

INTERSTATE COMMERCE COMMISSION

THIRTEENTH ANNUAL REPORT

OF THE

CHIEF INSPECTOR
BUREAU OF LOCOMOTIVE INSPECTION

TO THE

INTERSTATE COMMERCE COMMISSION

FISCAL YEAR ENDED
JUNE 30, 1924



WASHINGTON
GOVERNMENT PRINTING OFFICE
1924

ANNUAL REPORT OF THE CHIEF INSPECTOR BUREAU OF LOCOMOTIVE INSPECTION

OCTOBER 1, 1924.

To the Interstate Commerce Commission:

In compliance with section 7 of the act of February 17, 1911, as amended March 4, 1915, and June 7, 1924, the Thirteenth Annual Report of the Chief Inspector covering the work of the Bureau of Locomotive Inspection during the fiscal year ended June 30, 1924, is respectfully submitted.

A synopsis is given, by railroads, of all accidents, showing the number of persons killed and injured due to the failure of parts and appurtenances of the locomotive and tender, including the boiler, as reported and investigated under section 8 of the locomotive inspection law, and those reported to the Bureau of Statistics under the accident report act of May, 1910, and not reported to this bureau as should have been.

The data contained herein cover all defects on all parts and appurtenances of the locomotive and tender, including the boiler, found and reported by our inspectors, arranged by railroads.

The tables show the number of accidents, the number of persons killed and number injured as a result of the failure of parts and appurtenances of the locomotive and tender, including the boiler.

Tables have been arranged so as to permit comparison with previous years as far as consistent and also show the number of locomotives inspected, the number and percentage of those inspected and found defective, the number for which written notices for repairs were issued withholding them from service because of being in violation of the law, and the total defects found and reported.

Number of accidents, number killed, and number injured caused by the failure of some part or appurtenance of the locomotive and tender, including the boiler, by comparison

	Year ended June 30—				
	1924	1923	1922	1921	1920
Number of accidents.....	1,005	1,348	622	735	843
Per cent increase or decrease from previous year.....	25.5	¹ 117	15.4	12.8	¹ 49.2
Number of persons killed.....	66	72	33	64	66
Per cent increase or decrease from previous year.....	8.3	¹ 118	48.4	3	¹ 15.8
Number of persons injured.....	1,157	1,560	709	800	916
Per cent increase or decrease from previous year.....	25	¹ 120	11.3	12.6	¹ 41.6

¹ Increase.

ADDITIONAL COPIES
OF THIS PUBLICATION MAY BE PROCURED FROM
THE SUPERINTENDENT OF DOCUMENTS
GOVERNMENT PRINTING OFFICE
WASHINGTON, D. C.
AT
15 CENTS PER COPY

Number of accidents, number killed, and number injured as a result of the failure of parts and appurtenances of the locomotive boiler to which the original act only applied

	Year ended June 30--				
	1924	1923	1922	1915	1912
Number of accidents.....	393	509	273	424	856
Number of persons killed.....	54	47	25	13	91
Number of persons injured.....	447	594	318	467	1,005

Number of persons killed and injured, classified according to occupations, during the fiscal years 1920-1924, inclusive

	1924		1923		1922		1921		1920	
	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured
Members of train crews:										
Engineers.....	19	330	19	484	11	213	15	237	16	272
Firemen.....	22	434	16	597	10	277	25	360	20	474
Brakemen.....	9	102	12	137	7	66	13	64	9	77
Conductors.....	2	39	1	35		25	2	20	2	19
Switchmen.....	1	29	2	32	1	13	3	15	4	19
Roundhouse and shop employees:										
Boilermakers.....	1	24	3	19	1	10	1	7	2	9
Machinists.....	1	9	2	14		9	1	3	1	20
Foremen.....	1	6	1	6		1	1	3		3
Inspectors.....	1	3		2		2		5		1
Watchmen.....		5	1	6		3		4		4
Boilerwashers.....	2	5	1	9		3		7		13
Hostlers.....		14		31		10		8		13
Other roundhouse and shop employees.....	6	34	4	29	1	15	1	25	3	30
Other employees.....		16	4	36	2	23	2	16	4	26
Nonemployees.....	1	107	6	123		41		21	1	7
Total.....	66	1,157	72	1,560	33	709	64	800	66	916

Derailments due to defects in or failure of some part of the locomotive or tender, with the number of persons killed and injured as the result of such derailments

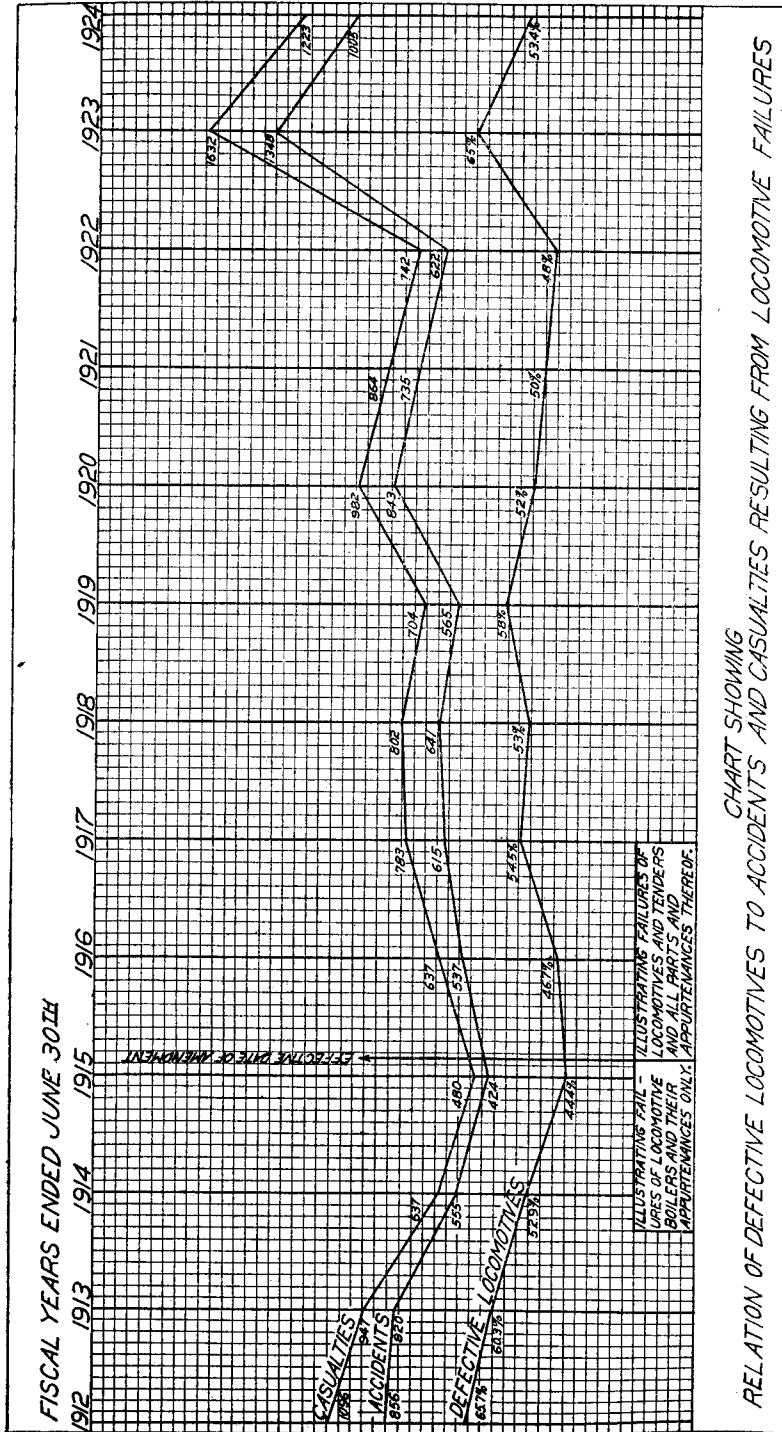
	Year ended June 30--				
	1924	1923	1922	1921	1920
Number of derailments ¹	30	38	22	8	7
Number of persons killed.....	3	4	5		7
Number of persons injured.....	112	157	61	30	18

¹ Only derailments reported by carriers as being caused by defect in or failure of parts of the locomotive or tender were investigated or counted.

Accidents and casualties resulting from failures of locomotives and tenders and their appurtenances

Part or appurtenance which caused accident	Year ended June 30--														
	1924			1923			1922			1921			1920		
	Accidents	Killed	Injured	Accidents	Killed	Injured	Accidents	Killed	Injured	Accidents	Killed	Injured	Accidents	Killed	Injured
Air reservoirs.....	2		2	6		7	3		3	1		1	2	1	2
Aprons.....	11		11	8		11	11		16	16		16	8	8	8
Arch tubes.....	5		8	11		17	4		5	5		5	9	1	15
Ash-pan blowers.....	9		9	19		19	7		5	5		5	6	1	5
Axles.....	10		16	6		7	5		17	5		6	5		5
Blow-off cocks.....	18		18	28		29	16		16	14		14	15		15
Boiler checks.....	8		8	12		12	4		4	7		1	7		6
Boiler explosions:															
A. Shell explosions.....							1		1						
B. Crown sheet; low water; no contributory causes found.....	20	25	19	19	24	27	13	15	23	20	19	26	24	22	35
C. Crown sheet; low water; contributory causes or defects found.....	22	20	37	34	15	56	14	6	27	33	24	52	35	19	46
D. Firebox; defective staybolts, crown stays, or sheets.....	1		3	4	2	5	5	1	5	1	2		2		2
Brakes and brake rigging.....	38		45	27	1	56	10	2	24	6		6	3		3
Couplers.....	24	1	27	25	1	27	21		23	11	1	13	8		8
Crank pin, collars, etc.....	12		13	12		13	10		10	6	3	8	4		4
Crossheads and guides.....	11		13	10		10	4		4	4	1	4	5	2	3
Cylinder cocks and rigging.....	8		8	11		11	3		3	4		4			
Cylinder heads and steam chests.....	8		14	8		8	3		3	6		6	9		9
Draft appliances.....	4		5	13		14	6		9	8		9	1		1
Draw gear.....	13	2	11	16	2	16	7		7	8	1	8	11	2	9
Fire doors, levers, etc.....	16		16	26		26	2		2	8		8	11		11
Flues.....	41	1	54	44		59	28		32	32	1	35	45		52
Flue pockets.....	1		2	5		5	1		1	1		1			
Footboards.....	24		24	36	1	35	11	1	10	8	3	5	23		23
Gauge cocks.....	8		7	6	1	6	3		3	7		7	10		10
Grease cups.....	96	1	97	138		138	49		49	85		85	108		109
Grate shakers.....	21	1	20	34	2	32	12	1	11	19		20	15	1	14
Handholds.....	6	2	4	8		8	2		2	8		6	9	1	9
Headlights and brackets.....															
Injectors and connections (not including injector steam pipes).....	35	1	36	33		33	21		24	15	2	13	23		27
Injector steam pipes.....	16		20	40		46	9		9	15		17	23	1	29
Lubricators and connections.....	12		12	22		22	9		9	12		12	14		15
Lubricator glasses.....	5		5	10		10	3		3	3		3	17		17
Patch bolts.....	2		3	3		3									
Pistons and piston rods.....	7		7	14	1	13	6		6	3		3	3	1	3
Plugs, arch tube, and washout.....	17	6	19	19	5	27	12	1	19	15		18	28		40
Plugs in firebox sheets.....							2		3	2		2	1		2
Reversing gear.....	83		83	100		100	53		53	65		65	59		59
Rivets.....	7		8	5		8				4		5			
Rods, main and side.....	21	1	21	53	3	57	23		27	18		21	16	2	20
Safety valves.....	3		3												
Sanders.....	5		5	4		4	2		2				1		1
Side bearings.....							1		1						
Springs and spring rigging.....	19	1	18	25	2	25	10	1	9	3		3	9	2	18
Squirt hose.....	66		66	67		69	54		54	82		82	82		82
Stay bolts.....	2		3	7		8	6		8			2	2		1
Steam piping and blowers.....	23	1	27	19		19	9		11	9		9	18	1	19
Steam valves.....	15		15	16	1	16	6		6	11		12	17		17
Studs.....	4		5	6		8	7		8	7		7	9		11
Superheater tubes.....	4		6	10		15			1			2	4		6
Throttle glands.....	1		1	1		1	1		1			3	3		4
Throttle leaking.....	8		9	6		6	3	1	2	3		3	1	1	
Throttle rigging.....	13		14	19	2	19	5		5	1		1	6		6
Trucks, leading, trailing, or tender.....	17	3	85	25	5	101	11	2	25	6		8	1	3	1
Valve gear, eccentrics and rods.....	27		27	59	2	59	18		18	10		10	6		6
Water bars.....															
Water glasses.....	14		14	35		35	19		19	25		25	32		32
Water-glass fittings.....	10		11	7		7	6		6	2		2	4		4
Wheels.....	8		10	10	1	19	8	1	7	4	1	4	2	1	4
Miscellaneous.....	124		133	170	1	179	61		61	91	2	117	87	2	86
Total.....	1,005	66	1,157	1,348	72	1,560	622	33	709	735	64	800	843	66	916

Table showing number of locomotives reported, inspected, found defective, and ordered from service



Parts defective, inoperative or missing, or in violation of rules	Fiscal years ended June 30—				
	1924	1923	1922	1921	1920
1. Air compressors.....	1,221	1,300	971	692	763
2. Arch tubes.....	272	468	151	160	150
3. Ash pans or mechanism.....	257	306	161	147	152
4. Axles.....	19	21	15	12	10
5. Blow-off cocks.....	965	1,578	975	969	771
6. Boiler checks.....	1,329	1,913	949	1,006	877
7. Boiler shell.....	2,103	2,370	1,598	1,550	1,598
8. Brake equipment.....	6,920	8,213	4,677	4,836	4,373
9. Cabs or cab windows.....	1,627	1,423	1,276	1,171	1,361
10. Cab aprons or decks.....	1,293	1,476	1,098	893	550
11. Cab cards.....	758	1,449	567	671	816
12. Coupling or uncoupling devices.....	398	634	423	547	707
13. Crossheads, guides, pistons, or piston rods.....	3,577	5,527	1,920	2,116	2,107
14. Crown bolts.....	418	630	331	392	348
15. Cylinders, saddles, or steam chests.....	5,712	4,875	3,234	3,304	4,212
16. Cylinder cocks or rigging.....	2,376	1,745	1,201	1,197	1,735
17. Dome or dome caps.....	494	626	331	396	722
18. Draft gear.....	1,981	2,613	1,526	1,418	1,722
19. Draw gear.....	4,160	4,513	3,042	3,134	2,857
20. Driving boxes, shoes, wedges, pedestals, or braces.....	3,722	4,269	2,776	3,361	2,128
21. Fire-box sheets.....	1,471	2,327	1,191	1,185	1,185
22. Flues.....	698	1,268	521	552	554
23. Frames, tail pieces, or braces, locomotive.....	2,550	2,683	2,078	1,998	2,921
24. Frames, tender.....	414	540	352	232	264
25. Gauge or gauge fittings, air.....	626	1,062	399	537	248
26. Gauge or gauge fittings, steam.....	2,026	3,075	1,595	1,769	1,283
27. Gauge cocks.....	3,835	5,895	3,275	3,657	3,413
28. Grate shakers.....	1,006	569	425	565	93
29. Handholds.....	2,241	1,990	1,533	894	593
30. Injectors, inoperative.....	94	251	94	179	88
31. Injectors and connections.....	9,985	12,406	7,741	7,606	6,638
32. Inspections or tests not made as required.....	9,740	7,419	4,114	4,865	3,924
33. Lateral motion.....	939	1,625	976	1,066	1,052
34. Lights, cab or classification.....	72	90	86	80	115
35. Lights, headlight.....	904	1,164	705	539	639
36. Lubricator or shields.....	565	566	456	427	515
37. Mud rings.....	1,901	2,711	1,598	1,441	1,515
38. Packing nuts.....	3,304	4,755	3,151	3,294	3,779
39. Packing, piston rod and valve stem.....	3,187	3,359	1,756	2,176	2,818
40. Pilot or pilot beams.....	967	1,294	679	588	374
41. Plugs or studs.....	1,026	857	443	457	333
42. Reversing gear.....	1,217	1,272	789	745	470
43. Rods, main or side, crank pins or collars.....	6,507	10,080	3,915	4,464	4,392
44. Safety valves.....	188	192	162	144	957
45. Sanders.....	1,806	1,857	1,165	1,071	891
46. Springs or spring rigging.....	6,335	7,911	5,497	5,494	4,244
47. Squirt Hose.....	1,221	1,098	985	916	512
48. Staybolts.....	916	1,313	722	716	541
49. Staybolts, broken.....	5,320	10,089	4,261	4,871	5,551
50. Steam pipes.....	2,305	2,467	1,461	1,678	1,320
51. Steam valves.....	981	1,168	791	792	676
52. Steps.....	2,829	3,289	2,038	1,917	1,260
53. Tanks or tank valves.....	3,393	3,788	2,817	2,385	2,064
54. Telltale holes.....	620	715	630	567	437
55. Throttle or throttle rigging.....	2,868	2,633	1,880	1,730	1,087
56. Trucks, engine or trailing.....	3,425	3,890	2,467	2,493	1,927
57. Trucks, tender.....	5,977	3,714	2,551	2,408	2,240
58. Valve motion.....	1,269	1,761	710	691	463
59. Washout plugs.....	3,204	3,641	2,449	2,306	2,221
60. Water-bars or combustion flues.....	16	24	57	24	82
61. Water glass, fittings, or shields.....	4,201	5,641	3,640	4,045	2,954
62. Wheels.....	2,996	4,371	2,410	2,802	2,440
63. Miscellaneous—Signal appliances, badge plates, brakes (hand).....	1,342	972	403	504	184
Total number of defects.....	146,121	173,840	101,734	104,848	95,066
Locomotives reported.....	70,683	70,242	70,070	70,475	69,910
Locomotives inspected.....	67,507	63,657	64,354	60,812	49,471
Locomotives defective.....	36,098	41,150	30,978	30,207	25,529
Percentage inspected found defective.....	53	65	48	50	52
Locomotives ordered out of service.....	5,764	7,075	3,089	3,914	3,774

INVESTIGATION OF ACCIDENTS

All accidents reported to this bureau, as required by the law and rules, were carefully investigated and action taken to prevent recurrences as far as possible. Copies of accident investigation reports were furnished to parties interested when requested, and otherwise used in our efforts to bring about a decrease in the number of accidents.

The percentage of locomotives found defective decreased from 65 per cent during the year 1923 to 53.4 per cent during the last year. This shows an improvement in the condition of motive power during the year, yet below that during the year 1922, when 48 per cent of the locomotives inspected by our inspectors were found defective.

The condition of motive power is reflected in the number of accidents and casualties to persons resulting from failures of parts and appurtenances of locomotives and tenders. During the last year there were 1,005 accidents, resulting in the death of 66 persons and serious injury to 1,157 others. While this is a reduction as compared with the previous year, it is a very material increase over the year 1922, when there occurred 622 accidents resulting in the death of 33 persons and the serious injury of 709 others from the same causes.

The chart on page 4 shows graphically the relation between the percentage of defective locomotives, and the number of accidents and casualties resulting from failure thereof, and illustrates the result, from the viewpoint of safety, of operating locomotives in a defective condition.

EXPLOSIONS

During the year there were 43 boiler explosions, which resulted in death of 45 persons and the serious injury of 59 others. The statement above made with respect to the total number of accidents during the year also applies to accidents due to explosions. The total explosions during the year decreased 24.6 per cent as compared with the preceding year, but an increase of 30 per cent over the year 1922.

Attention is called to the increased seriousness of explosions as reflected by the loss of life. The effect of a boiler explosion is in direct proportion to the size and suddenness of the initial rupture which causes the explosion and the temperature and volume of the water in the boiler at the time of the accident. The volume of water increases with the size of the boiler and the temperature of the water increases as the steam pressure increases, consequently the failure of the large modern boiler carrying high pressure is very much more serious in effect. This is illustrated by the fact that 57 explosions during the year 1923 caused the death of 41 persons, while 43 explosions during the last year caused the death of 45 persons. The reason that more people are not killed and injured by locomotive boiler

failures is due to the fact there are usually only two persons on the locomotive at the time of the accident. If such explosions were to occur at stations or other congested places, the results could not be estimated. These facts forcibly demonstrate the necessity for a high standard of construction, maintenance, and operation of the locomotive. Because of defects developing from day to day and trip to trip, the utmost diligence must be pursued if serious accidents are to be avoided.

While most of these explosions were caused by the crown sheet having been overheated due to low water in the boiler, contributory defects or causes were found in 52.4 per cent of the cases, which again illustrates the necessity for better construction, inspection, and repair of all parts and appurtenances.

In my ninth, tenth, eleventh, and twelfth annual reports reference is made to investigations and tests made by this bureau on a number of railroads to determine the action of water in the boiler and its effect upon the water-indicating appliances, which investigations established without question that gauge cocks when screwed directly into the boiler do not correctly indicate the general water level while steam is being rapidly generated and simultaneously escaping from the boiler. It having been made manifest that dependency on gauge cocks attached directly to the boiler for registering the general water level creates an unsafe condition and adds to the peril of operation, it was and is recommended that a suitable water column be applied to the boiler with three gauge cocks and one water glass attached, with an additional water glass applied on the left side or boiler back head so that those operating the locomotive may have accurate knowledge of the general water level in the boiler under all conditions of service.

The water column as recommended is the most accurate device yet invented for this purpose. Accurate knowledge of the height of the water in the boiler is most essential to safe and economical locomotive operation. Water columns as recommended have been applied to practically all new locomotives constructed since the publication of our report and to a large number of locomotives previously in service. It is essential to safe and economical locomotive operation that water glasses and gauge cocks be so constructed, located, and maintained that they not only register the correct height of the water in the boiler, but that they be conveniently located and easily seen and read by the engineer and fireman from their usual and proper places in the cab. The duties of locomotive engineers are among the most hazardous and exacting; therefore, anything that detracts their attention for any length of time from the track and signals ahead creates an inestimable peril to locomotive and train operation. It is our hope that proper water-

indicating appliances, as recommended, will be applied by all carriers with due diligence and without the necessity of an order by the commission making it mandatory.

AUTOGENOUS WELDING

In view of the number of accidents investigated where welds made by the autogenous process were involved, I feel that particular attention should be called to this subject. Due to the many failures, I have taken the position that this process has not yet reached a stage of development where it can be safely used on any part of the boiler where the strain to which the structure is subjected is not carried by other construction which conforms to the requirements of the law and rules, nor in fire-box crown-sheet seams where overheating and failure are liable to occur, nor on sheets which have been weakened from any cause to the extent of becoming unsafe, nor seams on boiler back head, except where the welded seams are covered with a patch applied with patch bolts, studs, or rivets that will prevent the escape of scalding water and steam in the cab to the extent that might cause serious injury to persons should the welding fail (attention is directed to illustration and description on page 90), nor on any part of the locomotive or tender subjected to shocks or strains where through failure accident and injury might result.

The most prolific source of casualties due to failure of autogenously welded seams has been in fire-box crown sheets and it has been conclusively demonstrated that the loss of life and limb due to fire-box failures depends very largely upon whether or not the sheets or seams were included in the pocketed, bagged, or ruptured area, or, in other words, where at least one row of stays between the seams and the pocketed or ruptured area remained intact the seams were not considered as being involved.

Statements showing by fiscal years for the period from July 1, 1915, to June 30, 1924, inclusive, the relative effect of crown-sheet failures in which the sheets bagged or pocketed as compared with those in which the sheets tore; with comparative statement showing the relative value of riveted and autogenously welded seams involved in accidents due to crown sheet failures which caused serious and fatal injury to persons

Years ended June 30	1916			1917			1918			1919			1920			1921			1922			1923			1924			Totals				
	Accidents	Killed	Injured	Accidents	Killed	Injured	Accidents	Killed	Injured	Accidents	Killed	Injured	Accidents	Killed	Injured	Accidents	Killed	Injured	Accidents	Killed	Injured	Accidents	Killed	Injured	Accidents	Killed	Injured	Killed per accident	Injured per accident			
Total number of crown sheet failures.....	41	20	64	63	45	100	90	32	149	67	39	112	61	41	83	53	45	76	27	21	50	57	41	88	42	45	56	501	329	779	0.66	1.55
Total accidents in which the sheets pocketed, but did not tear.....	29	5	43	42	3	66	63	6	105	35	5	70	30	6	44	29	8	46	15	4	33	31	8	51	16	4	23	290	49	481	.17	1.66
Total accidents in which the sheets tore.....	12	15	21	21	37	32	27	26	44	32	34	42	31	35	39	24	37	30	12	17	17	26	33	37	26	41	35	211	275	285	1.30	1.40

CROWN SHEET FAILURES IN WHICH THE RIVETED SEAMS IN FIREBOX WERE INVOLVED IN THE ACCIDENTS	
Total crown sheet failures in which riveted seams were in pocketed or ruptured area, or were subjected to unusual stress.....	35
Total accidents in which riveted seams failed.....	8
Total accidents in which riveted seams did not fail.....	27

CROWN SHEET FAILURES IN WHICH AUTOGENOUS WELDED SEAMS IN FIREBOX WERE INVOLVED IN THE ACCIDENT	
Total crown sheet failures in which welded seams were in the pocketed or ruptured area or were subjected to unusual stress.....	2
Total accidents in which welded seams failed.....	2
Total accidents in which welded seams did not fail.....	2

From this tabulation it will be seen that approximately 78 per cent of autogenously welded seams involved in fire-box failures have torn, while 15.4 per cent of riveted seams involved have failed. The fatalities where sheets tore have been about eight times as great as where they did not tear. From July 1, 1915, to June 30, 1924, autogenously welded seams were involved in 26.9 per cent of the crown-sheet failures, while 50.7 per cent of the total persons killed in such accidents was where the autogenously welded seams were involved. From the viewpoint of safety, this clearly shows the necessity for constructing fire-box sheet seams in the strongest practical manner, especially so in the so-called "low water zone," or such seams as may be within 15 inches of the highest part of the crown sheet measured vertically. Because the autogenous welding process is in a state of development, and due to my desire to avoid hindering the progress or development of any process of such great value when properly and discreetly used, I have hesitated to ask the commission to establish or approve rules or regulations restricting its use which might retard its development. However, unless the carriers confine its use to parts and appliances where, through failure, accidents and injuries will not result, I will be compelled to recommend more restrictive measures in the near future.

ACCIDENTS IN GENERAL

The tabulation on page 3 shows the principal causes of accidents. If advantage is taken of the information there contained and proper inspections and repairs are made, accidents from these sources should be materially reduced, if not entirely eliminated.

GENERAL COMPLIANCE WITH REQUIREMENTS

Soon after July 1, 1922, it was brought to the attention of the commission that inspections, tests, and repairs were not being made by many of the carriers as required; therefore it became necessary for our inspectors to obtain information to show that locomotives were being used while in violation of the law so that court proceedings could be instituted. It was also necessary that our inspectors issue special notices for repairs, in accordance with sections 6 and 9 of the law, withholding 7,075 locomotives from service during that year until proper inspections and repairs were made. During the last year our inspectors were compelled to issue special notices for repairs ordering out of service 5,764 locomotives because of being in violation of the law. Considerable improvement has been made by a large number of carriers and some improvement has been made by most all of them, yet the condition is far from being satisfactory in so far as a proper compliance with the law is concerned. If due dili-

gence were pursued by the carriers in seeing that locomotives are in proper condition and safe to operate before being offered for service, the commission's inspectors should not find it necessary to order any locomotive from service because of being in violation of the law, thus frequently causing serious inconvenience to the traveling and shipping public and an added burden to the carriers.

PROSECUTIONS

There is now pending in the United States District Court for the Northern District of New York a case involving an inspector charged with perjury in swearing to the correctness of an annual locomotive inspection and repair report rendered this bureau. In this case the inspector swore that the arch tubes in the locomotive were in "good" condition, notwithstanding that the center arch tube did not extend through the throat sheet far enough to be either belled or beaded to secure it in place. It is charged that the inspector did so swear when he did not believe the same to be true. The tube blew out 27 days after the sworn report was rendered, causing serious injury to two employees, report of which was made public by order of the commission.

During the fiscal year 1923-24 evidence was obtained and petitions prepared and transmitted to the proper United States attorneys for prosecution in 46 cases, involving 472 counts. Pleas of guilty were entered by defendants in 294 counts and penalties aggregating \$29,400 imposed; 65 counts were dismissed and 113 counts were pending as of June 30, 1924.

Following is a brief summary of the cases instituted by this bureau to and including June 30, 1924. Many of the cases were lodged with the various United States attorneys during the fiscal year 1923, but were disposed of during the fiscal year 1924. Under the style of each case is shown the nature of the violations involved, number of counts, and status of the case:

U. S. v. Baltimore & Ohio Railroad Co., district of Maryland, involved the use of a locomotive with a cracked side rod which broke, resulting in an accident and serious injury to the fireman. One count was filed, to which the defendant entered a plea of guilty and a penalty of \$100 was imposed.

U. S. v. Chesapeake & Ohio Railway Co., southern district of West Virginia, involved 10 counts for the use of locomotives overdue for inspections. Plea of guilty was entered by the defendant and penalty of \$1,000 imposed.

U. S. v. Chicago & Eastern Illinois Railway Co., eastern district of Illinois, involved 10 counts for the use of locomotives overdue for inspections. The defendant confessed as to each count and a penalty of \$1,000 was imposed.

U. S. v. Chicago & North Western Railway Co., northern district of Iowa, involved 10 counts for the use of locomotives overdue for inspections. A plea of guilty was entered by the defendant as to each count and penalty of \$1,000 was imposed.

U. S. v. Chicago, Milwaukee & St. Paul Railway Co., northern district of Iowa, involved 8 counts for the use of locomotives overdue for inspections. Defendant confessed as to 6 counts and a fine of \$600 was assessed; 2 counts were dismissed.

U. S. v. Chicago, Rock Island & Pacific Railway Co., district of Kansas, involved 6 counts for the use of locomotives while overdue for monthly inspections. By authority of the Attorney General's office the United States attorney dismissed all counts in this suit.

U. S. v. Chicago, St. Paul, Minneapolis & Omaha Railway Co., district of Nebraska, involved 10 counts for the use of locomotives while overdue for monthly inspections. The United States attorney accepted settlement of this case upon payment by defendant of \$10 for each count.

U. S. v. Cleveland, Cincinnati, Chicago & St. Louis Railway Co., northern district of Ohio, involved 1 count for the use of a locomotive with a defective guide yoke, resulting in an accident and injury to the engineer. Defendant entered a plea of guilty and a fine of \$100 was imposed.

U. S. v. Colorado & Southern Railway Co., district of Colorado, involved 12 counts for use of locomotives while overdue for monthly inspections. Case pending.

U. S. v. Delaware, Lackawanna & Western Railroad Co., district of New Jersey, involved 6 counts for use of locomotives while overdue for inspections. A plea of guilty as to all counts was entered by defendant and a fine of \$600 was imposed.

U. S. v. Delaware, Lackawanna & Western Railroad Co., northern district of New York, involved 7 counts for use of locomotives while overdue for annual and monthly inspections. Defendant confessed as to each count and a fine of \$700 was assessed.

U. S. v. Receivers of Denver & Rio Grande Western Railroad Co., district of Colorado, involved 15 counts for the use of locomotives in defective condition and in violation of the lawful order of the district locomotive inspector. Defendant entered a plea of guilty as to 14 counts, and a fine of \$1,400 was imposed. One count was dismissed by the Government.

U. S. v. Fort Worth & Denver City Railway Co., northern district of Texas, involved 15 counts for the use of locomotives while overdue for monthly inspections. The defendant pleaded guilty in 10 counts and a fine of \$1,000 was imposed. The Government dismissed 5 counts.

U. S. v. Fort Worth & Rio Grande Railway Co., northern district of Texas. This case consisted of 6 counts charging the defendant with the use of locomotives while in defective condition and in violation of the lawful order of the district inspector of locomotives. The defendant pleaded guilty in 3 counts and 3 counts were dismissed. A fine of \$300 was assessed.

U. S. v. Great Northern Railway Co., district of Minnesota, involved 10 counts for use of locomotives while overdue for monthly inspections. A plea of guilty was filed by the defendant and fine of \$1,000 imposed.

U. S. v. Kansas City Southern Railway Co., eastern district of Oklahoma, involved 9 counts for use of locomotives while overdue for monthly inspections. The defendant entered a plea of guilty in all counts and was assessed a fine of \$900.

U. S. v. Lehigh Valley Railroad Co., eastern district of Pennsylvania, involved 6 counts for the use of locomotives while in defective condition. The Attorney General authorized the United States attorney to accept plea of guilty in 4 counts and to dismiss 2 counts. A fine of \$400 was imposed on the defendant.

U. S. v. Long Island Railroad Co., eastern district of New York. This case involves 28 counts for the use of one locomotive on 28 separate trips while

arch tube was not properly belled or beaded. The tube blew out injuring fireman, engineer, and conductor. Case pending.

U. S. v. Louisiana & Northwest Railroad Co., western district of Louisiana, involved 1 count for the use of a locomotive with defective draw gear which broke between the locomotive and tender, resulting in death to the fireman. A plea of guilty was entered and fine of \$100 imposed.

U. S. v. Louisville & Nashville Railroad Co., eastern district of Kentucky. This case involved 9 counts for the use of locomotives while overdue for inspections. The defendant entered a plea of guilty in all counts and a penalty of \$900 was imposed.

U. S. v. Midland Valley Railroad Co., eastern district of Oklahoma, involved 13 counts for the use of locomotives while overdue for monthly inspections. A plea of guilty was entered by defendant and a penalty of \$1,300 imposed.

U. S. v. Receivers of Missouri-Kansas-Texas Railway of Texas, Eastern district of Texas, involved 8 counts for use of locomotives while overdue for monthly inspections. The defendant confessed in all counts and was assessed a penalty of \$800.

U. S. v. Missouri-Kansas-Texas Railroad Company of Texas, eastern district of Texas, involves 2 counts for the use of locomotives while in a defective condition in that each of the locomotives had cracked side rods. Case pending.

U. S. v. Missouri-Kansas-Texas Railroad Company, eastern district of Oklahoma, involved 6 counts for use of locomotives while in defective condition. Defendant entered a plea of guilty in each of the counts and a penalty of \$600 was imposed.

U. S. v. Missouri-Kansas-Texas Railroad Company of Texas, northern district of Texas, involves 5 counts for use of locomotives while in a defective condition. Case pending.

U. S. v. Missouri-Kansas-Texas Railroad Co., district of Kansas, involved 9 counts for the use of locomotives while in defective condition. The defendant confessed as to each count and was assessed a penalty of \$900.

U. S. v. Missouri Pacific Railroad Co., district of Kansas, involved 11 counts charging the use of locomotives while overdue for monthly inspections. By authority of the Attorney General's office the United States attorney dismissed the case.

U. S. v. Mobile & Ohio Railroad Co., northern district of Mississippi, involved 9 counts for the use of locomotives while overdue for monthly inspections. Defendant entered a plea of guilty as to each count and a penalty of \$900 was assessed.

U. S. v. Mobile & Ohio Railroad Co., southern district of Alabama, involves 10 counts charging the use of one locomotive on 10 separate trips while overdue for flue removal. Case pending.

U. S. v. New York, Chicago & St. Louis Railroad Co., northern district of Illinois, involved 20 counts charging the use of locomotives while overdue for monthly inspections. The defendant entered a plea of guilty as to each count and was assessed a penalty of \$2,000.

U. S. v. New York, New Haven & Hartford Railroad Co., district of Connecticut, involved 8 counts for the use of locomotives while overdue for monthly inspections. The defendant confessed as to each count and paid a penalty of \$800.

U. S. v. Pennsylvania Railroad Co., eastern district of Illinois, involved 10 counts charging the use of one locomotive on 10 separate trips while one of the side rods of the locomotive was cracked. Defendant entered a plea of guilty in each count and a penalty of \$1,000 was imposed.

U. S. v. Pennsylvania Railroad Co., District of Columbia, involves 4 counts charging the use of locomotives while in a defective condition. Case pending.

U. S. v. Pennsylvania Railroad Co., district of New Jersey, involves 1 count charging the use of a locomotive with a cracked main rod which broke, resulting in an accident and injury to a fireman. Plea of guilty was entered by defendant and penalty of \$100 imposed.

U. S. v. St. Louis-San Francisco Railway Co., district of Kansas, involved 1 count charging the use of a locomotive while in defective condition resulting in an accident and injury to fireman. Plea of guilty was entered by defendant and fine of \$100 imposed.

U. S. v. St. Louis-San Francisco Railway Co., eastern district of Missouri, involved 8 counts charging the use of locomotives while overdue for monthly and annual inspections. The defendant confessed as to each count and was assessed a penalty of \$800.

U. S. v. St. Louis-San Francisco Railway Co., eastern district of Missouri, involved 62 counts charging the use of locomotives while overdue for monthly inspections. The defendant entered a plea of guilty as to all counts and a penalty of \$6,200 was imposed.

U. S. v. St. Louis Southwestern Railway Co., eastern district of Arkansas, involved 10 counts charging the use of locomotives while overdue for monthly and annual inspections. A plea of guilty was entered by the defendant and a penalty of \$1,000 imposed.

U. S. v. Seaboard Air Line Railway Co., southern district of Florida, involves 12 counts charging the use of locomotives while overdue for monthly inspections. Case pending.

U. S. v. Southern Railway Co., eastern district of Tennessee, involved 11 counts charging the use of locomotives while overdue for monthly inspection. Defendant admitted the facts as alleged, but asserted that inasmuch as only six locomotives were involved in the 11 counts, the penalties should be restricted to \$600, contending that the failure to make the inspection was the offense and not each separate use or trip of the locomotive. Argument was heard by the court and judgment rendered for the Government in respect to each of the 11 counts, the court holding that each use, or each trip made by the locomotive after it became overdue for inspection, constituted a separate offense under the law. A fine of \$1,100 was imposed.

U. S. v. Tennessee Central Railroad Co., middle district of Tennessee, involved 10 counts charging the use of locomotives while overdue for inspections. Defendant admitted the facts alleged. The court assessed defendant with costs but relieved it of the penalties.

U. S. v. Receivers of Texas & Pacific Railway Co., eastern district of Texas, involved 10 counts charging the use of locomotives while overdue for monthly inspections. By authority of the Attorney General's office the United States attorney dismissed the suit.

U. S. v. Virginia Railway Co., southern district of West Virginia, involved 10 counts, charging the use of locomotives while overdue for monthly inspections. The defendant entered a plea of guilty to each count and was assessed a penalty of \$1,000.

U. S. v. Wabash Railway Co., southern district of Illinois, involves 20 counts charging the use of one locomotive on 20 separate trips while in a defective condition. Case pending.

U. S. v. Western Maryland Railway Co., District of Maryland, involved 9 counts charging the use of locomotives in defective condition. The defendant entered a plea of guilty in 8 counts and a penalty of \$800 was imposed. The United States attorney dismissed 1 count.

U. S. v. Western Maryland Railway Co., northern district of West Virginia, involved 3 counts charging the use of locomotive while in defective condition. Plea of guilty entered by defendant and penalty of \$300 imposed.

SENATE RESOLUTION NO. 327

In response to Senate Resolution No. 327 of August 3, 1922, calling for information as to whether or not the provisions of the locomotive inspection act were being violated and, if so, the extent of such violations and as to whether inspections of the locomotives were being made in all Federal inspection districts and upon the roads of all common carriers engaged in interstate commerce as required by said act, we have been supplying information each month to Congress when in session, and to the President when not in session, showing the number of locomotives inspected, the number found defective, the percentage inspected found defective, number ordered out of service, and the number of accidents, killed and injured, by comparison with previous periods.

EXTENSION OF TIME FOR FLUE REMOVALS

During the year 139 applications were filed for extension of time for removal of flues, as provided in rule 10. Our investigation disclosed that in 12 of these cases the condition of the locomotives were such that no extension within the purpose and intent of the law could properly be granted. Seventeen were in such condition that the full extension requested could not be authorized, but an extension for a shorter period within the limits of safety was allowed. Fifteen extensions were granted after defects disclosed by our investigations had been repaired. Twenty-two applications were withdrawn by the carriers for various reasons and the remaining 73 were granted for the period requested.

SPECIFICATION CARDS AND ALTERATION REPORTS

In accordance with rule 54, there were filed 3,336 specification cards and 11,795 alteration reports necessary in determining the safe working pressure and other required data for the boilers represented. In order to determine whether or not the boilers covered by these reports were so constructed as to be in safe and proper condition for service and that the stresses were within the allowed limits, these specification cards and alteration reports were carefully checked and analyzed and corrective measures taken with respect to numerous discrepancies found.

APPEALS

No formal appeal was taken from the decisions of any inspector during the year.

AMENDMENT TO THE LAW

The act of June 7, 1924, further amending the locomotive inspection law, extending our jurisdiction to all locomotives and tenders, their parts and appurtenances, has placed upon the bureau additional duties and responsibilities. The preparation of rules fixing minimum requirements for all locomotives not heretofore coming under the jurisdiction of the law is being pursued as diligently as conditions will permit, and arrangements are being made to put into effect the additional requirements as soon as possible.

APPROPRIATIONS

The amount appropriated to carry out the requirements of the law during the year was \$300,000, to be spent monthly in equal allotments. In order to keep within this appropriation, it was necessary to curtail materially the travel of our field force and to keep the office force at the lowest consistent minimum. Because of lack of sufficient funds and of a sufficient number of inspectors, there were 2,189, or 47 per cent of the total points in the United States where locomotives are stationed, housed, or repaired, where no inspections were made during the year.

RECOMMENDATIONS FOR BETTERMENT OF SERVICE

In my ninth, tenth, eleventh, and twelfth annual reports recommendations were made, in accordance with section 7 of the act for additional inspectors and appropriation and the application of automatic firedoors, power reverse gear, power grate shaker, automatic bell ringer, horizontal handholds and stirrups on cabs, and water columns, and the reasons therefor given.

In order to save space in this report we have refrained from repeating in detail these recommendations and reasons; however, they are respectfully renewed as being in the interest of safety.

There are several devices now being used and being developed which will apparently give an audible alarm when the water becomes dangerously low in the boiler and prevent serious and fatal explosions, and while these devices have not been in use a sufficient length of time to definitely prove their reliability, it is hoped that the carriers will give due consideration to them and assist in their development and broaden their use in every consistent way.

A. G. PACK,
Chief Inspector.

ACCIDENTS AND CASUALTIES RESULTING FROM THE FAILURE OF LOCOMOTIVES AND TENDERS AND THEIR APPURTENANCES DURING THE FISCAL YEAR ENDED JUNE 30, 1924, BY ROADS

[A star (*) indicates accidents taken from records of the Bureau of Statistics of the Interstate Commerce Commission. A double star (**) indicates accidents not properly reported, as required by rules 55 and 162. A complete investigation, therefore, could not be made, inasmuch as the bureau was not apprised of the accidents in sufficient time after they occurred to permit them to be properly investigated.]

ALABAMA & VICKSBURG RAILWAY:

September 18, 1923, locomotive 412, Jackson, Miss. Defective back stop to rear footboard broke off, causing employee to fall. One injured.

**June 23, 1924, locomotive 460, Jackson, Miss. Left front cylinder cock broken. 1 injured.

June 30, 1924, locomotive 474, Ragland, Miss. Wooden tread on tank step broke off, causing engineer to fall. One injured.

Three accidents, 3 injured.

ATCHISON, TOPEKA & SANTA FE RAILWAY SYSTEM:

**July 30, 1923, locomotive 1072, White Deer, Tex. Cylinder head blew out; head had been faced down until only three sixty-fourths inch to three-sixteenths inch thick. One injured.

**August 3, 1923, locomotive 1103, near Valley Falls, Kans. Board broken off of engine step, leaving sharp iron plate protruding which caused injury to fireman when he attempted to go down the steps. 1 injured.

**August 6, 1923, locomotive 1622, Heidenheimer, Tex. Plug in blower cock came partly out, causing engineer to fall from running board. One injured.

August 15, 1923, locomotive 1977, Silsbee, Tex. Arch tube burst, due to overheating. One injured.

August 17, 1923, locomotive 1969, near Algoa, Tex. Crown-sheet failure, caused by overheating due to low water; gauge cocks applied directly in back head near flange knuckle; initial rupture apparently occurred in autogenously welded seam of patch at front of crown sheet, which failed for a distance of 60 inches. Three killed, 2 injured.

August 31, 1923, locomotive 3808, near Abo, N. Mex. Back section of hand rail became loosened in column and slipped back, leaving gap of approximately 2 feet in the hand rail; engineer attempting to pass along running board in the dark could not see the gap, missed the hand rail and fell to ground. One injured.

September 15, 1923, locomotive 3808, Taiban, N. Mex. Handhold at gangway broke, due to old flaw, throwing brakeman to ground. One injured.

**September 30, 1923, locomotive (G. C. & S. F.) 762, near McGregor, Tex. Scalded, due to squirt hose connection leaking. One injured.

*October 17, 1923, locomotive (G. C. & S. F.) 621, Beaumont, Tex. Struck by cab apron, which flew up, account of apron hinge being broken. One injured.

November 12, 1923, locomotive 1912, near Valley View, Tex. Crown-sheet failure, caused by overheating due to low water; violence of explosion apparently increased by failure of defective autogenously welded seams; gauge cocks applied directly in boiler back head. Three injured.

*November 17, 1923, locomotive 2016, Argentine, Kans. Struck by reverse lever which would not stay in place. One injured.

November 29, 1923, locomotive 3804, Yeso, N. Mex. Power grate shaker latch slipped out of fulcrum lever, allowing power lever to move back violently; lever had too much lateral motion on shaft and power lever latch and fulcrum lever were worn. One injured.

December 4, 1923, locomotive (G. C. & S. F.) 623, Galveston, Tex. Squirt hose burst, due to being badly worn. One injured.

December 15, 1923, locomotive (G. C. & S. F.) 1980, near Fuqua, Tex. Arch tube burst, due to overheating caused by bad water and fire box so drafted that flames are concentrated on arch tubes. Two injured.

December 31, 1923, locomotive 3192, near Bucklin, Mo. Crown-sheet failure, caused by low water; no contributing causes found. One killed, 2 injured.

January 1, 1924, locomotive 227, Elkhart, Kans. Shaker bar slipped off dump grate post; post badly battered at end, causing improper fit. One injured.

****January 17, 1924, locomotive 1968, Williams, Ariz.** Fell while operating angle cock on rear of tender, due to pipe clamp being broken and footboard bent back under tender. One injured.

****January 21, 1924, locomotive 3186, Gardner, Kans.** Smokebox cleaning hole cover dropped, due to supporting chain breaking. One injured.

****February 5, 1924, locomotive 3263, near Corwith, Ill.** Burned by steam leaking from blower pipe; blower pipe cap missing. One injured.

February 13, 1924, locomotive 1455, near Lariat, Tex. Crown-sheet failure, caused by overheating due to low water; boiler appurtenances damaged to such extent that their condition prior to the accident could not be determined. Two killed.

***February 29, 1924, locomotive (G. C. & S. F.) 1916, Santa Anna, Tex.** Side rod broke. One injured.

****May 20, 1924, locomotive 700, Enid, Okla.** Slipped and fell while attempting to get on rear footboard of engine; footboard was out of line, being back 3 inches under draw bar, causing it to be at an angle. One injured.

****June 8, 1924, locomotive 708, Barstow, Calif.** Bonnet cap nut of blow-off cock broke off at top thread, due to fracture caused by the use of hammer and set. One injured.

Twenty-three accidents, 6 killed, 27 injured.

ATLANTA, BIRMINGHAM & ATLANTIC RAILWAY:

September 9, 1923, locomotive 62, near Parkwood, Ala. Main crank pin broke off, due to old defect, causing engine to strip on both sides. Two injured.

January 25, 1924, locomotive 56, near Crosland, Ga. Turbine of headlight generator burst. One injured.

***June 7, 1924, locomotive 54, Omega, Ga.** Grates became disconnected. One injured.

Three accidents, 4 injured.

ATLANTIC COAST LINE RAILROAD:

July 10, 1923, locomotive 149, South Rocky Mount, N. C. Slipped and fell from top of tender to ground, due to plate at back of fuel space being badly rusted and giving way. One injured.

****July 15, 1923, locomotive 240, Ferebee, S. C.** Main driving axle broke, due to old fracture covering approximately two-thirds of the cross-sectional area. One injured.

September 6, 1923, locomotive 1140, Florence, S. C. Tender brake beam dropped down, account of bolt on right side of back beam losing out. One injured.

October 28, 1923, locomotive 440, Fair Bluff, N. C. Nozzle studs defective and worked out of saddle, causing locomotive to fail for steam; engineer and fireman burned by hot gases while opening front end door. Two injured.

****December 5, 1923, locomotive 343, South Rocky Mount, N. C.** Arch tube plug blew out while attempting to tighten under pressure; threads in holes in throat sheet practically destroyed when holes were retapped. One injured.

December 8, 1923, locomotive 401, Orangeburg, S. C. Grate shaker bar slipped off fulcrum lever and caught fireman's hand between lever and oil-can tray. One injured.

December 9, 1923, locomotive 357, near Climax, Ga. Drawbar and safety chains between engine and tender broke, causing fireman to fall to track and be run over; old fractures in drawbar and pinhole badly worn. One killed.

December 19, 1923, locomotive 348, Florence, S. C. Ash-pan lever became loose on shaft, allowing the lever to strike brake cylinder. One injured.

****December 21, 1923, locomotive 213, near Homerville, Ga.** Set screw in rod which held cab window in place worked loose, permitting window to slam and break glass. One injured.

****January 9, 1924, locomotive 341, Harrisburg, Fla.** Coal board slipped out of brackets and struck fireman. One injured.

***January 23, 1924, locomotive 1534, Baker Moore, S. C.** Inside equalizer on rear tender truck broke, causing derailment of tender and eight cars. Three injured.

February 2, 1924, locomotive 396, Wilmington, N. C. Push-pole pocket gave away, allowing pole to fall and catch on gangway step and fly up, striking running board and cab, raising the latter and catching fireman's foot. One injured.

February 16, 1924, locomotive 813, Oriole, Fla. Ring forming joint between superheater header and dry pipe broke and caused steam and flames to blow back into cab. One injured.

March 8, 1924, locomotive 250, Maysville, S. C. Train signal whistle valve fell, striking fireman, due to bolts securing valve to cab working out and air pipe breaking off. One injured.

April 9, 1924, locomotive 553, Sumter, S. C. Water cooler fell from leg of tank; no provision for securing cooler in place. One injured.

****May 6, 1924, locomotive 809, Gulf Junction, Fla.** Insufficient clearance between reverse lever and automatic brake valve handle. One injured.

****May 28, 1924, locomotive 209, Millwood, Ga.** Stepped on journal brass lying on top of tender back of fuel space, which turned, resulting in ankle being sprained. One injured.

June 9, 1924, locomotive 1635, near Emporia, Va. Caught hand between injector steam valve handle and seat box, due to insufficient clearance. One injured.

Eighteen accidents, 1 killed, 20 injured.

BALTIMORE & OHIO RAILROAD:

***July 14, 1923, locomotive 1927, Ivorydale, Ohio.** Lantern fell from rack on rear of cab and struck conductor, due to hook breaking. One injured.

July 19, 1923, locomotive 4545, Baltimore, Md. Arch tube plug blew out while being tightened under pressure; threads in sheet poor and plug applied with threads crossed. One injured.

July 19, 1923, locomotive 4182, Newton Falls, Ohio. Plug blew out of main rod grease cup; main rod reported running hot on July 8, 9, 11, 13, 15, 15, 18, and 19; also again on July 20, after accident had occurred, from which it is evident that proper repairs were not made. One injured.

July 20, 1923, locomotive 4192, Kennon Mine, Ohio. Leading locomotives separated from locomotive 4192, account of front coupler casting pulling loose; broken filling prevented two bottom bolts from holding and other bolts of insufficient strength. One injured.

August 5, 1923, locomotive 4017, Ralphton, Pa. Tender and caboose derailed and turned over, due to female center casting of rear tender truck fouling on reinforcing ribs of male casting and preventing truck from curving. One injured.

August 25, 1923, locomotive 4219, Indiana Harbor, Ind. Flue broke off, due to having been cut nearly in two on flue-cutting machine before applied to boiler. One injured.

August 26, 1923, locomotive 7210, Bond, Md. Crown-sheet failure, caused by overheating due to low water; no contributory causes found. Two killed, 1 injured.

****September 11, 1923, locomotive 259, North Baltimore, Ohio.** Throttle flew open, account of throttle lever latch spring too weak to hold latch in quadrant. One injured.

***September 12, 1923, locomotive (B. & O. C. T.) 481, Chicago, Ill.** Brake rigging on tender truck fell down, causing derailment of rear truck. One injured.

September 19, 1923, locomotive 2785, Vallonia, Ind. Squirt hose burst; hose defective. One injured.

September 20, 1923, locomotive 2733, Bond Hill, Ohio. Crown-sheet failure, due to threads on stays and in sheet deteriorated, account of leakage and stay bolts loosened in sheet by being redriven numerous times until their holding power was insufficient to withstand the pressure. Two injured.

***September 21, 1923, locomotive 5021, Hazelwood, Pa.** Cab door broke off. One injured.

October 9, 1923, locomotive 4101, Bridgeport, Ohio. Small piece of squirt hose attached by pipe nipple and not clamped blew off. One injured.

****October 9, 1923, locomotive 1948, Pittsburgh, Pa.** Air hose uncoupled and struck brakeman, due to stop pin being missing. One injured.

October 16, 1923, locomotive 7035, near McMillan, W. Va. Superheater tube broke off at safe end weld; overheated in welding. One injured.

October 23, 1923, locomotive 5012, near Hunts, Ohio. Crosshead pin worked out and caught on guide yoke, breaking main rod and guide bar; main rod flew around and struck air compressor, knocking it off and breaking steam pipe. One injured.

October 29, 1923, locomotive 4541, Bakerstown, Pa. Shaker bar slipped off post due to improper fit. One injured.

November 3, 1923, locomotive 1315, Mineral City, Ohio. Cap on blower pipe connection at smoke box blew off. One injured.

****November 4, 1923, locomotive 4513, Leipsic Junction, Ohio.** Grate shaker bar broke off through weld. One injured.

November 13, 1923, locomotive 4579, Reduction, Pa. Reflex type water glass burst; cut by flying glass. One injured.

November 16, 1923, locomotive 2249, Fostoria, Ohio. Union in blower pipe broke; blower pipe not braced to avoid vibration. One injured.

November 23, 1923, locomotive 4054, Wolf Lake, Ind. Safety valve casing fell from boiler, due to being insecurely attached. One injured.

November 23, 1923, locomotive 4192, Hartzel, W. Va. Throttle lever pin worked out while throttle valve was open and caught on guide, preventing throttle from closing; engineer injured by inhaling gases while locomotive was stalled in tunnel. One injured.

November 30, 1923, locomotive 1599, Sedamsville, Ohio. Injector steam valve bonnet blew out, due to threads so badly worn and stripped that bonnet could be placed in position without turning; bonnet badly mutilated by use of chisel or set in tightening; injector reported not working properly 12 times during November. One injured.

December 17, 1923, locomotive 4608, Wilmers, Del. Grate shaker bar broke, due to old defect covering approximately 41 per cent of cross-sectional area. One injured.

**December 21, 1923, locomotive 4099, Smithburg, W. Va. Hand struck sand valve, due to insufficient clearance between valve and throttle lever. One injured.

**December 24, 1923, locomotive 4503, Wildwood, Pa. Brake head on tender broke off. One injured.

December 26, 1923, locomotive 4214, South Stockton, Ohio. Crown-sheet failure, caused by overheating due to low water; gauge cocks applied directly in boiler back head. Two injured.

December 28, 1923, locomotive 2011, Cambridge, Ohio. Grate shaker bar slipped off post; end of post badly worn and mutilated and piece broken out of shaker bar socket. One injured.

**January 7, 1924, locomotive 2852, Carlyle, Ill. Section of rear coupler which included bottom knuckle pinhole broke off, allowing knuckle to fall out, striking brakeman's foot. One injured.

January 29, 1924, locomotive 2837, Springfield, Ill. Bell rope broke, causing fireman to fall from running board. One injured.

**January 29, 1924, locomotive 5009, Tiffin, Ohio. Slipped and fell, due to step at front of smoke box not being properly supported; step was attached to plate on pilot beam and engine frame, which was loose. One injured.

January 31, 1924, locomotive 4093, New Castle Junction, Pa. Locomotive uncoupled while being towed, caused by low coupler and bad track, and due to leaky throttle moved in opposite direction and collided with another locomotive. One injured.

February 9, 1924, locomotive 1149, Benwood Junction, W. Va. Cylinder cock connecting rod dropped down, striking track, causing operating lever in cab to fly backward, striking engineer. One injured.

February 9, 1924, locomotive 1863, Benwood Junction, W. Va. Apron jumped up, causing fireman to fall; apron not properly secured in place. One injured.

February 23, 1924, locomotive 1836, Fairmont, W. Va. Throttle stuck in open position, due to defective quadrant, causing locomotive and tender to run into turntable pit. One injured.

**February 28, 1924, locomotive 2508, Chicago, Ill. Coupling nut pulled off of tank hose; coupling nut was very loose on feed pipe strainer and threads on strainer coupling in poor condition, showing evidence that coupling nut had been applied cross-threaded. One injured.

**March 4, 1924, locomotive 1788, Benwood Junction, W. Va. Gangway safety chain became unfastened, due to defective hook, causing fireman to fall from locomotive. One injured.

**March 6, 1924, locomotive 2524, Porter Falls, W. Va. Burned when fire-box door and frame swung back, due to nut working off supporting stud. One injured.

**March 19, 1924, locomotive 1016, Willard, Ohio. Cab floor board nearest the deck turned over, causing fireman to fall to deck; board not properly secured. One injured.

March 20, 1924, locomotive 2204, Akron Junction, Ohio. Engine moved off, due to leaky throttle and standpipe joint; small piece of steel embedded in valve seat caused throttle to leak; throttle reported leaking two days prior to accident and proper repairs not made. One injured.

March 25, 1924, locomotive 5071, Hyndman, Pa. Piston rod broke at cross-head fit, due to old defect, causing cylinder head to be knocked out. One injured.

**March 26, 1924, locomotive 5010, Washington, Ind. Arch tube plug blew out while being tightened under pressure; plug applied with threads crossed. One injured.

April 4, 1924, locomotive 1831, Clarksburg, W. Va. Grate shaker bar broke off while grates were being shaken; shaker bar of too light construction and contained old fracture at point of failure. One injured.

April 19, 1924, locomotive 555, Peterson, W. Va. Draw bar failed between engine and tender, due to old crack at pinhole. One injured.

**May 1, 1924, locomotive 2746, Vincennes, Ind. Stop block missing from reverse lever quadrant, allowing insufficient clearance between lever and injector handle, which was improperly applied. One injured.

**May 6, 1924, locomotive 2539, Flora, Ill. Sprained wrist while handling throttle, due to defective quadrant. One injured.

May 6, 1924, locomotive 4257, Galatea, Ohio. Ash-pan slide lever became disconnected; lever in two pieces, hinged together and lock pin came out, due to no means provided to hold it in place. One injured.

May 9, 1924, locomotive 4310, Holloway, Ohio. Crown-sheet failure, caused by overheating due to low water; no contributory causes found. Four injured.

Forty-nine accidents, 2 killed, 54 injured.

BANGOR & AROOSTOCK RAILROAD:

*October 6, 1923, locomotive 324, Northern Maine Junction, Me. Injured due to insufficient clearance between reverse lever and injector feed pipe. One injured.

March 11, 1924, locomotive 171, Medford, Me. Crown-sheet failure, caused by overheating due to low water; bottom opening of water glass completely closed with rubber gasket. Three injured.

Two accidents, 4 injured.

BELT RAILWAY OF CHICAGO:

*November 7, 1923, locomotive 108, Chicago, Ill. Shaker bar slipped off fulcrum lever. One injured.

*January 13, 1924, locomotive 64, Chicago, Ill. Insufficient clearance between reverse lever and injector steam ram. One injured.

**April 24, 1924, locomotive 21, Clearing, Ill. Stoker trap door on engine deck tilted, causing fireman to fall; floor plate and bearing at back end badly worn and defective. One injured.

May 7, 1924, locomotive 96, Chicago, Ill. Slipped on cab apron, account of apron not properly roughened. One injured.

May 17, 1924, locomotive 108, Clearing, Ill. Hand operating lever came down while fire door was being power operated, catching fireman's hand between lever and air cylinder; set screw which secures hand lever to fulcrum making it inoperative when door is being power operated was loose. One injured.

Five accidents, 5 injured.

BESSEMER & LAKE ERIE RAILROAD:

*August 25, 1923, locomotive 522, near Grove City, Pa. Stem of lubricator supply valve broke off when attempt was made to open valve. One injured.

**October 19, 1923, locomotive 138, near McBride, Pa. Pin came out of transmission bar, account of nut working off, causing reverse lever to jump and strike engineer. One injured.

March 7, 1924, locomotive 61, Conneaut, Ohio. Injector steam pipe spanner nut parted from injector while being tightened under pressure with hammer and chisel; spanner nut stretched and distorted and cracked part way through due to previous use of hammer and set. One injured.

Three accidents, 3 injured.

BOSTON & ALBANY RAILROAD:

**July 15, 1923, locomotive 3185, near Charlton, Mass. Scalded by steam and water coming from loose injector overflow pipe. One injured.

One accident, 1 injured.

BOSTON & MAINE RAILROAD:

July 7, 1923, locomotive 218, Lawrence, Mass. Finger caught between reverse lever and air reducing valve, due to insufficient clearance, caused by valve being improperly applied. One injured.

July 16, 1923, locomotive 271, Warren Bridge, Mass. Cab flooring gave away while engineer was attempting to reverse engine. One injured.

**July 21, 1923, locomotive 1426, Brookside, Mass. Defective and weak reverse lever latch spring would not hold reverse lever in position; engineer's arm strained trying to operate locomotive in this condition. One injured.

August 24, 1923, locomotive 278, Boston, Mass. Water glass burst; cut by flying glass; water glass shield had large openings at top and bottom, which permitted the broken glass to escape. One injured.

August 27, 1923, locomotive 1141, East Cambridge, Mass. Ash-pan operating lever slipped off shaft, account of nut missing from shaft. One injured.

**October 7, 1923, locomotive 2731, Royalston, Mass. Automatic fire door would not operate and fireman was injured while attempting to operate it by hand. One injured.

**October 18, 1923, locomotive 2651, Wachusett, Mass. Yoke of coupler on rear of tender broke, causing tender to separate from train. One injured.

October 20, 1923, locomotive 3689, East Somerville, Mass. Ash-pan blower pipe missing, allowed hot water to escape from blower valve and strike employee's foot; threads in elbow on blower valve wasted away. One injured.

November 2, 1923, locomotive 943, near Manchester, N. H. Left back driving spring hanger broke; equalizer stand allowed equalizer to tip toward fire box and block of iron between equalizer and fire box prevented free movement of equalizer; springs reported on October 22 and November 2 (1½ hours previous to accident) and no reports rendered for October 26, 27, 29, 31, and November 1, the days within this period on which the locomotive was in service. One injured.

November 7, 1923, locomotive 2409, Lowell Jct., Mass. Radius bar of pony truck broke at defective weld, causing derailment of locomotive; metal had been overheated in welding and only approximately one-fourth of cross-sectional area had been holding. One injured.

*December 29, 1923, locomotive 2637, East Deerfield, Mass. Drawbar pulled out of engine, causing sudden stop. One injured.

**January 3, 1924, locomotive 2607, Brattleboro, Vt. Engineman slipped on step and fell, account of tank cock leaking, causing ice to form on step. One injured.

January 18, 1924, locomotive 2063, near Montrose, Mass. Clamp and nut on union to blower pipe worked loose, permitting nozzle to turn and blow the flame out fire door. One injured.

January 24, 1924, locomotive 2652, Lowell, Mass. Flue failed at defective safe end weld. Two injured.

February 11, 1924, locomotive 1470, Plymouth, N. H. Corner of ash-pan slide broke off, permitting slide to drop down on track. One injured.

February 14, 1924, locomotive 3009, Hoosac Tunnel, Mass. Arch tube pulled out of throat sheet, due to not being properly rolled and not belled or beaded to secure it in place; tube too short to be flared or belled over. Two injured.

February 23, 1924, locomotive 2025, Whitefield, N. H. While engine was backing brake rod on rear tender truck broke and dropped down, catching in switch and causing tender to derail; No. 4 tender brake reported not in line with wheel on February 7, 11, 11, 13, 13, 15, 17, 19, 19, 21, and 23, and repairs not made. Two injured.

**May 3, 1924, locomotive 3636, Woodsville, N. H. Hinges of cover to grate bar shaker broke when engineer stepped onto cover, causing him to fall. One injured.

May 5, 1924, locomotive 416, Chalestown, Mass. Fire-hose box on which hostler was standing collapsed, due to being wasted away. One injured.

Nineteen accidents, 22 injured.

BUFFALO, ROCHESTER & PITTSBURGH RAILWAY:

January 31, 1924, locomotive 370, Carrollton, N. Y. Flue broke off at defective safe end weld; overheated in welding. One injured.

One accident, 1 injured.

CANADIAN NATIONAL RAILWAY:

**October 21, 1923, locomotive (G. T.) 711, Holly, Mich. Reverse lever unlatched and flew forward, catching engineer's foot. One injured.

One accident, 1 injured.

CENTRAL NEW ENGLAND RAILWAY:

**July 2, 1923, locomotive 115, East Hartford, Conn. Reverse lever flew back, injuring engineer, due to eccentric blade being sprung. One injured.

August 24, 1923, locomotive (N. Y., N. H. & H.) 3235, Maybrook, N. Y. Straight air pipe coupling broke. One injured.

December 20, 1923, locomotive (N. Y., N. H. & H.) 3247, Clintondale, N. Y. Drawbar on rear of tender low, allowing locomotive to separate from train; drawbar carrier iron bent and loose on rear of tender. One injured.

January 13, 1924, locomotive (N. Y., N. H. & H.) 3235, Highland, N. Y. Drawbar at rear of tender broke, due to old flaw covering approximately 80 per cent of cross-sectional area. One injured.

Four accidents, 4 injured.

CENTRAL OF GEORGIA RAILWAY:

July 23, 1923, locomotive 1577, near Milledgeville, Ga. Front driving axle broke due to old crack which extended through approximately 88 per cent of cross-sectional area. One injured.

September 27, 1923, locomotive 1719, near Pike Road, Ala. Crown-sheet failure, due to low water; gauge cocks applied directly in boiler back head. Three injured.

*November 19, 1923, locomotive 1479, Fort Valley, Ga. Scalded by steam from leaking valve on dynamo. One injured.

Three accidents, 5 injured.

CENTRAL RAILROAD CO. OF NEW JERSEY:

July 17, 1923, locomotive 86, East Rahway, N. J. Rear section of right fire-box jacket fell from locomotive, due to broken jacket band, breaking windows in a passing passenger train and causing injury to two passengers. Two injured.

**September 9, 1923, locomotive 825, Bethayres, Pa. Squirt-hose valve worked open and hose blew off nipple. One injured.

**September 20, 1923, locomotive 619, near Pleasantville, N. J. Crank pin worked out about 2 inches on left side, causing guides, valve gear, and main rod to be bent and both cylinder heads knocked out. One injured.

**October 28, 1923, locomotive 603, Point Pleasant, N. J. Scalded, due to steam heat valve leaking. One injured.

November 13, 1923, locomotive 455, Glen Gardner, N. J. Flue failed at safe end weld; overheated in welding. One injured.

*December 24, 1923, locomotive 172, Eatontown, N. J. Fire-box door closed on fireman's hand. One injured.

**May 13, 1924, locomotive 829, Somerville, N. J. Hand caught between fire-door handle and injector overflow pipe, due to insufficient clearance. One injured.

June 8, 1924, locomotive 404, Tamaqua, Pa. Flagstaff socket turned on bolt, causing engineer to fall to roadbed; flagstaff not securely bolted to smoke box; locomotive not equipped with secure hand rail and step suitable for getting to and from headlight. One injured.

Eight accidents, 9 injured.

CHARLESTON & WESTERN CAROLINA RAILWAY:

**July 17, 1923, locomotive 276, Robbins, S. C. Hot water blew out of blow-off cock, account of leaky valve, scalding fireman, who was making repairs to main rod. One injured.

**July 23, 1923, locomotive 210, Steel Creek, S. C. Boiler check valve blew out. One injured.

**October 3, 1923, locomotive 251, Blakes, S. C. Main rod strap broke, due to old flaw. One injured.

March 27, 1924, locomotive 286, Spartanburg, S. C. Squirt hose blew off nipple, due to being insecurely clamped. One injured.

Four accidents; 4 injured.

CHESAPEAKE & OHIO RAILWAY:

October 12, 1923, locomotive 520, Peach Creek, W. Va. Rivet blew out while being calked under pressure, due to head having broken off. Two injured.

March 14, 1924, locomotive 588, Logan, W. Va. Crown-sheet failure; water foaming; gauge cocks applied directly in sloping boiler back head. Two injured.

**May 15, 1924, locomotive 130, South Charleston, W. Va. Packing blew out of throttle stuffing box, due to being improperly applied; gland lacked one-fourth inch of going into stuffing box far enough to hold packing. One injured.

June 23, 1924, locomotive 716, Cincinnati, Ohio. Flue broke off at safe end weld; overheated in welding. One injured.

**June 25, 1924, locomotive 531, Quinnimont, W. Va. Squirt hose parted at splice, due to not being clamped. One injured.
Five accidents, 7 injured.

CHICAGO & ALTON RAILROAD:

**July 14, 1923, locomotive 229, Toluca, Ill. Hand rail came out of column, account of set screw working out and under the weight of engineer twisted around and broke front columns, allowing engineer to fall to ground. One injured.

November 7, 1923, locomotive 853, Harmony, Mo. Grate shaker connecting rod became disconnected from fulcrum lever, due to pin working out. Two injured.

January 16, 1924, locomotive 61, Kansas City, Mo. Attempted to open main steam valve to right injector and screwed valve bonnet out of valve body, due to bonnet being improperly applied and valve stem packing a very close fit. One injured.

February 11, 1924, locomotive 110, Peoria, Ill. Top water glass cock broke off through the threads inside of steam bonnet, due to old flaw. One injured.

May 23, 1924, locomotive 657, Lexington, Ill. Flue broke off inside of front flue sheet, due to being badly grooved its entire circumference. One injured.

June 9, 1924, locomotive 344, near Mayview, Mo. Filling plug blew out of lubricator, due to enlarged bushing in filling hole and poor threads on plug. One injured.

Six accidents, 7 injured.

CHICAGO & EASTERN ILLINOIS RAILWAY:

July 3, 1923, locomotive 944, Kell, Ill. Flue burst, due to having been excessively rolled; flue had been rolled at back flue sheet until only one thirty-second inch thick. Two injured.

July 12, 1923, locomotive 965, Salem, Ill. Crown-sheet failure, caused by overheating due to low water; appurtenances damaged to such extent that their previous condition could not be determined. One killed, 1 injured.

October 5, 1923, locomotive 623, Chicago, Ill. Reverse lever unlatched when throttle was opened and flew forward, striking engineer. One injured.

October 15, 1923, locomotive 626, Momence, Ill. Reverse lever reach rod broke; reach rod badly worn and valve gear in bad condition; valve gear reported defective twelve times within the period of 30 days prior to accident. One injured.

Four accidents, 1 killed, 5 injured.

CHICAGO & NORTHWESTERN RAILWAY:

July 12, 1923, locomotive 2332, Butler, Wis. Slipped and fell, due to defective step in cab; tread of step was worn and access to it obstructed by cab floor. One injured.

July 14, 1923, locomotive 2455, Belle Plaine, Iowa. Crown-sheet failure, caused by overheating due to low water; appurtenances damaged to such extent that their previous condition could not be determined. Two killed, 1 injured.

July 20, 1923, locomotive 1440, Milwaukee, Wis. Right front driving spring hanger broke, causing front end of engine to drop and footboard to catch on rail, throwing the switchman, who was riding on footboard, underneath the locomotive; break occurred through the eye, where both sections showed old fractures of approximately 65 per cent and 20 per cent of their cross-sectional areas. One killed.

July 31, 1923, locomotive 292 near Elcho, Wis. Grate shaker connecting rod pin worked out. One injured.

August 15, 1923, locomotive 137, Tracy, Minn. Defective throttle valve in steam heat pipe leaked badly; steam heat hose had been removed. One injured.

August 16, 1923, locomotive 1422, Mankato, Minn. Squirt hose pulled off nipple, due to clamp being loose account of nut having worked off of clamp bolt. One injured.

August 17, 1923, locomotive 351, Racine, Wis. Squirt hose parted at splice, account of being insecurely applied. One injured.

August 21, 1923, locomotive 1874, Crystal Lake, Ill. Fire door stuck open and while attempting repairs fireman was injured. One injured.

*September 2, 1923, locomotive 472, Lusk, Wyo. Left main driving wheel broke. One injured.

September 3, 1923, locomotive 2152, Manitowoc, Wis. Automatic fire door stuck open, account of operating mechanism badly worn; fire-door handle missing. One injured.

September 12, 1923, locomotive 1192, Milwaukee, Wis. Tender deck lower than locomotive deck. One injured.

*September 16, 1923, locomotive 1900, Dike, Iowa. Insufficient clearance between reverse lever and engineer's brake valve. One injured.

September 18, 1923, locomotive 2010, Baraboo, Wis. Reverse lever difficult to operate account of counterbalance springs not properly adjusted. One injured.

**September 24, 1923, locomotive 1889, Chicago, Ill. Bolt missing out of tank box door allowed door to swing open. One injured.

November 12, 1923, locomotive 351, Kenosha, Wis. Spring hanger broke, due to old flaw, causing footboards to drop down on rail and bend back, catching switchman's foot. Repairs were made and locomotive returned to service with footboards in violation of safety appliance standards. One injured.

November 13, 1923, locomotive 1532, near Waukesha, Wis. Storm window became unfastened and blew back, catching engineer's finger; window insecurely fastened. One injured.

December 4, 1923, locomotive 2177, Milwaukee, Wis. Spring intended to hold tender-box door in closed position was broken, permitting door to stand open and causing fireman to strike it. One injured.

**December 22, 1923, locomotive 2066, Chicago, Ill. Pilot footboard missing caused conductor to fall when he attempted to get on moving locomotive; footboards had been removed account of being broken when spring hanger broke, dropping front of engine and breaking both front footboards, and locomotive continued in service with footboards missing. One injured.

January 21, 1924, locomotive 1432, Milwaukee, Wis. Driving brake on engine inoperative, due to brake cylinder leathers freezing. One injured.

February 1, 1924, locomotive 1583, near Grand Mound, Iowa. Eccentric rod broke. One injured.

March 2, 1924, locomotive 2437, Marshalltown, Iowa. Operating handle of coal pusher on tender stuck, due to five cotter keys missing from pins in operating levers; coal pusher reported defective on February 15, 17, 19, 21, and 23 and March 2. One injured.

**March 27, 1924, locomotive 1466, Rose Tower, Ill. Bolt securing curtain rod came out. One injured.

April 1, 1924, locomotive 1766, Wessington, S. Dak. Steam leaking from drain valve on coal pusher obscured fireman's vision, causing him to step into cistern filling hole. One injured.

April 23, 1924, locomotive 923, near Watertown, Wis. Squirt hose parted at splice. One injured.

April 26, 1924, locomotive 1870, Lambertton, Minn. Insufficient clearance between reverse lever and air pipe; stop pin in forward end of quadrant missing. One injured.

**April 26, 1924, locomotive 1473, Proviso, Ill. Engineer's foot caught in cab curtain, which was torn and lying on deck, causing him to fall from gangway. One injured.

**April 28, 1924, locomotive 2092, Janesville, Wis. Hand caught between shaker bar and fire-door shield, due to insufficient clearance. One injured.

**May 13, 1924, locomotive 2390, Fond du Lac, Wis. Struck hand on nail protruding from seat box. One injured.

**May 20, 1924, locomotive 2144, Chicago, Ill. Blow-off cock leaking; both cocks reported leaking on May 13 and 18. One injured.

June 12, 1924, locomotive 1091, Long Pine, Nebr. Fill-up hose coupling blew off discharge nipple in blow-off cock, due to threads on nipple being badly worn and wasted away. One injured.

June 21, 1924, locomotive 504, Genoa Junction, Wis. Left boiler check cap leaking. One injured.

June 22, 1924, locomotive 2505, near Blairstown, Iowa. Injector broke and steam and hot water blew out of tell-tale pipe at connection to alarm nozzle; threads on tell-tale pipe and alarm nozzle badly worn, having no holding power. One injured.

Thirty-two accidents, 3 killed, 31 injured.

CHICAGO, BURLINGTON & QUINCY RAILROAD:

July 4, 1923, locomotive 6100, Lowder, Ill. Shaker bar slipped off post, account of both bar and post badly worn, causing improper fit. One injured.

July 15, 1923, locomotive 2105, Clemens, Mo. Shaker rod pin broke or lost out while fireman was shaking grates, causing him to fall against back head. One injured.

July 17, 1923, locomotive 2813, Savanna, Ill. Steam heat throttle valve bonnet blew out, due to loose fit in valve body. One injured.

July 27, 1923, locomotive 2050, Daytons Bluff, Minn. Cylinder cock on left side inoperative from cab, and while attempting to open it fireman was injured; cylinder cock rigging was disconnected on left side, account of dowel pin through shaft and lever missing. One injured.

August 6, 1923, locomotive 2032, Tampico, Ill. Locomotive climbed switch point, account of flange on engine truck wheel being sharp and worn, causing derailment of engine and three cars. One injured.

**August 13, 1923, locomotive 2197, Mark, Mo. Grate shaker bar slipped off post; bottom of shaker bar pocket burred, which prevented bar going down full length on post, allowing excessive lost motion. One injured.

August 13, 1923, locomotive 6107, Keyesport, Ill. Squirt hose blew off nipple. One injured.

August 28, 1923, locomotive 1632, Keokuk, Iowa. Water glass steam pipe pulled out of collar, due to threads on pipe being badly worn. One injured.

September 13, 1923, locomotive 1906, Losey, Wis. Shaker bar slipped off lever; waste found in bottom of socket for a depth of 2 inches. One injured.

October 24, 1923, locomotive 3177, Galesburg, Ill. Lubricator sight glass packing nut blew off. One injured.

November 3, 1923, locomotive 2502, near Rushville, Mo. Cab seat dropped due to screws by which support was attached to seat working out. One injured.

**November 26, 1923, locomotive 2530, Keenesburg, Colo. Hand rail on front of smoke box gave away, due to supporting bracket pulling off stud, causing fireman to fall to track and be run over; semicircle hand rail passed through bottom bracket and was capped by but not attached to top brackets; stud had not been securely applied in bottom bracket but entered only 1½ threads. One killed.

December 6, 1923, locomotive 5022, near Old Monroe, Mo. Grate shaker fulcrum lever broke at defective weld. One injured.

December 10, 1923, locomotive 1067, near Wendover, Wyo. Grate rod broke while fireman was shaking grates. One injured.

December 17, 1923, locomotive 3130, Kirby, Wyo. Crown-sheet failure, caused by overheating due to low water; no contributory causes found. Two killed.

December 22, 1923, locomotive 2131, near New Cambria, Mo. Reverse lever jumped out of quadrant and flew back, striking engineer, due to piece of wrench working into valve port. One injured.

December 29, 1923, locomotive 1691, St. Joseph, Mo. Main reservoir burst, due to excessive pressure; air compressor governor inoperative and air gauge defective and did not register pressure correctly; right reservoir badly pitted and left reservoir failed at defective weld to back head. One injured.

*February 14, 1924, locomotive 5054, Brookfield, Mo. Water glass burst, breaking water glass shield and scattering glass about cab. One injured.

*February 28, 1924, locomotive 1696, Quincy, Ill. Insufficient clearance between reverse lever and cylinder cock lever. One injured.

March 24, 1924, locomotive 1465, St. Louis, Mo. Main air reservoir burst; sheet reduced in thickness to one thirty-second inch for full length of reservoir and about 3 inches wide, due to corrosion. One injured.

**May 14, 1924, locomotive 2836, Burlington, Iowa. Coal board fell from rack, account of being too short for proper fit. One injured.

**May 20, 1924, locomotive 1434, St. Joseph, Mo. Electric light globe worked out of socket and broke, a piece striking engineer's eye; light had been applied in cab above engineer's head without cutout switch, and to avoid being blinded by light engineer loosened light in socket to break circuit. One injured.

**June 11, 1924, locomotive 3003, Centralia, Ill. Cab apron tilted, due to tender deck being too high, and caught fireman's foot between apron and running board. One injured.

Twenty-three accidents, 3 killed, 21 injured.

CHICAGO, INDIANAPOLIS & LOUISVILLE RAILWAY:

August 10, 1923, locomotive 554, La Fayette, Ind. Arch tube plug blew out, due to not being properly applied; attempted to tighten under pressure. Two injured.

**May 23, 1924, locomotive 526, Youngstown, Ky. Throttle valve leaking permitted pressure to build up in valve chamber sufficient to force piston and crosshead back and cause injury to two employees. Two injured.
Two accidents, 4 injured.

CHICAGO, MILWAUKEE & ST. PAUL RAILWAY:

July 22, 1923, locomotive 2445, Fox Lake, Ill. Link saddle pin broke, throwing excessive strain on valve gear and causing reverse lever to fly out of quadrant, striking engineer. One injured.

August 10, 1923, locomotive 1520, Chicago, Ill. Fell from running board while attempting to tighten leaking air pump steam pipe union. One injured.

September 5, 1923, locomotive 8144, Aberdeen, S. Dak. Reverse lever flew back, striking hostler, due to counterbalance spring bolt losing out. One injured.

**September 8, 1923, locomotive 8639, Watertown Junction, Wis. Squirt hose burst; hose badly worn. One injured.

September 14, 1923, locomotive 8604, Oconomowoc, Wis. Cover of stoker conveyor worked forward and tipped up when brakeman stepped on it, permitting his foot to be caught in conveyor screw. One injured.

**October 26, 1923, locomotive 1296, Chicago, Ill. Shovel struck screw head which protruded above shovel sheet, breaking bone in fireman's hand. One injured.

November 3, 1923, locomotive 2251, Spring Grove, Minn. Right main crank pin broke off, due to old flaw covering approximately three-fifths of cross-sectional area, causing considerable damage to locomotive on that side and reverse lever to unlatch and fly back, striking engineer. One injured.

**November 9, 1923, locomotive 8201, Milwaukee, Wis. Portion of hand rail came loose, causing employee who was holding onto it while cleaning cab window to fall. One injured.

December 21, 1923, locomotive 2362, Hokah, Minn. Grate connecting rod came loose, due to pin working out, causing shaker lever to strike fireman. One injured.

January 15, 1924, locomotive 1138, Sanborn, Iowa. Cab window blew out of slides, due to being too small to properly fit slides. One injured.

January 28, 1924, locomotive 8142, near De Kalb, Ill. Rear coupler carrier iron broke off, permitting coupler to drop and part the train, causing emergency application of brakes. Two injured.

February 6, 1924, locomotive 5624, La Crosse, Wis. Overflow cap blew out of injector; cap very loose fit and could be inserted for three threads without turning. One injured.

February 7, 1924, locomotive 8067, near Glencoe, Minn. Main rod broke, due to old flaw extending over about 40 per cent of its cross-sectional area; rod was reported cracked on January 23 and 28 and reports approved by foreman with notations "Found not bad"; "O. K. for service." One injured.

February 19, 1924, locomotive 7014, Chicago, Ill. Water glass burst; perforated plate improperly applied in back of shield, deflecting the escaping steam and hot water upward, causing serious injury to fireman. One injured.

March 18, 1924, locomotive 8253, Kansas City, Mo. Broken rivet blew out while being calked. One injured.

May 7, 1924, locomotive 402, Sturtevant, Wis. Driving brake cam pin broke or lost out, permitting cam to drop down and catch in frog, causing derailment of rear driving wheels, tender, and two coaches. One injured.

May 22, 1924, locomotive 7213, Ottumwa, Iowa. Handhold slipped, due to being loose in brackets, causing employee to fall to ground. One injured.

Seventeen accidents, 18 injured.

CHICAGO, ROCK ISLAND & PACIFIC RAILWAY:

July 3, 1923, locomotive 2132, near Harrah, Okla. Flue pocket blew out of front flue sheet; this and 47 other flue pockets in this boiler had not been prospected to secure them in place. Two injured.

July 4, 1923, locomotive 801, near Booneville, Ark. Reverse lever unlatched and flew forward, catching engineer's hand between lever and sander valve; latch was badly worn and clearance between lever and sander valve was insufficient. One injured.

*July 5, 1923, locomotive 2519, Eugene, Mo. Shaker bar slipped off post, due to improper fit. One injured.

July 8, 1923, locomotive 3015, Cameron Junction, Mo. Hose used for cleaning ash pan burst, causing fireman to be scalded. One injured.

July 12, 1923, locomotive 2044, near Chamberlain, Tex. Reverse lever unlatched and flew forward; teeth on quadrant badly worn and valve gear in bad condition; reversing gear had been reported defective nine times and valve gear eleven times within period of thirty days preceding accident. One injured.

July 22, 1923, locomotive 418, Booneville, Ark. Boiler check blew out, due to defective threads both in the shell and on the boiler check. One injured.

July 24, 1923, locomotive 1693, Valley Junction, Iowa. Piston rod broke, knocking out front cylinder head; piston rod showed old fracture covering approximately four-fifths of its cross-sectional area. One injured.

August 4, 1923, locomotive 1904, Wichita, Kans. Scalded by water escaping from injector overflow pipe, due to pipe not being properly bent and fastened. One injured.

**August 16, 1923, locomotive 1416, Holdenville, Okla. Main throttle lever flew back, striking engineer; throttle latch would not hold lever in quadrant. One injured.

*August 30, 1923, locomotive 2549, Geneseo, Ill. Board in tank platform broke, causing firemen to fall to ground; board old and decayed. One injured.

*September 1, 1923, locomotive 1670, Peru, Ill. Whistle rope broke. One injured.

**September 3, 1923, locomotive 3001, Kansas City, Kans. Packing nut on water glass drain valve blew off. One injured.

September 8, 1923, locomotive 1960, near South Bend, Nebr. Spanner nut on left injector steam pipe blew off; threads in spanner nut and on injector badly worn. One injured.

**September 22, 1923, locomotive 3022, Kearney, Mo. Engine moved off while engineer was attempting to repair sand pipe, due to drifting throttle valve leaking. One injured.

September 24, 1923, locomotive 254, Biddle, Ark. Crown-sheet failure, caused by overheating due to low water; bottom water glass cock closed with hard scale except a hole about one-sixteenth inch in diameter which was filled with loose scale, although reported cleaned four days previous; tank hose strainers badly stopped up with vegetable matter; water in boiler foaming. One killed, 1 injured.

*October 1, 1923, locomotive 1244, Lincoln, Nebr. Injured, due to defective sand pipe. One injured.

**October 16, 1923, locomotive 2572, Inman, Kans. Shaker bar slipped off dump grate post, due to improper fit. One injured.

October 19, 1923, locomotive 650, Stockbridge, Mo. Dry pipe collapsed and ruptured, causing steam and scalding water to be blown back through flues and fire box, due to dry pipe being reduced to only one-sixteenth inch in thickness by corrosion, and petticoat pipe found loose and out of place. One injured.

November 1, 1923, locomotive 1745, Danville, Ark. Brick from fire-box wall fell down on oil burner, causing fireman to be burned. One injured.

*November 8, 1923, locomotive 2043, Bureau, Ill. Air-brake pipe on engine broke. One injured.

*November 10, 1923, locomotive 1015, Quinn, Ark. Reverse lever unlatched and struck engineer. One injured.

November 29, 1923, locomotive 2618, Engle, Okla. Wooden block which had been nailed to cab floor to raise engineer's seat worked loose, allowing supporting rod to move out of position and seat to drop down. One injured.

December 16, 1923, locomotive 894, near Kremlin, Okla. Reverse lever unlatched and caught engineer's arm between lever and boiler head; lever latch was loose on face of quadrant; pin and bushing at foot of lever were badly worn and stop pin was broken off. One injured.

January 5, 1924, locomotive 2537, near Henley, Mo. Injector steam pipe broke off at collar, due to improper brazing. Two injured.

January 14, 1924, locomotive 1412, Haskell, Ark. Manhole cover hinge disconnected, account of bolt working out, allowing cover to work out of position. One injured.

January 16, 1924, locomotive 961, Bureau, Ill. Handrail on top of tender became disconnected at union in vertical handrail column, account of union nut stretched, preventing threads from engaging. One injured.

**January 20, 1924, locomotive 1995, Colby, Kans. Union nut on blower pipe blew off valve at fountain while being tightened under pressure, due to nut being very loose fit on valve and applied cross-threaded. One injured.

January 25, 1924, locomotive 1773, near Redfern, Ark. Left reversing link trunnion bushing lost out, causing a jerk on reach rod, breaking it at old flaw. One injured.

January 26, 1924, locomotive 1717, near Seneca, Ill. Injector steam pipe collar broke off at left injector. This connection reported leaking two days prior to accident and repairs were shown to have been made; it was apparent, however, that proper repairs, if any, were not made. One injured.

**February 18, 1924, locomotive 916, Kansas City, Mo. Insufficient clearance between reverse lever and back board of cab. One injured.

**February 18, 1924, locomotive 1859, El Dorado, Ark. Front buffer beam was loose and when coupling was made was forced back against brackets, jerking the footboard and causing switchman to fall; buffer beam bracket bolts were loose. One injured.

**February 18, 1924, locomotive 914, Trenton, Mo. Tender deck lower than engine deck. One injured.

**February 25, 1924, locomotive 1725, near Guilford, Ark. Reverse lever jerked and flew forward, due to valves being dry, caused by inoperative lubricator. One injured.

February 29, 1924, locomotive 2313, Manly, Iowa. Water glass burst; cut by flying glass. One injured.

March 10, 1924, locomotive 1660, Kansas City, Kans. Flue broke off at safe end weld; overheated in welding. Two injured.

March 11, 1924, locomotive 1999, Birds Bridge, Ill. Main rod broke, due to old crack which should have been detected by proper inspection; broken rod struck blow-off cock and turned it so that hot water and steam were discharged into cab. One injured.

**March 14, 1924, locomotive 2116, Waurika, Okla. Hinges to cover of sand box located in cab became detached, allowing cover to slide when engineer stepped upon it for the purpose of closing lubricator. One injured.

March 19, 1924, locomotive 1894, Silvis, Ill. Pilot beam knee bracket braces loose on frame, account of holes in brackets worn and considerably enlarged, causing conductor to be thrown from footboard. One injured.

**March 20, 1924, locomotive 929, Zeandale, Kans. Engine and four passenger cars derailed and three of the four cars turned over, due to loose tire on trailing truck wheel. Twenty injured.

**April 19, 1924, locomotive 850, Palestine, Ark. Struck by cradle hanger pin, which was thrown out by engine; bolt securing pin in place sheared off. One injured.

**May 11, 1924, locomotive 2510, Meade, Kans. Engine parted from train, due to low coupler on rear of tender. One injured.

**June 11, 1924, locomotive 2001, Haileyville, Okla. Burned by hot water from overflow pipe to left injector, due to defective arrangement of this pipe. One injured.

June 12, 1924, locomotive 1995, Rock Island, Ill. Air hose on rear of tender was too low and caught in switch frog, bending both back footboard brackets on right side under end sill of tank and causing injury to brakeman who was riding on footboard. One injured.

June 14, 1924, locomotive 1421, Lawton, Okla. Shaker bar slipped off post, due to improper fit. One injured.

Forty-four accidents, 1 killed, 66 injured.

CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA RAILWAY:

*July 14, 1923, locomotive 328, St. James, Minn. Insufficient clearance between tank-box door hasp and back of cab. One injured.

**October 23, 1923, locomotive 334, Superior, Wis. Slipped on cab apron, due to tender deck lower than cab and apron worn smooth. One injured.

**April 18, 1924, locomotive 201, Couderay, Wis. Top of marker box on back of tank came off, causing injury to fireman when he stepped on it. One injured.

June 8, 1924, locomotive 236, Sioux City, Iowa. Flue broke off; overheated in welding safe end. One injured.

Four accidents, 4 injured.

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS RAILWAY:

July 2, 1923, locomotive 6072, Lovett, Ind. Main crank pin broke, causing bolt in reverse lever latch to also break, which permitted lever to unlatch and fly backward, striking engineer. One injured.

October 10, 1923, locomotive 6606, St. Joseph, Ill. Squirt hose defective. One injured.

*December 7, 1923, locomotive 6614, Indianapolis, Ind. Derailment; engine trucks climbed rails at point of frog by reason of engine frames being out of line, allowing trucks to foul. One injured.

*January 6, 1924, locomotive 6465, St. Louis, Mo. Air hose became uncoupled on tender, causing emergency application of brakes. Three injured.

January 29, 1924, locomotive 6485, Indianapolis, Ind. Arch tube plug blew out while attempting to tighten under pressure; plug applied cross-threaded; fire-door guide extended above the washout hole and directly in line with it, making it difficult to properly apply this plug. One killed, 1 injured.

February 7, 1924, locomotive 6678, Alton, Ill. Tank hose burst; inner lining of hose defective. One injured.

February 23, 1924, locomotive (CN) 6568, near Ingomar, Ohio. Main steam pipe in smoke box burst, causing flames to be blown into cab. One injured.

March 17, 1924, locomotive 6746, Bellefontaine, Ohio. Defective footboard broke off, causing switchman to fall. One injured.

Eight accidents, 1 killed, 10 injured.

COLORADO & SOUTHERN RY. CO.:

September 1, 1923, locomotive 452, Lignite, Colo. Injector steam ram blew out, due to being damaged by set or chisel in tightening; injector had given trouble for five days previous to accident, though no daily inspection reports were made during this period and proper action was not taken when the defective condition became known. One injured.

*December 12, 1923, locomotive 630, Three Pines Mine, Colo. Footboard became loose, caught on frog and turned under. One injured.

Two accidents, 2 injured.

DELAWARE & HUDSON COMPANY:

July 6, 1923, locomotive 558, Plattsburg, N. Y. Reverse lever came back suddenly, due to reach rod being broken, catching fireman's arm between lever and cab. One injured.

*July 9, 1923, locomotive 855, Cobleskill, N. Y. Nut worked off side rod knuckle pin. One injured.

July 12, 1923, locomotive 858, near Schoharie Junction, N. Y. Flue broke at safe end weld, due to defective weld. One injured.

**September 7, 1923, locomotive 557, Glen Lake, N. Y. Main driving axle broke, account of defect 95 per cent of its cross-sectional area. One injured.

October 5, 1923, locomotive 37, Carbondale, Pa. Handhold on rear of tender broke off through bolt hole. One injured.

October 22, 1923, locomotive 820, near Maryland, N. Y. Flue failed at defective safe end weld; mandrel used when weld was made was too small. One injured.

October 23, 1923, locomotive 849, Afton, N. Y. Flue broke at safe end weld; overheated in welding. One injured.

November 28, 1923, locomotive 714, West Chazy, N. Y. Tank hose nut came off delivery pipe, due to being very loose and only a few threads engaging. One injured.

December 28, 1923, locomotive 1043, near Nugents, N. Y. Flue failed at defective safe end weld. One injured.

**January 4, 1924, locomotive 444, Rutland, Vt. Operating rod from cab to electric generator was disconnected, account of cotter key having worked out of generator throttle extension. One injured.

January 19, 1924, locomotive 1018, Parsons, Pa. Lamp bracket on tender broke off, causing conductor to fall. One injured.

March 5, 1924, locomotive 561, Westport, N. Y. Flue broke off at safe end weld; overheated in welding and welding mandrel used too small. Two injured.

**March 23, 1924, locomotive 1016, Carbondale, Pa. Table plate patch blew out of stack, striking trainman; patch of iron 5 by 10 inches was secured in position with one three-eighths inch bolt. One injured.

**May 11, 1924, locomotive 1208, near Nineveh, N. Y. Piston rod broke and knocked out front cylinder head. One injured.

June 12, 1924, locomotive 1200, Oneonta, N. Y. Washout plug blew out while attempting to tighten it under pressure; threads on plug and in sheet badly worn and in poor condition. One killed.

Fifteen accidents, 1 killed, 15 injured.

DELAWARE, LACKAWANNA & WESTERN RAILROAD:

*July 1, 1923, locomotive 1217, Elmira, N. Y. Injured, due to cylinder cocks being inoperative from cab. One injured.

**July 14, 1923, locomotive 1132, near Stroudsburg, Pa. Grate shaker connecting rod became disconnected, due to bolt breaking or losing out. One injured.

July 31, 1923, locomotive 2123, Elmhurst, Pa. While using power grate shaker connecting rod, pins fouled, causing hand shaker lever to strike fireman. One injured.

August 30, 1923, locomotive 1255, Wilawana, Pa. Bell chain fouled stoker engine throttle valve extension handle cotter pin, preventing valve from being closed from inside of cab. One injured.

*October 25, 1923, locomotive 798, Chenango Forks, N. Y. Grease-cup plug blew out. One injured.

October 31, 1923, locomotive 23, Binghamton, N. Y. Cylinder head blew out. One injured.

December 5, 1923, locomotive 340, Clarks Summit, Pa. Left gangway safety chains gave way, allowing fireman to fall; hook securing safety chains had spread out, which allowed it to slip off eyebolt. One injured.

April 12, 1924, locomotive 1171, Groveland, N. J. Shaker bar slipped off lever, due to improper fit. One injured.

Eight accidents, 8 injured.

DENVER & RIO GRANDE WESTERN RAILROAD:

*July 3, 1923, locomotive 792, Thompsons, Utah. Shaker bar slipped off post, due to improper fit. One injured.

**July 7, 1923, locomotive 1134, Walsenburg Junction, Colo. Grate shaker bar slipped off fulcrum lever. One injured.

July 9, 1923, locomotive 458, Chester, Colo. Link saddle pin lost out, causing reverse lever to fly backward. One injured.

July 19, 1923, locomotive 1177, near Texas Creek, Colo. Flue broke at safe end weld; overheated in welding. One injured.

August 26, 1923, locomotive 1143, near Ogden, Utah. Injector heater cock bonnet blew out; bonnet of very loose fit and threads defective. One injured.

September 2, 1923, locomotive 451, near Shawano, Colo. Crown-sheet failure, caused by overheating due to low water; appurtenances lost or damaged so that their condition prior to the accident could not be determined. Two killed.

**September 27, 1923, locomotive 1512, Cotopaxi, Colo. Squirt-hose valve leaking. One injured.

November 29, 1923, locomotive 430, near Sargent, Colo. Grate shaker lever disconnected, account of bolt working out. One injured.

December 3, 1923, locomotive 1161, Avon, Colo. Water glass burst. One injured.

January 16, 1924, locomotive 403, near Montrose, Colo. Squirt hose burst; hose defective. One injured.

**February 2, 1924, locomotive 560, Pueblo, Colo. Injured while shaking grates, due to excessive lost motion in grate shaker lever. One injured.

*February 18, 1924, locomotive 1137, Castle Gate, Utah. Left main crank pin broke, causing main and side rods to break. One injured.

March 28, 1924, locomotive 3400, near Nathrop, Colo. Power reverse gear failed to operate properly, due to packing nut to piston in oil cylinder leaking and cylinder did not have the required amount of oil. One injured.

*April 28, 1924, locomotive 3303, Pearl, Utah. Insufficient clearance between reverse lever and boiler head. One injured.

June 7, 1924, locomotive 3504, Helper, Utah. Shaker bar slipped off post, due to improper fit. One injured.

Fifteen accidents, 2 killed, 14 injured.

DULUTH & IRON RANGE RAILROAD:

*August 20, 1923, locomotive 306, Two Harbors, Minn. Main crank pin broke, due to old flaw. One injured.

One accident, 1 injured.

EL PASO & SOUTHWESTERN RAILROAD:

*March 16, 1924, locomotive 168, Orogrande, N. Mex. Spring hanger broke. One injured.

One accident, 1 injured.

ERIE RAILROAD:

July 19, 1923, locomotive 1420, Jamestown, N. Y. Fire hose burst. One injured.

*July 22, 1923, locomotive 1956, Kenton, Ohio. Derailment, due to rigid pony trucks. One injured.

October 18, 1923, locomotive 112, Akron, Ohio. Broken staybolt blew out while being caulked under pressure; threads in wrapper sheet in poor condition and several bolts reported leaking repeatedly prior to accident. One injured.

*December 24, 1923, locomotive 2482, Belfast, N. Y. Handle on coal gate dropped down, causing brakeman to fall, due to rivets securing handle being broken. One injured.

December 26, 1923, locomotive 1698, Glenmore, Ohio. Rear drawbar pin, drawbar casting on tender, and safety chain fastenings on engine deck broke; casting was fractured from pinhole outward toward front, safety chain fastenings were badly rusted and wasted away and drawbar pin had old fracture. One injured.

*February 24, 1924, locomotive 2538, Carlton Hill, N. J. Throttle stuck open, due to being caught in ratchet. One injured.

*March 15, 1924, locomotive 919, Garfield, N. J. Brake rigging on rear truck of locomotive dropped down and caught in crossing plank. One injured.

*March 22, 1924, locomotive (P. R. R.) 1723, Elmira, N. Y. Pilot dropped down and caught in station platform. One injured.

*May 9, 1924, locomotive 1319, Susquehanna, Pa. Insufficient clearance between reverse lever and straight air valve. One injured.

May 26, 1924, locomotive 2751, Hornell, N. Y. Packing nut blew off top reflex water glass fitting; no collar or other means of securing packing nut. One injured.

June 6, 1924, locomotive 1863, Buffalo, N. Y. Main rod broke, causing front cylinder head to be knocked off, striking switchman who was riding on pilot-sill step. One injured.

**June 23, 1924, locomotive 2550, Rochester, Ind. Air-operated bell ringer was inoperative, due to bell shaft being loose, account of set screw working loose. One injured.

Twelve accidents, 12 injured.

FLORIDA EAST COAST RAILWAY:

February 5, 1924, locomotive 104, Melbourne, Fla. Crown-sheet failure, caused by overheating due to low water; locomotive was operating without water glass due to same having broken en route and shut-off cocks leaking to such extent that new glass could not be applied; gauge cocks applied directly in boiler back head; top and bottom gauge cocks stopped up. One injured.

One accident, 1 injured.

FORT WORTH & DENVER CITY RAILWAY:

October 22, 1923, locomotive 258, Amarillo, Tex. Cab handhold gave away, due to supporting bolts at lower end missing, causing fireman to fall to track and his foot to be severed at ankle. One injured.

*December 19, 1923, locomotive 51, Fort Worth, Tex. Engine separated from train, due to drawbar between engine and tank breaking through eye. One injured.

Two accidents, 2 injured.

GEORGIA RAILROAD:

July 17, 1923, locomotive 141, Lakeside, Ga. Eleven flues pulled out of back flue sheet. Three injured.

One accident, 3 injured.

GREAT NORTHERN RAILWAY:

July 11, 1923, locomotive 314, Perth, N. Dak. Injured while making repairs to defective bell rope while en route. One injured.

July 14, 1923, locomotive 3050, near Hancock, Minn. While attempting to reverse stoker with defective hand ratchet it stuck and flew around, striking fireman on head. One injured.

July 17, 1923, locomotive 3030, Cass Lake, Minn. Water glass burst, breaking shield glasses; cut by flying glass. One injured.

July 18, 1923, locomotive 1064, Osakis, Minn. Squirt hose blew off, account of not being clamped. One injured.

**August 1, 1923, locomotive 3303, Snowden, Mont. Pin worked out of fire door operating lever, preventing fire door from opening properly. One injured.

**August 9, 1923, locomotive 1194, near Portage, Mont. Air hose between engine and tender burst, causing emergency application of brakes. One injured.

August 18, 1923, locomotive 3036, Superior, Wis. Fell from headlight while removing burned-out bulb when train was pulling out of yard; headlight wires

too short to permit reflector to be pulled out, necessitating the opening of front headlight door which was stuck and gave way suddenly, causing fireman to fall to ground in front of moving locomotive; proper steps and handholds not provided. One killed.

August 30, 1923, locomotive 1230, Kelly Lake, Minn. Squirt hose blew off nipple. One injured.

**August 31, 1923, locomotive 3247, near Columbia River, Wash. Coupler on rear of tender broke through shank; tender of locomotive was then chained to the train, consisting of 66 cars. The chain parted while train was in motion, causing air brakes to be set in emergency, knocking the brakeman down. One injured.

**September 19, 1923, locomotive 3068, Cedar, Minn. Wrist pin in left cross-head broke, due to crystallization. One injured.

September 21, 1923, locomotive 1984, Wingate, Minn. Air hose on rear of tender burst, causing emergency application of brakes, throwing conductor from caboose cupola to floor. One injured.

September 22, 1923, locomotive 1132, Calumet, Minn. Shaker bar slipped off post; bar badly distorted and too large for posts. One injured.

October 6, 1923, locomotive 1177, between Redland and Fisher, Minn. Fire door became unlatched, account of defective latch. One injured.

October 11, 1923, locomotive 3096, Loop Tank, Wis. Nut worked off stoker shaft, due to cotter key losing out. One injured.

October 14, 1923, locomotive 2022, near Nyack, Mont. Running board too long, causing insufficient clearance between end of running board and sand box located on platform over pony truck when engine rounded a curve, causing fireman's foot to be severely crushed. One injured.

October 19, 1923, locomotive 3305, Poplar, Mont. Flames came out of fire door, due to leakage from flues obstructing draft. One injured.

October 19, 1923, locomotive 1513, Redland, Minn. Steam escaping from leaky steam chest and cylinders obscured the view of the brakeman, causing him to fall from running board. One injured.

October 24, 1923, locomotive 1313, Whitefish, Mont. Cab window dropped, catching engineer's fingers; window stop missing. One injured.

October 31, 1923, locomotive 1813, Lowell, Wash. Crown-sheet failure, caused by overheating due to low water; several appurtenances damaged to such extent that their previous condition could not be determined. One killed.

**November 3, 1923, locomotive 1483, near Hinsdale, Mont. Drawbar broke, due to old flaw, permitting fireman to fall between engine and tender; safety chains were too long causing apron to drop down when draw bar broke. One injured.

November 21, 1923, locomotive 3139, Yakt, Mont. Defective air hose caused brakes to apply in emergency, causing rough stop of train and brakeman to be severely injured. One injured.

December 14, 1923, locomotive 51, Superior, Wis. Lubricator glass burst. One injured.

**December 30, 1923, locomotive 1805, Clancy, Mont. Shaker bar slipped off post, due to improper fit. One injured.

January 29, 1924, locomotive 536, Grafton, N. Dak. Frost cock blew out of injector delivery pipe. One injured.

February 7, 1924, locomotive 1321, Lupfer, Mont. Reverse lever unlatched and flew forward, due to valve ring breaking and dropping into port opening, breaking follower head on valve and jerking reverse lever from quadrant. One injured.

February 24, 1924, locomotive 1312, Rexford, Mont. Cab handhold pulled off bolt at top end, due to nut missing. One injured.

March 15, 1924, locomotive 3059, near Willmar, Minn. Bonnet of steam valve in stoker steam pipe blew out; bonnet was for 1 1/4-inch valve with 16 threads per inch and applied to body of 1 1/2-inch valve with 14 threads per inch, and bonnet slipped into body of valve to within one-sixteenth inch of joint before engaging threads in valve body. One injured.

March 31, 1924, locomotive 2114, Browning, Mont. Grab iron on front of tank bent in, causing brakeman's foot to slip off and brakeman to fall against oil tank. One injured.

May 9, 1924, locomotive 2016, Loop Tank, Wis. Extension handle missing from right ash pan swipe valve. One injured.

May 10, 1924, locomotive 1169, Ruby Junction, Minn. Brake shoe on tender truck wheel broke and dropped to track, causing derailment of tender. One injured.

*May 10, 1924, locomotive 1758, Vista, Mont. Defective air hose burst between locomotive and tender. One injured.

*June 3, 1924, locomotive 1128, Sioux City, Iowa. Wind-shield plate along reverse lever in cab was bent up, causing injury to employee. One injured.

Thirty-two accidents, 2 killed, 30 injured.

GULF & SHIP ISLAND RAILROAD:

*November 15, 1923, locomotive 73, Ten Mile, Miss. Bolts in pilot broke, causing pilot to fall with brakeman. One injured.

April 9, 1924, locomotive 53, Maxie, Miss. Injector throttle blew off at connection to turret; nut securing it to nipple was defective, caused by the use of set in tightening. Two injured.

Two accidents, 3 injured.

GULF COAST LINES:

*December 14, 1923, locomotive (N. O. T. & M.) 111, Elliott City, La. Lap and lead lever broke. One injured.

January 15, 1924, locomotive (N. O. T. & M.) 108, near Grayburg, Tex. Crown-sheet failure, caused by overheating due to low water; autogenously welded seam between door sheet and crown and side sheets failed its entire length; gauge cocks applied directly in boiler back head. Appurtenances damaged at time of accident to such an extent that their previous condition could not be determined. Two killed, 1 injured.

*March 21, 1924, locomotive (N. O. T. & M.) 55, De Quincy, La. Defective bolt holding reverse lever latch spring broke, allowing lever to unlatch and fly forward, mashing engineer's foot between lever and foot rest. One injured.

Three accidents, 2 killed, 3 injured.

HOCKING VALLEY RAILWAY:

*February 5, 1924, locomotive 177, Linworth, Ohio. Pin in front end of right union link broke. One injured.

*June 17, 1924, locomotive 205, Upper Sandusky, Ohio. Nozzle of hose blew off while fireman was blowing out ash pan. One injured.

Two accidents, two injured.

ILLINOIS CENTRAL RAILROAD:

July 31, 1923, locomotive 4909, Matteson, Ill. Shaker rod disconnected from grates, account of bolt missing. One injured.

**August 17, 1923, locomotive 1091, near Wilke, Iowa. Water glass burst; shield was removed for purpose of cleaning water glass while en route. One injured.

**August 20, 1923, locomotive 1652, Dyersburg, Tenn. Fell into manhole, account of one side of manhole cover being loose, due to bolt in hinge having worked out. One injured.

September 17, 1923, locomotive 957, Bowdre, Miss. Injector steam pipe collar broke off, account of sleeve on collar being too thin. Two injured.

September 18, 1923, locomotive 1158, St. Louis, Mo. Shaker bar broke, due to old flaw in weld. One injured.

September 28, 1923, locomotive 81, Indianapolis, Ind. Reverse lever became unlatched and flew back, striking fireman, due to latch spring weak and notches in quadrant and latch badly gummed with dirt and grease. One injured.

November 2, 1923, locomotive 988, Peoria, Ill. Patch bolt blew out while attempting to calk under pressure; threads on bolt and in bolt holes practically destroyed by frequent calking and long leakage. Two injured.

**November 8, 1923, locomotive 3010, Waddams Grove, Ill. Shaker bar slipped off post, due to improper fit. One injured.

*December 11, 1923, locomotive 514, Winfield, Ala. Footboard caught on guardrail, due to being too low. One injured.

*January 6, 1924, locomotive 1041, near Central City, Ky. Tender truck failed, causing engine to derail and coach and sleeper to derail and turn over. Fourteen injured.

**June 7, 1924, locomotive 2902, Minonk, Ill. Grate shaker bar slipped off fulcrum lever, due to improper fit. One injured.

Eleven accidents, 26 injured.

INDIANA HARBOR BELT RAILROAD:

August 30, 1923, locomotive 307, Gibson, Ind. Fell when stepping onto footboard, on account of footboard being loose and defective. One injured.

November 9, 1923, locomotive 304, South Chicago, Ill. Cylinder cock rod became disconnected and dropped down, causing operating lever to strike engineer's foot. One injured.

November 10, 1923, locomotive 406, Franklin Park, Ill. Squirt hose burst; hose defective. One injured.

March 15, 1924, locomotive 46, Osborn, Ind. Grate shaker bar slipped off post, due to improper fit; shaker post too short and post and socket of bar badly worn. One injured.

April 2, 1924, locomotive 304, Chicago, Ill. Cylinder cock lever rod became disconnected, account of bolt having lost out of connecting rod, allowing rod to drop down and catch on crossing plank, throwing foot lever back in cab and bruising fireman's foot. One injured.

Five accidents, 5 injured.

INTERNATIONAL-GREAT NORTHERN RAILROAD:

**March 10, 1924, locomotive 251, Spring, Tex. Elbow in blow-off cock line burst, due to old fracture. One injured.

One accident, 1 injured.

KANSAS CITY, MEXICO & ORIENT RAILROAD:

**September 4, 1923, locomotive 402, between Dill City and Braithwaite, Okla. Locomotive moved forward, account of leaky throttle. One injured.

**June 11, 1924, locomotive 302, Mile Post 432. Grease cup plug blew out. One injured.

Two accidents, 2 injured.

KANSAS CITY SOUTHERN RAILWAY:

August 14, 1923, locomotive 561, near Westville, Okla. Squirt hose operating valve bonnet blew out. One injured.

September 1, 1923, locomotive 498, Mansfield, La. Steam heat pipe became disconnected and dropped down, catching on crossing plank, which caused pipe in cab to be forced up, which in turn pulled valve out of turret. One injured.

**November 15, 1923, locomotive 521, near Frierson, La. Injector steam pipe failed at throttle connection. One injured.

November 16, 1923, locomotive 809, Kansas City, Mo. Patch bolt blew out of flue sheet seam while being calked under pressure, due to defective threads. One injured.

**June 4, 1924, locomotive 96, East Kansas City, Mo. Pin came out of blow-off cock, causing fireman to lose balance and fall from running board. One injured.

Five accidents, 5 injured.

KANSAS CITY TERMINAL RAILWAY:

January 14, 1924, locomotive 28, Kansas City, Mo. Coping on top of coal space on tank gave way, account of failure of spot welds, causing hostler helper to fall to ground. One injured.

One accident, 1 injured.

LEHIGH & HUDSON RIVER RAILWAY:

November 27, 1923, locomotive 33, Vernon, N. J. Plank in tender gave way, account of deterioration. One injured.

One accident, 1 injured.

LEHIGH VALLEY RAILROAD:

July 6, 1923, locomotive 1603, Flagtown, N. J. Crown-sheet failure, caused by overheating due to low water; no contributory causes found. One killed.

July 6, 1923, locomotive 318, Lehigh, Pa. Coal board pulled out of bracket, due to bolt missing from bracket, causing fireman to fall from top of tender. One injured.

July 7, 1923, locomotive 684, Port Bowkley, Pa. Marker bracket turned, due to bracket bolt breaking, causing fireman to fall to ground. One injured.

July 12, 1923, locomotive 2051, Corfu, N. Y. Squirt hose became disconnected. One injured.

July 18, 1923, locomotive 792, Mahanoy City, Pa. Pilot caught on guard rail, due to being too low, injuring brakeman who was riding on pilot step. One injured.

July 29, 1923, locomotive 358, Bradens, Pa. Crown-sheet failure, due to low water; no contributory causes found; several appurtenances lost or damaged

to such extent that their previous condition could not be determined. One killed, 1 injured.

**August 22, 1923, locomotive 3147, Irvington, N. J. Fire hose burst in two places when attempt was made to use same. One injured.

September 6, 1923, locomotive 1616, New Market, N. J. Flue broke off at defective butt weld; flues reported leaking at Easton, Pa., on August 1, 3, 7, 13, 21, 27, 29, and 31, and reported at Jersey City on August 1, 13, 17, 27, 31, and September 6. One injured.

September 20, 1923, locomotive 2100, Rummerfield, Pa. Injector steam pipe broke off at brazing collar. One injured.

November 10, 1923, locomotive 3044, Buffalo, N. Y. Injector steam pipe spanner nut stripped off, account of nut badly mutilated by use of set. One injured.

December 6, 1923, locomotive 1814, Manchester, N. Y. Boiler check cap blew out, due to improper fit in cage. One injured.

December 17, 1923, locomotive 1222, Elmira, N. Y. Water glass burst; cut by flying glass; front glass missing from shield. One injured.

April 18, 1924, locomotive 1387, Easton, Pa. Fire hose burst, due to defective fabric. One injured.

June 13, 1924, locomotive 2064, Canfield, N. Y. Pilot step gave way, due to step bracket breaking. One injured.

Fourteen accidents, 2 killed, 13 injured.

LONG ISLAND RAILROAD:

September 1, 1923, locomotive 260, Long Island City, N. Y. Arch tube pulled out of throat sheet, due to not extending through sheet far enough to permit bellowing or beading to secure it in place; tube reported leaking on the date of accident and locomotive returned to service after condition of tube had been called to the attention of and had been examined by the foreman. Two injured. One accident, 2 injured.

LOS ANGELES & SALT LAKE RAILROAD:

September 7, 1923, locomotive 3181, Balch, Calif. Flue broke at defective safe end weld. Two injured.

One accident, 2 injured.

LOUISIANA & ARKANSAS RAILWAY:

*January 6, 1924, locomotive 552, Hope, Ark. Squirt hose valve worked open. One injured.

May 3, 1924, locomotive 204, Jena, La. Two flues broke. One injured. Two accidents, 2 injured.

LOUISVILLE & NASHVILLE RAILROAD:

**July 1, 1923, locomotive 1778, Ophelia, Ky. Grate shaker bar slipped off fulcrum lever, due to improper fit. One injured.

July 13, 1923, locomotive 1763, Paris, Ky. Grate shaker bar broke, throwing fireman against cab. One injured.

July 16, 1923, locomotive 811, Boyles, Ala. Water cooler fell off tank, account of not being secured. One injured.

**July 31, 1923, locomotive 1561, near Brumfield, Ky. Squirt hose blew off pipe connection, due to being insecurely clamped. One injured.

**August 6, 1923, locomotive 1037, Atwood, Tenn. Eccentric strap broke. One injured.

August 17, 1923, locomotive 1548, Livingston, Ky. Squirt hose burst, account of being worn and cut by cab apron. One injured.

**August 23, 1923, locomotive 600, Columbia, Tenn. Headlight wire broke off, causing headlight to go out, and while making necessary repairs switchman was injured. One injured.

September 9, 1923, locomotive 989, Nashville, Ill. Water cooler fell from position on tank, account of being insecurely fastened. One injured.

**September 10, 1923, locomotive 2138, Boyles, Ala. Grate shaker bar slipped off lever, due to improper fit. One injured.

September 10, 1923, locomotive 207, Knob Lick, Ky. Reverse lever flew forward, catching engineer's foot; quadrant three-sixteenths inch lower at front than at back and foot brace not properly applied. One injured.

September 14, 1923, locomotive 1750, near Austerlitz, Ky. Shaker bar slipped off lever, due to improper fit; bar too long and shaker lever had 1 inch off-set, causing shaker bar to strike back cab wall. One injured.

September 22, 1923, locomotive 1216, Castleberry, Ala. Bolts missing from false deck supporting brackets allowed plate to work out of place and fireman's leg to slip down and be caught between boiler head and plate. One injured.

**September 27, 1923, locomotive 1047, Wyandotte, Ky. Reverse lever came out of quadrant and went forward against brake valve, catching engineer's arm; bolt securing latch defective and gear reported defective on September 7, 8, 11, 11, 13, 25, 26, and repairs indicated. One injured.

**September 27, 1923, locomotive 1047, Copland, Ky. Reverse lever came out of quadrant, account of bolt securing latch being defective; reversing gear reported defective on September 7, 8, 11, 11, 13, 25, and 26; similar accident occurred on this locomotive eight hours previous and locomotive continued in service without repairs until after the second person was injured. One injured.

September 29, 1923, locomotive 2084, Boyles, Ala. Injector throttle valve bonnet blew out, due to having been improperly applied. One injured.

October 3, 1923, locomotive 613, Pensacola, Fla. Automatic bell ringer inoperative, account of adjusting screw and nut loose. One injured.

October 5, 1923, locomotive 1061, Gallatin, Tenn. Engine truck center pin broke, due to old flaws and material being crystallized. One injured.

October 14, 1923, locomotive 1753, De Coursey, Ky. Grate shaker bar broke off at weld; old flaw extended over one-fourth of cross-sectional area. One injured.

October 19, 1923, locomotive 183, Hillsdale, Miss. (on detour). Stop pin missing from reverse lever quadrant, allowing insufficient clearance between lever and brake valve. One injured.

October 23, 1923, locomotive 1560, Kelly, Ky. Stoker conveyor slide hook slipped out of hole in plate, account of having straightened out from usage, causing fireman to fall against fire door. One injured.

**November 10, 1923, locomotive 1205, Pensacola, Fla. Grate connecting rod broke, causing fireman to fall. One injured.

**November 16, 1923, locomotive 1426, Himyar, Ky. Injured while shaking grates, due to grate shaker connecting rod pin missing. One injured.

**January 14, 1924, locomotive 909, Blackmont, Ky. Coupler broke, due to old flaw. One injured.

*January 18, 1924, locomotive 318, Perdido, Ala. Plug blew out of fire-box door air cylinder. One injured.

January 27, 1924, locomotive 118, near Russellville, Ky. Reverse lever unlatched and flew forward and, due to stop missing from front end of quadrant, caught engineer's hand between lever and boiler back head. One injured.

February 2, 1924, locomotive 1010, near McLeansboro, Ill. Arch tube burst, due to being overheated. One injured.

**February 11, 1924, locomotive 1500, Barbourville, Ky. Blower valve handle came loose, due to pin shearing off. One injured.

February 15, 1924, locomotive 1026, Colta, Ala. Brakes leaked off, causing locomotive to move backward, catching the fireman between water spout and rear headlight. One injured.

March 7, 1924, locomotive 1081, Ferndale, Ky. Right eccentric crank broke, due to old fracture covering approximately 60 per cent of cross-sectional area and metal of very coarse structure and badly crystallized. One injured.

March 10, 1924, locomotive 1158, Coaldale, Ala. Reverse lever counter-balance spring improperly equalized, necessitating repairs on line of road; reversing gear reported defective on March 1, 2, 10, and 11. One injured.

March 28, 1924, locomotive 1185, Mattawanna, Ala. Ash-pan lever latch was sprung out of position, causing injury to fireman while closing the pan and forcing lever into latch. One injured.

April 13, 1924, locomotive 1238, Shepherdsville, Ky. Glass in cab door broke and struck fireman when door blew shut, due to latch being insecurely fastened to cab floor. One injured.

April 16, 1924, locomotive 146, Tacona, Ala. Ash-pan blower pipe blew out of connection to manifold, due to end of pipe being badly rusted and eaten away and threads in three-way cock and union nuts badly worn. One injured.

May 4, 1924, locomotive 1523, Livingston, Ky. Broken fire-box rivet blew out while being caulked under pressure. One injured.

**May 9, 1924, locomotive 2086, East Louisville, Ky. Hand caught between reverse lever and injector handle; stop pin missing from quadrant. One injured.

**June 11, 1924, locomotive 170, New Orleans, La. Squirt hose burst. One injured.

June 18, 1924, locomotive 964, Riolo, Ind. Main driving axle broke in left wheel fit, due to old fractures; driving boxes or journals reported running-

hot on May 20, 25, 26, 28, 29, June 5, 5, 6, 8, 9, 13, 16, 17, and 17. Three injured.

June 20, 1924, locomotive 541, Nashville, Tenn. Fire hose burst, due to being worn. One injured.

June 22, 1924, locomotive 1293, Ramhurst, Ga. Manhole cover on tender gave way, due to hinge bolts being out of place, causing fireman to fall to track and have his foot severed by the car following. One injured.

Thirty-nine accidents, 41 injured.

LOUISVILLE, HENDERSON & ST. LOUIS RAILWAY:

**May 8, 1924, locomotive 43, near Maceo, Ky. Main driving wheel axle broke, due to old flaws, causing engine to be stripped and running board bracket stud to be pulled out of boiler. Two injured.

One accident, 2 injured.

MAINE CENTRAL RAILROAD:

July 7, 1923, locomotive 167, Waterville, Me. Headlight turbine wheel broke, due to defective governor, causing casing to break while under pressure; flying parts struck employee. One killed.

**September 3, 1923, locomotive 611, Wytopotlock, Me. Squirt hose valve came open. One injured.

September 17, 1923, locomotive 168, Bangor, Me. Superheater tube collapsed, due to being badly pitted and corroded; other superheater tubes in bad condition and three had thimbles applied. One injured.

June 5, 1924, locomotive 616, near Bangor, Me. Lubricator drain cock broke off while attempting to tighten cock which was leaking. One injured.

Four accidents, 1 killed, 3 injured.

MICHIGAN CENTRAL RAILROAD:

July 18, 1923, locomotive 8484, near Parma, Mich. Injector steam pipe and brazing collar broke off, due to old break in beveled seat of collar. One injured.

April 13, 1924, locomotive 7829, Millington, Mich. Steam pipe in smoke box burst, due to old flaw. One injured.

Two accidents, 2 injured.

MIDLAND VALLEY RAILROAD:

January 20, 1924, locomotive 71, near Keota, Okla. Shaker bar slipped off post, due to improper fit. One injured.

One accident, 1 injured.

MINNEAPOLIS & ST. LOUIS RAILROAD:

*May 7, 1924, locomotive 614, Eldora, Iowa. Front end of running board broke off even with end of bracket, due to old crack for about one-half of its length. One injured.

One accident, 1 injured.

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

July 15, 1923, locomotive 1004, near Hamel, Minn. Side rod broke, due to old flaw, and while disconnecting rod the blocking under driving wheel flew out, striking and fatally injuring fireman. One killed.

March 18, 1924, locomotive 165, Sault Ste. Marie, Mich. Insufficient clearance between reverse lever and independent brake valve. One injured.

*June 13, 1924, locomotive (no number given), Dresser Junction, Wis. Step on engine pilot broke. One injured.

Three accidents, 1 killed, 2 injured.

MISSOURI, KANSAS & TEXAS RAILROAD:

*July 9, 1923, locomotive 568, Lindale, Mo. Squirt hose parted at splice. One injured.

September 15, 1923, locomotive 476, Wichita Falls, Tex. Crosshead key sheared, due to being loose and poor fit, causing cylinder head to be knocked out, striking employee. One injured.

*September 23, 1923, locomotive 358, North Jefferson, Mo. Squirt hose burst. One injured.

October 12, 1923, locomotive 572, Smithville, Tex. Washout plug blew out when attempt was made to tighten under pressure; threads on plug and in hole worn and plug applied cross-threaded. One killed, 1 injured.

*October 23, 1923, locomotive 638, near Hico, Tex. Blow-off cock stem broke off. One injured.

**November 1, 1923, locomotive 384, near Walker, Mo. Counterbalance spring being loose allowed reverse lever to get away from engineer and go into corner, striking his leg. One injured.

*December 12, 1923, locomotive 350, near Brookshire, Tex. Reverse lever flew backward, catching engineer's hand, due to counterbalance spring pocket breaking loose from boiler brace. One injured.

**January 30, 1924, locomotive 617, North McAlester, Okla. Section of front cylinder head blew out. One injured.

*February 1, 1924, locomotive 233, Leon, Tex. Rear tank truck frame broke, due to old flaw, causing derailment of locomotive. One injured.

February 22, 1924, locomotive 441, near Hominy, Okla. Crown-sheet failure, caused by overheating due to low water; several appurtenances damaged to such extent that their condition prior to the accident could not be determined. Three killed.

Ten accidents, 4 killed, 9 injured.

MISSOURI PACIFIC RAILROAD:

*July 25, 1923, locomotive 9432, Omaha, Nebr. Squirt hose valve worked open. One injured.

*August 3, 1923, locomotive 1311, Pacific, Mo. Fire door stuck open, then closed suddenly, catching fireman's finger. One injured.

**August 8, 1923, locomotive 2651, Clearwater, Kans. Insufficient clearance between blow-off cock extension handle and eccentric, causing handle to be caught while being used. One injured.

**August 9, 1923, locomotive 1315, between St. Louis and Jefferson City, Mo. Squirt hose came off of pipe. One injured.

August 10, 1923, locomotive 1239, Platow, Mo. Drawbar and safety chains between engine and tender failed, due to drawbar being badly worn at pinhole and safety chains not of sufficient strength, allowing fireman to fall to track and be run over. One injured.

**September 7, 1923, locomotive 1426, Blackwater, Mo. Grate shaker latch struck fireman's hand, due to defective valve mechanism. One injured.

*September 8, 1923, locomotive 5514, Delaplaine, Ark. Sand pipe broke off. One injured.

**September 18, 1923, locomotive 9537, Kansas City, Mo. Shovel caught on ragged edge of hole in shovel sheet, causing fireman to fall; shovel sheet had hole 5 inches wide and 9 inches long and had been reported defective on September 10 and 11. One injured.

September 23, 1923, locomotive 9429, North Kansas City, Mo. Bracket at right end of rear end handhold loose, account of bolt which held bracket to sill missing, causing employee to fall to ground. One injured.

*September 27, 1923, locomotive 9413, St. Louis, Mo. Reverse lever did not hold in quadrant and flew back, striking engineer. One injured.

*October 18, 1923, locomotive 6423, Texarkana, Ark. Collision; hostler attempted to stop locomotive but reverse lever latch and distributing valve pipe were broken. One injured.

October 24, 1923, locomotive 1814, Snow Lake, Ark. Pin securing superheater damper fulcrum arm to shaft broke, rendering damper inoperative and causing excessive heat at fire door. One injured.

November 13, 1923, locomotive 1305, Kirkwood, Mo. Scalded by hot water and steam from drain pipe to steam end of air compressor; drain pipe was loose at coupling to cock and also at bottom end which allowed it to swing around when drain cock was opened. One injured.

November 20, 1923, locomotive 2369, near Myrtle, Ark. Main throttle valve out of balance and when latch was lifted the throttle suddenly opened wide, causing lever to fly back, striking fireman's hand. One injured.

**November 25, 1923, locomotive 531, McGehee, Ark. Reverse lever counterbalance spring improperly adjusted, causing lever to fly back, striking hostler. One injured.

December 3, 1923, locomotive 2708, near Marshall Junction, Mo. Shaker bar too long to clear leg of tank when locomotive was on a curve. One injured.

December 7, 1923, locomotive 16, North Little Rock, Ark. Flagstaff bracket turned, due to being secured by only one bolt, causing employee to fall to ground; provisions in bracket for two bolts and only one had been applied. One injured.

**December 11, 1923, locomotive 1430, Nowata, Okla. Roofing nail in brakeman's cab on rear of tender worked out one-half inch on which fireman cut his hand. One injured.

*December 23, 1923, locomotive 54, North Little Rock, Ark. Steam blew back through injector throttle valve, scalding fireman. One injured.

*December 24, 1923, locomotive 116, Myrick, Mo. Locomotive and six cars derailed, due to broken spring hanger. One injured.

**February 5, 1924, locomotive 1201, Poplar Bluff, Mo. Slipped on ice in gangway; piping to squirt hose was 24 inches too short causing water to siphon through the hose and run on gangway and freeze. One injured.

February 13, 1924, locomotive 1425, Kansas City, Mo. Grate shaker fulcrum lever broke at old flaw which had been autogenously welded. One injured.

*February 14, 1924, locomotive 1427, Lenapah, Okla. Hand caught by power grate shaker, due to spring in operating lever being weak. One injured.

February 24, 1924, locomotive 6418, Knobel, Ark. Shaker bar slipped off post, due to improper fit. One injured.

March 4, 1924, locomotive 7808, Tipton, Mo. Grate shaker bar slipped off fulcrum lever, due to improper fit; safety pin had been provided but holes in bar and lever did not match, thus rendering safety pin useless. One injured.

March 8, 1924, locomotive 1276, Little Rock, Ark. Hand rail above cab window broke in two at old fracture in the bend where it had been overheated. One injured.

March 22, 1924, locomotive 5207, Prairie Du Rocher, Ill. Shaker bar slipped off post, due to improper fit. One injured.

April 2, 1924, locomotive 6519, Donnell, Mo. Reverse lever caught engineer's wrist, between lever and air pipe, due to insufficient clearance. One injured.

**May 5, 1924, locomotive 9412, Kansas City, Kans. Driving spring hanger broke, allowing locomotive to drop at front end and footboard to catch on crossing plank, causing switchman who was riding on footboard to fall. One injured.

*May 11, 1924, locomotive 1499, North Little Rock, Ark. Insufficient clearance between reverse lever and valve rod to injector. One injured.

**May 22, 1924, locomotive 1257, Gorham, Ill. Rear tender truck brake beam came down. One injured.

Thirty-one accidents, 31 injured.

MOBILE & OHIO RAILROAD:

**July 17, 1923, locomotive 337, Gem, Ala. Drawbar broke through front pinhole; drawbar defective, showing numerous old flaws in cross-sectional area where the failure occurred. One injured.

**August 3, 1923, locomotive 370, Tipton, Miss. Valve yoke broke; fireman burned when he removed relief valve. One injured.

**August 14, 1923, locomotive 235, Deer Park, Ala. Right front driver brake hanger broke. One injured.

September 14, 1923, locomotive 304, McShan, Ala. Side rod broke, due to old flaw. One injured.

**September 16, 1923, locomotive 230, Chunchula, Ala. Shaker bar slipped off lever, due to improper fit. One injured.

December 8, 1923, locomotive 321, South Columbus, Ky. Ash-pan lever shaft broke through bolt holes; metal crystallized. One injured.

March 19, 1924, locomotive 369, Corinth, Miss. Reverse lever hard to reverse, due to steam accumulating in cylinders caused by leaky throttle. One injured.

**May 3, 1924, locomotive 219, Vestals, Miss. Set screw in collar on grate shaker bar staff worked loose, allowing staff to drop, forcing shaker bar off and causing injury to fireman. One injured.

Eight accidents, 8 injured.

MONONGAHELA RAILWAY:

**July 12, 1923, locomotive 178, Luzerne, Pa. Injector delivery pipe union coupling nut broke while injector was working, account of being mutilated by use of hammer and chisel in tightening. One injured.

October 29, 1923, locomotive 134, Brownsville, Pa. Squirt hose pipe split at seam, scalding fireman. One injured.

**February 25, 1924, locomotive 305, near Gates, Pa. Grate shaker bar slipped off post; bar not a proper fit on post. One injured.

Three accidents, 3 injured.

NASHVILLE, CHATTANOOGA & ST. LOUIS RAILWAY:

May 5, 1924, locomotive 612, Bridgeport, Ala. Scalded, due to overflow pipe becoming disconnected. One injured.

One accident, 1 injured.

NEW ORLEANS GREAT NORTHERN RAILROAD:

*July 27, 1923, locomotive 91, Wortham, La. Defective sand pipe. One injured.

One accident, 1 injured.

NEW YORK CENTRAL—EAST:

July 6, 1923, locomotive 2915, Kato, Pa. Cab apron hinge bolt worked out, allowing apron to work back from its fastening and fireman fell through opening. One injured.

July 23, 1923, locomotive 3337, near Warners, N. Y. Flue broke off at bead and pulled out of back flue sheet and went forward 37 inches; copper ferrule used in applying flue had been worked forward until only one-eighth inch remained between flue and sheet and due to excessive rolling and prossering the ferrule was cut off and the flue greatly reduced in thickness. Two injured.

August 13, 1923, locomotive 838, Wingdale, N. Y. Cylinder head casing fell from locomotive, striking section laborer, account of lug to which casing straps were applied breaking off. One injured.

September 22, 1923, locomotive 3892, Bowmanville, N. Y. Squirt hose blew off; no clamp on hose to secure it to nipple. One injured.

September 28, 1923, locomotive 3063, Childwold, N. Y. Injector delivery pipe gave way, due to defective nipple. One injured.

**October 8, 1923, locomotive 5148, Corning, N. Y. Shaker bar slipped off post, due to improper fit. One injured.

October 17, 1923, locomotive 3609, Rensselaer, N. Y. Spanner nut on injector delivery pipe broke; nut badly mutilated by use of hammer and chisel or set in tightening. One injured.

October 17, 1923, locomotive 3299, Rochester, N. Y. Blower pipe became disconnected in smoke box, account of nut working off, and caused back draft. One injured.

October 17, 1923, locomotive 3963, Buffalo, N. Y. Main steam pipe to right cylinder burst, blowing a piece 34 inches long and two-thirds of its circumference entirely out; old fracture 12 inches long in steam pipe and pipe of uneven thickness, one side being seven-eighths inch thick and other side where the failure occurred being seven-sixteenths inch thick; metal porous and otherwise defective. One killed, 3 injured.

October 29, 1923, locomotive 3044, Glenwood, N. Y. Injector steam pipe broke off at top connection and pulled out of sleeve; pipe had been materially reduced in thickness when beaded. One injured.

November 30, 1923, locomotive 673, Schenectady, N. Y. Flue broke off at safe end weld; improper size welding mandrel used, leaving the metal at weld approximately twice the thickness of the flue. One injured.

November 30, 1923, locomotive 3717, Charlotte, N. Y. Spring equalizer hanger broke, due to old flaw, allowing engine to drop down and footboard to catch on rail, causing brakeman's foot to be caught between footboard and rail; hanger overheated in welding and badly crystallized. One injured.

December 13, 1923, locomotive 2530, West Albany, N. Y. Cab handhold gave way due to old break; only one-fourth inch holding at time of failure. One injured.

February 28, 1924, locomotive 64, West Seneca, N. Y. Broken rivet blew out while being caulked under pressure. One injured.

April 23, 1924, locomotive 3377, Syracuse, N. Y. Top part of elbow entering nipple connection at left injector blew off; wing broken off left boiler check prevented check from seating and allowed pressure to accumulate in delivery pipe; malleable iron elbow not of uniform thickness. One injured.

April 25, 1924, locomotive 2079, Philmont, N. Y. Injector steam pipe pulled out of bolting plate at injector connection, due to improper size; flange on brass sleeve on pipe did not have sufficient bearing against plate. Two injured.

Sixteen accidents, 1 killed, 20 injured.

NEW YORK CENTRAL—WEST:

**July 25, 1923, locomotive 47, Collinwood, Ohio. Rivet broke and blew out of firebox while being caulked, due to having been overheated when applied. One injured.

*August 5, 1923, locomotive 5993, Pan, Ohio. Grease-cup vent hole became stopped up, causing bearings and oil to become hot and grease-cup cap to blow off while being unscrewed. One injured.

August 22, 1923, locomotive 4009, Graytown, Ohio. Leaking throttle and dry pipe caused locomotive to move forward unexpectedly, causing employee to fall. One injured.

August 26, 1923, locomotive 2595, Dune Park, Ind. Crosshead key broke, allowing piston rod to pull loose and caused cylinder head to be knocked out. One injured.

*September 24, 1923, locomotive 9678, Croton, Ohio. Insufficient clearance between end of reverse lever and water column. One injured.

October 1, 1923, locomotive 23, Collinwood, Ohio. Arch tube plug blew out; plug applied cross-threaded and attempt was made to tighten under pressure. Two killed.

November 9, 1923, locomotive 3287, Portland, N. Y. Oil pipe from lubricator to air pump broke off. One injured.

November 13, 1923, locomotive 87, Painesville, Ohio. Locomotive parted from train, account of low coupler on tender; chain strap on tender was bent and bolt loose and wheels of rear truck had been turned down $1\frac{1}{8}$ inches and truck had not been raised on center; coupler on tender only $30\frac{1}{2}$ inches in height and coupler on car $34\frac{1}{2}$ inches. One injured.

November 15, 1923, locomotive 80, State Line, N. Y. Cotter key in coupler key sheared off, allowing key to work out of rear coupler on leading locomotive, causing locomotives to separate and brakes to apply in emergency. One injured.

December 8, 1923, locomotive 4863, Toledo, Ohio. Brake cylinder pipe union disconnected, account of union nut worn and loose fit, rendering the brakes inoperative and causing collision with another locomotive. Two injured.

December 11, 1923, locomotive 9650, Columbus, Ohio. Washout cap blew out while attempting to tighten under pressure; threads on cap were so badly worn that it was too small for fit in bushing. One injured.

January 18, 1924, locomotive 53, Lake View, N. Y. Globe valve to steam grate shaker leaked sufficient to move grate shaker when valve was closed, due to defective valve seat. One injured.

February 21, 1924, locomotive 5153, Enos, Ind. Crown-sheet failure, caused by overheating due to low water; gauge cocks applied directly in boiler back head; both injector warning or telltale pipe connections plugged. Two killed.

March 1, 1924, locomotive 4863, near Wauseon, Ohio. Injector steam pipe sleeve broke off at fountain connection, due to being of too light construction. One injured.

March 6, 1924, locomotive 5839, Starbrick, Pa. Crown-sheet failure, caused by overheating due to low water; no contributory causes found. One killed, 2 injured.

April 14, 1924, locomotive 5676, Elkhart, Ind. Drain valve to water column leaking; attempted to tighten valve with wrench and valve bonnet broke off. One injured.

May 3, 1924, locomotive 309, Cleveland, Ohio. Valve gear stripped off right side of locomotive, due to bolt in eccentric crank becoming loose and working out, allowing crank to come off main pin and valve to travel too far. One injured.

*May 20, 1924, locomotive 4734, Elyria, Ohio. Engine truck wheel moved in on axle, causing wheel to mount rail, derailing engine and combination car. Three injured.

June 20, 1924, locomotive 5166, Englewood, Ill. Loose handle on manhole cover turned as fireman was raising cover, causing him to fall; one of the two bolts securing this handle had lost out and the other bolt was loose. One injured.

Nineteen accidents, 5 killed, 21 injured.

NEW YORK, CHICAGO & ST. LOUIS RAILROAD:

July 21, 1923, locomotive 66, Bellevue, Ohio. Squirt hose pipe bushing broke off while injector was working. One injured.

**July 23, 1923, locomotive 361, Avery, Ohio. Reverse lever unlatched and struck engineer, due to excessive lost motion in latch rigging. One injured.

September 2, 1923, locomotive 178, Ridge Farm, Ill. King pin holding rear coupler in coupler pocket casting broke, allowing locomotive to part from train and brakes to apply in emergency. One injured.

November 4, 1923, locomotive 4252, Stony Island, Ill. Cylinder cock operating lever flew back, striking engineer, due to cocks and rigging being knocked off. One injured.

December 26, 1923, locomotive 326, Chase, Ind. Crosshead broke, due to gib bolts shearing off. One injured.

January 9, 1924, locomotive 515, Valparaiso, Ind. Crown-sheet failure, caused by overheating due to low water. Two killed, 2 injured.

February 26, 1924, locomotive (T., St. L. & W.) 177, near Neoga, Ill. Crown-sheet failure, caused by overheating due to low water; autogenously welded seam of patch at front of crown sheet failed for a distance of 50 inches. One injured.

February 27, 1924, locomotive 619, Conneaut, Ohio. Arch tube washout plug blew out when attempt was made to tighten under pressure; threads on plug and in sheet were badly worn and plug had heavy shoulder of graphite. Two injured.

March 6, 1924, locomotive 463, Vermillion, Ohio. Injector water valve stuck shut. One injured.

April 19, 1924, locomotive 880, Panama, Ill. Flue broke off at defective safe end weld; safe end inserted into flue three-sixteenths inch on one side and did not enter flue on opposite side and showed a very slight fusion of metals. One injured.

**May 13, 1924, locomotive 404, near Coldwater, Ohio. Radius rod broke, due to defective forge weld, causing reverse lever to move suddenly and strike engineer. One injured.

Eleven accidents, 2 killed, 13 injured.

NEW YORK, NEW HAVEN & HARTFORD RAILROAD:

**July 2, 1923, locomotive 2336, Boston, Mass. Grate shaker bar became disconnected from grates, account of bolt working out. One injured.

**July 4, 1923, locomotive 1394, Providence, R. I. Grates disconnected, account of back pin on grate lever coming out. One injured.

July 16, 1923, locomotive 2441, Boston, Mass. Grate shaker connecting rod became disconnected, due to pin working out. One injured.

**July 27, 1923, locomotive 403, Franklin, Mass. Grate shaker rod became disconnected from grates, due to pin working out. One injured.

**July 30, 1923, locomotive 1107, Blackstone, Mass. Nuts on wrist pin worked loose, and while attempting repairs en route engineer was injured. One injured.

August 3, 1923, locomotive 2375, Brockton, Mass. Fire hose burst; hose defective. One injured.

August 15, 1923, locomotive 1585, Chatham, Mass. Grate shaker cotter pin came out, causing grates to become disconnected. One injured.

August 19, 1923, locomotive 409, Walpole Heights, Mass. Crown-sheet failure, due to overheating caused by low water; initial rupture evidently occurred in autogenously welded seam between flue sheet and crown sheet, which was very defective, and violence was apparently increased by failure of this and other welded seams, contributed to by two adjacent broken crown stays; fire box reported leaking nine times between August 1 and 18; several appurtenances damaged to such extent that their previous condition could not be determined. Four injured.

**August 22, 1923, locomotive 3322, East Greenwich, R. I. Wedge bolt on main rod broke, knocking wedge out of front end of main rod. One injured.

August 30, 1923, locomotive 1358, Boston, Mass. Air hose on tender burst. One injured.

August 31, 1923, locomotive 2397, Cedar Hill, Conn. Squirt hose parted at splice, due to not being clamped. One injured.

September 22, 1923, locomotive 1362, New London, Conn. Crosshead key worked out, causing cylinder head to be knocked out. One injured.

**October 9, 1923, locomotive 3217, Shelton, Conn. Side-rod grease cup and bushing blew out when bushing parted from rod cup, account of defective autogenous weld; only approximately one-third of welding material properly fused to rod cup. One injured.

October 15, 1923, locomotive 3315, Groton, Conn. Blower pipe in front end tipped over, causing back draft; union connection to blower pipe disconnected, account of not being properly tightened. Two injured.

**October 18, 1923, locomotive 830, Provincetown, Mass. Hand rail gave way, due to being insecurely fastened, causing engineer to fall from running board to ground. One injured.

October 23, 1923, locomotive 2417, New Haven, Conn. Latch on fire-box door was broken, allowing door to close unexpectedly. One injured.

November 1, 1923, locomotive 3402, Providence, R. I. Locomotive 3402 collided with another locomotive, account of engineer's view obstructed by steam, due to injector steam ram and boiler check leaking, which prevented him from seeing stop signal. One injured.

November 1, 1923, locomotive (C. N. E.) 108, Fall River, Mass. Grate shaker post broke off. One injured.

November 1, 1923, locomotive 2397, New Haven, Conn. Packing blew out of top water glass cock. One injured.

November 4, 1923, locomotive 438, Titicut, Mass. Reverse lever latch badly worn, permitting lever to unlatch and fly forward and catch engineer's foot between lever and reducing valve; reversing gear reported defective on October 25, 27, and 30. One injured.

**November 9, 1923, locomotive 2449, Boston, Mass. Footboard on tender dropped down, account of loose bolts, and struck on electric charging box, knocking brakeman off footboard. One injured.

November 9, 1923, locomotive 2435, Boston, Mass. Handhold on rear of tender pulled out, causing employee to fall against car; threads on handhold where screwed into flange were worn and corroded; also bolt through handhold and top post was missing. One injured.

November 18, 1923, locomotive 3207, Hawleyville, Conn. Grease cup plug blew out while being tightened; threads on plug and in cup worn and stripped and plug had at some time been applied with threads crossed; locomotive just out of shop with class 3 repairs. One killed.

November 24, 1923, locomotive (C. N. E.) 42, East Hartford, Conn. While backing out of engine house engine started at high rate of speed and throttle could not be closed; throttle-valve lever had become disconnected, due to pin working out of clevis end, causing stem to be caught in body of throttle and prevent throttle from closing. One injured.

December 31, 1923, locomotive 300, Providence, R. I. Broken handle on fire-door latch caused injury to engineer when he came in contact with it. One injured.

February 6, 1924, locomotive 1528, Needham Junction, Mass. Grate shaker bar slipped off, due to square on shaker post being worn round. One injured.

February 14, 1924, locomotive 489, Terryville, Conn. Stop pin on reverse-lever quadrant missing, which allowed lever to come in contact with back head of boiler, causing injury to fireman's hand. One injured.

February 18, 1924, locomotive 1614, Armory Station, Mass. Valve strip spring broken, causing reverse lever to throw engineer forward on deck of engine. One injured.

**February 18, 1924, locomotive 1574, Fort Point, Conn. Injured, due to engine riding hard, caused by defective condition of driving boxes. One injured.

February 27, 1924, locomotive 1362, Forest Hills, Mass. Steam heat pipe pulled away from turret, due to spanner nut being too large and threads worn. Two injured.

**March 7, 1924, locomotive 338, Simsbury, Conn. Shaker rod became disconnected at grates in ash pan, due to pin working out. One injured.

March 22, 1924, locomotive 237, South Boston, Mass. Crown-sheet failure, caused by overheating due to low water; right tank valve closed and disconnected, rendering injector inoperative. One injured.

**April 16, 1924, locomotive 2390, Oak Point, N. Y. Brake rigging dropped down under locomotive. One injured.

May 6, 1924, locomotive 238, Providence, R. I. Reverse lever unlatched and flew back; right go-ahead eccentric blade in contact with No. 2 driving wheel axle and reverse lever latch not a proper fit; teeth on quadrant badly worn and would not hold lever in position. One injured.

May 15, 1924, locomotive 275, Providence, R. I. Reverse lever came back suddenly while being moved to back position, account of counter balance spring not being properly adjusted. One injured.

*June 16, 1924, locomotive 2418, Springfield, Mass. Squirt hose blew off. One injured.

Thirty-six accidents, 1 killed, 40 injured.

NEW YORK, ONTARIO & WESTERN RAILWAY:

*March 5, 1924, locomotive 246, New Berlin Junction, N. Y. Reverse lever unlatched and swung forward, striking end of quadrant, account of lever latch guide being broken. One injured.

May 7, 1924, locomotive 69, Kvserike, N. Y. Main steam pipe in smoke box failed, due to being thin, causing back draft. One injured.
Two accidents, 2 injured.

NORFOLK & WESTERN RAILWAY:

July 17, 1923, locomotive 1305, Portsmouth, Ohio. Arch tube plug blew out. Two injured.

**August 19, 1923, locomotive 1304, Watts, W. Va. Grate shaker bar slipped off fulcrum lever, due to improper fit. One injured.

August 20, 1923, locomotive 1095, near Winchester, Ohio. Flue broke at butt weld 18 inches ahead of back flue sheet. One injured.

September 1, 1923, locomotive 759, Graham, Va. Boiler step gave way under weight of engineer, due to not being properly secured to bracket. One injured.

September 4, 1923, locomotive 932, Winston-Salem, N. C. Crown-sheet failure, due to low water; no contributory causes found. One killed.

September 13, 1923, locomotive 1395, Stultz Tank, Va. Grate shaker bar slipped off lever, due to improper fit. One injured.

**September 14, 1923, locomotive 206, Delton, Va. Shaker bar broke. One injured.

**September 18, 1923, locomotive 1065, Kinkinnick, Ohio. Bolt came out of reverse lever ratchet, causing engineers' arm to be caught between lever and pipes leading to independent brake valve. One injured.

October 12, 1923, locomotive 1070, Portsmouth, Ohio. Handle on air compressor starting valve came off, causing brakeman to fall to ground. One injured.

November 7, 1923, locomotive 452, Bristol, Va. Handle of steam valve to air compressor came off, causing engineer to fall from running board. One injured.

November 28, 1923, locomotive 88, near Winston-Salem, N. C. Head broke off eccentric crank arm bolt while locomotive was moving at approximately 25 miles per hour, was hurled back and struck fireman; bolt was too large for hole and bolt head had been heavily hammered in driving it in. One injured.

December 11, 1923, locomotive 1326, Coal Grove, Ohio. Bonnet of air compressor throttle valve worked off, permitting steam to strike engineer in face. One injured.

January 2, 1924, locomotive 1308, Henry, Va. Grate shaker bar slipped off fulcrum lever; safety pin inoperative; power grate shaker inoperative. One injured.

January 24, 1924, locomotive 1117, Poe, Va. Grease-cup bushing blew out, due to loose fit. One injured.

March 3, 1924, locomotive 1305, Dunlow, W. Va. Cover missing from sprocket idler wheel on stoker allowed fireman's foot to slip into opening. One injured.

*March 21, 1924, locomotive 728, Iaeger, W. Va. Reverse lever jumped out of quadrant, due to lever latch spring being broken. One injured.

June 18, 1924, locomotive 817, Bluefield, W. Va. Injector overflow pipe became disconnected at union. One injured.

Seventeen accidents, 1 killed, 17 injured.

NORFOLK SOUTHERN RAILROAD:

May 24, 1924, locomotive 226, near Suffolk Junction, N. C. Crown-sheet failure, caused by overheating due to low water; appurtenances removed prior to investigation, so that previous condition could not be determined. One injured.

One accident, 1 injured.

NORTHERN PACIFIC RAILWAY:

**October 19, 1923, locomotive 50, Orting, Wash. Tumbling shaft bracket bolt broke while engine was being reversed, causing injury to engineer. One injured.

**October 25, 1923, locomotive 1153, Seattle, Wash. Lubricator glass burst; cut by flying glass. One injured.

January 17, 1924, locomotive 2190, near Trout Creek, Mont. Ash pan wrench slipped off post, causing fireman to fall. One injured.

**February 21, 1924, locomotive 167, Gibbs, Idaho. Water glass and shield broke; cut by flying glass. One injured.

**April 3, 1924, locomotive 3004, Easton, Wash. Rivet blew out while being caulked under pressure, due to head on water side of sheet having broken off. One injured.

*April 24, 1924, locomotive 1522, near Hope, Idaho. Main rod strap broke, knocking out front cylinder head. One injured.

May 26, 1924, locomotive 173, Henning, Minn. Syphon pipe broke off at dome, due to pipe being corroded and wasted away to less than one-sixteenth inch in thickness. One injured.

June 20, 1924, locomotive 2208, near Perma, Mont. Reverse lever became unlatched due to defective quadrant, reverse lever latch, and spring; caught engineer's arm between lever and piping on boiler head, breaking it. One injured.

Eight accidents, 8 injured.

OREGON SHORT LINE RAILROAD:

*February 2, 1924, locomotive 4737, Pocatello, Idaho. Footboard brackets on rear of tender broke, permitting footboard, on which switchman was riding, to drop to track. One injured.

One accident, 1 injured.

OREGON-WASHINGTON RAILROAD & NAVIGATION Co.:

**September 21, 1923, locomotive (U. P.) 3622, La Grande, Oreg. Handle of stoker operating valve gave way, causing fireman to fall out of cab window. One injured.

*April 16, 1924, locomotive 2152, Nisqually, Wash. Spring hanger broke. One injured.

Two accidents, 2 injured.

PENNSYLVANIA RAILROAD SYSTEM:

**July 2, 1923, locomotive 1780, Blue Ball, Pa. Flue burst. One injured.

July 4, 1923, locomotive 8045, Wilberforce, Ohio. Cut by edge of cab apron which had worn sharp. One injured.

July 6, 1923, locomotive 9132, Cincinnati, Ohio. Squirt hose blew off, due to being insecurely applied. One injured.

July 8, 1923, locomotive 9956, Cleveland, Ohio. Shaker bar slipped off, account of being too large for grate lever. One injured.

July 12, 1923, locomotive 7004, Freedom, Pa. Crank pin broke, causing engine to be stripped and reverse lever to strike engineer. One injured.

July 13, 1923, locomotive 3198, Edge Moor, Del. Flue broke at old weld near front flue sheet. One injured.

July 16, 1923, locomotive 7608, Cleveland, Ohio. Piece welded onto shaker bar to form pocket broke off while fireman was shaking grates, due to defective weld. One injured.

July 16, 1923, locomotive 2932, Aspinwall, Pa. Flue broke near front flue sheet, due to being badly deteriorated. One injured.

July 18, 1923, locomotive 2408, Pittsburgh, Pa. Squirt hose parted at splice, due to being insecurely clamped. One injured.

July 21, 1923, locomotive 4182, Northumberland, Pa. Fire hose burst, account of weakened material. One injured.

July 23, 1923, locomotive 8576, Whitelick, Ind. Reverse shaft bearing was too tight, causing reverse lever to be hard to operate. One injured.

July 25, 1923, locomotive 8652, Wheeling Junction, W. Va. Reverse lever flew out of quadrant and struck engineer, due to bolt connecting eccentric rod to link working out and catching on main rod. One injured.

*July 25, 1923, locomotive 7309, Chicago, Ill. Squirt hose valve pulled off of pipe. One injured.

July 26, 1923, locomotive 4066, Lawrence Junction, Pa. Packing ring of piston valve broke and caught in valve port, causing reverse lever to fly back, striking engineer in face. One injured.

July 27, 1923, locomotive 7473, Peninsula, W. Va. Flue broke; overheated in welding and material wasted away. Three injured.

July 29, 1923, locomotive 8656, Scio, Ohio. Eccentric rod bolt worked loose and was caught by main rod and pulled out, causing reverse lever to become unlatched and fly backward, striking engineer. One injured.

July 29, 1923, locomotive 8853, near Logansport, Ind. Reverse lever unlatched and flew forward, throwing engineer into gangway. One injured.

July 31, 1923, locomotive 8597, Logansport, Ind. Insufficient clearance between reverse lever and air pipe to sanders. One injured.

August 4, 1923, locomotive 6011, Camden, N. J. Washout plug blew out when attempt was made to tighten under pressure, due to being improperly applied. One injured.

*August 6, 1923, locomotive 8127, Urbana, Ohio. Insufficient clearance between reverse lever and injector feed pipe. One injured.

August 6, 1923, locomotive 8015, Columbus, Ohio. Squirt hose pipe nipple blew out of feed pipe; threads on nipple badly corroded. One injured.

August 6, 1923, locomotive 9099, Mancelona, Mich. Crank pin collar and brass broke. One injured.

August 8, 1923, locomotive 1522, Philadelphia, Pa. Burned by hot water discharged from hole in squirt hose. One injured.

August 12, 1923, locomotive 7909, St. Paris, Ohio. Shaker bar slipped off lever, due to improper fit. One injured.

August 15, 1923, locomotive 1946, Phoenixville, Pa. Seat box turned over, due to not being securely fastened. One injured.

**August 16, 1923, locomotive 3388, Mattoon, Ill. (on detour). Scoop caught under shoveling sheet, account of sheet being raised due to rivets coming out. One injured.

August 19, 1923, locomotive 3467, Rahway, N. J. Eccentric rod broke, account of old flaw and metal crystallized. One injured.

August 21, 1923, locomotive 3103, Isehua, N. Y. Fireman's shovel caught on edge of patch on shovel sheet, three patched places on top of shovel sheet creating an uneven surface. One injured.

August 21, 1923, locomotive 4316, near Baden, Pa. Wrist pin worked out, due to studs securing retaining cage having broken off, causing main rod to fly around, striking injector steam pipe and cab; wrist pin and retaining cage in defective condition, although front end main rod brass was reported to have been rebored on day prior to accident, at which time the defective condition should have been discovered and proper repairs made. Three injured.

August 22, 1923, locomotive 7781, Alliance, Ohio. Driving-wheel tire broke. Two injured.

**August 27, 1923, locomotive 1368, South Oil City, Pa. Injector steam ram packing nut blew out. One injured.

August 29, 1923, locomotive 4375, Conemaugh, Pa. Lubricator drain cock broke off. One injured.

August 31, 1923, locomotive 515, Cresson, Pa. Coupling nut on lubricator steam pipe pulled away from valve, due to being too large; nut could be placed to one-sixteenth inch of seat without turning. One injured.

*September 1, 1923, locomotive 8575, Fort Wayne, Ind. Squirt hose became disconnected at union, due to threads on nipple securing it to branch pipe being worn. One injured.

September 2, 1923, locomotive 3850, Gray, Pa. Plug blew out of valve chamber; escaping steam broke 8 windows in coach on next track, injuring passenger. One injured.

September 4, 1923, locomotive 7749, Mingo Junction, Ohio. Bolt protruding through footboard caught on bridge member, causing footboard to be turned under and conductor to be thrown to ground and dragged. One injured.

September 4, 1923, locomotive 7025, Girard Junction, Pa. Plug in valve chamber blew out due to threads being stripped; escaping steam broke five window glasses in passing train and glass struck passengers. Three injured.

**September 10, 1923, locomotive 4516, Columbus, Ohio. Rivet blew out of throat sheet flange, due to head being broken off; condition indicated that head had been broken off for some time prior to the accident. One injured.

**September 12, 1923, locomotive 345, Newport, Pa. Nut lost off bolt which holds cab door slide, allowing bolt to slip out and rod to drop down, striking fireman on the head. One injured.

*September 16, 1923, locomotive 4307, Mansfield, Ohio. Burned, due to leak in squirt hose; leak occurred due to weakened condition of material in hose. One injured.

*September 18, 1923, locomotive 7451, Fort Wayne, Ind. Burned, due to leak in squirt hose; leak occurred due to weakened condition of material in hose. One injured.

**September 20, 1923, locomotive 8028, Frankfort, Ind. Curtain and pole fell, account of screws working out, striking fireman. One injured.

September 21, 1923, locomotive 2614, Trenton, N. J. Flue failed, caused by being pitted, wasted away, and thin, due to excessive prossering; locomotive returned to service three hours prior to accident after being in shop for boiler work, at which time 11 flues failed during hydrostatic test; remaining flues in condition similar to ones which failed. One injured.

September 21, 1923, locomotive 994, Renovo, Pa. Part of handhole plate gasket blew out. One injured.

September 21, 1923, locomotive 9434, Columbus, Ohio. Cab loose on boiler, on account of cab bracket loose. One injured.

September 23, 1923, locomotive 2398, Altoona, Pa. Extension to squirt hose pulled off at splice, account of not being properly secured. One injured.

September 25, 1923, locomotive 756, South Duquesne, Pa. Bolt worked out of cab apron hinge, permitting apron to drop down. One injured.

October 1, 1923, locomotive 4595, King of Prussia, Pa. Driving tire broke, due to improper constituent elements used in manufacture, causing derailment of locomotive, tender, and seven cars; locomotive new and had made only 297 miles. Two injured.

October 3, 1923, locomotive 4252, Limaville, Ohio. Section of water-glass gasket blew out. Two injured.

*October 4, 1923, locomotive 7957, Brecon, Ohio. Tender and combination car derailed, due to arch bar on rear tender truck breaking. One injured.

*October 7, 1923, locomotives 8250 and 8146, Mingo Junction, Ohio. Air hose uncoupled between locomotives which were double-heading. One injured.

October 9, 1923, locomotive 7942, Houston, Pa. Two flues broke off at front flue sheet, due to being pitted and corroded away. Two injured.

October 10, 1923, locomotive 3709, Portage, Pa. Handle of independent brake valve in release position, due to broken return spring, preventing the brakes from applying, causing a collision of a light locomotive with a work train. Three injured.

October 11, 1923, locomotive 4513, Bedford, Ohio. Air hose used to clean ash-pan blew off nipple, due to not being securely clamped. One injured.

October 11, 1923, locomotive 3116, Millville, N. J. Squirt hose pipe blew out of injector delivery pipe due to defective threads. One injured.

October 12, 1923, locomotive 4606, Shocks Mills, Pa. Squirt hose valve worked open. One injured.

**October 12, 1923, locomotive 2713, Barnesboro, Pa. Blower pipe leaking at connection to valve. One injured.

**October 14, 1923, locomotive 736, Northumberland, Pa. Lubricator condensing valve packing nut came off, due to not having been properly applied. One injured.

October 14, 1923, locomotive 8835, Rose Lake, Ill. Arch-tube washout cap blew off while attempting to tighten under pressure. Two injured.

**October 16, 1923, locomotive 8936, Columbus, Ohio. Fire door stuck and then opened suddenly, causing injury to fireman. One injured.

October 18, 1923, locomotive 2733, near West Monnessen, Pa. Bolts in transmission bar pad hanger worked out, causing reverse lever to fly backward, striking engineer. One injured.

October 18, 1923, locomotive 1107, Port Providence, Pa. Side-rod knuckle pin came out, account of nut working off, disengaging the left back side rod and allowing it to fly around. One injured.

October 21, 1923, locomotive 3748, Adams, N. J. Part of broken truck spring leaf dropped on ties and was thrown upward, striking employee. One injured.

October 25, 1923, locomotive 9551, near Decatur, Ind. Side rod broke at main crank pin, permitting it to fly around, striking cab; rod bushing fit had been built up by autogenous welding. One injured.

October 25, 1923, locomotive 5336, New Brunswick, N. J. Cellar key worked out of engine truck journal box and was thrown from locomotive, striking employee. One injured.

October 26, 1923, locomotive 1774, Honey Pot, Pa. Cab door dropped off runner, due to flange of roller having broken off, and while attempting to replace it fireman was injured. One injured.

October 28, 1923, locomotive 4232, near Kittanning Point, Pa. Defective squirt hose valve worked open. One injured.

October 31, 1923, locomotive 3854, Adams, N. J. Crank-pin collar bolt broke, due to old defect, which allowed collar to be thrown from locomotive, striking employee. One injured.

**November 3, 1923, locomotive 1635, Harrisburg, Pa. Brake rigging on tender came down. One injured.

*November 6, 1923, locomotive 4509, Canton, Ohio. Locomotive derailed, due to sharp flange. One injured.

*November 7, 1923, locomotive 2335, Ecorse, Mich. Reverse lever unlatched and struck engineer, due to nut working off latch bolt. One injured.

*November 10, 1923, locomotive 932, Brandon, Pa. Brake beam on tender dropped down, due to hanger breaking. One injured.

November 16, 1923, locomotive 1346, Altoona, Pa. Washout plug blew out, due to threads being worn and plug applied with threads crossed. One injured.

November 17, 1923, locomotive 8477, Jeffersonville, Ind. Brake rigging on rear tender truck came down. One injured.

November 19, 1923, locomotive 9421, Columbus, Ohio. Fireman fell into tank cistern, due to filling hole cover being missing; cover reported missing two days prior to accident and repairs not made. One injured.

November 21, 1923, locomotive 2227, Wyano, Pa. Eccentric strap and rod broke, due to defective material, causing reverse lever to unlatch and strike engineer. One injured.

November 24, 1923, locomotive 4335, New Florence, Pa. Union in injector delivery pipe separated; union nut was of improper construction and caught only two threads, which stripped. One injured.

November 26, 1923, locomotive 8513, Indianapolis, Ind. Injured while attempting to close defective ash-pan door. One injured.

November 26, 1923, locomotive 1765, Philadelphia, Pa. Grate shaker lever slipped off post, due to post being too short to extend through deck far enough to provide a proper fit for the lever. One injured.

**November 26, 1923, locomotive 749, Newark N. J. Brake rigging became disconnected and dropped to track, due to brake-beam shoe holder breaking. One injured.

November 28, 1923, locomotive 8068, Columbus, Ohio. Flue broke off at front flue sheet, due to being badly pitted and corroded. One injured.

November 29, 1923, locomotive 460, Philadelphia, Pa. Stud securing smoke box door clamp broke while nut was being tightened on it. One injured.

*December 2, 1923, locomotive 9530, Big Rapids, Mich. Broken tire. One injured.

December 4, 1923, locomotive 7400, Alliance, Ohio. Grate shaker lever disconnected, due to pin working out. One injured.

December 7, 1923, locomotive 2098, West Detroit, Mich. Crown sheet failed, caused by low water; view of water in water glass obstructed, account of water glass discolored by sediment at the bottom for about 1 inch; steam gauge destroyed at the time of accident and water glass and gauge cocks had been removed prior to this investigation; therefore the condition of these appurtenances could not be determined. One injured.

December 7, 1923, locomotive 9608, Big Rapids, Mich. Left injector delivery pipe blew off boiler check, due to spanner nut badly worn; union to boiler checks reported leaking on November 25, 26, 29, and December 7, and repairs indicated made. One injured.

December 8, 1923, locomotive 3801, Philadelphia, Pa. Passenger thrown down in Pullman car, due to sudden stop caused by defective distributing valve. One injured.

December 8, 1923, locomotive 3124, Morea, Pa. Flue failed near fire-box end, due to being badly pitted and deteriorated. One injured.

**December 12, 1923, locomotive 4497, Roxton, Pa. Main rod key worked out, permitting key bolt and rod brass to come out; flying pieces broke brake pipe, causing emergency application of brakes. Two injured.

December 15, 1923, locomotive 7523, Hamlet, Ind. Right back driving wheel tire broke into six pieces; tire showed five old cracks, ranging from five-eighths inch to 3½ inches deep where breaks occurred, and numerous other cracks and metal very poor and coarse grained. One injured.

**December 16, 1923, locomotive 3716, Derry, Pa. Stud securing cab bracket blew out, due to threads on stud and in sheet being defective. One injured.

*December 17, 1923, locomotive 9875, Mt. Vernon, Ohio. Brake-beam hanger on tender broke, allowing beam to drop and catch in guard rail, where it caught footboard on rear of tender as train passed over, bending same and resulting in injury to brakeman. One injured.

December 19, 1923, locomotive 2526, Granville, Pa. Crosshead broke, due to old fracture. One injured.

December 21, 1923, locomotive 9965, Freeport, Pa. Valve ring broke and caught in valve port, causing reverse lever to jump out of quadrant and fly back, striking engineer. One injured.

December 22, 1923, locomotive 347, Pittsburgh, Pa. Headlight step turned, allowing employee to fall; step secured to front end door ring by two bolts and bottom bolt was missing and top bolt was loose. One injured.

January 3, 1924, locomotive 1496, Philadelphia, Pa. Throttle rod fouled dry pipe hanger; throttle reported defective on December 25, 26, and 29. One injured.

January 3, 1924, locomotive 5118, Wyoming, Del. Left main frame broke through old weld, breaking guide yoke, guide, and valve stem on that side. One injured.

January 4, 1924, locomotive 405, Dillersville, Pa. Side rod broke, causing left side of engine to be stripped. One injured.

January 4, 1924, locomotive 5155, Parkton, Md. Steam heat valve bonnet blew out, due to threads on bonnet badly worn and distorted; bonnet would slip in valve to within three thirty-seconds inch of shoulder without turning. One injured.

January 9, 1924, locomotive 2584, Pittsburgh, Pa. Sand-box stud broke off, due to old defect. One injured.

January 9, 1924, locomotive 7146, Midland, Pa. Cab foot brace tore loose, due to not being properly secured to cab floor, causing engineer to fall while operating reverse gear. One injured.

January 17, 1924, locomotive 8598, Richmond, Ind. Control valve had been removed from sight-feed hydrostatic lubricator, and by order of the foreman the hole was closed by applying a blind gasket in the packing nut made from sheet lead one thirty-second inch thick and the locomotive then put in service; soon after pressure was restored in lubricator the blind gasket failed. One injured.

**January 18, 1924, locomotive 8946, Toledo, Ohio. Gasket in injector steam pipe joint blew out. One injured.

January 18, 1924, locomotive 3695, Baltimore, Md. Headlight generator steam turbine burst. One injured.

*January 18, 1924, locomotive 9071, Cambridge, Ohio. Caught hand between reverse lever and injector handle, due to insufficient clearance. One injured.

January 24, 1924, locomotive 7245, near Edenburg, Pa. Flue broke off at water side of front flue sheet, due to being thin, caused by corrosion and leakage; there was a groove cut in flue hole about one-sixteenth inch wide by a tool prior to flue being applied; leakage through flue where a hole had developed caused it to cut and wear thin where it broke. One killed.

January 24, 1924, locomotive 4171, Stelton, N. J. Brake-pin connecting pull rod to fulcrum arm lost out, allowing brake rod to drop in switch, causing derailment of passenger coach. One injured.

January 25, 1924, locomotive 5254, Baltimore, Md. Vertical handhold pulled away from cab at top fastening, due to nuts working off the two bolts securing it to cab. One injured.

**January 25, 1924, locomotive 1388, Altoona, Pa. Cab curtain was secured by a piece of wire when rolled up, which caused serious injury to fireman's eye when he came in contact with it. One injured.

January 28, 1924, locomotive 7166, Montdale, Ind. Tender truck derailed, due to tie bar thereon coming loose and catching on ties. One injured.

January 30, 1924, locomotive 397, near St. George, Pa. Derailment of passenger train; engine truck frame semirigid, due to broken truck springs; wheel of No. 1 pair of truck wheels was loose on axle, and after the accident was found at the opposite end of axle against the other wheel; excessive lateral motion in No. 2 pair of engine truck wheels. Three killed, 33 injured.

February 1, 1924, locomotive 8091, Newcomerstown, Ohio. Left main crank pin broke, due to old defect. One injured.

**February 4, 1924, locomotive 3679, Pittsburgh, Pa. Injured while operating reverse lever, due to throttle valve leaking. One injured.

February 5, 1924, locomotive 8196, near Tuscarawas, Ohio. Indicator plug blew out of valve chamber and locomotive continued in service with steam escaping; when meeting a passenger train the steam struck and broke the coach windows, causing injury to passengers; indicator plugs not properly tightened. Five injured.

**February 5, 1924, locomotive 7724, Mingo Junction, Ohio. Latch on back cab door, missing, allowed door to swing back and catch fireman's foot between it and apron. One injured.

February 9, 1924, locomotive 4086, Snyderstown, Pa. Injured, due to defective blower. One injured.

February 16, 1924, locomotive 2621, Buffalo, N. Y. Lubricator drain valve broke off, due to old flaw. One injured.

February 17, 1924, locomotive 972, Pittsburgh, Pa. Flue burst at front flue sheet, due to being thin, caused by corrosion and pitting; flue in poor condition and had been reported leaking several times just prior to accident. One injured.

February 20, 1924, locomotive 1326, South Elizabeth, N. J. Cab ventilator fell and struck fireman; ventilator had been secured in place with a piece of wire. One injured.

**February 21, 1924, locomotive 7715, near Pasadena, Ohio. Locomotive and eight cars derailed; right No. 4 driving wheel tire eleven-sixteenths inch larger in diameter than other tires; wrong kind of equalizer had been applied and did not properly distribute weight. One injured.

February 23, 1924, locomotive 5069, Baltimore, Md. Reverse lever jerked forward, due to valve strip springs missing, causing valve to be unbalanced; reverse lever reported defective on February 21 and 22 and proper repairs evidently not made. One injured.

**February 23, 1924, locomotive 332, Cartersburg, Ind. Injured, due to tender deck being lower than engine deck. One injured.

February 26, 1924, locomotive 3374, Newport, Pa. Driving-box cellar bolt worked out and was thrown from locomotive while running about 40 miles per hour, striking employee. One injured.

February 27, 1924, locomotive 7143, Cleveland, Ohio. Grate shaker bar slipped off fulcrum lever, due to piece having broken out of lever lug. One injured.

March 4, 1924, locomotive 2874, Leatherwood, Pa. Right front spring saddle broke, disturbing the equalization of weight of the locomotive and causing derailment of locomotive and first two cars in the train. One injured.

March 8, 1924, locomotive 2376, Weigh Scales, Pa. Crown-sheet failure, caused by overheating due to low water; no contributory causes found. One killed, 1 injured.

March 10, 1924, locomotive 8895, Marion, Ohio. Defective autogenously welded seam of patch in firebox side sheet failed for its entire length of 86 inches. Three injured.

**March 11, 1924, locomotive 2101, Pitscairn, Pa. Valve-rod extension stuck; while fireman was trying to move reverse lever the engineer struck and released valve rod, which caused reverse lever to fly forward, due to steam accumulating in cylinders caused by throttle leaking and cylinder cocks inoperative. One injured.

March 11, 1924, locomotive 3896, Wheeling, W. Va. Cab sliding door came out of guide bracket and caught fireman's foot, due to stop pin being missing. One injured.

*March 13, 1924, locomotive 8094, Royal Center, Ind. Bull ring in right valve broke. One injured.

March 20, 1924, locomotive 8256, Colliers, W. Va. Crosshead guide bar lug broke off. One injured.

March 21, 1924, locomotive 8847, between Reagan and Pike, Ind. Reverse lever jerked away from engineer and flew forward, catching his foot between lever and boiler backhead; valves were dry, due to leaky oil pipes and steam chest joints, and reverse lever was too short, thus not providing proper grip at top. One injured.

March 24, 1924, locomotive 7469, Parkers Landing, Pa. Automatic fire door suddenly closed, catching fireman's finger, due to door binding in guides and operating lever being defective. One injured.

March 26, 1924, locomotive 1520, Enola, Pa. Arch-tube plug blew out while being tightened under pressure, due to having been insecurely applied. One killed.

March 28, 1924, locomotive 8861, Brooklyn, Ind. Coupler on locomotive 3 inches above prescribed height and coupler on car below prescribed height caused coupling to fail to make while attempting to couple locomotive to car. One killed.

April 5, 1924 locomotive 6312, Turtle Point, Pa. Shaker bar slipped off post, due to improper fit. One injured.

**April 9, 1924, locomotive 8160, Columbus, Ohio. Grate shaker bar slipped off lever; depression or dent in grate shaker socket prevented it from going down on lever for sufficient depth. One injured.

April 10, 1924, locomotive 3898, Canton, Ohio. Cylinder cock valve stuck open, due to being broken, permitting steam to escape and so obscure the switchman's vision as to cause him to miss footboard. One injured.

April 17, 1924, locomotive 7635, near New Paris, Ohio. Drop seat in cab fell, account of seat leg slipping off metal sheet on edge of cab floor; metal sheet had no socket for end of seat leg or other provision to prevent it from slipping. One injured.

April 20, 1924, locomotive 8449, Logansport, Ind. Flue failed at safe end weld immediately inside of front flue sheet where it had been expanded into flue hole three-sixteenths inch larger than flue. One injured.

April 24, 1924, locomotive 3683, near Kittanning Point, Pa. Flue broke off near front flue sheet. One injured.

*April 24, 1924, locomotive 7496, Wolcottville, Ind. Knee injured on nail that protruded through seat box. One injured.

April 25, 1924, locomotive 1565, near Menlo Park, N. J. Flue failed at defective safe end weld. One injured.

April 27, 1924, locomotive 5343, Philadelphia, Pa. Top joint of left main steam pipe in smoke box became disconnected, due to studs which secured pipe in place breaking or working out. One injured.

**April 30, 1924, locomotive 1239, Philadelphia, Pa. Left main crank pin broke, due to old fracture, resulting in sudden stop of train and causing injury to a passenger. One injured.

April 30, 1924, locomotive (O. R. & W.) 9660, Merritt, Ohio. Locomotive, tender, and two coaches derailed and turned over; tender cistern not centrally located on frame; cistern not equipped with splash plates; rear tender truck of special design and not properly square with rails. Nine injured.

May 1, 1924, locomotive 8097, Greer, Pa. Reverse lever jerked out of engine-man's hand; two short springs under valve strips on both sides were broken. One injured.

May 1, 1924, locomotive 3549, near Langdon, Pa. Superheater flue collapsed and burst at back end, where it was wasted away by erosion to paper thickness; latch on hand operated fire door was defective and fire door was blown open when failure occurred while locomotive was running backward at approximated speed of 20 miles per hour. Two injured.

May 2, 1924, locomotive 2549, Emporium Junction, Pa. Sand-box operating lever broke off, causing engineer to fall from running board to ground. One injured.

May 3, 1924, locomotive 5336, Croyden, Pa. Struck by extension rod piston cover which fell off, struck ballast and rebounded; crosshead on extension piston rod worked off, due to stud working out, and knocked extension cover and casing off. One injured.

May 5, 1924, locomotive 8800, Seeleyville, Ind. Slipped on cab apron, account of apron worn smooth, and right end of apron was bowed upward. One injured.

May 5, 1924, locomotive 9563, Muskegon, Mich. Left injector throttle valve blew out of turret, account of being loose, due to worn threads; valve reported leaking on May 2 and 3. One injured.

May 9, 1924, locomotive 434, Philadelphia, Pa. Locomotive separated from car, account of low coupler on locomotive. One injured.

May 9, 1924, locomotive 4009, Renovo, Pa. Injector delivery pipe burst; pipe was expanded for almost entire length and at lower end, where failure occurred, the outside diameter was enlarged from $2\frac{1}{2}$ to $3\frac{1}{8}$ inches and thickness of pipe reduced to feather edge. One injured.

May 25, 1924, locomotive 7685, Fairview, Pa. Valve-rod key broke at old flaw; valve stem did not properly fit into valve rod and had been working, causing entire strain to be on valve-rod key. One injured.

May 28, 1924, locomotive 3443, Monmouth Junction, N. J. Eccentric rod came off pin, due to nut working off, and struck cylinder cock rigging, which caused operating lever in cab to fly back and strike engineer. One injured.

May 29, 1924, locomotive 5268, Philadelphia, Pa. Flue failed, due to defective safe end weld. Two injured.

May 30, 1924, locomotive 9436, Chicago, Ill. Gasket blew out of reflex type water glass, due to frame not having been properly tightened. One injured.

June 7, 1924, locomotive 1401, near Lowellville, Ohio. Main crank pin broke off, due to old fractures covering approximately two-thirds of cross-sectional area; tire of right back driver badly tread worn and running gear had been reported defective on June 2, 3, 5, 6, and 7. One injured.

June 9, 1924, locomotive 3712, near Blairsville, Pa. Locomotive, tender, and four cars derailed and locomotive and tender turned over and went down a high embankment; derailment due to lug broken off on gib at bottom end of back hanger on No. 1 driving spring, allowing hanger to work off gib and release weight on driving wheel on a 7° curve. One injured.

June 10, 1924, locomotive 7075, Canton, Ohio. Injector starting valve bonnet blew out, due to threads in valve body badly worn and opening out of round. One killed, 1 injured.

**June 12, 1924, locomotive 4340, Ehrenfeld, Pa. Squirt hose valve worked open; valve defective. One injured.

*June 17, 1924, locomotive 9833, Cincinnati, Ohio. Brake beam on rear of tender truck dropped down, due to broken hanger, causing derailment of tender. One injured.

June 19, 1924, locomotive 7272, Wrights, Pa. Shaker bar slipped off post, due to improper fit; both shaker bar fit and shaker posts were out of standard gauge. One injured.

June 21, 1924, locomotive 3536, Deans, N. J. Eccentric rod broke and struck cylinder cock rigging, causing the cylinder cock lever in cab to be forced back against fireman's leg. One injured.

June 24, 1924, locomotive 3058, Manayunk, Pa. Defective uncoupling lever bracket allowed lever to catch brakeman's hand. One injured.

One hundred and sixty-six accidents, 8 killed, 225 injured.

PERE MARQUETTE RAILWAY:

*July 4, 1923, locomotive 157, Berry, Mich. Squirt hose valve worked open. One injured.

*July 11, 1923, locomotive 1402, Detroit, Mich. Front equalizers broke, causing footboard to catch on crossing plank and turn under, causing injury to brakeman, who was riding on footboard. One injured.

*July 25, 1923, locomotive 1307, Wyoming, Mich. Grab iron pulled off from engine under weight of brakeman, causing him to be struck before he could clear engine. One injured.

*August 18, 1923, locomotive 726, Riverside, Mich. Side rods broke and in course of repairs piston blew out, striking brakeman. One injured.

*October 25, 1923, locomotive 385, Rougemere, Mich. Grate shaker bar slipped off lever, due to improper fit. One injured.

December 22, 1923, locomotive 332, Saginaw, Mich. Water glass and shield broke; shield panel was of ordinary window glass one-eighth inch in thickness. One injured.

**December 27, 1923, locomotive 464, Detroit, Mich. Water glass burst; cut by flying glass. One injured.

**February 6, 1924, locomotive 471, Flint, Mich. Grate shaker bar slipped off fulcrum lever. One injured.

March 18, 1924, locomotive 227, Lansing, Mich. Grate shaker bar slipped off fulcrum lever, due to improper fit. One injured.

*April 7, 1924, locomotive 365, Monroe, Mich. Insufficient clearance between reverse lever and back of cab. One injured.

Ten accidents, 10 injured.

PITTSBURGH & LAKE ERIE RAILROAD:

January 23, 1924, locomotive (Erie) 2535, Aliquippa, Pa. Explosion, due to crown-sheet failure, caused by low water; water glass was located to the left and back of throttle rigging, making it difficult for the engineer to see the water from his proper position in the cab, and the reflex type of glass was turned so that the assistant road foreman of engines, who was riding the locomotive, and the fireman could not see the water from the left side of the cab; gauge cocks were screwed into boiler back head and unreliable. Three killed.

*May 22, 1924, locomotive 9588, Beaver Falls, Pa. Engine derailed, account of wedge sticking on left front driver, which did not allow wheels to straighten after passing curve. One injured.

Two accidents, 3 killed, 1 injured.

PITTSBURGH & WEST VIRGINIA RAILWAY:

November 3, 1923, locomotive 200, New Alexandria, Ohio. Crown-sheet failure, caused by overheating due to low water; accumulation of mud and scale in water column and connections restricting flow of water. Two injured.

One accident, 2 injured.

READING COMPANY:

August 21, 1923, locomotive 1599, Jenkintown, Pa. Safe end of flue broke off at back flue sheet, due to being badly pitted. One injured.

**September 15, 1923, locomotive 772, Center Valley, Pa. Whistle rope broke; weather strip gave way when used as handhold in returning to cab after making necessary repairs. One injured.

**October 19, 1923, locomotive 260, Philadelphia, Pa. Grate shaker bar fouled step casting on back head, due to improper construction, forcing bar off of vertical grate extension rod and causing fireman to fall out of gangway while engine was running at estimated speed of 20 miles per hour. One injured.

**November 5, 1923, locomotive 282, Danville, Pa. Hand caught between reverse lever and feed valve, due to insufficient clearance. One injured.

**November 22, 1923, locomotive 1086, Newberry Junction, Pa. Tender cistern filling hole cover fell, due to defective latch. One injured.

**December 31, 1923, locomotive 263, Big Mine Run Junction, Pa. Crosshead broke in two, causing the piston to strike front cylinder head and break it into numerous pieces, one of which struck the conductor who was standing near; crosshead had old fractures covering approximately 75 per cent of its cross-sectional area. One injured.

January 30, 1924, locomotive 291, Newtown, Pa. Grate broke at back section while fireman was shaking the grates, causing him to lose his balance and fall out of gangway. One injured.

February 1, 1924, locomotive 1704, Skillman, N. J. Grate shaker bar slipped off post, due to improper fit; shaker bar was C. R. R. of N. J. equipment and not intended to fit on P. & R. locomotives. One injured.

February 19, 1924, locomotive 1535, Rupert, Pa. Drawbar and safety chains failed, permitting locomotive to separate from tender and fireman to fall to track between locomotive and tender; drawbar broke in three places and was badly crystallized at points of fracture. One injured.

February 25, 1924, locomotive 959, Gordon, Pa. Grate shaker lever slipped off grate, due to very loose fit. One injured.

April 15, 1924, locomotive 611, Coopersburg, Pa. Main rod key broke; injured while making repairs on line of road. One injured.

April 16, 1924, locomotive 1634, Philadelphia, Pa. Stoker trapdoor fell on fireman's foot, due to handle being missing. One injured.

June 7, 1924, locomotive 1720, Reading, Pa. Grease-cup plug and bushing blew out, striking fireman. One injured.

Thirteen accidents, 13 injured.

RICHMOND, FREDERICKSBURG & POTOMAC RAILROAD:

February 11, 1924, locomotive 40, Glen Allen, Va. Squirt hose pipe bushing broke off where screwed into injector delivery pipe. One injured.

One accident, 1 injured.

RIO GRANDE SOUTHERN RAILROAD:

**December 29, 1923, locomotive 10, Rico, Colo. Water glass burst; cut by flying glass. One injured.

One accident, 1 injured.

RUTLAND RAILROAD:

*July 23, 1923, locomotive 63, Manchester, Vt. While taking water engine moved off, account of leak in pipe to brake cylinder. One injured.

**December 18, 1923, locomotive 79, Proctor, Vt. Reverse lever unlatched and went into corner, catching engineer's finger between lever and boiler back-head. One injured.

Two accidents, 2 injured.

ST. LOUIS-SAN FRANCISCO RAILWAY:

July 14, 1923, locomotive 753, Leasburg, Mo. Squirt hose blew off nipple, due to being insecurely clamped. One injured.

August 9, 1923, locomotive 792, Pacific, Mo. Squirt hose blew off nipple, due to being insecurely clamped. One injured.

August 16, 1923, locomotive 1614, Blue Springs, Miss. Squirt hose valve worked open; no packing around valve stem, leaving stem very loose when valve was raised from seat. One injured.

August 20, 1923, locomotive 499, Blackwell, Okla. Fuel oil pipe became disconnected. One injured.

**September 1, 1923, locomotive 4024, Denison, Tex. Ash pan wrench slipped off operating shaft, due to being too large. One injured.

September 10, 1923, locomotive 529, near Coleman, Kans. Crown-sheet failure, caused by overheating due to low water; several appurtenances damaged to such extent that their previous condition could not be determined; initial rupture evidently occurred in autogenously welded seam between flue sheet and crown sheet which failed for its entire length. Three killed.

October 17, 1923, locomotive 1293, Lindenwood, Mo. Water column drain valve bonnet blew out when attempt was made to operate valve, account of union nut being loose. One injured.

**October 27, 1923, locomotive 3694, Harvard, Ark. Driving spring broke, causing engine to drop down and footboard to catch on rail. One injured.

November 29, 1923, locomotive 1305, near Gratiot, Mo. Shaker bar slipped off post, due to improper fit. One injured.

January 15, 1924, locomotive 1282, Fort Scott, Kans. Right side rod broke, striking tumbling shaft arm and breaking reach rod and jerked reverse lever out of quadrant, which struck engineer; excessive strain on rod due to No. 2 driving axle bent, snug fit of rod on pin and very little lost motion between driving box bearings and journals; quadrant was one-fourth inch lower at front end and reverse lever latch was reported defective on January 13 and January 15, just previous to accident and locomotive continued in service without repairs. One injured.

February 27, 1924, locomotive 158, near Short, Mo. Main driving axle broke through right journal at old flaw. One injured.

March 8, 1924, locomotive 635, Enid, Okla. Crown-sheet failure, caused by overheating due to low water; autogenously welded seams between crown sheet and flue and door sheets failed for their entire length. Locomotive was furnishing steam for stationary plant and had been left unattended for some time although oil fire was left burning. Two killed.

**April 25, 1924, locomotive 1225, Memphis, Tenn. Burned, due to loose handle on injector operating rod. One injured.

April 28, 1924, locomotive 4031, Francis, Okla. Shaker bar handle broke at top of pocket, due to old fracture and metal crystallized. One injured.

**May 29, 1924, locomotive 3684, Kansas City, Kans. Driving spring hanger broke through gib hole; roller bearing to driving spring found badly worn; spring rigging reported defective on May 10, 11, 12, 14, 17, 20, and 24. One injured.

June 7, 1924, locomotive 984, West Tulsa, Okla. Squirt hose burst. One injured.

June 28, 1924, locomotive 594, Springfield, Mo. Bottom water glass cock spindle blew out, due to very loose fit in bonnet packing nut. One injured.

Seventeen accidents, 5 killed, 15 injured.

ST. LOUIS SOUTHWESTERN RAILWAY:

**July 2, 1923, locomotive 759, near Sulphur Springs, Tex. Blow-off cock stuck open. One injured.

**August 1, 1923, locomotive 778, Texarkana, Ark. Step on engine came off, allowing brakeman to fall to ground. One injured.

October 3, 1923, locomotive 507, Pine Bluff, Ark. Left go-ahead eccentric sheared key and slipped eccentric, causing eccentric blade to break and reverse lever to fly back, striking engineer. One injured.

**December 10, 1923, locomotive 578, Herbert, Ark. Grate shaker bar slipped off fulcrum lever. One injured.

Four accidents, 4 injured.

SEABOARD AIR LINE RAILWAY:

**August 20, 1923, locomotive 1040, Athens, Ga. Grate shaker connecting rod pin worked out. One injured.

**August 28, 1923, locomotive 813, Sparr, Fla. Cab bracket stud blew out of boiler. One injured.

October 17, 1923, locomotive 773, Tallahassee, Fla. Spanner nut on right injector steam pipe burst. Two injured.

November 30, 1923, locomotive 393, near Auburn, Ga. Main rod broke, due to old flaw covering approximately 40 per cent of the cross-sectional area. One injured.

**February 3, 1924, locomotive 659, Tampa, Fla. Scalded by water which had accumulated in blow-off cock discharge pipe, due to blow-off cock leaking. One injured.

*March 26, 1924, locomotive 508, Knowles, S. C. Water keg fell from its position onto fireman's foot. One injured.

March 27, 1924, locomotive 780, Sanderson, Fla. Engine steps bent, causing fireman to miss footing and be dragged for about a car's length. One injured.

March 31, 1924, locomotive 405, Raleigh, N. C. Grate shaker bar slipped off fulcrum lever, due to improper fit; shaker bar socket indented. One injured.

*April 8, 1924, locomotive 497, Lemon Springs, N. C. Spring dropped down on frame of engine. One injured.

**May 8, 1924, locomotive 649, Lawtey, Fla. Bolt worked out of reverse lever, permitting lever to become unlatched and fly forward. One injured.

**June 4, 1924, locomotive 825, Dade City, Fla. Lubricator steam valve broke off at turret. One injured.

June 4, 1924, locomotive 332, Atlanta, Ga. Blow-off cock pipe became disconnected, due to threads in blow-off cock fitting and on pipe nipple badly worn and defective. One injured.

June 6, 1924, locomotive 760, Lilesville, N. C. Eccentric bolts worked loose, permitting eccentric to ride on key and break eccentric strap and blade which caused reverse lever to fly back, striking engineer. One injured.

Thirteen accidents, 14 injured.

SOUTHERN RAILWAY:

July 5, 1923, locomotive 569, near Red Clay, Ga. Engine truck equalizer hanger broke, due to old crack which extended approximately two-thirds of cross-sectional area in top opening. One injured.

July 7, 1923, locomotive 2005, Princeton, Ind. Bull's-eye lubricator glass burst; cut by flying glass. One injured.

July 7, 1923, locomotive 378, near Buntyn, Tenn. Reverse lever quadrant bracket stud blew out, account of threads entering boiler entirely corroded away. One injured.

July 9, 1923, locomotive 336, Sulphur Springs, N. C. Reverse lever slipped out of quadrant and caught engineer's foot between lever and foot brace, due to insufficient clearance. One injured.

July 9, 1923, locomotive 1234, Louisville, Ky. Reverse lever was binding on quadrant, making it difficult to operate, and while attempting to move it forward engineer was injured. One injured.

July 9, 1923, locomotive 790, Princeton, Ind. Reverse lever was very difficult to operate, due to counter balance spring being improperly adjusted, and while attempting to move lever engineer was injured. One injured.

July 15, 1923, locomotive 1700, Howell, Ga. Stud securing air cylinder to fire-door frame had worn threads, allowing operating lever to top section of pneumatic fire door to become disengaged and fire door to fall, crushing fireman's finger. One injured.

**July 30, 1923, locomotive 6905, Laurel, Miss. Shaker bar slipped off fulcrum lever, due to improper fit. One injured.

August 6, 1923, locomotive 581, Fletcher, N. C. Link block bolt fouled spring hanger, causing reverse lever to jerk engineer against throttle lever. One injured.

**August 8, 1923, locomotive 6201, Chattanooga, Tenn. Burned by hot water escaping through holes in defective squirt hose. One injured.

August 14, 1923, locomotive 6278, near Robbins, Tenn. Flue broke at safe end weld, account of being overheated in welding. Three injured.

**August 14, 1923, locomotive 786, Melrose, N. C. Reverse lever flew back, striking engineer. One injured.

August 22, 1923, locomotive (G. S. & F.) 8339, Sunsweet, Ga. Main rod strap broke, due to defective weld, stripping left side of engine and knocking two studs out of side sheet. One injured.

August 25, 1923, locomotive 1638, Columbia, S. C. Ash-pan blower disconnected, account of defective pipe coupling. One injured.

August 31, 1923, locomotive 1310, Austell, Ga. Manhole cover gave way, account of hinge pin missing. One injured.

October 4, 1923, locomotive 676, Brookfield, Tenn. Reverse lever jerked forward, catching engineer's foot between lever and boiler back head, due to insufficient clearance. One injured.

**October 14, 1923, locomotive 1279, Potomac, Va. Reverse lever unlatched and flew forward, due to latch spring too weak to hold lever in position. One injured.

October 17, 1923, locomotive 6594, Alabama City, Ala. Locomotive parted from tender, permitting fireman, who was standing on apron, to fall to track and be run over; drawbar pin in front end had been broken in two for some time and bottom portion missing, and when top portion worked out the safety bars gave way, due to being of insufficient strength; drawbar pin showed old fracture covering approximately two-thirds of cross-sectional area. No daily inspection reports on file since October 13, though the locomotive had been in service and monthly inspection and repair report dated October 14 showed drawbar removed and inspected September 16, and draft gear and drawgear in "good" condition. One killed.

October 21, 1923, locomotive 1004, Winston-Salem, N. C. Injector overflow pipe was broken at elbow, allowing hot water to escape at rupture, scalding employee. One injured.

**November 3, 1923, locomotive 1205, Dalton, Ga. Insufficient clearance between reverse lever and side of cab. One injured.

November 3, 1923, locomotive 6581, near Fort Payne, Ala. Windshield at reverse lever quadrant came loose and struck engineer, due to nut coming off bolt. One injured.

**November 8, 1923, locomotive 6458, High Bridge, Ky. Locomotive and four cars derailed, account of broken axle on front tank truck. Three injured.

November 13, 1923, locomotive 6029, Oakdale, Tenn. Blow-off cock discharge pipe blew off, due to threads being crossed and stripped; pipe about 5 feet long and not clamped to secure it in place. One injured.

**November 17, 1923, locomotive 4563, Finley, Ala. Rail washer pipe gave away, due to old fracture, allowing steam to strike employee. One injured.

November 19, 1923, locomotive 1907, Empire, Ga. Union in ash-pan blower pipe became disconnected. One injured.

**November 23, 1923, locomotive 1580, Brunswick, Ga. Driving spring saddle broke, due to old fracture. One injured.

November 27, 1923, locomotive 607, Coleman, N. C. Pin in driving spring hanger broke, causing pilot to drop, throwing flagman who was riding on pilot off. One injured.

**November 28, 1923, locomotive 571, Ridgeway, S. C. Locomotive derailed and turned over, caused by brake rigging coming down. Two injured.

November 30, 1923, locomotive 1884, Birmingham, Ala. Tank hose burst. One injured.

December 15, 1923, locomotive 1710, National Stock Yards, Ill. Clevis pin came out of pin lifter chain when switchman attempted to operate uncoupling lever at rear of tender, causing him to fall from footboard; cotter key missing from clevis. One injured.

**December 23, 1923, locomotive 947, Bankhead, Ala. Grate shaker bar slipped off fulcrum lever. One injured.

**January 18, 1924, locomotive 641, Princeton, Ind. Injured while attempting to tighten loose plug in blower connection at smoke box. One injured.

January 18, 1924, locomotive 6599, Fort Payne, Ala. Defective brake rod broke, breaking brake beam; injured while making repairs while on line of road. One injured.

**January 21, 1924, locomotive 719, near Plainville, Ga. Reverse lever flew forward and caught engineer's foot between lever and boiler back head, due to stop being improperly located. One injured.

February 1, 1924, locomotive 829, Old Fort, N. C. Locomotive moved a head, caused by leaky throttle valve, lost motion in throttle rigging and fulcrum point of throttle lever improperly located, making it difficult to close throttle tight. One injured.

February 12, 1924, locomotive 4555, Lincoln, Ala. Main rod broke through strap hole at front end, due to old flaw. One injured.

February 19, 1924, locomotive 1732, Spencer, N. C. Spring hanger pin worked out, causing spring to drop down and reverse lever to fly back, striking engineer; key was reported missing from hanger pin on February 9 and 18 and repairs evidently not made. One injured.

March 7, 1924, locomotive 3852, Columbiana, Ala. Tender truck axle broke, due to old fracture, causing tender and one coach to turn over and two other coaches to derail. Two injured.

March 9, 1924, locomotive 403, Brevard, N. C. Grab iron at side of cab door pulled loose at top, due to bolt working out, causing fireman to fall to ground. One injured.

**March 15, 1924, locomotive 4591, Charlotte, N. C. Ash-pan blower pipe disconnected under union, due to nut on union elbow working loose, allowing steam to be thrown outside of pan. One injured.

March 17, 1924, locomotive 350, Hammond, S. C. Union in branch pipe failed, due to spanner nut being stretched until too large for fit on threads on stop valve. One injured.

March 21, 1924, locomotive 5029, Spencer, N. C. Muffler casing of safety valve blew off, due to set screw missing. One injured.

March 24, 1924, locomotive 590, Ooltewah, Tenn. Grate shaker bar slipped off post, due to improper fit. One injured.

**March 26, 1924, locomotive 1362, Columbia, S. C. Pilot step broke off through bracket at top bend, causing hostler helper to fall. One injured.

**April 4, 1924, locomotive 4558, Republic, Ala. Right boiler check stuck open; boiler checks reported on March 26, 28, and April 1. One injured.

**April 4, 1924, locomotive 1027, Youngstown, Ky. Hand caught between uncoupling lever on rear of tender and car, due to lever and lift chain being too long. One injured.

**April 12, 1924, locomotive 507, Louisville, Ky. Top part of blow-off cock broke off at nipple connection while attempting to loosen union. One injured.

April 17, 1924, locomotive 552, near Scott Field, Ill. Reverse lever flew forward violently, due to broken counterbalance spring. One injured.

April 25, 1924, locomotive 4543, Cooks Springs, Ala. Reverse lever unlatched and flew ahead, catching conductor's foot between lever and boiler back head. One injured.

**May 17, 1924, locomotive 8335, Cordele, Ga. Shaker bar slipped off post, due to improper fit. One injured.

May 28, 1924, locomotive 98, Chickasaw, Ala. Left intermediate driving brake rod broke, allowing driving brake cylinder piston to travel full stroke; a bolt in jaw of piston rod struck handle on ash-pan blower valve, breaking valve off at boiler. One injured.

**May 29, 1924, locomotive 748, Germantown, Ill. Fireman stepped on chain lying on top of tender near filling hole, which caused him to lose his balance and fall to ground. One injured.

**June 5, 1924, locomotive 4512, Knoxville, Tenn. Spanner nut at connection of delivery pipe to check valve broke while being tightened under pressure with hammer and set; nut badly mutilated and crystallized. One injured.

**June 15, 1924, locomotive 1738, Columbia, S. C. Height of footboard above the rail below the minimum requirement, causing employee's foot to be caught. One injured.

June 21, 1924, locomotive 865, Charlotte, N. C. Fire hose burst. One injured.

**June 22, 1924, locomotive 1741, Birmingham, Ala. Pin through handhold and column worked out, causing injury to switchman's hand; pin was only slightly riveted on front end and worked back into the hole, causing the other end to extend away from column. One injured.

Fifty-six accidents, 1 killed, 61 injured.

SOUTHERN PACIFIC—EAST:

October 2, 1923, locomotive (H. & T. C.) 25, Corsicana, Tex. Uncoupling lever became disconnected, due to cotter key working out of clevis, causing switchman to fall. One injured.

*January 3, 1924, locomotive (H. & T. C.) 701, Giddings, Tex. Caught hand between throttle lever and gauge cock, due to insufficient clearance. One injured.

February 28, 1924, locomotive (G. H. & S. A.) 981, near Noonan, Tex. Crown-sheet failure, caused by overheating due to low water; gauge cocks applied directly in boiler back head. Three killed.

**June 15, 1924, locomotive (G. H. & S. A.) 61, New Orleans, La. Throttle valve stem broke off, due to old fracture at bottom of threads. One injured.

Four accidents, 3 killed, 3 injured.

SOUTHERN PACIFIC—WEST:

**July 7, 1923, locomotive 17, Tramway, Calif. Tender derailed, due to axle on rear pair of wheels breaking, due to crystallization. One injured.

*July 9, 1923, locomotive 1137, Los Angeles, Calif. Footboard turned under, due to protruding bolt catching on pavement. One injured.

July 15, 1923, locomotive 2600, Los Angeles, Calif. Bonnet of blow-down valve on top of steam dome blew off, due to threads on valve bonnet nut badly worn. One injured.

**July 26, 1923, locomotive 2533, Talent, Oreg. Eccentric blade broke, due to old flaw extending over approximately two-thirds of cross-sectional area. One injured.

**August 18, 1923, locomotive 2795, Lordsburg, N. Mex. Blow-off cock operating lever gave way, due to pin coming out while fireman was using it, causing him to fall from running board. One injured.

September 24, 1923, locomotive 2951, Mayo, Oreg. Drawbar between engine and tender broke. One injured.

September 28, 1923, locomotive 3259, Yuma, Ariz. Blow down pipe blew out of dome, due to being improperly applied. One injured.

**October 18, 1923, locomotive 1458, Hercules, Calif. Cylinder head was knocked out, account of nut working off piston rod; piston rod not properly riveted. One injured.

October 29, 1923, locomotive 2540, Carlin, Nev. Scalded by water squirting from blow-off cock. One injured.

*November 30, 1923, locomotive 2520, Vivian, Nev. Strap holding coupler carrier iron on rear of tender broke, allowing coupler to drop down and part train. Three injured.

February 21, 1924, locomotive 1261, Los Angeles, Calif. Steam pipe to head-light dynamo pulled out of collar at fountain connection inside of cab; collar too large for proper fit on steam pipe. One injured.

March 21, 1924, locomotive (C. P.) 3248, Los Angeles, Calif. Auxiliary dome casing blew off, due to safety valve nipples being too short, which permitted steam to strike casing when valves opened. One injured.

April 11, 1924, locomotive (C. N.) 3646, Loma Linda, Calif. Main steam pipe in smoke box failed, causing back draft. One injured.

**April 12, 1924, locomotive 2683, Los Angeles, Calif. Foot caught between cab apron and cab floor, due to insufficient clearance. One injured.

April 17, 1924, locomotive 2630, Santa Barbara, Calif. Bonnet of injector heater cock blew out. One injured.

June 18, 1924, locomotive 4015, Sparks, Nev. Bonnet blew out of air pump throttle valve. One injured.

Sixteen accidents, 18 injured.

SPOKANE, PORTLAND & SEATTLE RAILWAY:

October 20, 1923, locomotive 107, Hover, Wash. Oil pipe to air compressor broke off at lubricator. One injured.

One accident, 1 injured.

TENNESSEE CENTRAL RAILWAY:

**January 1, 1924, locomotive 501, Obey City, Tenn. Flue broke off at safe end weld, due to improper welding. One injured.

One accident, 1 injured.

TERMINAL RAILROAD ASSOCIATION OF ST. LOUIS:

May 11, 1924, locomotive 9, St. Louis, Mo. Lubricator drain valve broke off while being tightened under pressure. One injured.

One accident, 1 injured.

TEXAS & PACIFIC RAILWAY:

October 3, 1923, locomotive 535, Santo, Tex. Blow-off valve yoke was broken, causing valve to leak; while attempting to stop leakage by screwing in another valve pressure built up and blew valve out. One injured.

TRINITY & BRAZOS VALLEY RAILWAY:

*October 30, 1923, locomotive 407, Gulf Coast, Tex. Throttle stuck open, account of being improperly adjusted, and engine could not be shut off in time to avoid collision. Two injured.

One accident, 2 injured.

UNION PACIFIC RAILROAD:

August 15, 1923, locomotive 5000, near Knight, Wyo. Crown-sheet failure, caused by overheating due to low water; threads on crown stays and in sheet which gave way were defective and crown stay heads under size; fusible plug inoperative, due to outlet being stopped up with hard scale, although reported to have been cleaned five days previous; gauge cock dripper stopped up; gauge cocks applied directly in boiler back head. One injured.

September 1, 1923, locomotive 3601, near Buford, Wyo. Superheater flue failed at safe end weld, due to being overheated in welding. Two injured.

**February 16, 1924, locomotive 245, Detroit, Kans. Reverse lever stuck, due to link block being too tight. One injured.

Three accidents, 4 injured.

WICKSBURG, SHREVEPORT & PACIFIC RAILWAY:

May 29, 1924, locomotive 380, Tremont, La. Blow-off cock stuck open; extension handle to blow-off cock of improper design, binding on edge of slot in running board and air pipe underneath and holding the blow-off cock valve open. One injured.

One accident, 1 injured.

VIRGINIAN RAILWAY:

*February 18, 1924, locomotive 431, Oak Hill, W. Va. Lubricator glass blew out. One injured.

One accident, 1 injured.

WABASH RAILWAY:

July 26, 1923, locomotive 2506, Gibson City, Ill. Injector steam pipe spanner nut broke, due to having been badly mutilated by use of set or chisel in tightening. One injured.

August 24, 1923, locomotive 587, Detroit, Mich. Squirt hose blew off, account of defective coupling in cab. One injured.

**August 28, 1923, locomotive 2432, Ivesdale, Ill. Grate lever broke while fireman was shaking grates, causing him to fall against seat box. One injured.

**September 26, 1923, locomotive 2507, Decatur, Ill. Trap door on engine deck had a loose hinge, causing door to slide over and drop down. One injured.

*October 9, 1923, locomotive 853, Barry, Ill. Injector throttle opened suddenly while squirt hose valve was open. One injured.

*October 12, 1923, locomotive 597, Decatur, Ill. Reverse lever unlatched and went into extreme position, catching engineer between lever and seat box. One injured.

**October 19, 1923, locomotive 2310, near Hannibal, Mo. Coal gate swung around and fireman struck elbow against it, due to no provision having been made to hold gate in place. One injured.

November 14, 1923, locomotive 2306, Moberly, Mo. Tender deck 2 inches lower than engine deck and cab apron worn smooth caused engineer to fall. One injured.

*November 18, 1923, locomotives 2456, Bement, Ill. Blowoff cock leaking around stem. One injured.

*November 18, 1923, locomotive 2517, near Litchfield, Ill. Grate rod became disconnected in ash pan, due to pin losing out. One injured.

*November 20, 1923, locomotive 425, Carthage, Ill. Left go-ahead eccentric blade came down and left valve broke, causing reverse lever to go in back motion. One injured.

December 20, 1923, locomotive 2011, near Clark, Mo. Main driving axle broke off flush with hub liner, due to old fracture covering approximately 55 per cent of its cross-sectional area; bore of side rod bearing exceeded diameter of crank pin thirteen sixty-fourths inch and diameter of left main driving wheel tire exceeded diameter of right main tire one-fourth inch; wheel center cracked in two places. One injured.

December 31, 1923, locomotive 848, Hannibal, Mo. Hand rail on extension running board at side of smoke arch slipped in brackets, account of not being fastened, allowing engineer to fall to ground. One injured.

January 13, 1924, locomotive 147, Salisbury, Mo. Running board bracket stud blew out of wrapper sheet, due to threads on stud badly corroded and stud not extending into sheet full thickness of sheet. Two injured.

**January 21, 1924, locomotive 675, between Poag and Mitchell, Ill. Reverse lever unlatched and went into forward corner, catching engineer's arm; thread nut of link pin broke, allowing link pin to work out and strike valve gear frame, which threw strain on reversing gear. One injured.

**February 7, 1924, locomotive 2316, Bayliss, Ill. Boiler check leaking caused accumulation of hot water in squirt pipe, which gushed out when fireman removed bonnet from pipe for cleaning. One injured.

**February 24, 1924, locomotive 666, Attica, Ind. Drain cock in oil pipe worked open. One injured.

**April 1, 1924, locomotive 2440, Montpelier, Ohio. Water glass and shield broke. One injured.

May 16, 1924, locomotive 123, Pontiac, Ill. Ash-pan lever slipped off bar attached to slides, due to improper fit. One injured.

May 18, 1924, locomotive 2212, Attica, Ind. Grate shaker bar slipped off fulcrum lever, due to improper fit. One injured.

*June 20, 1924, locomotive 556, Delray, Mich. Plug blew out of blow-off pipe. One injured.

Twenty-one accidents, 22 injured.

WESTERN MARYLAND RAILWAY:

July 3, 1923, locomotive 951, Hagerstown, Md. Injector steam pipe collar broke, due to old fracture; collar was not properly brazed; this joint reported

leaking on June 17, and if proper inspection and repairs had been made this accident should have been avoided. One injured.

September 15, 1923, locomotive 924, Hagerstown, Md. Rod connecting fulcrum lever of power reverse gear to rotary valve became disconnected, due to nut working off, rendering gear inoperative; while attempting to make repairs gear suddenly moved catching fireman's foot. One injured.

*December 22, 1923, locomotive 917, Sabillasville, Md. Engine parted from train, due to coupler on rear of tender being too low, caused by carrier iron being bent. One injured.

May 6, 1924, locomotive 104, Hagerstown, Md. Boiler check cap blew out while attempting to tighten under pressure; threads on boiler check cap were too small to properly engage threads in check cage and cap could be inserted to within one-eighth inch of shoulder without turning. One injured.

May 28, 1924, locomotive 322, Ridgley, W. Va. Caught foot between cab apron and lug on tender, due to insufficient clearance. One injured.

Five accidents, 5 injured.

WESTERN PACIFIC RAILROAD:

**May 24, 1924, locomotive 9, between Luke and Sonar, Nev. Crown-sheet failure, caused by overheating due to low water; no contributory causes found. One injured.

One accident, 1 injured.

WHEELING & LAKE ERIE RAILWAY:

**August 28, 1923, locomotive 6065, Pryor, Ohio. Throttle came open, due to defective latch and spring, allowing locomotive to move off. One injured.

September 20, 1923, locomotive 8410, Harmon, Ohio. Locomotive parted from train, due to low coupler on rear of tender, causing emergency application of brakes. One injured.

*September 20, 1923, locomotive 2706, Cleveland, Ohio. Reverse lever unlatched, due to quadrant working loose. One injured.

January 19, 1924, locomotive 6055, Smithville, Ohio. Engine parted from train, due to defective coupler on rear of tender; coupler worn beyond gauge limit, knuckle pin hole badly worn, and knuckle lock sheared. Two injured.

March 13, 1924, locomotive 4302, Brewster, Ohio. Broken and loose stay bolt blew out while being caulked under pressure; a total of 29 stay bolts were either broken or had telltale holes plugged, yet monthly inspection and repair report filed under oath four days previous to accident showed stay bolts to be in "good" condition. Two injured.

May 9, 1924, locomotive 4310, near Adena, Ohio. Crown sheet failed, caused by overheating due to low water; eight broken radial stays; defective welds in side sheet seams; top water glass cock found partly closed and shut-off valve on left boiler check partly shut off. One killed, 7 injured.

Six accidents, 1 killed, 14 injured.

WICHITA FALLS, RANGER & FORT WORTH RAILROAD:

June 9, 1924, locomotive 205, Dublin, Tex. Crown-sheet failure, caused by overheating due to low water. One killed, 1 injured.

One accident, 1 killed, 1 injured.

WICHITA NORTHWESTERN RAILWAY:

June 2, 1924, locomotive 6, Byers, Kans. Crown-sheet failure, caused by overheating due to low water. One killed, 1 injured.

One accident, 1 killed, 1 injured.

TAZOO & MISSISSIPPI VALLEY RAILROAD:

September 23, 1923, locomotive (I. C.) 676, Gwin, Miss. Washout plug blew out while attempting to tighten under pressure; threads on plug badly worn and plug improperly applied. Two injured.

*November 10, 1923, locomotive 957, Cleveland, Miss. Main rod broke, due to progressive fracture. One injured.

Two accidents, 3 injured.

Table showing number of locomotives inspected,

Parts defective, inoperative or missing, or in violation of rules	Ada & Atoka Route	Akron & Barberton Belt	Akron, Canton & Youngstown	Alabama & Vicksburg	Alabama, Tennessee & Northern	Alquippa & Southern	Ann Arbor	Arizona Eastern	Atchison, Topeka & Santa Fe
1 Air compressors.....							2	1	17
2 Arch tubes.....	1						5		4
3 Ash pans or mechanism.....									1
4 Axles.....							2		20
5 Blow-off cocks.....			2				4		6
6 Boiler checks.....	2			1			7	2	48
7 Boiler shell.....							50		113
8 Brake equipment.....	2			1			5		32
9 Cabs or cab windows.....							4	5	27
10 Cab aprons or decks.....					1		8		8
11 Cab cards.....							2	1	12
12 Coupling or uncoupling devices.....							8	2	56
13 Crossheads, guides, pistons, or piston rods.....							2		7
14 Crown bolts.....	5		1	4			6		143
15 Cylinders, saddles, or steam chests.....							4		45
16 Cylinder cocks or rigging.....							1		8
17 Domes or dome caps.....			4				10	1	13
18 Draft gear.....	5				1		13	1	34
19 Draw gear.....	2						13		42
20 Driving boxes, shoes, wedges, pedestals, or braces.....	2						10		7
21 Fire-box sheets.....	1						4		16
22 Flues.....							5		53
23 Frames, tailpieces or braces, locomotive.....	2								11
24 Frames, tender.....							2		9
25 Gauges or gauge fittings, air.....					2		14	1	28
26 Gauges or gauge fittings, steam.....							23	1	23
27 Gauge cocks.....			1				9		4
28 Grate shakers.....				1			27	4	47
29 Handholds.....									5
30 Injectors, inoperative.....			4				40		186
31 Injectors and connections.....					1		6	8	446
32 Inspections or tests not made as required.....	3						7		16
33 Lateral motion.....	7								
34 Lights, cab or classification.....							1		13
35 Lights, headlights.....							14		3
36 Lubricator or shields.....				4			18	1	28
37 Mud rings.....							18		77
38 Packing nuts.....				2			2		14
39 Packing, piston rod, and valve stem.....	1						9		38
40 Pilot or pilot beams.....	1					1			21
41 Plugs or studs.....	1						12	1	87
42 Reversing gear.....							2	1	1
43 Rods, main or side, crank pins, or collars.....	4			3			2		56
44 Safety valves.....							28		92
45 Sanders.....	1			1			6	2	11
46 Springs or spring rigging.....							10	1	12
47 Squirt hose.....			1				7		60
48 Staybolts.....				2			55	11	58
49 Staybolts, broken.....				7			5		23
50 Steam pipes.....							24		36
51 Steam valves.....						1	16	2	7
52 Steps.....			2				7		6
53 Tanks or tank valves.....	1						17		37
54 Telltale holes.....							19	1	46
55 Throttle or throttle rigging.....				1	1		26		72
56 Trucks, engine or trailing.....							7		27
57 Trucks, tender.....	20						21	1	82
58 Valve motion.....							20		58
59 Washout plugs.....	1		2				40	3	63
60 Water bar or combustion flues.....									
61 Water glass, fittings or shield.....	1			1	2				
62 Wheels.....			1						
63 Miscellaneous—Signal appliances, badge plates, brakes (band).....							6		14
Number of defects.....	61	18	29	22			691	49	2,646
Locomotives reported.....	10	10	24	73	18	13	61	41	2,162
Locomotives inspected.....	7	7	38	14	13	87	40	23	2,474
Locomotives defective.....	7	4	13	7	23	4	76	23	895
Percentage of inspected found defective.....	100	57	34	50	87	37	125	53	36
Locomotives ordered out of service.....			2	1			26	4	38

found defective, and ordered from service, etc.

	Atlanta & West Point & Western Ry. of Ala.	Atlanta, Birmingham & Atlantic	Atlantic Coast Line	Baltimore & Ohio	Bangor & Aroostook	Ret Ry. of Chicago	Benwood & Wheeling Connecting	Bessemer & Lake Erie	Birmingham Slag	Birmingham South-ern	Boston & Albany	Boston & Maine	Brooklyn Eastern District Terminal	Buffalo & Susque-hanna	Buffalo Creek	Buffalo, Rochester & Pittsburgh	Cambria & Indiana	Canadian National	Canadian Pacific
			6	52		2						9				3		1	1
			6	4								1							2
			38	10								21							3
	3	1	17	25		1					8	3						4	5
		6	3	62		1					7	8						6	6
		5	14	58		1	14		1			21				3		6	7
		12	48	292		2	26	3	2		8	48		1		22		13	8
		9	11	52		2					5	34						16	9
		1	9	40		3					1	30				5		10	10
		1	3	13		2	1				8	60				2		9	2
		2	14	1		3					13	13						2	12
		13	12	69		3	8	2			25	31				17		2	13
		7	3	26		1						1				3		1	14
		12	193	1		11		3				8				13		9	15
		4	2	74		13					1	1						2	16
		2	32	1		1		1				6				2		3	17
		4	21	60		12					12	15						8	18
		19	73	101		2	13	1			4	65				2		4	19
		23	12	139		9					2	32				4		6	20
		7	5	44		6	9	3			1	56				4		4	1
		2	15	5		3	5				2	25				3		3	21
		18	42	81		1		1			6	6				6		6	22
		2	19			1		1			4	4				4		4	23
		4	1	23		1					3	3				3		6	24
		3	7	62		1					1	15		5		12		5	25
		6	43	121		1	6				8	55		1		16		8	1
		2	63	27		2					10	10		3		1		1	26
		13	13	112		2	2				27	27		6		8		12	28
			2	19								4				4			29
		4	1	23		1					1	3				3		6	30
		3	7	62		1					1	15				12		5	26
		6	43	121		1	6				8	55		1		16		8	1
		2	63	27		2					10	10		3		1		1	27
		13	13	112		2	2				2	27		6		8		12	28
			2	19								4				4			29
		41	88	355		7	9	7			27	85		1		16		33	3
		7	191	290		3	38				41	119				24		9	1
		4	3	41		2	1				1	4				2		9	32
			2																33
		1	7	25		2	4					3				1			34
		2	12	12		1					1	5				4		8	35
		20	40	3		6		1			18	42		1		4		13	36
		26	33	52		7		10			8	9				8		9	37
		10	6	99		17	3	3			1	13				2		9	38
		2	11	24		3					1	16						2	39
		2	13	34		1					1	11				1		2	40
		2	9	64		4					1	5				1		2	41
		25	14	151		32		2			22	133		1		12		3	42
			2	4		1						1				1			43
		1	2	38		1		2				5				1		3	44
		14	35	319		1	6	2	4		19	121				15		21	2
		6	3	21		1						9				9		6	1
		3	12	47		7		2			1	3				2		3	46
	4	19	55	119		9	46	9			29	44		2		2		20	2
		7	18	82		5		2			8	24				9		3	48
		3	16	33		5					5	8				1		3	50
		15	15	108		5	2				2	48				5		14	2
		7	43	123		2	6	1	1		17	61		1		3		12	53
		1	2	25		2		1			3	8						7	1
		8	12	98		3		4			2	25				6		28	55
		1	30	90		2	1	2			6	57				10		2	56
		1	28	202		3					4	25				7		5	2
			1	31		2		2			3	23				3		2	57
		6	47	77		1	3				9	14						7	58
			2																60
		15	46	125		3	10		1		21	72		7		19		15	61
		10	15	77		5	15		9		1	24		1		5		9	62
			9	40					1			6						7	63
		10	455	1,535	4,658	79	377	27	66										

Table showing number of locomotives inspected,

Parts defective, inoperative or missing, or in violation of rules		Carnegie Steel	Carolina, Clinchfield & Ohio	Central New England	Central of Georgia	Central Railroad of New Jersey	Central Vermont	Charleston & Western Carolina	Charlotte Harbor & Northern
1	Air compressors		2		4	4	2	1	
2	Arch tubes					1	1		
3	Ash pans or mechanism							1	
4	Axles								
5	Blow-off cocks		1		5	16			
6	Boiler checks		7		4	23		1	
7	Boiler shell		2	1	9	54	4		
8	Brake equipment		13		13	46	2	4	
9	Cabs or cab windows			1	5	7	2	1	
10	Cab aprons or decks		3	2	1	8	3		
11	Cab cards		4		7	5	1		
12	Coupling or uncoupling devices		4		2	2			
13	Crossheads, guides, pistons, or piston rods		3	1	14	37	1	2	
14	Crown bolts				1	3			
15	Cylinders, saddles, or steam chests		18	2	2	41		2	
16	Cylinder cocks or rigging		2		2	7			
17	Domes or dome caps		1		1	12	1		
18	Draft gear		1		7	4			
19	Draw gear			3	17	72	9	3	
20	Driving boxes, shoes, wedges, pedestals, or braces		16		27	33	1	6	
21	Fire-box sheets		1		4	56	2		
22	Flues			1	11	11			
23	Frames, tailpieces or braces, locomotive		9	3	17	14	1	8	
24	Frames, tender		4		5	10	1		
25	Gauges or gauge fittings, air			1		1	1	1	
26	Gauges or gauge fittings, steam		3		3	15	4		
27	Graze cocks		13	2	11	53	1	5	
28	Graze shakers		9		3	3			
29	Handholds		7	3	12	30	3	2	
30	Injectors, inoperative								
31	Injectors and connections		1	14	2	96	9	4	
32	Inspections or tests not made as required		1	1	3	51	4	16	
33	Lateral motion				6	53			
34	Lights, cab or classification					24	2		
35	Lights, headlights			4		5			
36	Lubricators or shields					27	1		
37	Mud rings		4	1	5	24			
38	Packing nuts		12	1	24	11	10	10	
39	Packing, piston rod, and valve stem		1	3	13	61			
40	Pilot or pilot beams		4	1	1	10			
41	Plugs or studs		1		8	10		1	
42	Reversing gear		3		3	5		1	
43	Rods, main or side, crank pins, or collars		22		11	69		2	
44	Safety valves					2			
45	Sanders		2	1		4			
46	Springs or spring rigging		13	4	24	64	15	3	
47	Squirt hose				6	2		1	
48	Staybolts		1	1	2	3			
49	Staybolts, broken		9	5	3	55	19		
50	Steam pipes		11		10	12	3	1	
51	Steam valves		5		7	23	1	2	
52	Steps		11		1	4			
53	Tanks or tank valves		10	1	3	29	2	3	
54	Telltale holes		1		2	1			
55	Throttle or throttle rigging		1		14	22	4	2	
56	Trucks, engine or trailing		8	1	12	8			
57	Trucks, tender		9	3	36	29	2	21	4
58	Valve motion				5	10			
59	Washout plugs		9	3	10	43			
60	Water bar or combustion flues								
61	Water glass, fittings or shield		4	1	16	56	9	6	
62	Wheels			2	18	52	2		
63	Miscellaneous—Signal appliances, badge plates, brakes (hand)		5		5	2	1		
Number of defects		12	300	57	507	1,432	136	111	4
Locomotives reported		56	101	96	336	608	107	64	12
Locomotives inspected		4	73	28	395	627	123	64	5
Locomotives defective		3	59	16	159	416	51	35	1
Percentage of inspected found defective		75	81	57	40	66	41	55	20
Locomotives ordered out of service			4	3	11	86	5	1	

found defective, and ordered from service, etc.—Continued

Chesapeake & Ohio	Chicago & Alton	Chicago & Eastern Illinois	Chicago & North Western	Chicago & Western Indiana	Chicago, Burlington & Quincy	Chicago Great Western	Chicago, Indianapolis & Louisville	Chicago Junction	Chicago, Milwaukee & St. Paul	Chicago, Peoria & St. Louis	Chicago, Rock Island & Pacific	Chicago, St. Paul, Minneapolis & Omaha	Chicago Short Line	Chicago, West Pullman & Southern	Cincinnati, Indianapolis & Western	Cleveland, Cincinnati, Chicago & St. Louis	Colorado & Southern	Colorado & Wyoming
11	3		19		55	2	1	2	33	2	129	14				6	2	
7	1	3			6	1	1		6		26	3			2			
3		1	2		3	1			2		20				1	3	1	
5	5	8	25		14	2	2		8	3	101				3	4	3	
15	1	6	17	1	16	1	2		10	2	72	7			2	12	7	
12	4	9	21		38	2	1		35	3	107	4			3	4	3	
54	6	22	211	3	248	14	15		96	13	643	47			2	28	14	1
63	26	8	26		58	9	3	1	19		138	11			4	8	5	
7	2	18	19	1	28	27			11		69	14			2	4	1	
6	5	2	25	2	7	5			4		3				2	2		
2	2	2	17		5	1			2		15	6			1	5	11	
20	7	10	55		118	5			22	2	272	18			1	23	16	
7	3	6	6	3	5				3		47				1	3		
128	24	40	47		228	9	7		46	12	475	9			15	31	32	1
29	4	15	27	5	98	4	2	3	13	9	224	26			13	19	19	
3	1		12		21				5		18					3	2	
22	8	13	91	2	87	26	3	1	11	3	153	13	4	1	6	21	10	
39	8	17	55	2	135	9	3	1	27	1	299	19			3	24	11	
86	3	24	16	1	13				32	6	301	7			3	32	5	
17	3	6	11	1	5	3			4	5	62	4			3	15		
25	1	4	29		90	6			3	2	30	2			5	2		
6	2	5	2		38				4		413	4			5	7	5	
10	7	1	1		90				12	4	67	3			1	7		
11	3	10	11		34	6			16		67	3			1	6		
16	3	10	26		59	14	5		23	1	145	5			1	15	6	
16	6	10	154	2	88	22	10	4	57	2	260	20			8	6	12	
47	6	10	10	4	40		8		4		55	2			1	1	1	
8	2	5	48	1	89	12	4		21		169	3			1	9	16	
9	5	14	1		1						8				3			
76	26	55	129	6	297	23	16	4	57	10	828	30			9	22	62	
7	3	62	112	10	221	17	8	17	61	2	1,132	6	4	27	12	69	6	
81	24	1	15		16	1	1		12	1	48	8		2	2	2	3	
1	1				1				2		1							
8	1	15	10		22	3	2		8		85	4		1	3	11	1	
1	1	3	40		11	1			4		47	6		1	1	4	1	
28	1	14	33		13	1	2		5	2	93	5		4	11	16	5	
18	12	12	68		112	1	1		29	11	154	14			2	29	33	
31	6	24	59		168	7	3		21	6	217	7			6	13	9	
8	3	2	29		16	2	2		9	2	133	8			2	8	22	
6	2	2	16		18	1	1		11		111	6			1	8	1	
6	4	15	35		58	5	3		10		121	10			2	9	1	
6	4	38	121		430	11	4	2	82	6	465	27			13	18	49	
74	8		12		6				4		19	2			2			
11	6	3	53		146	8			9		286	13			6	30		
77	32	38	106	1	146	49	2		87	12	563	33			9	17	32	
3	5	8	40	3	82	7	1		6		95	33			4	4	22	
15	1	8	13		16				5	4	64	6			2	4		
59	18	18	40	18	232	2	8		18	15	467	41	5	114	33	27	10	
19	5	7	40		118	3	1		24	10	170	5			9	10	7	
10	4	6	15		26	3	3		11	6	52	1			2	14	1	
52	1	8	43	1	82	11	4		51	1	148	23			5	20	34	1
29	4	14	43		104	3			29	2	239	15			1	13	24	
1		2	2		14				49	3	49	3			1	1	1	
1		2	2		14				2		2				1	1	2	
9	11	5	95	3	122	4	1		54	1	136	10			2	4	21	
37	4	21	67	2	114	11	5		24	1	304	21			1	1	7	
33	11	31	221	1	390	10	7	2	27	1	450	17	27	58	6	47	10	
3	4		23		58				129	2	129	2			5	4	4	
16	4		33	2	116	10	2		22		208	10	1	1	5	38	16	
31	8	14									2					2		
44	3	15	65		124	15	11	5	40	3	305	26			8	40	14	
21	3	22	53		154	11	1	8	16	11	156	9			11	13	14	
22		7	14		68	5	1		9		135	5				12	5	
1,500		342	746	2,677	70	5,179	409											

Table showing number of locomotives inspected, found

Parts defective, inoperative or missing, or in violation of rules	Number of locomotives inspected, found						
	Columbus & Greenville	Copper Range	Copper River & Northwestern	Cornwall	Cumberland & Pennsylvania	Delaware & Hudson	Delaware, Lackawanna & Western
1 Air compressors.....						1	16
2 Arch tubes.....						1	1
3 Ash pans or mechanism.....					1	4	6
4 Axles.....							
5 Blow-off cocks.....					1	18	9
6 Boiler checks.....					10	24	15
7 Boiler shell.....					23	21	26
8 Brake equipment.....	1		1		14	41	177
9 Cabs or cab windows.....		1			1	1	61
10 Cab aprons or decks.....					4	2	10
11 Cab cards.....			1		10	5	11
12 Coupling or uncoupling devices.....		1					5
13 Crossheads, guides, pistons, or piston rods.....					14	21	91
14 Crown bolts.....					1	1	2
15 Cylinders, saddles or steam chests.....			1		14	27	174
16 Cylinder cocks or rigging.....	1	2			2	10	68
17 Domes or dome caps.....					1	5	18
18 Draft gear.....			1		3	5	59
19 Draw gear.....			2		12	30	38
20 Driving boxes, shoes, wedges, pedestals or braces.....	5	1			6	16	26
21 Fire-box sheets.....			1		17	21	3
22 Flues.....			1		4	7	7
23 Frames, tall pieces or braces, locomotive.....					5	9	42
24 Frames, tender.....					5	8	2
25 Gauges or gauge fittings, air.....					16	12	11
26 Gauges or gauge fittings, steam.....			2		22	27	51
27 Gauge cocks.....		1	1		3	4	20
28 Grate shakers.....					10	7	61
29 Handholds.....			1				3
30 Injectors, inoperative.....					54	117	195
31 Injectors and connections.....		1			7	9	138
32 Inspections or tests not made as required.....			5		20	3	12
33 Lateral motion.....		1					15
34 Lights, cab or classification.....					1	10	40
35 Lights, headlights.....			2				24
36 Lubricator or shield.....					30	60	6
37 Mud rings.....		1	2		9	9	121
38 Packing nuts.....			2		23	30	82
39 Packing, piston rod and valve stem.....	2		1		2	4	48
40 Pilot or pilot beams.....			1		7	4	5
41 Plugs or studs.....	1	1			16	8	5
42 Reversing gear.....					30	59	109
43 Rods, main or side, crank pins or collars.....				1			5
44 Safety valves.....					9	9	86
45 Sanders.....		3			38	18	97
46 Springs or spring rigging.....	1	1			9	14	22
47 Squirt hose.....					33	27	103
48 Staybolts.....			1		14	21	64
49 Staybolts broken.....		8	9		1	8	25
50 Steam pipes.....					7	12	77
51 Steam valves.....					33	38	43
52 Steps.....			2		1	13	6
53 Tanks or tank valves.....		1	1		15	23	43
54 Telltale holes.....		2	1	1	2	6	42
55 Throttle or throttle rigging.....					11	12	90
56 Trucks, engine or trailing.....	1			5	11	2	28
57 Trucks, tender.....	8	4			18	62	35
58 Valve motion.....					28	47	91
59 Washout plugs.....					6	3	31
60 Water bar or combustion flues.....			4	2	28	47	31
61 Water glass, fittings or shield.....	1		2	4	6	3	6
62 Wheels.....		3	2	4	4	3	33
63 Miscellaneous—Signal appliances, badge plates, brakes (hand).....							
Number of defects.....	21	33	48	13	624	964	2,794
Locomotives reported.....	27	20	19	12	492	779	556
Locomotives inspected.....	23	15	11	6	447	663	737
Locomotives defective.....	6	8	8	3	201	330	567
Percentage of inspected found defective.....	26	53	73	50	45	50	77
Locomotives ordered out of service.....		1	2	1	31	23	214

Defective, and ordered from service, etc.—Continued

Parts defective, inoperative or missing, or in violation of rules	Number of locomotives inspected, found																		
	Denver & Salt Lake	Detroit & Mackinac	Detroit & Toledo Shore Line	Detroit Terminal	Detroit, Toledo & Ironton	Donora Southern	Duluth & Iron Range	Duluth, Missabe & Northern	Duluth, South Shore & Atlantic	East Broad Top R. R. & Coal Co.	East St. Louis Junction	East Tennessee & Western North Carolina	Elgin, Joliet & Eastern	El Paso & Southwestern	Emporium Forestry Co.	Erie	Escombria	Fernwood, Columbia & Gulf	Florida East Coast
1 Air compressors.....	6	1	1	1			1	6					12			2			1
2 Arch tubes.....														1		1			2
3 Ash pans or mechanism.....			1													1			3
4 Axles.....																			4
5 Blow-off cocks.....																			5
6 Boiler checks.....	2			5	2			3					5	1		13			6
7 Boiler shell.....																26			5
8 Brake equipment.....	18	1	1	3	2			2	1				5	2		22			7
9 Cabs or cab windows.....	17			2				3					1			25			8
10 Cab aprons or decks.....			3					1	3	1			7			13			9
11 Cab cards.....	1	2		4				1					1			4			10
12 Coupling or uncoupling devices.....								1				1	2			2			11
13 Crossheads, guides, pistons, or piston rods.....	41			3	1			2					14	5		29			12
14 Crown bolts.....	1	1		2				2					5			1			13
15 Cylinders, saddles or steam chests.....	38	1	1	6	5			3					5			27			14
16 Cylinder cocks or rigging.....	8			1	2			1					10	1		6			15
17 Domes or dome caps.....	1												10			7			16
18 Draft gear.....																8			17
19 Draw gear.....	20	2		3	1			3				1	1			7			18
20 Driving boxes, shoes, wedges, pedestals or braces.....	5		1	4	3			3	1				8	2		43			19
21 Fire-box sheets.....	24	1	2	3	2			1	1	1			14	7		19			20
22 Flues.....	2	3	1	3	1			1					5	1		8			21
23 Frames, tall pieces or braces, locomotive.....	4	2		2				2					1			6			22
24 Frames, tender.....													2			2			23
25 Gauges or gauge fittings, air.....	6			1	1			1					1			4			24
26 Gauges or gauge fittings, steam.....	3	3		2				3					3	1		14			25
27 Gauge cocks.....	12	3		2	4			2	1				6			4			26
28 Grate shakers.....	2			4	2								55			2			27
29 Handholds.....	13	2	3	1				10	2	6			8			8			28
30 Injectors, inoperative.....																			29
31 Injectors and connections.....	46	4	1	14	7			4	2	8			30			73			30
32 Inspections or tests not made as required.....	33			5	2			1	2				67	9		52			31
33 Lateral motion.....	7												3			6			32
34 Lights, cab or classification.....																			33
35 Lights, headlights.....																			34
36 Lubricator or shield.....	2												7			11			35
37 Mud rings.....													1			2			36
38 Packing nuts.....	18	10	4	3				1		1			8	1		30			37
39 Packing, piston rod and valve stem.....	12			1									5	1		20			38
40 Pilot or pilot beams.....	6			1									1			20			39
41 Plugs or studs.....																7			40
42 Reversing gear.....	4							1		1			2			2			41
43 Rods, main or side, crank pins or collars.....	48							2		3						8			42
44 Safety valves.....	2												9	3		67			43
45 Sanders.....	25	1	2					2								3			44
46 Springs or spring rigging.....	24			1	3			2	2	4			17			13			45
47 Squirt hose.....	5	1	1	1	4			4	1	1	1		3			53			46
48 Staybolts.....				3	1											3			47
49 Staybolts broken.....																7			48
50 Steam pipes.....	15	10		3	4			14	8	1			36	2		46			49
51 Steam valves.....	3							1	1	1			4			12			50
52 Steps.....	3			1				1	1	1						18			51
53 Tanks or tank valves.....	5	1	1	1	3			1		2	3		5	1		11			52
54 Telltale holes.....													7			50			53
55 Throttle or throttle rigging.....													2			9			54
56 Trucks, engine or trailing.....	2	2		5	5			2					12			18			55
57 Trucks, tender.....	12							1	1				3	1		31			56
58 Valve motion.....	13			1				1					25			56			57
59 Washout plugs.....													7	5		11			58
60 Water bar or combustion flues.....								1					3			21			59
61 Water glass, fittings or shield.....	9	3	3	11	2			1	1	3			14	1		44			60
62 Wheels.....	8	1	1	10				2	2				2	3		12			61
63 Miscellaneous—Signal appliances, badge plates, brakes (hand).....	1			4	1								2	1		2			62
Number of defects.....	53	31	139	67				54	51	73	20	27	25	414	57	1,092	1		97
Locomotives reported.....	31	25	23	79	18			110	115	98	11	12	11	283	151	1,589	14	11	151
Locomotives inspected.....	34	25	38	63	19			39	50	48	15	10	10	106	101	1,776	5	5	241
Locomotives defective.....	11	11	24	19				22	22	23	11	8	9	88	28	314	1		64
Percentage of inspected found defective.....	32	44	63	30				56	37	48	73	80	90	83	28	40			27
Locomotives ordered out of service.....	3		8	1				4	1	3			2	11	5	21			

Table showing number of locomotives inspected, found

Parts defective, inoperative, or missing, or in violation of rules	Number of locomotives inspected, found									
	Lake Superior & Ish- pening	Lake Superior Termi- nal & Transfer	Lake Terminal	Lehigh & Hudson River	Lehigh & New Eng- land	Lehigh Valley	List. & Gifford Con- struction Co.	Litchfield & Madison		
1 Air compressors.....					1	7				
2 Arch tubes.....					3	3				
3 Ash pans or mechanism.....					3					
4 Axles.....										
5 Blow-off cocks.....					15					
6 Boiler checks.....				1	16					
7 Boiler shell.....				2	92					
8 Brake equipment.....	2			1	6	91		1		
9 Cabs or cab windows.....				1	2	4			1	
10 Cabs or cab aprons.....	1				6					
11 Cab cards.....					15					
12 Coupling or uncoupling devices.....										
13 Crossheads, guides, pistons, or piston rods.....					3	61				
14 Crown bolts.....					1	1				
15 Cylinders, saddles, or steam chests.....					2	77				
16 Cylinder cocks or rigging.....					7	7				
17 Domes or dome caps.....	1				11	4				
18 Draft gear.....					1	4				
19 Draw gear.....	1				2	76				
20 Driving boxes, shoes, wedges, pedestals, or braces.....					39	39				
21 Fire-box sheets.....					2	27				
22 Flues.....					5	12				
23 Frames, tail pieces or braces, locomotive.....					1	40				
24 Frames, tender.....					1	3				
25 Gauges or gauge fittings, air.....					1	1				
26 Gauges or gauge fittings, steam.....					22	2				
27 Gauge cocks.....					10	10				
28 Grate shakers.....					4	4				
29 Handholds.....	2				3	27		1		
30 Injectors, inoperative.....										
31 Injectors and connections.....	1			2	7	73		2		
32 Inspections and tests not made as required.....				1	30	34		1		
33 Lateral motion.....						62				
34 Lights, cab or classification.....										
35 Lights, headlights.....					8	5				
36 Lubricators or shields.....					2	5				
37 Mud rings.....					31	1		1		
38 Packing nuts.....					16					
39 Packing, piston rod and valve stem.....					4	26		1		
40 Pilot or pilot beams.....					1	12				
41 Plugs or studs.....					2	16				
42 Reversing gear.....					10	10				
43 Rods, main or side, crank pins or collars.....					120			1		
44 Safety valves.....					3	3				
45 Sanders.....		1			1	12				
46 Springs or spring rigging.....	1	6		2	2	86		2		
47 Squirt hose.....	1				10	1				
48 Staybolts.....					3	3				
49 Staybolts, broken.....					14	6		15		
50 Steam pipes.....					1	24				
51 Steam valves.....					1	3				
52 Steps.....	2	3			1	27				
53 Tanks or tank valves.....					5	4				
54 Telltale holes.....					2	2				
55 Throttle or throttle rigging.....	1				1	23				
56 Trucks, engine or trailing.....					16	47				
57 Trucks, tender.....		3			6	17		2		
58 Valve motion.....					19	19				
59 Washout plugs.....					3	52		1		
60 Water bar or combustion flues.....					11	58				
61 Water glass, fittings, or shield.....					41	41		1		
62 Wheels.....					1	13				
63 Miscellaneous—Signal appliances badge plates, brakes (hand).....					1	13				
Number of defects.....	5	21		34	131	1,733		33		
Locomotives reported.....	31	11	18	42	67	1,008	10	10		
Locomotives inspected.....	5	21	18	16	57	762		11		
Locomotives defective.....	2	11		8	37	410		6		
Percentage of inspected found defective.....	40	52		50	65	54		55		
Locomotives ordered out of service.....	1			5	96			3		

defective, and ordered from service, etc.—Continued

Parts defective, inoperative, or missing, or in violation of rules	Number of locomotives inspected, found																		
	Long Island	Los Angeles & Salt Lake	Louisiana & Arkansas	Louisiana & North west	Louisiana Ry. & Nav. Co.	Louisville & Nashville	Louisville, Henderson & St. Louis	McCloud River	McKeesport Connect- ing	Macon, Dublin & Savannah	Maine Central	Maine & North- eastern	Maryland & Pennsy- vania	Mercer Valley	Michigan Central	Midland Valley	Minneapolis & St. Louis	Minneapolis, St. Paul & S. S. Marie	Minnesota & Inter- national
1 Air compressors.....						23					3		1		8		2	8	1
2 Arch tubes.....						1									5		1		2
3 Ash pans or mechanism.....						7								1					3
4 Axles.....																			4
5 Blow-off cocks.....																			5
6 Boiler checks.....						9					2				17		1		6
7 Boiler shell.....						29					2				10		1		7
8 Brake equipment.....						30					1				9		3		8
9 Cabs or cab windows.....						116					1				48		3		9
10 Cabs or cab aprons.....						11					14				16		2		10
11 Cab cards.....						31					2				34		1		11
12 Coupling or uncoupling devices.....						17					12				11		5		12
13 Crossheads, guides, pistons, or piston rods.....						5					10				5		1		13
14 Crown bolts.....						32					1				27		1		14
15 Cylinders, saddles, or steam chests.....						4					2				3		1		15
16 Cylinder cocks or rigging.....						19					4				14		5		16
17 Domes or dome caps.....						7					2				19		3		17
18 Draft gear.....						3					1				14		7		18
19 Draw gear.....						18					10				2		1		19
20 Driving boxes, shoes, wedges, pedestals, or braces.....						21					6				32		2		20
21 Fire-box sheets.....						12					2				17		8		21
22 Flues.....						7					3				15		5		22
23 Frames, tail pieces or braces, locomotive.....						5					4				6		2		23
24 Frames, tender.....						7					2				10		1		24
25 Gauges or gauge fittings, air.....						3					1				1		1		25
26 Gauges or gauge fittings, steam.....						3					1				13		3		26
27 Gauge cocks.....						26					2				26		5		27
28 Grate shakers.....						89					10				66		3		28
29 Handholds.....						27					3				14		9		29
30 Injectors, inoperative.....						56					3				38		1		30
31 Injectors and connections.....						1					1				1		1		31
32 Inspections and tests not made as required.....						191					14				106		8		32
33 Lateral motion.....						43					17				36		11		33
34 Lights, cab or classification.....						1					2				8		12		34
35 Lights, headlights.....						19					2				1		1		35
36 Lubricators or shields.....						3					3				1		3		36
37 Mud rings.....						1					1				1		1		37
38 Packing nuts.....						3					3				23		2		38
39 Packing, piston rod and valve stem.....						7					4				7		6		39
40 Pilot or pilot beams.....						18					2				9		1		40
41 Plugs or studs.....						1					3				7		3		41
42 Reversing gear.....						11					2				12		3		42
43 Rods, main or side, crank pins or collars.....						36					2				18		1		43
44 Safety valves.....						94					1				34		5		44
45 Sanders.....						3					8				1		11		45
46 Springs or spring rigging.....						1					3				8		4		46
47 Squirt hose.....						27					2				63		4		47
48 Staybolts.....						2					2				19		1		48
49 Staybolts, broken.....						40					2				18		4		49
50 Steam pipes.....						17					2				8		1		50
51 Steam valves.....						18					40				27		2		51
52 Steps.....						4					6				18		1		52
53 Tanks or tank valves.....						13					1				20		1		53
54 Telltale holes.....						8					14				70		4		54
55 Throttle or throttle rigging.....						5					5				55		4		55
56 Trucks, engine or trailing.....						5					9				14		5		56
57 Trucks, tender.....						10					5				1		5		57
58 Valve motion.....						7					1				82		2		58
59 Washout plugs.....						3					6				27		10		59
60 Water bar or combustion flues.....						11					4				56		7		60
61 Water glass, fittings, or shield.....						4					4				4		2		61
62 Wheels.....						13					1				43		2		62
63 Miscellaneous—Signal appliances badge plates, brakes (hand).....						24					8				1		6		63
Number of defects.....	191	1,078	26	31	412	2,577	8	10		23	298	16	67	13	1,459	71	183	355	28
Locomotives reported.....	163	209	41	13	65	1,335	38	14	16	13	230	14	14	11	772	49	219	532	26
Locomotives inspected.....	104	444	23	17	132	1,230	9	6		11	230	5	18	4	453	24	213	492	25
Locomotives defective.....	49	319	8	1															

Table showing number of locomotives inspected, found

Parts defective, inoperative, or missing, or in violation of rules		Minnesota, Dakota & Western	Minnesota Transfer	Mississippi Central	Mississippi River & Bonne Terre	Mississippi Southern	Missouri & North Arkansas	Missouri Illinois	Missouri-Kansas-Texas	Missouri Pacific
1	Compressors	3	2				2		12	33
2	Arch tubes								1	5
3	Ash pans or mechanism								1	7
4	Axles									
5	Blow-off cocks		4				1		15	45
6	Boiler checks								21	18
7	Boiler shell								23	55
8	Boiler equipment		7				23		104	178
9	Cabs or cab windows	2	1						5	34
10	Cab aprons or decks			1			4		7	14
11	Cab cards	1		1					5	17
12	Coupling or uncoupling devices		1				1		10	5
13	Crossheads, guides, pistons or piston rods		4	3			8		70	98
14	Crown bolts						1		5	10
15	Cylinders, saddles or steam chests		1			1	10		78	210
16	Cylinder cocks or rigging		3				2		8	84
17	Domes or dome caps						1		9	5
18	Draw gear		2	1			1		25	63
19	Driving boxes, shoes, wedges, pedestals, or braces	1	2	1			13		61	130
20	Fire-box sheets		1				1		7	120
21	Flames						4		7	15
22	Frames, tail pieces or braces, locomotive			2					59	65
23	Frames, tender								5	7
24	Gauges or gauge fittings, air	3	1						11	18
25	Gauges or gauge fittings, steam		1						20	58
26	Gauge cocks		4	1			5		47	111
27	Grate shakers								3	32
28	Handholds		9						19	60
29	Injectors, inoperative								1	9
30	Injectors and connections	3	9				8		188	257
31	Inspections and tests not made as required	4	2	1			3		227	166
32	Lateral motion						1		1	13
33	Lights, cab or classification								1	18
34	Lights, headlights						3		11	18
35	Lubricator or shield		1						22	16
36	Mud rings	2	1	1			2		51	84
37	Packing nuts						4		23	122
38	Packing, piston rod and valve stem								15	24
39	Pilot or pilot beams		2				3		16	17
40	Plugs or studs		1						13	57
41	Reversing gear		1	2			10		133	200
42	Rods, main or side, crank pins or collars								5	1
43	Safety valves								22	82
44	Sanders	7	4			1	10		76	166
45	Springs or spring rigging						4		8	32
46	Squirt hose	1	1						2	7
47	Staybolts								34	138
48	Staybolts, broken	6		10		2	21		23	45
49	Steam pipes								9	22
50	Steam valves		7			1	2		15	64
51	Steps		2	1		1	5		54	62
52	Tanks or tank valves								4	12
53	Telltale holes								23	100
54	Throttle or throttle rigging		1				6		71	128
55	Trucks, engine or trailing			2		1	13		109	121
56	Trucks, tender		5	5			11		20	33
57	Valve motion		1	1			2		42	73
58	Washout plugs									
59	Water bar or combustion flues					2	8		48	123
60	Water glass fittings or shield	3	8	2					53	50
61	Wheels									
62	Miscellaneous—Signal appliance, badge plates, brakes (hand)	1	1						26	63
Number of defects		40	98	36		11	204		2,047	3,830
Locomotives reported		12	19	24	18	12	24	14	694	1,164
Locomotives inspected		9	37	39		4	52		725	1,287
Locomotives defective		9	31	14		4	40		453	913
Percentage of inspected found defective		100	84	36		100	77		62	71
Locomotives ordered out of service		2	3	5		1	8		104	233

Defective, and ordered from service, etc.—Continued

	Mobile & Ohio	Monongahela	Monongahela Connecting	Montour	Muscle Shoals, Birmingham & Pensacola	Nashville, Chattanooga & St. Louis	Nevada-California-Oregon	Nevada Northern	Newburgh & South Shore	New Orleans Great Northern	New York Central—East	New York Central—West	New York, Chicago & St. Louis	New York, New Haven & Hartford	New York, Ontario & Western	Norfolk & Portsmouth Belt Line	Norfolk & Western	Norfolk Southern	Northern Pacific													
1					1	11					4	18	12				17		21													
2						1					2	2	2				4		8													
3						2						1		2			6	1	1													
4																			1													
5						16					16	12	19		3		3		12													
6						4					25	13	15	25	6	1	28	5	10													
7						10					5	8	36	52	1	15	2	28	7													
8						75					46	44	99	43	4	79	2	153	8													
9						10					24	2	23	10	4	61	11	3	9													
10						3					13	13	17	33		18		26	10													
11						17					20	7	11	41		4		2	11													
12						12					3	4				7		2	12													
13						18					16	34	31	91	3	50		15	13													
14											2	3	11		1		1	1	14													
15						43					8	14	50	6	2	206	10	43	15													
16						9					4	14	47	5		42	2	32	16													
17						6					1	6	5	5		6		6	17													
18						12					23	12	24	22		48	1	19	18													
19						47					15	11	59	67	4	68	8	36	19													
20						92					7	40	58	25		106	16	47	20													
21						12					6	11	16	17	2	27	6	7	21													
22						1					1	7	8	4	1	15	2	4	22													
23						41					6	6	4	15	19	70	3	14	23													
24						8					2	2	7	7		7		3	24													
25						11					1	5	6	1		7	1	50	25													
26						16					18	13	26	23	1	57		26	26													
27						58					34	14	68	42	3	76	6	40	27													
28						8					5	9	5	2	1	16	1	6	28													
29						40					42	15	14	5		21	1	15	29													
30																4			30													
31						94					67	59	105	136	12	178	29	53	31													
32						5					34	52	124	367	2	90	2	52	32													
33						7					5	1	9	18	3	12	2	19	33													
34						1					1	1	6			5		5	34													
35						1					10	14	14	3	3	3	4	6	35													
36						2					2	5	6			3		5	36													
37						13					23	13	18	141	11	26	2	21	37													
38						106					30	50	103	18	3	67	13	62	38													
39						13					7	6	21	17	4	28	10	31	39													
40						7					5	3	7	6	1	25		22	40													
41						13					12	11	10	6	2	12		7	41													
42						13					5	8	12	17	1	14		83	42													
43						14					15	15	97	148	7	57	3	7	43													
44						15					1	8				2	1	6	44													
45						5					19	27	28	2	1	6	2	117	45													
46						72					37	38	55	93	4	74		10	46													
47						4					19	4	24	9	3	13		4	47													
48						4					5	4	20	16	8	35	6	55	48													
49						37					2	13	63	190	1	63	2	24	49													
50						3					19	23	39	17	1	44	8	8	50													
51						36					11	12	13	21	2	28	8	44	51													
52						8					14	41	46	19	1	42		47	52													
53						15					56	29	36	65	5	70	9	1	53													
54						26					3	4	5	2	1	12	4	42	54													
55						26					37	32	28	19	1	17	16	61	55													
56						18					8	7	30	48	1	93		79	56													
57						46					20	63	196	34	2	58	6	1	57													
58						55					9	12	10			36		47	58													
59						8					39	56	39	34	8	49	3		59													
60						42					1					1		60	60													
61						34					110	82	58	44	3	43	7	40	61													
62						22					12	22	45	14	2	30	7	40	62													
63						14					4	16	27	2		21		22	63													
252																				16				30	1,345		12	39	15	1,026	1,094	1,

Table showing number of locomotives inspected, found

	Northern Pacific Terminal	Northwestern Pacific	Ogden Union Ry. & Depot	Ohio Central Lines	Oklahoma, New Mexico & Pacific	Oregon Short Line	Oregon-Washington Ry. & Navigation Co.	Patapsco & Back River	Pennsylvania System
1 Air compressors			1	1		4	1	311	
2 Arch tubes								85	
3 Ash pans or mechanism						1		54	
4 Axles								4	
5 Blow-off cocks		1				3	1	195	
6 Boiler checks		1	5			2	1	366	
7 Boiler shell		1		2	2	4	5	537	
8 Brake equipment		1		2	1	20	5	1,203	
9 Cabs or cab windows			1	1	1	10	4	217	
10 Cab aprons or decks		2	1	1		4		306	
11 Cab cards			1			4		101	
12 Coupling or uncoupling devices				2				36	
13 Crossheads, guides, pistons or piston rods	2	1	1	1	1	8		1,151	
14 Crown bolts		1	1			1	6	40	
15 Cylinders, saddles, or steam chests		1	16	10	8	3		1,413	
16 Cylinder cocks or rigging			4	1	3			721	
17 Domes or dome caps			1	1	1			152	
18 Draft gear		1	1	3	11	1	3	259	
19 Draw gear	4	2	4	1	4	2	2	896	
20 Driving boxes, shoes, wedges, pedestals, or braces			5	2	2	2		696	
21 Fire-box sheets		1	2		1	9		399	
22 Flues			2	2		1	1	199	
23 Frames, tail pieces or braces, locomotive			2	1	4	5	1	342	
24 Frames, tender			1		9	2		65	
25 Gauges or gauge fittings, air		1	1					84	
26 Gauges or gauge fittings, steam		1	5		11	6		372	
27 Gauge cocks		8	3	2	20	3		724	
28 Grate shakers					11			323	
29 Handholds		2	1		15			242	
30 Injectors, inoperative								15	
31 Injectors and connections		1	1	19	4	36	7	2,206	
32 Inspections or tests not made as required			18	14	5	6	1	2,257	
33 Lateral motion						1	1	112	
34 Lights, cab or classification							1	13	
35 Lights, headlights						4		248	
36 Lubricator or shields								115	
37 Mud rings					2	3	4	546	
38 Packing nuts			9	5	34	9		336	
39 Packing, piston rod and valve stem				8	2	1	1	1,114	
40 Pilot or pilot beams	1			1	10	1		121	
41 Plugs or studs				3	2	1		223	
42 Reversing gear					1	2		293	
43 Rods, main or side, crank pins or collars	1		2	3	3	13	4	1,338	
44 Safety valves								25	
45 Sanders			4	3	2			303	
46 Springs or spring rigging			12	8	8	8		1,093	
47 Squirt hose					3			241	
48 Staybolts				1	4		1	173	
49 Staybolts, broken		7	2	7	36	3	2	255	
50 Steam pipes	1		3	5	2	5	2	603	
51 Steam valves				2		3	1	231	
52 Steps		2			11		3	456	
53 Tanks or tank valves		2	2	2	1	15	8	541	
54 Telltale holes							1	72	
55 Throttle or throttle rigging		1	2	3		1	1	749	
56 Trucks, engine or trailing			4		17	1		402	
57 Trucks, tender			1	2	7	5	6	586	
58 Valve motion				2	2	2	2	343	
59 Washout plugs				4	4	8	2	797	
60 Water bar or combustion flues								2	
61 Water glass, fittings or shield			1	5	1	14	6	620	
62 Wheels		1	1	2	2	19	1	401	
63 Miscellaneous—Signal appliance, badge plates, brakes (hand)			1	6		9	2	343	
Number of defects	3	27	53	181	118	396	134	30	28,666
Locomotives reported	10	72	17	211	14	412	328	22	7,529
Locomotives inspected	34	57	37	164	15	299	439	7	7,438
Locomotives defective	3	15	15	62	14	131	78	5	5,414
Percentage of inspected found defective	9	26	41	38	93	44	18	71	73
Locomotives ordered out of service			4	3	5	6	2		1,432

Defective, and ordered from service, etc.—Continued

	Pere Marquette	Philadelphia, Bethlehem & New England	Pittsburgh & Lake Erie	Pittsburgh & Shawmut	Pittsburgh & West Virginia	Pittsburgh, Chartiers & Youghiogheny	Pittsburgh, Shawmut & Northern	Portland Terminal	Public Belt of New Orleans	Quincy, Omaha & Kansas City	Raritan River	Reading Company	Republic Iron & Steel (Alabama)	Republic Iron & Steel (Ohio)	Richmond, Fredricksburg & Potomac	Rio Grande Southern	River Terminal	Rutland
1	6		3					1				5				3		1
2	8																	1
3										1		4						2
4																		2
5	3											12						4
6	9		4							2		12						4
7	3	1								3		26						6
8	70	1	9	1				1		16		30	1					7
9	14	1	3							2		14			5			8
10	5		4							4		30						9
11	8		2	1						1								10
12	3	2										2						11
13	12	1	3	2					1	16	1	16	3					12
14	1											6						13
15	15	1	2							4		6						14
16	4	1	2							3		43	1					15
17	1		2							4		1						16
18	24	3	1							2		3						17
19	18		1							2		11						18
20	9		2	3				2		4		39	2		1	4		19
21	3	1	3	1					1	2		21			1			20
22	4	1	1	1						3		35						21
23	6	1	1							3		14						22
24	1		1							3		11			1	3		23
25	12									1		6						24
26	51		4							4		1						25
27	48	1	2							4		46						26
28	15		4							4		31	1					27
29	16	3	1							2		47						28
30	1									2		17			5	4		29
31	83	5	11							18		2						30
32	15	7	7							6		80	7		1	15	11	31
33	4		2							1		237	4	2		8	4	32
34												6						33
35	3											1						34
36	8											16						35
37	12	2										18						36
38	70		2									12	1					37
39	7											12						38
40	6	5										42	3		1	7		39
41	13											10						40
42	24	1								2		5						41
43	24	1	1							3		3						42
44												56			2	7		43
45												4						44
46	10		1									17				6		45
47	33	3	6							4		3						46
48	5		2									27	5		1	7	3	47
49	14											13						48
50	40	1										11						49
51	15	2	3						4	2		26						50
52	7											14						51
53	50	4	3									7						52
54	39	1	1									10						53
55	3	6										29	3		1	4		54
56	30	4	5									3						55
57	8		2									44	1				</	

Table showing number of locomotives inspected, found

Parts defective, inoperative or missing, or in violation of rules		St. Joseph & Grand Island	St. Louis & Hannibal	St. Louis-San Francisco	St. Louis Southwestern	San Antonio & Aransas Pass	San Antonio, Uvalde & Gulf	San Diego & Arizona	Sandy River & Rangeley Lake	Savannah & Atlanta
1	Air compressors	1		55	1					
2	Arch tubes			8						
3	Ash pans or mechanism			3						
4	Axles			1						
5	Blow-off cocks			28	2					
6	Boiler checks			23	3					
7	Boiler shell	2		66	2		2			
8	Brake equipment	4		322	23		2			
9	Cabs or cab windows			31	7		1			
10	Cab aprons or decks	1	1	30	1			1		
11	Cab cards	1		11	4					1
12	Coupling or uncoupling devices			1	4					2
13	Crosshead, guides, pistons, or piston rods	1	3	127	3	1	5			1
14	Crown bolts	1	1	9						
15	Cylinders, saddles, or steam chests	2	2	237	16					
16	Cylinder cocks or rigging	2	3	80	4					
17	Domes or dome caps	1		7						
18	Draft gear	3	1	57	11		1			1
19	Draw gear	3	3	118	11		4			5
20	Driving boxes, shoes, wedges, pedestals, or braces	2		105	15		4			7
21	Fire-box sheets		1	13			2			
22	Flues			4			2			
23	Frames, tail pieces or braces, locomotive			132	8		5			3
24	Frames, tender			17	1		1			1
25	Gauges or gauge fittings, air	3	1	17	4					
26	Gauges or gauge fittings, steam	1	1	46	1	1				
27	Gauge cocks			83	7			1		
28	Grate shakers			12						
29	Handholds		2	38	3		3	1		1
30	Injectors, inoperative			2						
31	Injectors and connections	7	10	385	35	2		2		8
32	Inspections or tests not made as required	2		467	25					
33	Lateral motion			15		2	3			
34	Lights, cab or classification									
35	Lights, headlights			7	1					
36	Lubricator or shields			10	2					
37	Mud rings	2		23	1					
38	Mud rings	2	8	54	5			1		
39	Packing nuts		1	57	8					
40	Packing, piston rod and valve stem			18						
41	Pilot or pilot beams	1		29						
42	Plugs or studs	1	2	41	5					1
43	Reversing gear	2	5	213	4	1	6			
44	Rods, main or side, crank pins or collars			10						
45	Safety valves	5	1	50						2
46	Sanders			293	28	1	6			
47	Springs or spring rigging			59	7			2		
48	Squirt hose			21	2					
49	Staybolts			96						1
50	Staybolts, broken	2		55	8					
51	Steam pipes			21	7					
52	Steam valves			54	7					
53	Steps	4	1	95	1	2				3
54	Tanks or tank valves	1		7	3		1			
55	Telltale holes	1		65	10		3			2
56	Throttle or throttle rigging			159	14		14			1
57	Trucks, engine or trailing	1	2	335	19		4			
58	Trucks, tender			63	4		6			
59	Valve motion	1		99	7		1	1		
60	Washout plugs									
61	Water bar or combustion flues	1	1	84	7	1	1			2
62	Water glass, fitting or shield			103	13	2	2			
63	Wheels									
64	Miscellaneous—Signal appliance, badge plates, brakes (hand)	1		34	1		1			
Number of defects		62	52	4,705	355	15	89	9		44
Locomotives reported		42	40	979	291	89	19	17	13	14
Locomotives inspected		37	9	1,482	167	52	29	28		22
Locomotives defective		22	9	1,086	104	8	16	6		14
Percentage of inspected found defective		59	100	73	62	15	55	21		64
Locomotives ordered out of service		2	2	280	24		3	1		3

defective, and ordered from service, etc.—Continued

Seaboard Air Line	South Buffalo	Southern	Southern Pacific—East	Southern Pacific—West	Southern Pacific de Mexico	Spokane International	Spokane, Portland & Seattle	Sumpter Valley	Tennessee Central	Tennessee Coal, Iron & R. R.	Terminal R. R., Association of St. Louis	Texas & Pacific	Texas-Mexican	Texas Midland	Tionesta Valley	Toledo, Peoria & Western	Toledo Terminal	Tonopah & Goldfield
3		25	1	4					5	1		1						1
3																		3
5		5							5									4
9		8		5					3	1	3	1						5
17	1	19	3	16					1	1	1	1						6
23		34	8	22					5	5								7
41	1	188	31	27		1			93		3	11						8
30		44	2	38					1									9
7		17	1	22					10									10
3		21	3	6					3		1							11
15		23	1	5					3		1							12
23		48	36	21					9		3	3	1					13
2		8		9					1		1	1						14
19		135	13	9					37		3	3	1					15
5		54	4	3					3		1	2						16
1		12	1						7		3	2						17
34		83	5	12					19		1	1						18
55	2	115	51	26					27		2	6	1					19
62		102	35	23					37		1	6						20
14	1	35	8	16					11		1	2						21
13		25		13					3		1	1						22
26	1	87	49	12					45		1	15	1					23
5		8	2	7					6									24
8		9	11	1								2						25
11		37	10	18							4	5		2				26
77		114	23	37					10		2	1		2				27
17		29							1		1	1						28
10	1	57	26	28		1			1		1	1						29
138	1	242	38	40		2			15		8	10	2					30
7		111	49	154					3		12	10	1	3				31
2	1	12	9	22					2		1	4						32
1		1	1															33
10		3	2	3					2									34
21		17	2	9														35
83	3	149	6	24					11		6	1						36
8		54	3	8					2									37
5	1	28	3	5					6			1						38
15		28	9	7					11		3							39
10		42	6	7					6									40
43	2	116	52	33					35		3	5						41
1		2	1	2					2									42
2		9	3	12					2									43
54	2	126	16	28		1			41		3	3	3					44
8		20	3	18					5			2						45
18		26	8	12					6			1						46
59		27	20	5					7			1						47
19		65	5	13					6			1						48
59	1	98	2	8					7			6						49
14		20	2	19					7			2						50
32		98	21	19					1			1						51
73	1	107	14	44					15		1	1						52
11		25	4						17		1	3						53
38	1	85	9	6					17			1	1					54
108		151	35	9					4			2	2	1				55
34		118	28	11					20			4	1					56
3		32	15	5					47		55	2						57
52	1	86	6	20					3			1						58
1		1							9			6						59
60		86	15	33					15		1	3						60
28		104	32	50					36		5	9						61
6		27	1	16					2			1						62
866	28	3,373	736	1,060	7	1	127	2	764	9	145	130	13	21		19		63
878	30	2,269	574	1,605	42	11	99	11	46	63	181	362	16	17	11	27	21	10
883	21	2,862	511	1,457	6	9	148	7	150	6	33	177	14	5		12	15	2
718	11	1,197	183	438	6	1	65	2	121	3	29	49	5	3		6		
52	52	42	36	30	100	11	43	28	81	30	88	28	36	60		50		
35		92	34	24					34		6	4		1				

