, Pa. Right injector delivery pipe burst; defective pipe; 1 injured.

\*November 13, 1912, engine 2967, Beatty, Pa. Blower pipe disconnected in smoke box, causing back draft; 1 injured.

\*December 19, 1912, engine 6323, Gallitzin, Pa. Steam pipe became disconnected from steam valve, due to old fracture at collar; 1 injured.

\*December 21, 1912, engine 2, Johnetta, Pa. Injector packing nut blew out; 1 injured.

December 24, 1912, engine 2610, Hazelkirk, Pa. Flue burst; 4 injured.

January 5, 1913, engine 6245, near Hinsdale, N. Y. Crown sheet failed, due to low water. Water glass shut off account of top packing nut being stripped; 2 injured.

January 7, 1913, engine 6265, near Fillmore, N. Y. Collar on left injector steam pipe pulled off; collar too thin and not securely brazed to pipe; 2 injured.

January 21, 1913, engine 1651, near Morrisville, Pa. Blower pipe turned over in smoke box, causing back draft; 1 injured.

January 29, 1913, engine 1739, Philadelphia, Pa. Gasket blew out of water glass; 1 injured.

\*February 6, 1913, engine 2960, Kittanning Point, Pa. Blower pipe collar disconnected at steam valve, due to defective brazing; 1 injured.

\*February 20, 1913, engine 2140, Ehrenfeld, Pa. Injector delivery pipe burst; 1 injured.

February 27, 1913, engine 5162, Perryville, Md. Washout cap blew off while being tightened with boiler under pressure; defective cap; 1 injured.

February 27, 1913, engine 5166, Loudon Park, Md. Crown sheet failed, due to low water; 1 injured.

March 3, 1913, engine 2037, Rahway, N. J. Crown sheet failed, due to low water; appurtenances too badly damaged by explosion to permit testing; 1 killed; 1 injured.

March 11, 1913, engine 5021, near Glen Mills, Pa. Crown sheet failed, due to low water; 1 injured.

March 25, 1913, engine 2598, near Sistersville, Pa. Delivery pipe burst; defective pipe; pipe had been patched, and rupture occurred at edge of one of the patches; 1 injured.

March 28, 1913, engine 5103, near Middletown, Pa. Crown sheet failed, due to low water; tank well and screen in dirty condition, which reduced water supply to right injector; 2 injured.

March 29, 1913, engine 3085, near Monongahela City, Pa. Crown sheet failed, due to low water; appurtenances removed prior to investigation; 3 injured.

March 29, 1913, engine 1875, Enslie, Pa. Crown sheet failed, due to low water; 3 injured.

April 19, 1913, engine 1629, Wapwallopen, Pa. Collar pulled off steam pipe to left injector; collar too thin and improperly brazed; 2 injured.

May 5, 1913, engine 2371, Buffalo, N. Y. Right injector delivery pipe burst; defective pipe; 1 injured.

June 28, 1913, engine 3402, Atglen, Pa. Squirt hose blew off; insecurely applied; 1 injured.

June 29, 1913, engine 2551, near Angola, N. Y. Middle arch tube pulled through flue sheet; improperly applied; 1 injured.

Thirty-nine accidents; 1 killed; 50 injured.



## PENNSYLVANIA SOUTHERN RAILROAD:

May 17, 1913, engine 7, near Van, Pa. Nut blew off steam pipe to left injector; nut improperly fitted; 1 injured.

One accident; 1 injured.

## PEORIA &amp; EASTERN RAILWAY:

\*July 25, 1912, engine 6583, Oakwood, Ill. Nozzle blew out of squirt hose; 1 injured.

One accident; 1 injured.

## PERE MARQUETTE RAILROAD:

\*September 1, 1912, engine 282, Island Lake, Mich. Squirt hose blew off; 1 injured.

\*September 3, 1912, engine 279, Lamar, Mich. Blower pipe burst; 1 injured.

\*September 30, 1912, engine 343, Hallett, Ohio. Water glass burst; 1 injured by flying glass.

March 3, 1913, engine 60, Lakewood, Mich. Crown sheet failed, due to low water; left injector defective; 2 injured.

\*March 21, 1913, Averill, Mich. Flue burst; 1 injured.

\*April 21, 1913, Grandville, Mich. Nozzle blew off squirt hose pipe; 1 injured.

\*May 16, 1913, Grawn, Mich. Water glass burst; 1 injured by escaping steam.

Seven accidents; 8 injured.

## PHILADELPHIA &amp; READING RAILWAY:

October 20, 1912, engine 593, Longsdorf, Pa. Squirt hose burst; 1 injured.

November 27, 1912, engine 814, Big Mine Run Junction, Pa. Quadrant casting stud blew out; 1 injured.

December 11, 1912, Quakertown, Pa. Pocket flue blew out of back flue sheet; improperly applied; 1 injured.

March 1, 1913, engine 316, Pottstown, Pa. Water glass burst; 1 injured by escaping steam.

March 15, 1913, engine 771, Tamaqua, Pa. Blow-off cock plug blew out; cock improperly assembled; 1 injured.

May 2, 1913, engine 270, near Allenwood, Pa. Water glass burst; 1 injured by escaping steam.

June 27, 1913, engine 1008, Philadelphia, Pa. Squirt hose blew off; insecurely applied; 1 injured.

Seven accidents; 7 injured.

## PITTSBURGH, SHAWMUT &amp; NORTHERN RAILROAD:

\*October 15, 1912, engine 56, North Fork, Pa. Water glass burst; inefficient shield 1 injured by flying glass.

One accident; 1 injured.

## PITTSBURGH &amp; LAKE ERIE RAILROAD:

January 2, 1913, engine 9388, New Castle Junction, Pa. Water glass burst; inefficient shield; 1 injured by flying glass.

One accident; 1 injured.

## ST. LOUIS &amp; SAN FRANCISCO RAILROAD:

July 25, 1912, engine 1225, near Quincy, Miss. Crown sheet failed, due to low water; 2 injured.

\*August 17, 1912, engine 1288, Franks, Mo. Squirt hose blew off; 1 injured.

October 11, 1912, engine 363, Fort Worth, Tex. Squirt hose blew off; 1 injured.

October 24, 1912, Central of Georgia engine 1062, Birmingham, Ala. Arch tube pulled out of flue sheet; tube overheated on account of not being properly cleaned; 1 killed; 1 injured.

December 10, 1912, engine 977, Garnett, Okla. Crown sheet failed, due to low water; 2 injured.

December 27, 1912, engine 494, Granbury, Tex. Water glass burst; shield improperly secured; 1 injured by flying glass.

\*January 22, 1913, engine 2667, Thayer, Mo. Washout plug blew out; 1 injured.

\*January 29, 1913, Baxter, Kans. Squirt hose blew off; 1 injured.

May 23, 1913, engine 1202, New Albany, Miss. Stud attaching air pump bracket to boiler blew out; due to defective threads and improper application of stud; 1 injured.

Nine accidents; 1 killed; 11 injured.

## ST. LOUIS, BROWNSVILLE &amp; MEXICO RAILWAY:

July 20, 1912, engine K. C., F. S. & M., 549, near Bay City, Tex. Crown sheet failed, due to low water; a large number of crown stays were defective; 3 killed.

November 11, 1912, engine K. C., F. S. & M., 552, near Vanderbilt, Tex. Crown sheet failed, due to low water; left injector inoperative; right injector would not supply boiler; boiler very dirty and foaming badly; 2 injured.

Two accidents; 3 killed; 2 injured.

## ST. LOUIS, IRON MOUNTAIN &amp; SOUTHERN RAILWAY:

July 13, 1912, engine 2323, Jenny Lind, Ark. Water glass burst; lower water glass cock broke off when engineer attempted to close same; 1 injured by escaping steam.

July 22, 1912, engine 523, Crest, Ark. Squirt hose blew off; insecurely applied; 1 injured.

July 28, 1912, engine 503; Texarkana, Ark. Squirt hose blew off; insecurely applied; 1 injured.

\*August 7, 1912, Gurdon, Ark. Flue burst; 1 injured.

August 23, 1912, engine 2317, Homer, Ark. Squirt hose blew off; 1 injured.

August 24, 1912, engine 2324, near Hudspeth, Ark. Squirt hose blew off; insecurely applied; 1 injured.

September 4, 1912, engine 6401, Mill Spring, Mo. Squirt hose burst; defective hose; 1 injured.

September 13, 1912, engine 2649, Foley, La. Squirt hose blew off; insecurely applied; 1 injured.

September 16, 1912, engine 117, Jacob, Ill. Water glass burst; 1 injured by escaping steam.

\*September 18, 1912, engine 536, Marion, Ill. Squirt hose blew off; 1 injured.

\*October 2, 1912, engine 8606, New Augusta, Ark. Squirt hose blew off; 1 injured.

October 8, 1912, engine 1234, De Soto, Mo. Water glass burst; inefficient shield; 1 injured by flying glass.

\*November 14, 1912, engine 2807, McGehee, Ark. Water glass burst; 1 injured by escaping steam.

December 24, 1912, engine 538, Pollock, La. Squirt hose blew off; insecurely applied; 1 injured.

December 25, 1912, engine 7510, Birds Point, Mo. Cleaning plug blew out of lubricator; defective plug; 1 injured.

\*March 30, 1913, engine 60, Emmett, Ark. Water glass burst; 1 injured by escaping steam.

April 1, 1913, engine 447, Whitehall, Ark. Throttle packing nut blew off; due to defective threads; 1 injured.

April 3, 1913, engine 2725, Cotter, Ark. Squirt hose blew off; insecurely applied; 1 injured.

April 16, 1913, engine 1802, Dupo, Ill. Squirt hose blew off; insecurely applied; 1 injured.

April 19, 1913, engine 2345, Little Rock, Ark. Lubricator glass burst; 1 injured by escaping hot oil.

May 21, 1913, engine 465, Illmo, Mo. Water glass burst; 1 injured by escaping steam.

May 24, 1913, engine 841, Bush, Ill. Flue burst, due to defective weld; 1 injured.

June 5, 1913, engine 535, Watson, Ark. Injector broke while engineer was using squirt hose, boiler check sticking; 1 injured.

June 25, 1913, engine 5011, McLains, La. Injector delivery pipe blew off, due to cross threads on spanner nut; 1 injured.

June 27, 1913, engine 530, Wynne, Ark. Spanner nut on steam pipe to right injector burst while being tightened; 1 injured.

Twenty-five accidents; 25 injured.

## ST. LOUIS, SAN FRANCISCO &amp; TEXAS RAILWAY:

\*October 11, 1912, engine 363, Fort Worth, Tex. Squirt hose blew off; 1 injured. One accident; 1 injured.

## ST. LOUIS SOUTHWESTERN RAILWAY:

\*October 8, 1912, engine 502, Commerce, Tex. Squirt hose blew off; 1 injured.

April 16, 1913, engine 307, Brinkley, Ark. Running board bracket stud blew out; defective stud; 1 injured.

\*April 17, 1913, Kingsland, Ark. Squirt hose burst; 1 injured.

Three accidents; 3 injured.

## SAN ANTONIO &amp; ARANSAS PASS RAILWAY:

February 21, 1913, engine 113, near Rockdale, Tex. Crown sheet failed, due to low water; 2 injured.

\*March 25, 1913, engine 202, Normanna, Tex. Spanner nut on injector delivery pipe broke; 1 injured.

Two accidents; 3 injured.

## SAN PEDRO, LOS ANGELES &amp; SALT LAKE RAILROAD:

July 18, 1912, engine 3410, near Etna, Nev. Right injector steam pipe collar blew off at turret; collar insecurely brazed to pipe; 1 injured.

July 23, 1912, engine 3647, near Barclay, Nev. Squirt hose blew off; insecurely applied; 1 injured.

August 2, 1912, engine 3631, near Black Rock, Utah. Squirt hose blew off; insecurely applied; 1 injured.

January 13, 1913, engine 3606, near Sandy, Utah. Cross stay blew out, due to improper setting of crown T bars; 3 injured.

February 17, 1913, engine 3625, Black Rock, Utah. Blow-off cock blew off, due to defective threads on nipple; 1 injured.

Five accidents; 7 injured.

#### SEABOARD AIR LINE RAILWAY:

\*August 13, 1912, engine 743, Rockingham, N. C. Squirt hose burst; 1 injured.

September 20, 1912, engine 662, Fowlers Junction, Ga. Arch tube burst; defective tube; 1 injured.

\*September 23, 1912, engine 49, Maxville, Fla. Arch tube burst; defective tube; 1 injured.

October 1, 1912, engine 76, near Cedartown, Ga. Arch tube burst; defective tube; 1 injured.

\*December 5, 1912, engine 622, Montgomery, Ala. Lubricator glass burst; 1 injured by escaping hot oil.

May 18, 1913, engine 727, Cayce, S. C. Squirt hose parted at splice; 1 injured.

Six accidents; 6 injured.

#### SOUTHERN PACIFIC Co.:

\*July 1, 1912, Tucson, Ariz. Squirt hose blew off; insecurely applied; 1 injured.

\*September 2, 1912, engine 1185, Mojave, Cal. Squirt hose blew off; 1 injured.

October 3, 1912, engine 2833, Cosgrove, Nev. Firebox failure; side sheets, door sheet, and back end of crown sheet overheated, due to water foaming; 2 killed.

March 15, 1913, engine 2704, Strathearn, Cal. Squirt hose blew off; insecurely applied; 1 injured.

March 23, 1913, engine 2824, Imlay, Nev. Operating rod at lift crank gave way while engineer was attempting to open blow-off cock from running board, causing him to fall from engine; blow-off cock lever in cab inoperative; 1 injured.

April 11, 1913, engine 2548, San Luis Obispo, Cal. Squirt hose blew off; 1 injured.

April 28, 1913, engine 1611, Beaverton, Oreg. Squirt hose blew off; insecurely applied; 1 injured.

June 21, 1913, engine 2616, Fresno, Cal. Stud on boiler check blew out; defective stud; 1 injured.

Eight accidents; 2 killed; 7 injured.

#### SOUTHERN RAILWAY:

\*July 13, 1912, Wilton, Ala. Squirt hose blew off; insecurely applied; 1 injured.

July 19, 1912, engine 745, Swannanoa, N. C. Ash-pan blower pipe union leaking; 1 injured.

August 5, 1912, engine 859, Arrowhead, Va. Squirt hose burst; defective hose; 1 injured.

\*August 11, 1912, engine 873, Spencer, N. C. Squirt hose blew off; insecurely applied; 1 injured.

October 5, 1912, engine 611, Irondale, Ala. Squirt hose burst; defective hose; 1 injured.

October 17, 1912, engine 3752, Abbeyville, S. C. Ash-pan blower pipe leaking at union; 1 injured.

December 2, 1912, engine 869, near Whittles, Va. Crown sheet failed, due to low water; 1 killed; 1 injured.

December 19, 1912, engine 587, Asheville, N. C. Squirt hose blew off; insecurely applied; 1 injured.

December 31, 1912, engine 4537, Asheville, N. C. Ash-pan blower pipe disconnected; pipe improperly applied; 1 injured.

January 22, 1913, engine 905, Neapolis, Va. Squirt-hose valve blew off; valve insecurely applied; 1 injured.

February 7, 1913, engine 569, Macon, Ga. Ash-pan blower pipe broke; 1 injured.

February 22, 1913, engine 826, White Pine, Tenn. Overflow pipe on left injector disconnected; pipe insecurely clamped; 1 injured.

March 5, 1913, engine 103, Columbia, S. C. Lubricator glass burst; shield removed at time of accident; 1 injured by flying glass.

March 6, 1913, engine 844, Belt Junction, Ky. Petticoat pipe dropped down causing back draft; due to defective hanger; 1 injured.

March 7, 1913, engine 1035, Hazlehurst, Ga. Expansion pad stud blew out; threads stripped on stud; 1 injured.

March 8, 1913, engine 824, Lula, Ga. Ash-pan blower pipe blew off; defective threads; 1 injured.

March 15, 1913, engine 71, Lincoln City, Ind. Flue burst; defective flue; 1 injured.

March 26, 1913, engine 777, Gaffney, S. C. Squirt hose blew off; insecurely applied; 1 injured.

May 11, 1913, engine 862, near Lawyers, Va. Crown sheet failed, due to low water; 2 injured.

May 17, 1913, engine 566, Macon, Ga. Squirt hose burst; defective hose; 1 injured.

May 20, 1913, engine 634, Youngstown, Ky. Squirt hose burst; 1 injured.

May 29, 1913, engine 550, Mount Carmel, Ill. Squirt hose parted at splice; 1 injured.

May 30, 1913, engine 65, Rockport, Ind. Ash-pan blower pipe disconnected from blow-off valve; defective threads on valve; 1 injured.

June 19, 1913, engine 668, near Danville Junction, Va. Squirt hose leaking; defective hose; 1 injured.

June 21, 1913, engine 1222, near Conover, N. C. Squirt hose leaking; defective hose; 1 injured.

June 26, 1913, engine 776, Buford, Ga. Squirt hose burst; defective hose; 1 injured. Twenty-six accidents; 1 killed; 27 injured.

#### SOUTHERN RAILWAY IN MISSISSIPPI:

July 4, 1912, engine 3023, Greenville, Miss. Portion of dome cap blew off; defective dome cap; 1 injured.

One accident; 1 injured.

#### TEXAS & NEW ORLEANS RAILROAD:

September 20, 1912, engine 50, Beaumont, Tex. Lubricator glass burst; inefficient shield; 1 injured by flying glass.

One accident; 1 injured.

#### TEXAS & PACIFIC RAILWAY:

\*July 17, 1912, engine 296, Fruitvale, Tex. Squirt hose blew off; insecurely applied; 1 injured.

\*August 1, 1912, engine 213, Fort Worth, Tex. Squirt hose parted at splice; 1 injured.

December 13, 1912, engine 219, Texarkana, Tex. Lubricator glass burst; 1 injured by escaping hot oil.

February 9, 1913, engine 280, Abney, Tex. Water glass burst; inefficient shield; 1 injured by flying glass.

March 29, 1913, engine 325, near Handley, Tex. Crown sheet failed, due to low water; 1 killed; 2 injured.

June 30, 1913, engine 192, Mira, La. Crown sheet failed, due to defective crown bolts; 1 injured.

Six accidents; 1 killed; 7 injured.

#### TEXAS MEXICAN RAILWAY:

February 19, 1913, engine 228, Laredo, Tex. Dome cap blew off, due to old defect in casting; 1 injured.

One accident; 1 injured.

#### TOLEDO, ST. LOUIS & WESTERN RAILROAD:

\*July 21, 1912, engine 8, Madison, Ill. Squirt hose blew off; 1 injured.

\*February 8, 1913, engine 152, Holgate, Ohio. Frost cock valve blew out, due to threads stripping; 1 injured.

Two accidents; 2 injured.

#### UNION PACIFIC RAILROAD:

July 24, 1912, engine 706, Dale Creek, Wyo. Squirt hose blew off; 1 injured.

July 30, 1912, engine 1607, Grand Island, Nebr. Plug driven through fire-box sheet while being calked with pressure on boiler; 1 injured.

September 21, 1912, engine 1684, Chemung, Colo. Crown sheet failed, due to low water; 1 injured.

September 22, 1912, engine 943, Onemea, Kans. Squirt hose burst; defective hose; 1 injured.

November 21, 1912, engine 270, Salt Wells, Wyo. Crown sheet failed, due to low water; 1 killed; 1 injured.

December 31, 1912, engine 1640, Seymour, Nebr. Cap blew off boiler check, due to defective threads; 1 injured.

January 7, 1913, engine 289, Rawlins, Wyo. Lubricator glass burst; shield removed at time of accident; 1 injured by flying glass.

February 5, 1913, engine 6, near Brookville, Kans. Left tank hose blew off; boiler check stuck; 1 injured.

March 5, 1913, engine 1801, Columbus, Nebr. Rivet blew out of flue sheet while being calked with boiler under pressure; 1 injured.

May 8, 1913, engine 213, near Kimball, Nebr. Squirt hose blew off; insecurely applied; 1 injured.

June 6, 1913, engine 693, Ord, Nebr. Squirt hose blew off; 1 injured.

June 24, 1913, engine 1648, Alda, Nebr. Ash-pan blower-pipe union broke, due to defective union nut; 1 injured.

Twelve accidents; 1 killed; 12 injured.

**VANDALIA RAILROAD Co.:**

\*October 23, 1912, engine 331, Logansport, Ind. Squirt hose burst; 1 injured.

February 21, 1913, engine 12, Ben Davis, Ind. Crown sheet failed, due to low water; 1 injured.

Two accidents; 2 injured.

**VICKSBURG, SHREVEPORT & PACIFIC RAILWAY:**

\*December 3, 1912, engine 337, near Bossier City, La. Lubricator glass burst; 1 injured by flying glass.

One accident; 1 injured.

**VIRGINIAN RAILWAY:**

August 29, 1912, engine 602, Clarks Gap, W. Va. Arch tube blew out; improperly applied; 1 injured.

November 14, 1912, engine 469, near Ironto, Va. Crown sheet failed, due to low water; 2 killed; 1 injured.

Two accidents; 2 killed; 2 injured.

**WABASH-PITTSBURGH TERMINAL Co.:**

\*December 1, 1912, engine 416, Rook, Pa. Water glass burst; 1 injured by flying glass.

One accident; 1 injured.

**WABASH RAILROAD:**

\*September 4, 1912, engine 2420, Reddick, Ill. Injector pipe blew out; 1 injured.

September 6, 1912, engine 2442, near Clymers, Ind. Crown sheet failed, due to low water; 2 injured.

\*September 7, 1912, engine 770, Bluffs, Ill. Squirt hose burst; 1 injured.

\*September 8, 1912, engine 602, Clark, Mo. Squirt hose blew off; 1 injured.

\*December 1, 1912, engine 714, Moberly, Mo. Squirt hose blew off; 1 injured.

\*January 3, 1913, engine 754, Valley City, Ill. Steam pipe to right injector burst; 1 injured.

February 10, 1913, engine 2439, Peru, Ind. Cap removed from arch tube before hot water was drained from boiler; 1 killed.

Seven accidents; 1 killed; 7 injured.

**WESTERN MARYLAND RAILWAY:**

\*August 4, 1912, Spring Gap, Md. Squirt hose burst; 1 injured.

\*August 4, 1912, engine 606, Edgemont, Md. Squirt hose valve jarred open; 1 injured.

\*August 5, 1912, engine 951, Hagerstown, Md. Check valve defective; 1 injured.

\*August 17, 1912, engine 407, Elkins, W. Va. Squirt hose blew off; 1 injured.

September 10, 1912, engine 951, near Hagerstown, Md. Squirt hose burst; defective hose; 1 injured.

September 12, 1912, engine 403, Knob Mount, W. Va. Squirt hose blew off; insecurely applied; 1 injured.

\*October 11, 1912, engine 604, Medford, Md. Squirt-hose valve left open; 1 injured.

December 19, 1912, engine 207, Baltimore, Md. Drifting-valve bonnet blew out; bonnet improperly fitted; 1 injured.

January 11, 1913, engine 452, Parsons, W. Va. Squirt hose blew off; insecurely applied; 1 injured.

April 30, 1913, engine 613, Baltimore, Md. Collar pulled off right injector steam pipe; collar too light and improperly brazed to pipe; 1 injured.

\*May 15, 1913, engine 619, Waynecastle, Pa. Squirt hose blew off; 1 injured.

Eleven accidents; 11 injured.

**WESTERN PACIFIC RAILWAY Co.:**

\*December 17, 1912, engine 16, Lago, Utah. Water glass burst; no shield; 1 injured by flying glass.

One accident; 1 injured.

**WHEELING & LAKE ERIE RAILROAD:**

November 15, 1912, engine 2106, Cleveland, Ohio. Grate rest stud blew out; 1 injured.

January 27, 1913, engine 713, Brewster, Ohio. Lubricator glass burst; shield removed at time of accident; 1 injured by flying glass.

Two accidents; 2 injured.

**YAZOO & MISSISSIPPI VALLEY RAILROAD:**

\*July 16, 1912, Memphis, Tenn. Squirt hose blew off; 1 injured.

\*August 12, 1912, Illinois Central engine 420, Lake View, Miss. Lubricator glass burst; 1 injured by flying glass.

\*February 14, 1913, Memphis, Tenn. Water glass burst; 1 injured by escaping steam.

\*February 20, 1913, Tutwiler, Miss. Steam pipe to injector disconnected; 2 injured.

\*March 9, 1913, Tunica, Miss. Flue burst; 1 injured.

Five accidents; 6 injured.