

INTERSTATE COMMERCE COMMISSION

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SEVENTEENTH ANNUAL REPORT

OF THE

CHIEF INSPECTOR  
BUREAU OF LOCOMOTIVE INSPECTION

TO THE

INTERSTATE COMMERCE COMMISSION

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FISCAL YEAR ENDED  
JUNE 30, 1928



UNITED STATES  
GOVERNMENT PRINTING OFFICE  
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## ANNUAL REPORT OF THE CHIEF INSPECTOR BUREAU OF LOCOMOTIVE INSPECTION

OCTOBER 1, 1928.

*To the Interstate Commerce Commission:*

In compliance with section 7 of the act of February 17, 1911, as amended, the Seventeenth Annual Report of the Chief Inspector covering the work of the bureau during the fiscal year ended June 30, 1928, is respectfully submitted.

Summaries are given, by railroads, of all accidents, showing the number of persons killed and injured due to the failure of parts and appurtenances of locomotives, 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 tables showing the number of accidents, the number of persons killed, and number injured as a result of the failure of parts and appurtenances of locomotives have been arranged to permit comparison with previous years as far as consistent. These tables also show the number of locomotives inspected, the number and percentage of those inspected and found defective, the number for which written notices withholding locomotives from service for repairs were issued in accordance with section 6 of the law, which provides—

Whenever any district inspector shall, in the performance of his duty, find any locomotive or apparatus pertaining thereto not conforming to the requirements of the law or the rules and regulations established and approved, he shall notify the carrier in writing that the locomotive is not in serviceable condition, and thereafter such locomotive shall not be used until in serviceable condition—

and the total defects found and reported. The data contained therein cover all defects on all parts and appurtenances of locomotives found and reported by our inspectors, arranged by railroads.

Summaries and tables show separately accidents and other data in connection with steam locomotives and tenders and their appurtenances and accidents and other data in connection with locomotives other than steam.

## REPORT OF CHIEF INSPECTOR OF LOCOMOTIVES

TABLE I.—Reports and inspections—Steam locomotives

|   | 1928    | 1927    | 1926    | 1925    | 1924    | 1923    |
|---|---------|---------|---------|---------|---------|---------|
| Number of locomotives for which reports were filed..... | 65,940  | 67,835  | 69,173  | 70,361  | 70,683  | 70,242  |
| Number inspected.....                                   | 100,415 | 97,227  | 90,475  | 72,279  | 67,507  | 63,657  |
| Number found defective.....                             | 24,051  | 29,995  | 36,354  | 32,989  | 36,098  | 41,150  |
| Percentage inspected found defective.....               | 24      | 31      | 40      | 46      | 53      | 65      |
| Number ordered out of service.....                      | 1,725   | 2,539   | 3,281   | 3,637   | 5,764   | 7,075   |
| Total number of defects found.....                      | 85,530  | 112,008 | 136,973 | 129,239 | 146,121 | 173,840 |

TABLE II.—Accidents and casualties caused by failure of some part of the steam locomotive, including boiler, or tender

|  | Year ended June 30— |       |      |      |       |       |
|--|---------------------|-------|------|------|-------|-------|
|  | 1928                | 1927  | 1926 | 1925 | 1924  | 1923  |
| Number of accidents.....                                 | 419                 | 488   | 574  | 690  | 1,005 | 1,348 |
| Per cent of increase or decrease from previous year..... | 14.1                | 14.9  | 16.8 | 31.3 | 25.5  | 117   |
| Number of persons killed.....                            | 30                  | 28    | 22   | 20   | 66    | 72    |
| Per cent increase or decrease from previous year.....    | 17.1                | 127.3 | 110  | 69.7 | 8.3   | 1118  |
| Number of persons injured.....                           | 463                 | 517   | 660  | 764  | 1,157 | 1,560 |
| Per cent increase or decrease from previous year.....    | 10.4                | 21.6  | 13.6 | 33.9 | 25    | 1120  |

<sup>1</sup> Increase.TABLE III.—Accidents and casualties caused by failure of some part or appurtenance of the steam locomotive boiler <sup>1</sup>

|                                | Year ended June 30— |      |      |      |      |      |      |       |
|--------------------------------|---------------------|------|------|------|------|------|------|-------|
|                                | 1928                | 1927 | 1926 | 1925 | 1924 | 1923 | 1915 | 1912  |
| Number of accidents.....       | 150                 | 185  | 247  | 274  | 393  | 509  | 424  | 856   |
| Number of persons killed.....  | 26                  | 20   | 18   | 13   | 54   | 47   | 13   | 91    |
| Number of persons injured..... | 174                 | 205  | 287  | 315  | 447  | 594  | 467  | 1,005 |

<sup>1</sup> The original act applied only to the locomotive boiler.

TABLE IV.—Derailments and casualties caused by defects in or failure of some part of the steam locomotive or tender

|  | Year ended June 30— |      |      |      |      |
|--|---------------------|------|------|------|------|
|  | 1928                | 1927 | 1926 | 1925 | 1924 |
| Number of derailments <sup>1</sup> ..... | 14                  | 15   | 23   | 22   | 30   |
| Number of persons killed.....            | 1                   | 1    | 2    | 52   | 3    |
| Number of persons injured.....           | 27                  | 23   | 49   | 52   | 112  |

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

## REPORT OF CHIEF INSPECTOR OF LOCOMOTIVES

TABLE V.—Number of casualties classified according to occupation—Steam locomotive accidents

|  | 1928   |         | 1927   |         | 1926   |         | 1925   |         | 1924   |         |
|--|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|
|  | Killed | Injured | Killed | Injured | Killed | Injured | Killed | Injured | Killed | Injured |
| Members of train crews:                  |        |         |        |         |        |         |        |         |        |         |
| Engineers.....                           | 8      | 151     | 8      | 181     | 5      | 210     | 8      | 230     | 19     | 330     |
| Firemen.....                             | 11     | 161     | 9      | 179     | 6      | 230     | 6      | 300     | 22     | 434     |
| Brakemen.....                            | 4      | 54      | 4      | 51      | 3      | 77      | 2      | 84      | 9      | 102     |
| Conductors.....                          | 4      | 16      | 1      | 25      | 2      | 28      | 2      | 25      | 2      | 39      |
| Switchmen.....                           | 15     | 1       | 13     | 19      | 19     | 19      | 23     | 1       | 29     | 29      |
| Roundhouse and shop employees:           |        |         |        |         |        |         |        |         |        |         |
| Boiler makers.....                       | 3      | 5       | 11     | 5       | 5      | 6       | 1      | 24      | 1      | 24      |
| Machinists.....                          | 2      | 4       | 1      | 5       | 5      | 13      | 1      | 9       | 1      | 9       |
| Foremen.....                             | 1      | 1       | 1      | 3       | 3      | 1       | 1      | 6       | 1      | 6       |
| Inspectors.....                          | 1      | 1       | 2      | 4       | 1      | 5       | 1      | 3       | 1      | 3       |
| Watchmen.....                            | 1      | 2       | 4      | 1       | 5      | 1       | 3      | 5       | 1      | 5       |
| Boiler washers.....                      | 1      | 1       | 2      | 2       | 2      | 5       | 2      | 5       | 2      | 5       |
| Hostlers.....                            | 10     | 1       | 7      | 9       | 9      | 16      | 16     | 14      | 1      | 14      |
| Other roundhouse and shop employees..... | 8      | 10      | 10     | 1       | 15     | 10      | 6      | 34      | 6      | 34      |
| Other employees.....                     | 12     | 1       | 9      | 3       | 10     | 1       | 13     | 16      | 1      | 16      |
| Nonemployees.....                        | 1      | 23      | 19     | 1       | 42     | 2       | 34     | 1       | 107    | 107     |
| Total.....                               | 30     | 463     | 28     | 517     | 22     | 660     | 20     | 764     | 66     | 1,157   |

TABLE VI.—Reports and inspections—Locomotives other than steam

|   | 1928  | 1927 |
|---|-------|------|
| Number of locomotives for which reports were filed..... | 1,034 | 951  |
| Number inspected.....                                   | 1,119 | 604  |
| Number found defective.....                             | 169   | 174  |
| Percentage inspected found defective.....               | 15    | 29   |
| Number ordered out of service.....                      | 9     | 9    |
| Total number of defects found.....                      | 411   | 423  |

TABLE VII.—Accidents and casualties caused by failure of some part or appurtenance of locomotives other than steam

|                                | Year ended June 30— |      |
|--------------------------------|---------------------|------|
|                                | 1928                | 1927 |
| Number of accidents.....       | 4                   | 5    |
| Number of persons killed.....  | 1                   | 3    |
| Number of persons injured..... | 3                   | 5    |

TABLE VIII.—Number of casualties classified according to occupation—Locomotives other than steam

|  | 1928   |         | 1927   |         |
|--|--------|---------|--------|---------|
|  | Killed | Injured | Killed | Injured |
| Members of train crews:                  |        |         |        |         |
| Engineers.....                           |        | 2       |        | 1       |
| Firemen.....                             |        |         |        | 2       |
| Roundhouse and shop employees:           |        |         |        |         |
| Inspectors.....                          |        |         |        | 1       |
| Other roundhouse and shop employees..... | 1      | 1       |        | 1       |
| Total.....                               | 1      | 3       |        | 5       |

TABLE IX.—Accidents and casualties resulting from failures of steam locomotives and tenders and their appurtenances

| Part or appurtenance which caused accident                           | Year ended June 30— |        |         |           |        |         |           |        |         |           |        |         |           |        |         |
|--|---------------------|--------|---------|-----------|--------|---------|-----------|--------|---------|-----------|--------|---------|-----------|--------|---------|
|  | 1928                |        |         | 1927      |        |         | 1926      |        |         | 1925      |        |         | 1924      |        |         |
|  | Accidents           | Killed | Injured | Accidents | Killed | Injured | Accidents | Killed | Injured | Accidents | Killed | Injured | Accidents | Killed | Injured |
| Air reservoirs.....  |                     |        | 3       |           | 3      | 3       |           | 5      | 4       |           | 4      | 2       |           | 2      |         |
| Aprons.....  | 5                   | 5      | 6       |           | 6      | 11      |           | 11     | 4       |           | 4      | 5       |           | 11     |         |
| Arch tubes.....  | 1                   | 1      | 2       |           | 5      | 5       |           | 5      | 3       |           | 5      | 5       |           | 8      |         |
| Ash-pan blowers.....   | 1                   | 1      | 2       |           | 2      | 2       |           | 2      | 3       |           | 3      | 9       |           | 9      |         |
| Axles.....   | 5                   | 8      | 6       |           | 7      | 7       |           | 12     | 24      |           | 10     | 10      |           | 16     |         |
| Blow-off cocks.....  | 7                   | 7      | 10      | 1         | 9      | 10      |           | 10     | 13      |           | 13     | 18      |           | 18     |         |
| Boiler checks.....   | 3                   |        | 4       | 2         |        | 2       |           | 8      | 8       |           | 8      | 8       |           | 8      |         |
| Boiler explosions:   |                     |        |         |           |        |         |           |        |         |           |        |         |           |        |         |
| A. Shell explosions.....   |                     |        |         |           |        |         |           |        |         |           |        |         |           |        |         |
| B. Crown sheet; low water; no contributory causes found.....         | 15                  | 16     | 25      | 14        | 14     | 14      | 22        | 11     | 33      | 9         | 5      | 18      | 20        | 25     | 19      |
| C. Crown sheet; low water; contributory causes or defects found..... | 7                   | 4      | 12      | 5         | 3      | 12      | 15        | 6      | 30      | 13        | 5      | 22      | 22        | 20     | 37      |
| D. Firebox; defective stay bolts, crown stays, or sheets.....        |                     |        |         |           |        |         |           |        |         | 6         | 2      | 9       | 1         |        | 3       |
| Brakes and brake rigging.....  | 14                  |        | 14      | 25        | 1      | 26      | 13        |        | 21      | 31        | 3      | 33      | 38        |        | 45      |
| Couplers.....  | 13                  | 1      | 14      | 15        |        | 16      | 15        |        | 19      | 21        | 1      | 20      | 24        | 1      | 27      |
| Crank pins, collars, etc.....  | 8                   |        | 8       | 3         |        | 4       | 8         |        | 10      | 8         |        | 10      | 12        |        | 13      |
| Crossheads and guides.....   | 3                   |        | 3       | 7         |        | 7       | 5         |        | 7       | 3         |        | 3       | 11        |        | 13      |
| Cylinder cocks and rigging.....                                      | 6                   |        | 6       | 3         |        | 3       | 3         |        | 3       | 3         |        | 3       | 8         |        | 8       |
| Cylinder heads and steam chests.....                                 | 1                   |        | 1       | 4         |        | 4       | 9         |        | 11      | 2         |        | 2       | 8         |        | 14      |
| Dome caps.....   | 1                   |        | 1       |           |        |         |           |        | 2       | 2         |        | 3       |           |        |         |
| Draft appliances.....  | 1                   |        | 2       | 2         |        | 2       | 1         |        | 1       | 4         |        | 8       | 4         |        | 5       |
| Draw gear.....   | 2                   |        | 2       | 5         |        | 6       | 2         |        | 2       | 6         |        | 6       | 13        | 2      | 11      |
| Fire doors, levers, etc.....   | 8                   |        | 8       | 6         |        | 6       | 11        |        | 11      | 12        |        | 12      | 16        |        | 16      |
| Flues.....   | 17                  |        | 21      | 23        | 1      | 26      | 26        |        | 31      | 36        |        | 42      | 41        | 1      | 54      |
| Flue pockets.....  |                     |        |         |           |        |         |           |        |         |           |        |         | 2         |        | 2       |
| Foothboards.....   | 11                  |        | 11      | 10        |        | 10      | 9         | 1      | 8       | 11        |        | 11      | 24        |        | 24      |
| Gauge cocks.....   |                     |        |         |           |        |         |           |        | 2       | 2         |        | 2       |           |        |         |
| Grease cups.....   | 1                   |        | 1       | 1         |        | 1       | 3         |        | 3       | 7         |        | 7       | 8         | 1      | 7       |
| Grate shakers.....   | 25                  |        | 25      | 29        |        | 29      | 38        |        | 38      | 57        |        | 57      | 96        |        | 97      |
| Handholds.....   | 12                  |        | 12      | 1         |        | 11      | 14        |        | 14      | 13        |        | 13      | 21        | 1      | 20      |
| Headlights and brackets.....   | 3                   | 1      | 2       | 6         | 1      | 5       | 2         |        | 2       | 5         |        | 5       | 6         | 2      | 4       |
| Injectors and connections (not including injector steam pipes).....  | 7                   |        | 7       | 12        |        | 12      | 19        |        | 22      | 20        |        | 20      | 35        | 1      | 36      |
| Injector steam pipes.....  | 3                   |        | 3       | 4         |        | 5       | 8         |        | 9       | 12        |        | 15      | 16        |        | 20      |
| Lubricators and connections.....                                     | 8                   |        | 8       | 7         |        | 8       | 12        | 1      | 11      | 16        |        | 16      | 12        |        | 12      |
| Lubricator glasses.....  | 1                   |        | 1       |           |        | 3       | 3         |        | 3       | 6         |        | 6       | 5         |        | 5       |
| Patch bolts.....   |                     |        |         |           |        |         |           |        |         |           |        |         | 2         |        | 3       |
| Pistons and piston rods.....   | 2                   |        | 2       | 4         | 1      | 3       | 3         |        | 3       | 4         | 1      | 4       | 7         |        | 7       |
| Plugs, arch tube and washout.....                                    | 1                   | 2      | 1       | 6         | 1      | 8       | 4         |        | 5       | 5         |        | 6       | 17        | 6      | 19      |
| Plugs in firebox sheets.....   |                     |        |         |           |        |         |           |        |         |           |        |         |           |        |         |
| Reversing gear.....  | 35                  |        | 35      | 30        |        | 30      | 37        |        | 37      | 49        |        | 49      | 83        |        | 83      |
| Rivets.....  | 1                   |        | 1       | 2         |        | 2       | 3         |        | 3       | 1         |        | 1       | 7         |        | 8       |
| Rods, main and side.....   | 11                  | 1      | 13      | 16        | 1      | 18      | 20        |        | 24      | 23        | 1      | 25      | 21        | 1      | 21      |
| Safety valves.....   | 1                   |        | 1       |           |        |         |           |        |         |           |        |         | 3         |        | 3       |
| Sanders.....   | 2                   |        | 2       | 5         |        | 5       |           |        | 3       |           |        | 3       | 5         |        | 5       |
| Side bearings.....   |                     |        |         |           |        |         |           |        |         |           |        |         |           |        |         |
| Springs and spring rigging.....                                      | 10                  | 1      | 11      | 14        |        | 18      | 16        |        | 16      | 25        | 1      | 26      | 19        | 1      | 18      |
| Squirt hose.....   | 32                  |        | 33      | 33        |        | 33      | 51        |        | 51      | 53        |        | 53      | 66        |        | 66      |
| Stay bolts.....  | 5                   | 2      | 4       | 8         |        | 8       | 4         |        | 4       | 5         |        | 6       | 2         |        | 3       |
| Steam piping and blowers.....  | 7                   | 1      | 10      | 11        |        | 11      | 7         |        | 7       | 5         |        | 6       | 23        | 1      | 27      |
| Steam valves.....  | 2                   |        | 2       | 6         |        | 6       | 4         |        | 4       | 7         |        | 8       | 15        |        | 15      |
| Studs.....   | 1                   |        | 1       | 3         |        | 3       | 7         |        | 9       | 1         |        | 1       | 4         |        | 5       |
| Superheater tubes.....   | 1                   |        | 2       | 5         |        | 7       | 7         |        | 10      | 3         |        | 3       | 4         |        | 6       |
| Throttle glands.....   | 1                   |        | 1       | 2         |        | 2       |           |        | 1       | 1         |        | 1       | 1         |        | 1       |
| Throttle leaking.....  | 1                   |        | 1       |           |        |         |           |        | 3       | 2         |        | 2       | 8         |        | 9       |
| Throttle rigging.....  | 3                   |        | 3       | 6         | 1      | 6       | 12        |        | 12      | 10        |        | 10      | 13        |        | 14      |
| Trucks, leading, trailing or tender.....                             | 3                   |        | 4       | 4         | 1      | 4       | 7         |        | 23      | 6         |        | 14      | 17        | 3      | 85      |
| Valve gear, eccentrics and rods.....                                 | 8                   |        | 9       | 22        |        | 23      | 13        |        | 13      | 16        |        | 16      | 27        |        | 29      |
| Water glasses.....   | 13                  |        | 13      | 10        |        | 11      | 12        |        | 12      | 8         |        | 8       | 14        |        | 14      |
| Water-glass fittings.....  | 1                   |        | 1       | 2         |        | 2       | 3         |        | 3       | 7         |        | 7       | 10        |        | 11      |
| Wheels.....  | 5                   |        | 13      | 5         |        | 6       | 6         |        | 7       | 10        |        | 10      | 8         |        | 10      |
| Miscellaneous.....   | 84                  | 1      | 87      | 69        | 1      | 68      | 81        | 2      | 82      | 101       | 1      | 101     | 124       |        | 133     |
| Total.....   | 419                 | 30     | 463     | 488       | 28     | 517     | 574       | 22     | 660     | 690       | 20     | 764     | 1,005     | 66     | 1,157   |

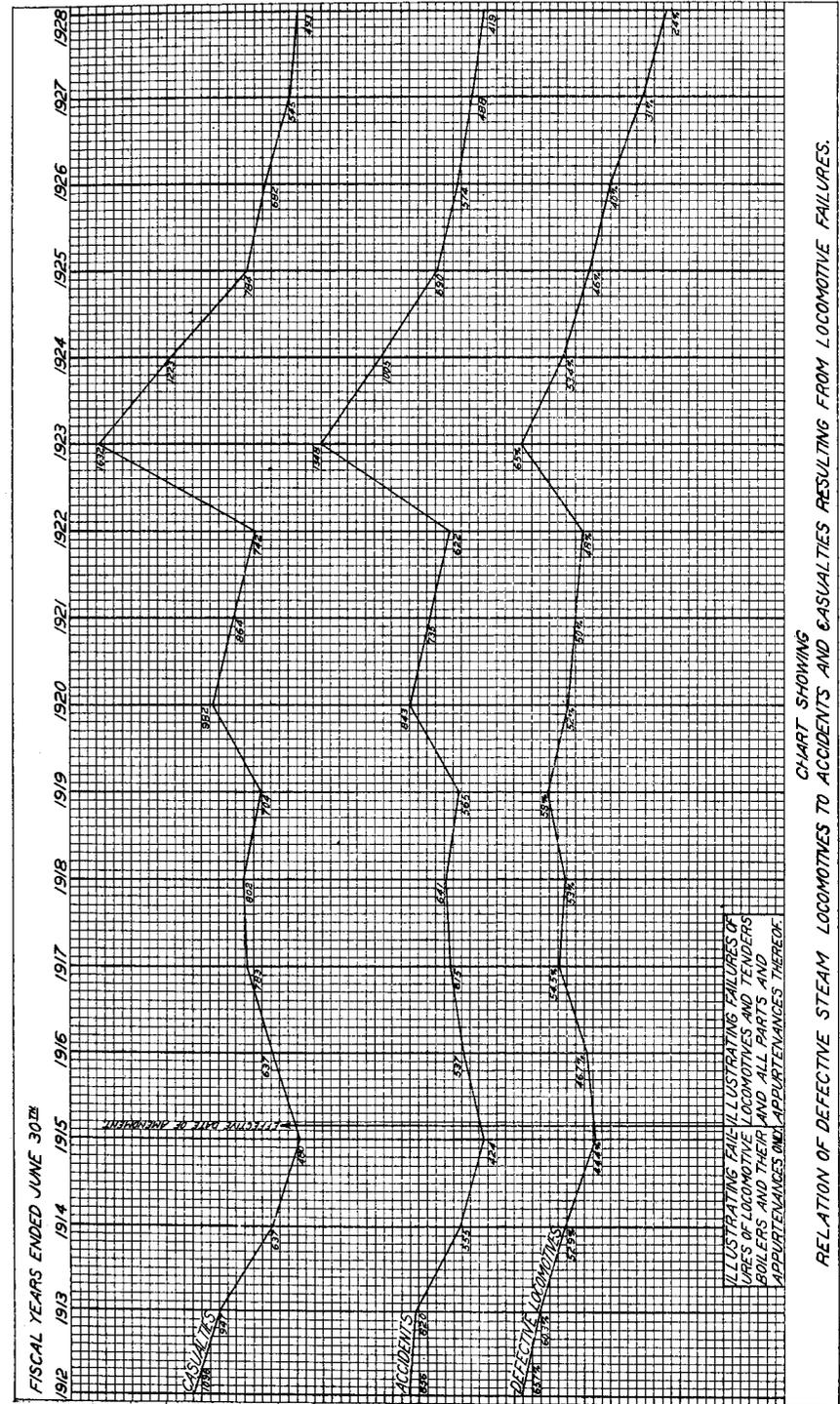


CHART SHOWING RELATION OF DEFECTIVE STEAM LOCOMOTIVES TO ACCIDENTS AND CASUALTIES RESULTING FROM LOCOMOTIVE FAILURES.

TABLE X.—Accidents and casualties resulting from failures of locomotives other than steam, and their appurtenances

| Part or appurtenance which caused accident | Year ended June 30— |        |         |           |        |         |
|--|---------------------|--------|---------|-----------|--------|---------|
|  | 1928                |        |         | 1927      |        |         |
|  | Accidents           | Killed | Injured | Accidents | Killed | Injured |
| Circuit breaker.....                       | 1                   | —      | 1       | 1         | —      | 1       |
| Insulation.....                            | —                   | —      | —       | 1         | —      | 1       |
| Pantagraph.....                            | 1                   | 1      | —       | —         | —      | —       |
| Third rail shoe.....                       | 2                   | —      | —       | —         | —      | —       |
| Transformer.....                           | —                   | —      | —       | 1         | —      | 1       |
| Miscellaneous.....                         | —                   | —      | —       | 2         | —      | 2       |
| Total.....                                 | 4                   | 1      | 3       | 5         | —      | 5       |

TABLE XI.—Number of steam locomotives reported, inspected, found defective, and ordered from service

|  | Year ended June 30— |       |        |        |       |        |
|--|---------------------|-------|--------|--------|-------|--------|
|  | 1928                | 1927  | 1926   | 1925   | 1924  | 1923   |
| 1 Air compressors.....                                     | 1,282               | 1,679 | 2,151  | 1,574  | 1,221 | 1,390  |
| 2 Arch tubes.....  | 103                 | 127   | 204    | 198    | 272   | 468    |
| 3 Ash pans or mechanism.....                               | 133                 | 192   | 211    | 216    | 257   | 306    |
| 4 Axles.....   | 7                   | 13    | 8      | 14     | 19    | 21     |
| 5 Blow-off cocks.....                                      | 469                 | 650   | 280    | 825    | 965   | 1,578  |
| 6 Boiler checks.....                                       | 914                 | 1,043 | 1,200  | 991    | 1,329 | 1,913  |
| 7 Boiler shell.....  | 954                 | 1,422 | 1,888  | 1,597  | 2,103 | 2,370  |
| 8 Brake equipment.....                                     | 5,214               | 6,572 | 7,062  | 6,497  | 6,920 | 8,213  |
| 9 Cabs or cab windows.....                                 | 1,670               | 2,055 | 2,666  | 2,541  | 1,627 | 1,423  |
| 10 Cab aprons or decks.....                                | 852                 | 1,086 | 1,307  | 1,165  | 1,293 | 1,476  |
| 11 Cab cards.....  | 378                 | 575   | 696    | 665    | 758   | 1,449  |
| 12 Coupling or uncoupling devices.....                     | 179                 | 289   | 394    | 447    | 398   | 634    |
| 13 Crossheads, guides, pistons, or piston rods.....        | 2,088               | 2,602 | 3,018  | 2,922  | 3,577 | 5,527  |
| 14 Crown bolts.....  | 164                 | 255   | 334    | 283    | 418   | 630    |
| 15 Cylinders, saddles, or steam chests.....                | 3,264               | 4,520 | 5,080  | 4,352  | 5,712 | 4,875  |
| 16 Cylinder cocks or rigging.....                          | 1,007               | 1,634 | 1,904  | 1,801  | 2,376 | 1,745  |
| 17 Domes or dome caps.....                                 | 281                 | 388   | 463    | 371    | 494   | 628    |
| 18 Draft gear.....   | 1,453               | 2,087 | 2,634  | 2,283  | 1,981 | 2,613  |
| 19 Draw gear.....  | 1,650               | 2,210 | 3,140  | 3,273  | 4,160 | 4,513  |
| 20 Driving boxes, shoes, wedges, pedestals, or braces..... | 1,990               | 2,710 | 3,342  | 3,241  | 3,722 | 4,269  |
| 21 Fire-box sheets.....                                    | 730                 | 796   | 1,129  | 1,152  | 1,471 | 2,327  |
| 22 Flues.....  | 464                 | 465   | 556    | 524    | 698   | 1,268  |
| 23 Frames, tail pieces, or braces, locomotive.....         | 1,354               | 1,682 | 1,973  | 2,036  | 2,580 | 2,683  |
| 24 Frames, tender.....                                     | 256                 | 264   | 373    | 391    | 414   | 540    |
| 25 Gauges or gauge fittings, air.....                      | 461                 | 721   | 886    | 694    | 626   | 1,062  |
| 26 Gauges or gauge fittings, steam.....                    | 969                 | 1,425 | 2,038  | 1,809  | 2,026 | 3,075  |
| 27 Gauge cocks.....  | 1,413               | 2,024 | 3,068  | 3,081  | 3,835 | 5,895  |
| 28 Grate shakers.....                                      | 377                 | 613   | 720    | 832    | 1,006 | 569    |
| 29 Handholds.....  | 1,373               | 2,285 | 3,100  | 2,831  | 2,241 | 1,990  |
| 30 Injectors, inoperative.....                             | 93                  | 84    | 78     | 70     | 94    | 251    |
| 31 Injectors and connections.....                          | 5,563               | 7,188 | 8,303  | 8,064  | 9,985 | 12,406 |
| 32 Inspections or tests not made as required.....          | 6,623               | 8,889 | 10,646 | 10,436 | 9,740 | 7,419  |
| 33 Lateral motion.....                                     | 699                 | 673   | 758    | 659    | 939   | 1,625  |
| 34 Lights, cab or classification.....                      | 118                 | 107   | 106    | 86     | 72    | 90     |
| 35 Lights, headlights.....                                 | 571                 | 835   | 946    | 928    | 904   | 1,164  |
| 36 Lubricator or shields.....                              | 500                 | 746   | 883    | 704    | 565   | 566    |
| 37 Mud rings.....  | 822                 | 1,073 | 1,458  | 1,384  | 1,901 | 2,711  |
| 38 Packing nuts.....                                       | 1,265               | 1,851 | 2,772  | 2,761  | 3,304 | 4,755  |
| 39 Packing, piston rod and valve stem.....                 | 1,904               | 2,214 | 2,489  | 2,411  | 3,187 | 3,359  |
| 40 Pilot or pilot beams.....                               | 386                 | 507   | 638    | 832    | 967   | 1,294  |
| 41 Plugs or studs.....                                     | 619                 | 740   | 1,087  | 849    | 1,026 | 857    |
| 42 Reversing gear.....                                     | 967                 | 1,247 | 1,539  | 1,274  | 1,217 | 1,272  |
| 43 Rods, main or side, crank pins or collars.....          | 4,152               | 5,137 | 5,683  | 4,813  | 6,507 | 10,080 |
| 44 Safety valves.....                                      | 172                 | 212   | 270    | 234    | 188   | 192    |
| 45 Sanders.....  | 1,031               | 1,288 | 1,769  | 2,004  | 1,806 | 1,857  |
| 46 Springs or spring rigging.....                          | 4,939               | 5,956 | 6,826  | 5,532  | 6,335 | 7,911  |
| 47 Squirt hose.....  | 478                 | 644   | 975    | 1,008  | 1,221 | 1,998  |
| 48 Staybolts.....  | 590                 | 631   | 905    | 741    | 616   | 1,813  |
| 49 Staybolts, broken.....                                  | 1,867               | 2,373 | 3,582  | 3,745  | 5,320 | 10,089 |
| 50 Steam pipes.....  | 1,020               | 1,308 | 1,587  | 1,590  | 2,305 | 2,467  |
| 51 Steam valves.....                                       | 708                 | 774   | 962    | 869    | 981   | 1,188  |
| 52 Steps.....  | 1,817               | 2,440 | 3,227  | 2,867  | 2,829 | 3,289  |
| 53 Tanks or tank valves.....                               | 1,941               | 2,747 | 3,430  | 3,352  | 3,393 | 3,788  |
| 54 Telltale holes.....                                     | 241                 | 377   | 487    | 461    | 620   | 715    |

TABLE XI.—Number of steam locomotives reported, inspected, found defective, and ordered from service—Continued

|  | Year ended June 30— |         |         |         |         |         |
|--|---------------------|---------|---------|---------|---------|---------|
|  | 1928                | 1927    | 1926    | 1925    | 1924    | 1923    |
| 55 Throttle or throttle rigging.....                                 | 1,889               | 2,233   | 2,618   | 2,403   | 2,868   | 2,633   |
| 56 Trucks, engine or trailing.....                                   | 1,914               | 2,363   | 2,860   | 2,966   | 3,425   | 3,899   |
| 57 Trucks, tender.....   | 2,610               | 4,114   | 4,929   | 5,372   | 5,977   | 3,714   |
| 58 Valve motion.....   | 1,262               | 1,568   | 1,576   | 1,250   | 1,269   | 1,761   |
| 59 Washout plugs.....  | 2,211               | 2,786   | 3,649   | 3,588   | 3,204   | 3,641   |
| 60 Train-control equipment.....                                      | 112                 | —       | —       | —       | —       | —       |
| 61 Water glass, fittings, or shields.....                            | 2,115               | 2,973   | 3,621   | 3,713   | 4,201   | 5,641   |
| 62 Wheels.....   | 1,609               | 2,119   | 2,243   | 2,148   | 2,996   | 4,371   |
| 63 Miscellaneous—Signal appliances, badge plates, brakes (hand)..... | 1,273               | 1,511   | 1,746   | 1,529   | 1,360   | 996     |
| Total number of defects.....   | 85,530              | 112,008 | 136,973 | 129,239 | 146,121 | 173,840 |
| Locomotives reported.....  | 65,940              | 67,835  | 69,173  | 70,361  | 70,683  | 70,242  |
| Locomotives inspected.....   | 100,415             | 97,227  | 90,475  | 72,279  | 67,507  | 63,657  |
| Locomotives defective.....   | 24,051              | 29,995  | 36,354  | 32,989  | 36,998  | 41,150  |
| Percentage inspected found defective.....                            | 24                  | 31      | 40      | 46      | 53      | 65      |
| Locomotives ordered out of service.....                              | 1,725               | 2,539   | 3,281   | 3,637   | 5,764   | 7,075   |

TABLE XII.—Number of locomotives other than steam reported, inspected, found defective, and ordered from service

| Parts defective, inoperative or missing, or in violation of rules           | Year ended June 30— |      |
|---|---------------------|------|
|   | 1928                | 1927 |
| Air compressors.....  | 5                   | 2    |
| Batteries.....  | —                   | 1    |
| Boiler.....   | 1                   | —    |
| Brake equipment.....  | 32                  | 13   |
| Cabs or cab windows.....  | 32                  | 72   |
| Cab floors, aprons, or deck plates.....                                     | 1                   | —    |
| Controllers, relays, circuit breakers, and switch groups.....               | 1                   | —    |
| Current collecting apparatus.....   | 1                   | 20   |
| Draft gear.....   | 41                  | 9    |
| Draw gear.....  | —                   | 6    |
| Driving boxes, shoes, wedges, pedestals, or pedestal braces.....            | 17                  | 8    |
| Frames, tail pieces, or braces.....   | 1                   | 1    |
| Fuel tank, its piping and valves.....                                       | 6                   | 8    |
| Gauges and gauge fittings, air.....   | 3                   | 1    |
| Gears and pinions.....  | 1                   | —    |
| High-tension equipment not properly guarded against accidental contact..... | 29                  | 11   |
| Inspections or tests not made as required.....                              | 84                  | 79   |
| Internal combustion engine defects, including parts and appliances.....     | 11                  | —    |
| Insulation.....   | —                   | 1    |
| Jack shafts.....  | 5                   | 1    |
| Lateral motion—wheels.....  | 2                   | 18   |
| Lights, cab or classification.....  | 10                  | 5    |
| Lights, headlights.....   | 9                   | 1    |
| Meters—volt and ampere.....   | —                   | 1    |
| Motors or generators.....   | 10                  | 5    |
| Pilots or pilot beams.....  | 3                   | 1    |
| Plugs or studs (boiler, other than fusible plugs).....                      | 1                   | —    |
| Rods, motor, main or side, drive shafts.....                                | 2                   | 38   |
| Sanders.....  | 12                  | —    |
| Springs or spring rigging—driving and truck.....                            | 10                  | 18   |
| Switches, hand-operated, and fuses.....                                     | 6                   | 6    |
| Transformers, resistors, and rheostats.....                                 | 1                   | 2    |
| Trucks.....   | 10                  | 56   |
| Water glass, fittings, or shields.....                                      | 1                   | 2    |
| Wheels.....   | 17                  | 17   |
| Whistles, bells, or train signal system.....                                | 1                   | —    |
| Miscellaneous.....  | 45                  | 20   |
| Total defects.....  | 411                 | 423  |
| Locomotives reported.....   | 1,034               | 951  |
| Locomotives inspected.....  | 1,119               | 604  |
| Locomotives defective.....  | 169                 | 174  |
| Percentage inspected found defective.....                                   | 15                  | 29   |
| Locomotives ordered out of service.....                                     | 9                   | 9    |

## 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 an endeavor to bring about a decrease in the number of accidents.

A summary of all accidents and casualties to persons occurring in connection with steam locomotives compared with the previous year shows a decrease of 14.1 per cent in the number of accidents, an increase of 7.1 per cent in the number of persons killed, and a decrease of 10.4 per cent in the number injured during the year.

## GENERAL CONDITION OF STEAM LOCOMOTIVES

There has been a substantial decrease in the percentage of locomotives inspected by our inspectors found defective; for instance, during the year 24 per cent of the locomotives inspected were found with defects or errors in inspection that should have been corrected before being put in use, as compared with 31 per cent for the previous year, 40 per cent for the fiscal year ended June 30, 1926, 46 per cent for the year 1925, 53 per cent for the year 1924, and 65 per cent for the year 1923, when there occurred 1,348 accidents, resulting in the death of 72 persons and the serious injury of 1,560 others—when prosecutions in the courts for the more flagrant violations of the law were begun—as compared with 419 accidents during the current year, resulting in the death of 30 persons and the serious injury of 463 others. The percentage of defective locomotives this year reached the lowest point ever recorded and is indicative of the general condition of the locomotives throughout the entire country.

While there has been a substantial decrease in the total number of accidents and casualties to persons, with a substantial decrease in the number of defective locomotives, our investigations indicate that a further reduction would have resulted had more thorough inspections been made by some of the carriers and the requirements of the law and rules been complied with in respect to the proper repair of defects in equipment that affect safety; and while there has been a very general substantial improvement in the inspection and maintenance of locomotives and tenders, there are some railroads whose records do not compare favorably and where more exertive action may be required in bringing about the purpose and intent of the law.

Table IX shows the various parts and appurtenances of steam locomotives and tenders which through failure have caused serious and fatal accidents. If the information contained in this table is taken advantage of and proper inspections and repairs made in

accordance with the requirements of the law and rules many accidents will be avoided.

The graphic chart on page 5 shows the relation between the percentage of defective steam locomotives and the number of accidents and casualties to persons resulting from failure thereof, and illustrates the effect of operating locomotives in a defective condition from the viewpoint of safety.

## REDUCED BODY STAY BOLTS

In my fifteenth and sixteenth annual reports attention was called to the danger resulting from the use of reduced body stay bolts having telltale holes which do not extend into the reduced section at least five-eighths inch. Accidents resulting in serious and fatal injuries continue to occur with this type of bolt because of the telltale holes not being of sufficient depth to perform the function for which they are intended.

Many of these bolts are improperly applied, the bolts being too long to permit full engagement of the threads on the enlarged ends with the threads in the holes in the sheets. This condition is indicated by persistent leakage after the bolts are installed and attempts to stop the leakage result only in thinning and flattening the heads. The illustrations on page 81 show typical examples of bolts of this type.

## BOILER EXPLOSIONS OR CROWN SHEET FAILURES

As in former years, boiler explosions caused by crown sheet failures were the most prolific source of fatal accidents. Sixty-six and six-tenths per cent of the fatalities during the year were attributable to this cause. There was an increase of 15.8 per cent in the number of boiler explosions or crown sheet failures, and an increase of 17.6 per cent in the number of fatalities from this cause as compared with the previous year. Especial attention is directed to plates 1 to 14 shown on pages 65 to 77. Explosions may be expected to increase in violence with the increasing size of locomotive boilers and the higher pressure carried therein, and accidents of this nature may well be expected to increase as the duties and responsibilities of enginemen become more complex and exacting; therefore, the best thought and efforts of the various agencies concerned with design, construction, maintenance, equipment, and operation must necessarily be exerted and all practical safeguards provided if this class of accidents is to be reduced and maintained at a minimum.

## EXTENSION OF TIME FOR REMOVAL OF FLUES

Two hundred and thirty-four applications were filed for extensions of time for removal of flues, as provided in rule 10. Our investigations disclosed that in 14 of these cases the condition of the locomotives

tives was such that extensions could not properly be granted. Sixteen were in such condition that the full extensions requested could not be authorized, but extensions for shorter periods of time were allowed. Thirty-eight extensions were granted after defects disclosed by our investigations had been repaired. Nine applications were canceled for various reasons. One hundred and fifty-seven applications were granted for the full periods requested.

#### SPECIFICATION CARDS AND ALTERATION REPORTS

Under rule 54 of the Rules and Instructions for Inspection and Testing of Steam Locomotives, 872 specification cards and 8,321 alteration reports were filed, checked, and analyzed. These reports are necessary in order to determine whether or not the boilers represented were so constructed or repaired as to render safe and proper service and whether the stresses were within the allowed limits. Corrective measures were taken with respect to numerous discrepancies found.

Under rules 328 and 329 of the Rules and Instructions for Inspection and Testing of Locomotives Other Than Steam, 154 specifications and 40 alteration reports were filed for locomotive units and 74 specifications and 8 alteration reports were filed for boilers mounted on locomotives other than steam. These were checked and analyzed and corrective measures taken with respect to discrepancies found.

#### SUITS FOR PENALTIES

Five suits for penalties, involving 79 counts for alleged violations of the Locomotive Inspection Law and Rules, were pending in the various district courts at the beginning of the year. Information of violations was lodged with the proper United States attorneys in seven cases, involving 87 counts. Judgments in favor of the Government were obtained in eight cases, involving 134 counts, penalties imposed on 84 counts in the sum of \$8,400, and 50 counts dismissed, by stipulation or agreement. There were no adverse decisions of courts. Four cases, involving 32 counts, were pending in the district courts at the end of the year. The following is a brief summary of the cases:

#### CASES PENDING AT THE BEGINNING OF THE YEAR AND DISPOSED OF DURING THE YEAR

*U. S. v. Cincinnati, Indianapolis & Western Railroad Company*, southern district of Illinois, involved 44 counts for use of locomotives while in defective and unsafe condition. Judgment on 22 counts for \$2,200 and costs; 22 counts dismissed.

*U. S. v. Jefferson & North Western Railway Company*, eastern district of Texas, involved 9 counts for use of locomotives while in

defective and unsafe condition. Judgment on 6 counts for \$600 and costs; 3 counts dismissed.

*U. S. v. Kansas City, Mexico & Orient Railway Company*, northern district of Texas, involved 20 counts for use of locomotive with arch tube in defective and unsafe condition. Judgment on 14 counts for \$1,400 and costs; 6 counts dismissed.

*U. S. v. Louisiana Railway & Navigation Company*, eastern district of Texas, involved 3 counts for permitting the use of locomotives while in defective and unsafe condition. Judgment on 1 count for \$100 and costs; 2 counts dismissed.

*U. S. v. Texas & Pacific Railway Company*, eastern district of Texas, involved 3 counts for permitting the use of locomotives while in defective and unsafe condition. Judgment on 1 count for \$100 and costs; 2 counts dismissed.

#### CASES INSTITUTED AND DISPOSED OF DURING THE YEAR

*U. S. v. Cleveland, Cincinnati, Chicago & St. Louis Railway Company*, southern district of Ohio, involved 4 counts for use of locomotive with defective and improperly applied arch tube plug. Judgment on 4 counts for \$400 and costs.

*U. S. v. Erie Railroad Company*, western district of Pennsylvania, involved one count for use of locomotive with defective and unsafe superheater flue. Judgment on 1 count for \$100 and costs.

*U. S. v. Long Island Railroad Company*, eastern district of New York, involved 50 counts for use of locomotive while unsafe by reason of improperly located water glass and gauge cocks. Judgment on 35 counts for \$3,500; 15 counts dismissed.

#### CASES PENDING AT THE CLOSE OF THE YEAR

*U. S. v. Great Southern Railway Company*, district of Oregon, involves 15 counts for use of locomotive while in defective and unsafe condition and in violation of order of inspector.

*U. S. v. Hartford Eastern Railway Company*, western district of Washington, involves 10 counts for use of locomotive while in defective and unsafe condition and in violation of order of inspector.

*U. S. v. Minneapolis, St. Paul & Sault Ste. Marie Railway Company*, western district of Wisconsin, involves six counts for permitting the use of locomotive while in defective and unsafe condition.

*U. S. v. New York, Susquehanna & Western Railroad Company*, district of New Jersey, involves one count for use of locomotive with defective and unsafe stay bolt.

Since January 7, 1920, information of 860 violations has been lodged with the proper United States attorneys and 65 suits for penalties have been instituted. Three cases were dismissed by United

States attorneys and one case resulted in judgment in favor of the defendant. Judgments in favor of the Government have been obtained in 56 cases concluded since March 21, 1923, and penalties in the sum of \$57,900 imposed.

## APPEALS

No formal appeal by any carrier was taken from the decisions of our inspectors during the year.

## RECOMMENDATIONS FOR BETTERMENT OF THE SERVICE

In my former reports recommendations were made for the betterment of the service, in accordance with section 7 of the act as amended, and reasons therefor given, which are renewed.

A. G. PACK, *Chief Inspector.*

**ACCIDENTS AND CASUALTIES RESULTING FROM THE FAILURE OF STEAM LOCOMOTIVES AND TENDERS AND THEIR APPURTENANCES DURING THE FISCAL YEAR ENDED JUNE 30, 1928, 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.]

## ATCHISON, TOPEKA &amp; SANTA FE RAILWAY SYSTEM:

\*\*July 5, 1927, locomotive 3421, near Medill, Mo. Back cab ventilator glass fell out of frame account of frame being decayed; 1 injured.

July 30, 1927, locomotive 572, Marceline, Mo. Squirt hose blew off nipple due to being insecurely applied; 1 injured.

September 23, 1927, locomotive 3828, near Mountainair, N. Mex. Crown sheet failure caused by overheating due to low water; 2 killed.

December 9, 1927, locomotive 3130, Bagdad, Calif. Employee fell from gangway account of vertical handhold being disconnected at bottom end due to the bolt for securing bottom end to tail piece missing; 1 injured.

\*February 18, 1928, locomotive 3504, near Moore, Okla. Trailer tire broke in four pieces; 1 injured.

\*\*March 30, 1928, locomotive 3207, near Florence, Kans. Drain cock broke off stoker lubricator; 1 injured.

Six accidents; 2 killed, 5 injured.

## ATLANTA, BIRMINGHAM &amp; COAST RAILROAD:

\*September 20, 1927, locomotive 209, Chelsea, Ala. Whistle bell came loose and when employee went on running board to tighten it, he was burned by steam expelled from end of headlight exhaust pipe caused by leaky valve between fountain and generator; 1 injured.

One accident; 1 injured.

## ATLANTIC &amp; YADKIN RAILWAY:

\*May 25, 1928, locomotive 941, near Cumnock, N. C. Main driving axle broke off, breaking all side rods and knocking cab bracket and cab floor off on engineer's side; 1 injured.

One accident; 1 injured.

## ATLANTIC COAST LINE RAILROAD:

July 12, 1927, locomotive 1125, Jacksonville, Fla. Fire hose blew off nozzle; 1 injured.

September 16, 1927, locomotive 1205, Waycross, Ga. Fire hose nozzle blew off due to not being securely applied; 1 injured.

\*\*December 4, 1927, locomotive 1670, Milan, N. C. Pin came out of grate connecting rod while grates were being shaken, causing fireman to be thrown back against coal boards; 1 injured.

\*\*December 9, 1927, locomotive 1679, Fayetteville, N. C. Shaker bar slipped off fulcrum lever due to improper fit; 1 injured.

\*\*December 9, 1927, locomotive 1617, Slawco, S. C. Failure of brakes to hold properly caused a hard coupling onto cars, due to defective brake cylinder packing; 1 injured.

\*\*December 16, 1927, locomotive 1660, near Lucama, N. C. Right steam pipe burst, pipe not of sufficient strength due to variations in thickness; 1 killed.

January 4, 1928, locomotive 1625, South Rocky Mount, N. C. Cover to box over left grate shaker levers tilted when employee stepped on it due to not being properly secured in place; 1 injured.

May 2, 1928, locomotive 708, Tampa, Fla. Fire hose blew off fitting due to being insecurely applied; 1 injured.

Eight accidents; 1 killed, 7 injured.

## BALTIMORE &amp; OHIO RAILROAD SYSTEM:

July 10, 1927, locomotive 6142, Millers, W. Va. Trailer wheel tire worked outward on wheel center sufficient to take wrong side of frog at crossover, causing

derailment of locomotive, tender and 15 cars in train; tire loose on center and wheel flange less than  $\frac{1}{8}$ -inch in thickness for 58 inches and less than 1 inch for its entire circumference. In the 60 days prior to accident, this tire had been reported loose 18 times and flange reported as being close to, or taking, the  $\frac{1}{8}$ -inch gauge three times; 2 injured.

\*\*July 12, 1927, locomotive 4488, Adamstown Junction, Md. Burned by hot water escaping through hole in squirt hose; 1 injured.

\*\*July 14, 1927, locomotive 6193, Connellsville, Pa. Reverse gear wheel came off shaft due to key and nut missing; keyway in shaft and wheel badly worn; 1 injured.

\*\*August 1, 1927, locomotive 6208, Connellsville, Pa. Wire obstruction (for fastening gutter) on handhold located along lower left side of cab roof broke employee's hold on the handhold and caused him to fall to enginehouse floor; 1 injured.

September 3, 1927, locomotive 4613, Watersville Junction, Md. Right top guide running hot. Crosshead shoe worn below babbitt grooves, crosshead had excessive vertical motion. Crosshead had been reported on daily work reports eight times from August 26 to September 2; 1 injured.

October 2, 1927, locomotive 7026, near Rodemer, W. Va. Crown sheet failure caused by overheating due to low water; 2 killed, 1 injured.

\*\*October 11, 1927, locomotive 1934, McDonald, Ohio. Jacket band on side of firebox casing sheet was loose, allowing insufficient clearance between reverse lever and jacket band; 1 injured.

\*\*October 14, 1927, locomotive 5001, Baltimore, Md. Insufficient clearance between handle of screw reversing gear wheel and brake valve; 1 injured.

\*\*November 6, 1927, locomotive 1013, Willard, Ohio. Engineer's foot slipped from cab gangway step; tread defective; 1 injured.

November 12, 1927, locomotive 4500, Galatea, Ohio. Grate shaker bar slipped off post due to improper fit; shaker post and shaker bar post fit were burred; 1 injured.

November 29, 1927, locomotive 1016, Willard, Ohio. Water glass leaking due to  $\frac{3}{8}$ -inch gap in fiber gasket; this gasket had been reported on November 22, 23, 26, and 29 (previous to accident); 1 injured.

December 3, 1927, locomotive 4306, near New Concord, Ohio. Reverse lever unlatched and went suddenly to full forward position account of quadrant dropping down due to loose bracket connections, catching employee's hand between top of reverse lever and brake valve handle; quadrant was reported to be tightened on November 25 and December 2; 1 injured.

\*\*January 5, 1928, locomotive 1665, Butler, Pa. Excessive steam leaks around cylinders and front end of locomotive prevented engineers from seeing the signals of train crew and caused forward wheels of car to be shoved over end of tipple; piston rod and valve stem packing, piston and valve gland joints and front and back cylinder head joints on both sides leaking badly, and these conditions had been reported on January 2 and twice on January 3 and 4; 1 injured.

January 7, 1928, locomotive 2919, Warrén, Ohio. Reverse lever shield not securely fastened to cab floor; 1 injured.

January 8, 1928, locomotive 5205, Struthers, Ohio. Front end of right guide step came loose and caught on pavement breaking the remaining bolts and guide step was thrown from rapidly moving locomotive and struck crossing watchman; "Tighten right guide step bolts" was reported on January 7 and report indicated repairs were made; 1 injured.

\*\*January 18, 1928, locomotive 4040, Glenwood, Pa. Insufficient clearance between reverse lever when in back position and wooden strips attached to cab curtain; 1 injured.

January 20, 1928, locomotive 5241, Avilla, Ind. Insufficient clearance between drifting valve operating lever and air bell ringer throttle; 1 injured.

\*January 30, 1928, locomotive 4284, Hurricane, Ind. Leak in rim of tank permitted ice to accumulate on tank step which caused employee to slip; 1 injured.

\*\*January 31, 1928, locomotive 6201, Greene Junction, Pa. Union nut at discharge end of steam heat regulator was disconnected, allowing steam to be emitted into cab; 1 injured.

April 5, 1928, locomotive 4504, Willard, Ohio. Drifting throttle reach rod was fouled by reversing screw bracket and housing which caused reach rod to bind when throttle was open and prevent throttle from being closed; 1 injured.

May 25, 1928, locomotive 385, Demmler, Pa. Steam to foot heater would not shut off account of disk in shut-off valve being so badly ground away that it would not seat properly; 1 injured.

June 2, 1928, locomotive 2855, Baltimore, Md. Insufficient clearance between vertical cab handhold and top tender step while locomotive was backing on a 20° curve due to tender chafing casting being badly worn; 1 injured.

June 6, 1928, locomotive 4050, Halethorpe, Md. Injured while attempting to release left driver brake which was stuck; brake fulcrum too large for bearing shaft causing it to twist and hold brake piston out where it was binding and prevented brake from releasing; 1 injured.

\*\*June 16, 1928, locomotive 4259, Stoyestown, Pa. Defective squirt hose burst; 1 injured.

Twenty-four accidents; 2 killed, 25 injured.

#### BELT RAILWAY OF CHICAGO:

July 16, 1927, locomotive 77, Clearing, Ill. Front coupler on locomotive defective; pinhole in knuckle badly worn and pin bent and beginning to shear; 1 injured.

\*\*January 11, 1928, locomotive 112, Clearing, Ill. Insufficient clearance between reverse lever and throttle lever; 1 injured.

Two accidents; 2 injured.

#### BESSEMER & LAKE ERIE RAILROAD:

September 9, 1927, locomotive 121, Argentine, Pa. Valve yoke broke causing reverse lever to unlatch and suddenly go to full back position; brass liner applied to front cylinder port opening became loose and completely blocked backward motion of valve on its seat; 1 injured.

One accident; 1 injured.

#### BINGHAM & GARFIELD RAILWAY:

\*February 10, 1928, locomotive 102, Bingham, Utah. Insufficient clearance between reverse lever and boiler head; cheek plate loose which permitted lever to go past the stop in forward position; 1 injured.

One accident; 1 injured.

#### BOSTON & ALBANY RAILROAD:

October 26, 1927, locomotive 522, Westboro, Mass. Flue broke off at defective safe end weld; 1 injured.

November 24, 1927, locomotive 565, South Worcester, Mass. Steam-pipe collar at top connection to water column broke off, causing steam pipe to become disconnected; water column not properly braced and throttle lever latch handle striking water glass steam pipe valve on column; collar not properly applied to water column steam pipe; 1 injured.

June 19, 1928, locomotive 1407, near Washington, Mass. Front end throttle valve case broke all around and a piece, approximately  $\frac{3}{4}$  by 7 inches, broke out of dry pipe section, causing steam to blow back into cab; thickness of casting varied from one-half inch to 1 inch, though blue print provided that casting should be 1 inch all around. The condition of the casting was evidently known prior to the failure as fusion welding had been applied, apparently in an attempt to repair a crack or strengthen the casting; 2 injured.

Three accidents; 4 injured.

#### BOSTON & MAINE RAILROAD:

\*\*September 10, 1927, locomotive 2379, Madbury, N. H. Steam heat hose hook caught brakeman's overalls as he stepped off pilot sill step, causing him to be thrown to the ground; two steam heat hose hooks, used for air hose hooks, were so located that they interfered with the usual and proper use of pilot sill steps; 1 injured.

October 6, 1927, locomotive 2341, Gerrish, N. H. Drawbar casting broke through holes for drawbar pin and safety chains broke, permitting locomotive to separate from tender and causing fireman who was on cab apron to fall between locomotive and tender; 1 injured.

October 11, 1927, locomotive 1395, Malden, Mass. Blower pipe in smoke box became disconnected account of blower pipe union not properly applied to nipple; 2 injured.

October 18, 1927, locomotive 1017, Claremont Junction, N. H. Shaker bar slipped off post due to improper fit; 1 injured.

\*December 11, 1927, locomotive 631, Mystic Junction, Mass. Cars broke away from locomotive account of broken coupler knuckle pin on locomotive; 1 injured.

\*December 15, 1927, locomotive 449, East Somerville, Mass. Forward driving spring hanger broke, causing front end of locomotive to lower and foot-board on which employee was riding to bend back under locomotive; 1 injured.

\*December 22, 1927, locomotive 1464, Lynn, Mass. Draw bar spring at rear of tender broke, causing rough stop of passenger train at station; 1 injured. Seven accidents; 8 injured.

#### CENTRAL RAILROAD OF NEW JERSEY:

\*\*July 20, 1927, locomotive 829, Jenkintown, Pa. Shaker bar slipped off lever; grate lever of improper taper and shoulder on lever prevented shaker bar from properly engaging lever; 1 injured.

\*\*October 15, 1927, locomotive 583, near Flagtown, N. J. Side rods broke, puncturing inside and outside throat sheets; old fracture in left side rod bushing fit; rods reported on September 1, 10, 12, 17, 18, 27, 28, 29, and October 5, 6, 12, 13, and 14; 3 injured.

\*February 13, 1928, locomotive 826, Wilkes-Barre, Pa. Superheater damper stuck shut; 1 injured.

\*\*April 24, 1928, locomotive 45, Jersey City, N. J. Shaker bar broke; 1 injured.

May 27, 1928, locomotive 181, Bayway, N. J. Crank pin broke off inside wheel fit due to old fracture comprising approximately 80% of cross-sectional area; 1 injured.

Five accidents; 7 injured.

#### CHESAPEAKE & OHIO RAILWAY:

September 9, 1927, locomotive 1100, near Fulton, Ind. Crown sheet failure caused by overheating due to low water; right injector operating valve stem collar broken; left injector defective and would not operate under ordinary working conditions; bottom water glass cock extension lined up decreasing opening to  $\frac{1}{8}$  inch. Injectors reported on August 1, 11, 15, 17, 22, 27, and 29, and on September 4, 5, and 8; 3 injured.

One accident; 3 injured.

#### CHICAGO & EASTERN ILLINOIS RAILWAY:

February 8, 1928, locomotive 1001, Beecher, Ill. Grate shaker rod became disconnected due to connecting pin coming out; 1 injured.

March 20, 1928, locomotive 3651, Wansford, Ind. Blow-off cock stuck open account large pieces of scale in body holding valve off seat. While attempting to close blow-off cock, it came entirely off nipple; threads badly wasted away in nipple end of cock and no bracket attached to boiler to prevent cock from turning; 1 injured.

June 9, 1928, locomotive 1922, Danville, Ill. Lubricator sight feed glass, together with gasket and lock nut blew out; locking nut loose on threads in lubricator; 1 injured.

Three accidents; 3 injured.

#### CHICAGO & NORTHWESTERN RAILWAY:

\*\*July 2, 1927, locomotive 1067, near Land O'Lakes, Wis. Reverse lever quadrant and brackets loose allowing reverse lever to crush engineer's foot between lever and boiler head; 1 injured.

\*\*July 30, 1927, locomotive 1552, Eden, Wis. Whistle stuck open; 1 injured.

August 20, 1927, locomotive 2042, Huron, S. Dak. When reverse lever latch was disengaged from quadrant, the gear connecting rod fouled on inside of gear frame causing reverse lever to go back suddenly with great force; valve gear worn and stops on quadrant not properly located; "Link arm on R. side strikes frame" was reported on August 18; 1 injured.

\*\*September 10, 1927, locomotive 1577, Wilmette, Ill. Main rod strap broke causing piston to knock out front cylinder head; 1 injured.

September 30, 1927, locomotive 2316, Boone, Iowa. Whistle lever bent and fouled against carrier bracket, preventing whistle valve from being properly opened; whistle reported on September 27, 28, and 29; 1 injured.

\*\*October 28, 1927, locomotive 625, Peoria, Ill. Scalded due to leaky blow-off cock and trap in piping; blow-off cock valve and seat cut; 1 injured.

December 23, 1927, locomotive 2545, Blodgett, Ill. Grate shaker lever connecting pin worked out permitting grates to disconnect while being shaken; 1 injured.

\*\*December 24, 1927, locomotive 1726, Chicago, Ill. Steam valve for coal pusher leaking badly due to seat being cut; 1 injured.

January 31, 1928, locomotive 2417, Friesland, Wis. Cab apron became disconnected at hinge due to bottom hinge bolt missing and apron tilted causing employee to fall from gangway; 1 injured.

\*\*February 13, 1928, locomotive 893, Elmhurst, Ill. Injured while attempting to operate uncoupling lever on rear of locomotive; lifter rod bent near weld, causing rod to bind in casting when pin was raised and prevented lock block and pin from falling into place; 1 injured.

\*February 18, 1928, locomotive 577, Green Bay, Wis. While attempting to unscrew heater valve, handle unscrewed all the way out, allowing steam and hot water to escape; bonnet holding heater valve in injector was loose; 1 injured.

February 19, 1928, locomotive 2540, Tama, Iowa. Lever for operating ash pan slides slipped off shaft due to loose and worn fit. The design and location of ash pan dump rigging allowed lever to strike on blow-off cock nipple and edge of ash pan; 1 injured.

March 5, 1928, locomotive 1600, Carbondale, Mich. Elbow fitting of steam heat pipe in the cab broke off through the bend; fitting of less than the required strength for use on pipes in the cab subject to boiler pressure; 2 injured.

April 11, 1928, locomotive 370, Tracy, Minn. Tender brake beam broke; 1 injured.

April 16, 1928, locomotive 1874, New Butler, Wis. Second step from bottom at gangway was  $1\frac{1}{2}$  inches wider than company's standard and hangers supporting bottom step were bent so that outer edge of second step extended approximately  $2\frac{1}{2}$  inches beyond outer edge of bottom step which caused employee to miss bottom step when descending gangway steps; 1 injured.

April 22, 1928, locomotive 2632, Chicago, Ill. Insufficient clearance between cab ventilator handle and cab roof account of ventilator stop missing; 1 injured.

\*\*May 7, 1928, locomotive 1745, California Junction, Iowa. Defective grate shaker fulcrum latch dropped in locked position while fulcrum was being operated, causing employee to be thrown against shaker bar; 1 injured.

\*\*June 19, 1928, locomotive 754, Elton, Wis. Ash pan wrench slipped off shaft due to being too large for proper fit; 1 injured.

Eighteen accidents; 19 injured.

#### CHICAGO, BURLINGTON, & QUINCY RAILROAD:

July 8, 1927, locomotive 1732, Hawthorne, Ill. Left injector steam pipe became disconnected at steam valve coupling due to coupling nut being improper fit on valve and improperly applied; 1 injured.

November 4, 1927, locomotive 5115, Mascot, Nebr. Automatic fire door closed unexpectedly when hand operating lever was accidentally struck; set screw for holding hand lever was loose; shaft not grooved so that set screw would prevent casting from working back and forth on shaft; 1 injured.

December 31, 1927, locomotive 2551, Old Monroe, Mo. Eye broke out of front end of draw bar between locomotive and tender and both safety chains pulled away from tender end sill due to not being properly secured; 1 injured.

January 11, 1928, locomotive 648, Brookfield, Ill. Flue broke off near back end due to being badly pitted and wasted away around entire circumference at point of failure; 1 injured.

February 15, 1928, locomotive 2861, near Hinckley, Ill. Injector throttle valve spanner nut collar broke off due to old crack covering 80 per cent of cross-sectional area; 1 injured.

April 28, 1928, locomotive 1814, St. Joseph, Mo. Center portion of cast iron dome cap blew out; old fracture extended almost entirely around cap approximately  $2\frac{3}{4}$  inches from outside circumference; 1 injured.

\*\*May 7, 1928, locomotive 1971, Pepin, Wis. Water glass burst, breaking shield glasses; 1 injured.

\*May 29, 1928, locomotive 5207, Chicago, Ill. Bell cord broke; 1 injured.

Eight accidents; 8 injured.

#### CHICAGO, INDIANAPOLIS & LOUISVILLE RAILWAY:

September 12, 1927, locomotive 422, Lowell, Ind. Union link broke through a defective weld, knocking out front cylinder head; 1 injured.

\*September 14, 1927, locomotive 524, Paoli, Ind. Main rod strap broke due to old fracture; 1 injured.

January 15, 1928, locomotive 605, Bloomington, Ind. Blow-off cock blew out due to improper fit of nipple in sheet; 1 injured.

April 19, 1928, locomotive 533, McDoel, Ind. Crown sheet failure caused by overheating due to low water; 3 injured.

June 6, 1928, locomotive 262, South Hammond, Ind. End of broken staybolt blew out while being calked under pressure. The bolt was of the reduced body type and broke at the junction of the enlarged end and the reduced portion. Telltale hole extended full length of bolt but ends had been heavily hammered, entirely closing telltale hole and badly damaging the threads on the bolt and in the sheet. The bolt had been broken for some time as evidenced by the condition of the broken ends; 2 injured.

Five accidents; 8 injured.

#### CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC RAILROAD:

December 7, 1927, locomotive 6121, Olivia, Minn. Right front truck side frame of tender of leading locomotive broke causing derailment of the tender and the second locomotive; 1 injured.

March 7, 1928, locomotive 1531, Cedar Rapids, Iowa. Right front driving brake hanger bracket post broke off; 1 injured.

\*April 10, 1928, locomotive 6129, Glenview, Ill. Two 1-inch nuts flew off left front engine truck casting bolts as fast passenger train was passing station, striking persons on station platform; 2 injured.

May 28, 1928, locomotive 7240, near Chillicothe, Mo. Valve spool broke through front end flange for 20½ inches of its circumference, due to old fracture, and broken parts of spool fouled valve causing reverse lever latch to be jerked out of quadrant, permitting reverse lever to go forward suddenly and strike employee; 1 injured.

\*June 12, 1928, locomotive 8243, Montpelier, Iowa. Squirt hose which was not securely fastened to connection came loose; 1 injured.

Five accidents; 6 injured.

#### CHICAGO RIVER & INDIANA RAILROAD:

\*\*August 11, 1927, locomotive 229, Chicago, Ill. Squirt hose pulled off nipple due to not being securely clamped; 1 injured.

June 11, 1928, locomotive 350, Chicago, Ill. Fire hose burst at nozzle due to excessive pressure in hose account of restricted size of nozzle orifice; 1 injured.

Two accidents; 2 injured.

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

July 13, 1927, locomotive 1469, Ponca City, Okla. Adjusting rod to reverse lever counterbalance spring broke due to being badly worn where it passed through housing; 1 injured.

July 15, 1927, locomotive 865, Marlow, Okla. Packing nut to stuffing box gland at air end of high pressure piston of air compressor worked off; threads on stuffing boxes and packing nuts badly worn; 1 injured.

July 17, 1927, locomotive 2107, Hennessy, Okla. No clearance between reverse lever and drain cock to water column when reverse lever was in forward position; 1 injured.

\*July 21, 1927, locomotive 2679, Marion, Kans. Squirt hose burst; 1 injured.

August 19, 1927, locomotive 137, Chickasha, Okla. Flue failed at safe end weld, due to having been badly burned when safe end was applied; 1 injured.

August 29, 1927, locomotive 1507, near Agawam, Okla. Crown sheet failure caused by overheating due to low water; 2 killed, 3 injured.

September 28, 1927, locomotive 921, Belle, Mo. Insufficient clearance between reverse lever and boiler back head; stop on quadrant had been removed; 1 injured.

October 18, 1927, locomotive 3011, Silvis, Ill. Broken rivet in seam between inside throat sheet and combustion chamber blew out while being calked under pressure; rivet had been excessively calked prior to accident; edge of seam had been heavily calked and sheet was cracked through rivet hole; 1 injured.

November 2, 1927, locomotive 220, Oklahoma City, Okla. Reverse lever latch spring broke, allowing reverse lever to become unlatched and fly back, striking employee; 1 injured.

November 17, 1927, locomotive 1469, Garber, Okla. Hinges on fire door broke, allowing door to fall on fireman's foot; hinges had been badly burned when electrically welded, making them unfit for service; 1 injured.

November 26, 1927, locomotive 1764, Carlisle, Ark. Filling board between oil and water tanks not properly secured and when used as a step this board tipped resulting in injury to the employee; 1 injured.

\*December 22, 1927, locomotive 1040, Joliet, Ill. Insufficient clearance between reverse lever and brake valve; 1 injured.

\*\*February 3, 1928, locomotive 904, near Nevada, Iowa. Lubricator steam valve broke off at thread in wrapper sheet connection; 1 injured.

April 2, 1928, locomotive 1553, El Dorado, Ark. Crown sheet failure; low water; no contributory causes found. Locomotive, in charge of hostler helper, was on track adjacent to the main track and the explosion hurled fire brick and debris into the cab of a passing locomotive, injuring the engineer; 1 injured.

\*April 15, 1928, locomotive 1013, Pineville Junction, La. Tender and baggage car derailed, caused by front wheel of tender being loose; 6 injured.

April 19, 1928, locomotive 1323, Blue Island, Ill. Packing nut blew off main throttle stem stuffing box, allowing steam and hot water to escape; threaded portion of stuffing box and packing nut badly worn; "Pack main throttle" was reported on April 19, at which time true condition of parts should have been disclosed and proper repairs made; 1 injured.

June 28, 1928, locomotive 1402, near Hobart, Okla. Front hanger to right front driving spring broke and spring fell with one end under eccentric blade which caused reverse lever latch to release; 1 injured.

Seventeen accidents; 2 killed, 24 injured.

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

\*\*September 5, 1927, locomotive 31, Sioux City, Iowa. Cab seat dropped, causing injury to employee; pins for holding seat stationary on rod at side of cab missing, which permitted seat to move forward and throw outer leg of seat out of upright position; 1 injured.

December 12, 1927, locomotive 369, Minneapolis, Minn. Right front ash pan lever bolt fouled on trailer brake rod due to being too long; 1 injured.

January 16, 1928, locomotive 29, Sioux City, Iowa. Cylinder cock operating rod was disconnected account of bolt missing; 1 injured.

Three accidents; 3 injured.

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

August 29, 1927, locomotive 6150, Sharonville, Ohio. Brewster type arch tube plug blew out while being tightened under pressure; surfaces of plug and bushing worn and plug was reported leaking two times on August 25 and again just previous to accident; 2 killed, 1 injured.

\*\*October 8, 1927, locomotive 6182, New London, Ohio. Fireman's shovel struck against rivet head projecting above shoveling sheet on tender; 1 injured.

\*\*January 21, 1928, locomotive 6796, Harrisburg, Ill. Handhold at gangway broke off causing employee to fall and tender wheel passed over his heel; bolts missing from lower end of handhold and handhold broke at an old crack near top end; 1 injured.

February 4, 1928, locomotive 7361, Sharonville, Ohio. Stud securing hand-rail column to smoke box broke due to old flaw and metal crystallized, allowing hand rail to turn and cause employee to fall; 1 injured.

February 5, 1928, locomotive (P. & E.) 6127, Urbana, Ill. Piston rod broke through keyway at old fracture covering approximately 60 per cent of cross-sectional area. Stamping on rod indicated that it was made October 9, 1925; date of application and kind of material were not stamped on rod as required by rule 127-b; 1 injured.

\*\*June 7, 1928, locomotive 6159, Indianapolis, Ind. Knuckle of coupler broke causing emergency application of brakes; 1 injured.

Six accidents; 2 killed, 6 injured.

#### DELAWARE & HUDSON Co.:

August 13, 1927, locomotive 86, Parsons, Pa. Flue failed at front flue sheet due to metal being laminated and excessively worked; 1 injured.

September 16, 1927, locomotive 821, South Schenectady, N. Y. Tender truck axle broke due to 50 per cent old fracture, causing derailment of tender and 10 cars; 1 injured.

September 24, 1927, locomotive 917, near Otego, N. Y. Crank pin broke due to being fractured approximately 80 per cent of its diameter; 1 injured.

October 4, 1927, locomotive 1029, Oneonta, N. Y. Reverse lever difficult to operate; right link binding on outside and reverse lever latch spring too stiff; reversing gear reported difficult to operate and/or throttle valve reported leaking on September 4, 7, 13, 17, 21, 25, and October 4; 1 injured.

March 23, 1928, locomotive 942, near Sidney, N. Y. Flue failed at defective safe end weld; 1 injured.

Five accidents; 5 injured.

## DELAWARE, LACKAWANNA &amp; WESTERN RAILROAD:

August 9, 1927, locomotive 180, Secaucus, N. J. Squirt hose pulled off nipple; inside of hose badly deteriorated at nipple connection; 1 injured.

September 29, 1927, locomotive 1160, Wilawanna, N. Y. Inspirator regulating pipe broke just above nipple at flange joint where the pipe was cracked for about one-third of its circumference; 1 injured.

November 22, 1927, locomotive 1127, Buffalo, N. Y. Union nut on starting valve to compressor broke due to old fractures; "Steam pipe coupling leaks at air pump throttle" was reported on November 14; union nut mutilated by use of chisel and wrenches in tightening; 1 injured.

February 9, 1928, locomotive 69, Jersey City, N. J. End of broken stay bolt blew out of right firebox side sheet while boiler was under 100 pounds steam pressure and boilermaker was in the firebox. This was a reduced body bolt, 3½ inches between the sheets, and broke in the reduced section beyond the depth of telltale hole which extended only five-eighths inch from outer end. Stay bolt improperly applied and had never had more than two threads engaging in sheet; threads on bolt and in sheet almost entirely wasted away and bolt head had been excessively hammered in an endeavor to stop leakage. "Stay bolts leaking on inside of sheet bad, right side" was reported in writing and verbally on date of accident and locomotive dispatched without repairs being made. Locomotive was withdrawn from service just previous to accident because of a report received from the engineer that locomotive was "leaking bad, hard to keep water in boiler"; 1 killed.

Four accidents; 1 killed, 3 injured.

## DENVER &amp; RIO GRANDE WESTERN RAILROAD:

November 23, 1927, locomotive 1517, Pinon, Colo. While descending steps on back plate on top of tender, employee was struck by metal door to tool box; door not securely fastened in closed position due to broken latch; 1 injured.

January 21, 1928, locomotive 3603, near Pando, Colo. Crown sheet of combustion chamber failed, caused by overheating due to low water; lowest reading of right water glass was 2¾ inches above highest point of combustion chamber crown sheet; 2 injured.

May 23, 1928, locomotive 1139, Blanca, Colo. Steam-heat pressure regulator valve leaking; 1 injured.

Three accidents; 4 injured.

## ERIE RAILROAD:

July 1, 1927, locomotive 530, near Kinney's Siding, N. J. End of broken reduced body stay bolt blew out of right firebox side sheet with 200 pounds pressure in the boiler while locomotive was hauling a passenger train at an estimated speed of 35 miles per hour, compelling the fireman to jump from the fast moving locomotive in an endeavor to avoid being scalded. The threads on the enlarged end of stay bolt had engaged the threads in the sheet from 1 to 3 threads when applied, due to the bolt being too long. Its inner end had been excessively calked and flattened in an endeavor to stop leakage which had destroyed the threads in the sheet and on the end of the bolt. The break occurred at the fillet near outer sheet and beyond the depth of the telltale hole; 1 killed.

August 7, 1927, locomotive 3199, Greycourt, N. Y. Classification lamp socket flange broke allowing employee to fall to ground; metal at point of failure showed about 75 per cent old defect; location of lamp bracket obstructed use of handrail; 1 injured.

August 7, 1927, locomotive 2565, Goshen, N. Y. Reverse lever unlatched and went into full forward position, striking engineer; excessive lost motion between reverse lever and latch; right gear connecting rod and radius bar pin nut missing and pin loose; 1 injured.

\*\* October 4, 1927, locomotive 4216, Mansfield, Ohio. Shaker bar slipped off grate lever due to improper fit; shaker bar was not of carrier's standard design; 1 injured.

October 9, 1927, locomotive 4034, Shenango, Pa. Arm rest on right side of cab gave way account of bolt in front bracket breaking, causing engineer to fall from the cab; 1 injured.

\*\* October 9, 1927, locomotive 2915, Corning, N. Y. Whistle inoperative due to bolt losing out of whistle trigger and connecting rod; cross rod brackets very loose. Locomotive was cut out of service from a through line passenger train on October 8 for repairs to whistle and had made only 41 miles since leaving this terminal; 1 injured.

\*\* November 18, 1927, locomotive 2473, Green Pond Junction, N. J. Sudden jerk of train due to lost motion in throttle rigging caused brakeman to fall from top of car; 1 injured.

February 7, 1928, locomotive 133, Hornell, N. Y. Right front footboard caught on rail and was pulled back under locomotive; locomotive was low at front end and right No. 1 driving spring and equalizer were off level and right footboard only 6½ inches above top of rail and left footboard 7½ inches above rail. Footboard had caught on rail and bent the hangers about five hours previous to this accident while in charge of another crew. This crew, assisted by the yardmaster, straightened the hangers but no action was taken to have the footboard raised. Evidently locomotive was low when sent out of back shop on February 4; 1 injured.

February 24, 1928, locomotive 1709, Pittston, Pa. Sanding apparatus inoperative due to accumulation of wet sand in pipes caused by leakage at blast chamber caps of sand traps due to gaskets being cut and mutilated. When wet sand was removed from pipes, sand flowed continuously account of air valve to front sander leaking, and to conserve sand supply until needed emergency repairs were made by plugging sand pipes with waste. Engineman was injured while attempting to remove waste from pipes when engine began slipping; sanding apparatus reported on February 9, 10, 14, 18, and 19; 1 injured.

March 2, 1928, locomotive 1657, Crown Point, Ind. Pilot flagstaff broke while being used as a handhold due to old fractures covering more than 80 per cent of cross-sectional area; 1 injured.

March 3, 1928, locomotive 1596, Port Jervis, N. Y. Slipped on left side of tender deck and fell to the ground; leak at slope sheet on left side and leak at left tank valve stem packing nut permitted ice to accumulate on outer end of tender deck and on steps leading to it; 1 injured.

\* March 10, 1928, locomotive 1739, Elmira, N. Y. Chain holding steam heat hose between engine and tender became unlatched allowing hose to come down and catch on frog in track, breaking it off at valve in cab; 1 injured.

March 15, 1928, locomotive 3109, North Randall, Ohio. Insufficient clearance between vertical cab handhold and tender deck support; "Give 2½ inches clearance to cab grab handle both sides" was reported on March 14; tender deck 8 inches wider than standard; 1 injured.

March 27, 1928, locomotive 131, Brier Hill, Ohio. Insufficient clearance between tender deck and cab handhold when on curve; 1 injured.

\*\* April 23, 1928, locomotive 1817, Hornell, N. Y. Fireman's overalls caught on wire used to fasten weights on left cab curtain, causing him to fall from gangway; cab curtain on this side had worn off almost completely and ragged edge about 2 inches above the deck, was being held down by weights; 1 injured.

May 8, 1928, locomotive 3005, Laketon, Ind. Flue broke in two at auto-genous weld joining body flue and safe end; 3 injured.

May 29, 1928, locomotive 1831, Hornell, N. Y. Engine was low on right back driving springs, allowing insufficient clearance between cab floor extension at right back corner and apron; driving springs reported on May 5, 7, 14, and 26; 1 injured.

June 4, 1928, locomotive 1571, Upper Montclair, N. J. Superheater flue failed due to metal at point of failure being wasted away to approximately one-sixty-fourth inch in thickness; 2 injured.

June 6, 1928, locomotive 3304, Cuba, N. Y. Reverse handwheel became unlatched and spun around striking engineer's hand; reversing wheel latch worn and improper repairs made to ratchet wheel, preventing latch from properly engaging; 1 injured.

June 21, 1928, locomotive 99, Jersey City, N. J. Automatic fire doors stuck in open position; air operating cylinder oil hole stopped up and cylinder not properly cleaned and lubricated; 1 injured.

Twenty accidents; 1 killed, 22 injured.

## FORT SMITH &amp; WESTERN RAILWAY:

\* May 28, 1928, locomotive 24, Okemah, Okla. Tender and ten cars derailed, caused by broken tender truck frame; frame broke through defective weld at corner; 1 injured.

One accident; 1 injured.

## GEORGIA RAILROAD:

June 1, 1928, locomotive 302, Rutledge, Ga. Nipple in steam pipe to cab heater broke through threads at tee fitting to blower pipe, due to old fracture; 1 injured.

One accident; 1 injured.

## GRAND TRUNK WESTERN RAILWAY:

September 12, 1927, locomotive 7477, South Bend, Ind. Handrail on side of boiler failed at welded splice and pulled out of bracket, causing employee to fall to the ground; 1 injured.  
One accident; 1 injured.

## GREAT NORTHERN RAILWAY:

August 5, 1927, locomotive 3245, Yakt, Mont. Slipped on bent step on front end of locomotive while attempting to make repairs to train line. Locomotive had been damaged in head-on collision on August 4 and returned to terminal where repairs should have been made; 1 injured.

August 14, 1927, locomotive 877, Hillyard, Wash. Insufficient clearance between throttle lever handle and air bell ringer valve; union nut below and street ell above bell ringer valve became loose and allowed valve to swing around in line with throttle lever handle; 1 injured.

November 4, 1927, locomotive 3, Great Falls, Mont. Main rod butt block fell out due to not being properly secured and allowed back end of main rod to fall to ties where it jammed, causing engine to turn over; 2 injured.

December 6, 1927, locomotive 1412, Hesper, Mont. Fuel oil tank exploded; 2 injured.

January 19, 1928, locomotive 1069, Swan River, Minn. Board in coal gate split while being used as a step; board cracked near center and pockets for coal boards not of sufficient depth to retain the broken portion; 1 injured.

February 24, 1928, locomotive 3011, Morris, Minn. Grate shaker bar slipped off lever due to improper fit; neither bar nor lever properly fitted to carrier's standard templates; 1 injured.

March 13, 1928, locomotive 1967, Great Falls, Mont. Turbo-generator steam head blew off; 1 killed.

March 29, 1928, locomotive 94, Great Falls, Mont. Employee's foot slipped from tender footboard which was loose account of defective bracket; 1 injured.

April 26, 1928, locomotive 2004, near State Line Tower, Wis. Coupler at rear of tender disconnected from car, causing emergency application of brakes; 2 injured.

Nine accidents; 1 killed, 11 injured.

## GULF COAST LINES:

\*September 25, 1927, locomotive (St. L. B. & M.) 936, McFaddin, Tex. Cooler stand broke loose and fell to deck account of one hinge breaking and other hinge pulling out; 1 injured.

One accident; 1 injured.

## GULF, COLORADO &amp; SANTA FE RAILWAY:

April 26, 1928, locomotive (A. T. & S. F.) 1614, Cameron, Tex. Water glass burst; injured while closing water glass cocks; 1 injured.

One accident; 1 injured.

## HOCKING VALLEY RAILWAY:

February 6, 1928, locomotive 282, Columbus, Ohio. Injector steam pipe spanner nut blew off due to being too large for fit on injector connection; nut mutilated and soft packing and copper gaskets used to prevent leakage; 1 injured.  
One accident; 1 injured.

## ILLINOIS CENTRAL SYSTEM:

\*\*October 7, 1927, locomotive 2426, Kankakee, Ill. Grate shaker post broke off at defective weld; 1 injured.

November 12, 1927, locomotive 6003, Markham, Ill. Grate shaker bar slipped off lever due to improper fit; grate shaker levers not of carrier's standard design. Accident occurred on first trip after locomotive had been given general repairs; 1 injured.

November 15, 1927, locomotive 3817, Matteson, Ill. Eye broke out of bottom column of vertical handhold at front of tender causing employee to swing back against tank; old crack at point of failure and metal defective; 1 injured.

\*\*November 26, 1927, locomotive 2406, Terry, Miss. Squirt hose valve worked open; "Squirt hose loose and valve works open" was reported on November 25; 2 injured.

\*\*December 30, 1927, locomotive 3007, Freeport, Ill. Water glass broke; injured when closing water glass cocks; 1 injured.

April 21, 1928, locomotive 231, Jackson, Tenn. Design of shaker post permitted shaker bar to slip off while grates were being shaken; 1 injured.

May 23, 1928, locomotive 1100, Memphis, Tenn. Water glass burst; 1 injured.  
\*\*May 28, 1928, locomotive 698, Waterloo, Iowa. Water glass burst; 1 injured.

June 13, 1928, locomotive 3001, Dulaney, Ky. Crown sheet failure caused by overheating due to low water; 2 injured.  
Nine accidents; 11 injured.

## KANSAS CITY SOUTHERN RAILWAY:

September 18, 1927, locomotive 710, near Bunch, Okla. Crown sheet failure caused by overheating due to low water; 1 killed, 3 injured.

\*April 4, 1928, locomotive 553, Stotesbury, Mo. Brakeman's cab seat gave way account of hinge breaking; 1 injured.  
Two accidents; 1 killed, 4 injured.

## LEHIGH VALLEY RAILROAD:

August 1, 1927, locomotive 3056, Jersey City, N. J. Fire hose burst; hose worn; 1 injured.

August 13, 1927, locomotive 3452, Phillipsburg, N. J. Fire hose burst; hose worn at point of failure; 1 injured.

\*October 24, 1927, locomotive 1154, Blakeslee, N. Y. Tender wheel loose causing derailment of locomotive and tender which tipped over and went down embankment; 3 injured.

November 8, 1927, locomotive 825, Perth Amboy, N. J. Headlight step bracket failed causing employee to fall to enginehouse floor; old fracture through clamp bolt hole comprising approximately 75 per cent of cross-sectional area; 1 injured.

November 16, 1927, locomotive 373, Mud Run, Pa. Oil cup and nipple blew out of air reverse cylinder; threads in nipple hole worn; 1 injured.

January 14, 1928, locomotive 2054, Suspension Bridge, N. Y. Nipple of steam pipe to back pressure gauge pulled out of main steam pipe account of threads stripped; 1 injured.

\*\*June 2, 1928, locomotive 1639, Ithaca, N. Y. Shaker bar slipped off lever due to improper fit; six of the eight grate levers did not fit standard gauge; 1 injured.

June 11, 1928, locomotive 1637, Redington, Pa. Main crank pin broke due to old defect; 1 injured.

June 19, 1928, locomotive 1677, Falls, Pa. Tank box fell from leg of tank to tender deck, striking employee; 1 injured.

June 23, 1928, locomotive 3162, Manchester, N. Y. Squirt hose blew off nipple due to not being properly applied and securely clamped; 1 injured.

Ten accidents; 12 injured.

## LONG ISLAND RAILROAD:

September 25, 1927, locomotive 145, Bellaire, N. Y. Crown sheet failure caused by overheating due to low water; lowest reading of water glass one-half inch above highest part of crown sheet; bottom gauge cock located three-eighths inch above highest part of crown sheet; 1 killed, 3 injured.

February 3, 1928, locomotive 8, Woodside, N. Y. Reverse lever broke at old fracture due to undue stress on valve gear caused by transmission bar hanger adhering to hanger pin; marks on bushing and hanger indicated that oil hole in bushing did not line up with oil hole in hanger; 1 injured.

March 8, 1928, locomotive (P. R. R.) 3538, Long Island City, N. Y. Flue failed at defective safe end weld; 1 injured.

\*June 20, 1928, locomotive 7140, Long Island City, N. Y. Shaker bar broke; 1 injured.

Four accidents; 1 killed, 6 injured.

## LOUISIANA RAILWAY &amp; NAVIGATION CO.:

July 16, 1927, locomotive 93, Baton Rouge, La. Crown sheet failure while in charge of engine watchman caused by overheating due to low water; 1 injured.

March 22, 1928, locomotive 122, Frelsens, La. Crown sheet failure caused by overheating due to low water; 2 injured.

Two accidents; 3 injured.

## LOUISVILLE &amp; NASHVILLE RAILROAD:

July 1, 1927, locomotive 1252, Berea, Ky. Insufficient clearance between reverse lever and gauge cock dripper casting due to stop block missing from quadrant; 1 injured.

July 15, 1927, locomotive 188, Marianna, Fla. Wood screws fastening water cooler to supporting hook on side of tender worked loose, permitting cooler to fall from tank; 1 injured.

July 23, 1927, locomotive 1463, Ages, Ky. Stoker oscillating chute bent and fouled on conveyor outlet; 1 injured.

\*\*August 9, 1927, locomotive 1315, Slaughters, Ky. Insufficient clearance between reverse lever handhold and air sand valve handle due to improper application of sand valve; 1 injured.

August 9, 1927, locomotive 1766, Montgomery, Ala. Scalded by hot water escaping through hole in squirt hose; 1 injured.

September 5, 1927, locomotive 1105, DeFuniak Springs, Fla. Main rod broke at end of lap where new end had been welded on due to old fracture which extended entirely through top section and web; 1 killed.

\*\*September 5, 1927, locomotive 1270, near Spring Lake, Ky. Air hose became disconnected due to worn condition of the connection at rear end of tender; 1 injured.

September 24, 1927, locomotive 1287, Montgomery, Ala. Ash pan lever became disconnected due to ash-pan slide connecting pin working out account of cotter key missing; 1 injured.

\*\*October 24, 1927, locomotive 205, Ferguson, Ky. Crosshead arm broke off, due to old flaw, causing steam to be trapped in front end of cylinder knocking out cylinder head, a part of which struck station agent who was on station platform; 1 injured.

November 7, 1927, locomotive 1538, Cedar Hill, Tenn. Cut-out valve in air pipe to fire door cylinder worked open due to valve hand wheel being loose and vibrating and packing gland loose, allowing fire door to unexpectedly close and catch fireman's hand; 1 injured.

\*\*November 19, 1927, locomotive 242, Queen's Lake, Ill. Cylinder cock lever reach rod broke due to being badly worn and the top of link caught broken end, thrusting lever back in cab and catching engineer's foot between pedal on lever and cab floor; 1 injured.

\*\*December 3, 1927, locomotive 1423, Mayking, Ky. Piston rod broke in crosshead fit due to old fracture extending over approximately four-fifths of cross-sectional area; 1 injured.

December 23, 1927, locomotive 1247, Helena, Ala. Fire door chain disconnected from latch when fireman attempted to open fire door, causing him to fall from gangway; 1 injured.

January 30, 1928, locomotive 1801, Mount Vernon, Ky. Emergency application of brakes due to train parting caused coupler pocket bolts at front end of locomotive to fail, allowing coupler to fall out of position; 1 injured.

February 11, 1928, locomotive 222, Welka, Ala. Cab apron became disconnected on left side account of hinge bolts working out; 1 injured.

February 12, 1928, locomotive 164, near Bonifay, Fla. Steam heat pipe coupling nut worked loose; 1 injured.

February 14, 1928, locomotive 1057, Svea, Fla. Reverse lever unlatched and went back suddenly striking employee; reverse lever was twisted so that teeth in latch did not properly fit into quadrant; 1 injured.

February 23, 1928, locomotive 2414, Kildare, Ky. Pin lost out of grate connecting rod; 1 injured.

\*\*April 10, 1928, locomotive 1185, near Century, Fla. Steam from broken cylinder cock valve obscured the vision of employee causing him to fall when getting off locomotive; 1 injured.

April 26, 1928, locomotive 1259, East Bernstadt, Ky. Safety valve stuck open account of foreign substance lodged between valve and seat; 1 injured.

\*\*May 6, 1928, locomotive 1422, Kildare, Ky. Knuckle pin in emergency coupler knuckle on rear of tender broke, permitting train to part, causing sudden stop which derailed the caboose; 1 injured.

May 21, 1928, locomotive 632, Gallatin, Tenn. Drain plug in lubricator leaking and in attempting to tighten plug drain cock was twisted off at lubricator; old fracture of approximately 25 per cent at point of failure. Emergency repairs made by driving threaded end of a brass globe valve stem into the hole in drain cock and this plug blew out when hammered under pressure; "Lubricator plug broken off" was reported on May 17 and locomotive continued in service without repairs being made; 1 injured.

June 21, 1928, locomotive 1771, Livingston, Ky. Injured while attempting to manually close defective automatic fire door; rollers and pins in lower section

of fire door badly worn causing excessive lateral motion between door and guides; 1 injured.

\*\*June 27, 1928, locomotive 185, Mobile, Ala. Squirt hose burst; hose defective; 1 injured.

Twenty-four accidents; 1 killed, 23 injured.

#### MAINE CENTRAL RAILROAD:

July 3, 1927, locomotive 505, near Willey House, N. H. Crown sheet failure caused by overheating due to low water; bottom water glass blow-off valve and drip pipe to water glass stopped up; left injector leaking through overflow valve; tank dirty and tank valves not in operating condition; 2 killed.

One accident; 2 killed.

#### MICHIGAN CENTRAL RAILROAD:

January 31, 1928, locomotive 8461, Eaton Rapids, Mich. Reverse lever unlatched and struck engineer's arm; front end of quadrant loose on boiler, quadrant teeth clogged up with waste and dirt, counterbalance spring out of adjustment, heel pin worn and latch bolt loose; 1 injured.

One accident; 1 injured.

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

\*\*September 15, 1927, locomotive 428, Minneapolis, Minn. Excessively worn step leading from locomotive deck to cab floor caused fireman to fall and in attempting to recover his balance he grabbed left seat box which gave way account of not being fastened to cab; 1 injured.

December 17, 1927, locomotive 703, near Vergas, Minn. Reverse lever unlatched and jerked to front end of quadrant; notches of reverse lever quadrant excessively worn; 1 injured.

February 11, 1928, locomotive 21, near Grano, N. Dak. Side rod broke due to old defect; 1 injured.

Three accidents; 3 injured.

#### MISSOURI & NORTH ARKANSAS RAILWAY:

\*September 16, 1927, locomotive 9, Helena, Ark. Main equalizer broke; 1 injured.

One accident; 1 injured.

#### MISSOURI-KANSAS-TEXAS LINES:

\*\*July 22, 1927, locomotive 629, Sand Springs, Okla. Cylinder head blew out; 1 injured.

\*\*December 24, 1927, locomotive 50, Smithville, Tex. Water glass burst; injured while closing water-glass cocks; 1 injured.

January 1, 1928, locomotive 905, Blue Jacket, Okla. Crown sheet failure caused by overheating due to low water; no contributing causes found; 1 killed, 2 injured.

\*\*January 2, 1928, locomotive 618, Houston, Tex. Water glass burst; injured while closing water-glass cocks; 1 injured.

January 10, 1928, locomotive 635, Nela, Tex. Water glass burst; 1 injured.

June 26, 1928, locomotive 639, Bellmead, Tex. Water glass burst; scalded while closing water-glass cocks; 1 injured.

\*\*June 28, 1928, locomotive 360, Hillsdale, Kans. Headlight generator failed due to defective armature; three wires leading from armature coils to commutator broken; right-hand pole piece not drawn up high enough to clear armature; 1 injured.

Seven accidents; 1 killed, 8 injured.

#### MISSOURI PACIFIC RAILROAD:

\*\*July 5, 1927, locomotive 2312, Opelousas, La. Blow-off cock handle loose on stem and would not close blow-off cock; 1 injured.

July 23, 1927, locomotive 1527, near Valmeyer, Ill. Crown sheet failure caused by overheating due to low water; 1 killed, 1 injured.

\*August 29, 1927, locomotive 1274, Snow Lake, Ark. Spring hanger broke; 1 injured.

September 10, 1927, locomotive 2341, Dexter, Kans. Injured while attempting to close blow-off cock with wrench. Blow-off cock had been opened due to loss of fulcrum pin, causing operating rod to foul on driving wheel and side rod; 1 injured.

November 8, 1927, locomotive 6611, Hoxie, Ark. Insufficient clearance between ash pan operating lever and deck waist sheet; 1 injured.

\*\*December 2, 1927, locomotive 1440, near Fort Gibson, Okla. Squirt hose burst; hose defective; 1 injured.

\*December 18, 1927, locomotive 6521, Labadie, Mo. Cylinder cock became disconnected; 1 injured.

\*\*December 24, 1927, locomotive 1252, Maplewood, Mo. Reverse lever unlatched and went forward, catching engineer's foot between lever and boiler head; 1 injured.

\*June 20, 1928, locomotive 9435, Hoisington, Kans. Coupler on locomotive was defective; 1 injured.

Nine accidents; 1 killed, 9 injured.

#### MOBILE & OHIO RAILROAD:

November 28, 1927, locomotive 551, near Tamms, Ill. Reverse lever latch became disengaged from quadrant account of front end of quadrant being too low; front end of quadrant was attached to casting by one 7/8-inch bolt and bolt hole in casting was elongated to 1 1/2 inches in vertical diameter which permitted front end to drop when nut on bolt became loose; 1 injured.

One accident; 1 injured.

#### MONONGAHELA RAILWAY:

\*January 27, 1928, locomotive (P. R. R.) 7018, Byrne, W. Va. Main crank pin broke off due to old defect covering approximately 75% of cross section; 1 injured.

One accident; 1 injured.

#### NASHVILLE, CHATTANOOGA & ST. LOUIS RAILWAY:

\*January 10, 1928, locomotive 452, Pomona, Tenn. Engine truck axle broke due to old defect, causing derailment of locomotive; 1 injured.

February 4, 1928, locomotive 605, near Dalton, Ga. Back bolts in both cab apron hinges lost out allowing apron to tip downward when employee stepped on it, causing him to fall; nuts on all hinge bolts loose; 1 injured.

Two accidents; 2 injured.

#### NEW YORK CENTRAL—LINES EAST:

December 15, 1927, locomotive 4114, Rensselaer, N. Y. Lubricator drain cock nipple broke off; 1 injured.

May 2, 1928, locomotive 673, New York, N. Y. Grate shaker bar slipped off post due to improper fit; shaker post did not conform to company's standard and shaker bar socket was worn; 1 injured.

May 28, 1928, locomotive 3370, New Hamburg, N. Y. Air compressor strainer fell from rapidly moving locomotive and struck employee; both studs for fastening strainer to bracket were missing and threads in strainer opening which screwed on to air inlet pipe were badly worn and in poor condition; 1 injured.

\*\*May 31, 1928, locomotive 4527, Buffalo, N. Y. Injured while attempting to open ash pan hopper slide; lugs on right side of hopper slide broken off and connecting rod missing; 1 injured.

Four accidents; 4 injured.

#### NEW YORK CENTRAL—LINES WEST:

August 6, 1927, locomotive 2645, Porter, Ind. Flue broke off at safe end weld due to being wasted to less than one-sixteenth inch in thickness; 1 injured.

September 16, 1927, locomotive 4713, Wesleyville, Pa. Handhold at front corner of tank was bent back against tank, causing employee to miss hold on handhold and fall from deck to the ground; 1 injured.

\*September 17, 1927, locomotive 9696, Hobson, Ohio. Two rear pairs of drivers derailed, caused by left main and left back wedges being stuck tight which prevented driving wheels from taking curve; 1 injured.

\*\*September 18, 1927, locomotive 723, Chicago, Ill. Power reverse gear difficult to operate on account of reverse gear valve stem packing blowing. While attempting to remove oil cup cap for the purpose of oiling reverse gear valve, oil pipe blew out of valve chest, blowing oil and dirt into engineer's eyes; 1 injured.

\*\*March 11, 1928, locomotive 3286, Cleveland, Ohio. Auxiliary step over engine truck wheel gave way, causing employee to fall; nut lost off the only bolt which was holding the step at time of accident; 1 injured.

April 11, 1928, locomotive 5248, Collinwood, Ohio. Feed water pump turbine wheel burst apparently due to failure of the control apparatus to function properly; strainer in hydraulic control valve stopped up; leak in pipe from auto-

matic control valve to main control valve; excessive tension in automatic drain and timing valve spring; 1 killed.

\*\*April 25, 1928, locomotive 4493, Dunkirk, N. Y. Flue failed at defective safe end weld. Flue was reduced to three-sixty-fourths inch in thickness near weld; 1 injured.

\*\*May 7, 1928, locomotive 3349, Wyandotte, Mich. Top leaf of automatic fire door stuck open; fire door frame loose on studs and studs too long which prevented top leaf from closing; 1 injured.

Eight accidents; 1 killed, 7 injured.

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

April 20, 1928, locomotive 383, near Dillon, Ind. Reverse lever went to full back position allowing the valve to over-travel and catch broken exhaust ring on the end of valve chamber bushing, causing the gear to reverse and throw engineer forward then backward with great force; 1 injured.

One accident, 1 injured.

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

August 28, 1927, locomotive 3210, Towantic, Conn. Blower pipe in front end became disconnected, forcing fire and gas back into the cab; 2 injured.

\*\*October 17, 1927, locomotive 2458, Boston, Mass. Fire hose burst; 1 injured.

November 9, 1927, locomotive 3325, Grove Beach, Conn. Crown sheet failure caused by overheating due to low water; 1 killed, 2 injured.

December 11, 1927, locomotive 3341, Providence, R. I. Handrail column stud blew out; stud did not extend through full thickness of boiler sheet and was applied cross-threaded; threads on stud were corroded, indicating that stud had been leaking for some time; 1 injured.

\*\*December 23, 1927, locomotive 2402, East Providence, R. I. Slipped on footboard at rear of tender which was covered with ice due to tank leaking; rivets at rear of tank lug broken; tank was reported leaking on December 11, 12, 17, 20, and 21; 1 injured.

\*\*January 16, 1928, locomotive 3500, Tafts, Conn. Short circuit in electric light wiring. Fell from running board while attempting repairs to generator; 1 injured.

\*\*April 14, 1928, locomotive 1209, Quincy Adams, Mass. Struck by brake shoe which was thrown from tender of passing train; 1 injured.

April 25, 1928, locomotive 301, Providence, R. I. Reflex type water glass burst; 1 injured.

April 27, 1928, locomotive 439, Boston, Mass. Flue broke off at defective safe end weld; 1 injured.

May 13, 1928, locomotive 3346, Woodlawn, R. I. Shaker bar slipped off lever due to improper fit; shaker bar was not company's standard bar; 1 injured.

Ten accidents; 1 killed, 12 injured.

#### NEW YORK, ONTARIO & WESTERN RAILWAY:

\*December 27, 1927, locomotive 250, Norwich, N. Y. Throttle flew open; engineer who previously brought locomotive in made report to pack throttle and put spring in throttle latch; 1 injured.

\*February 22, 1928, locomotive 56, Middletown, N. Y. Fireman's seat box broke; 1 injured.

May 24, 1928, locomotive 318, New Durham, N. J. Plug used for making temporary repairs to broken relief valve blew out when throttle was opened; relief valve spindle broken off flush with valve and missing; cap opening of relief valve body oversize and threads in same badly worn and threads on plug defective; 1 injured.

Three accidents; 3 injured.

#### NORFOLK & PORTSMOUTH BELT LINE RAILROAD:

\*\*June 30, 1928, locomotive 30, Sewells Point, Va. Squirt hose nipple blew out of valve body due to not being properly tightened; 1 injured.

One accident; 1 injured.

#### NORFOLK & WESTERN RAILWAY:

August 6, 1927, locomotive 947, Farmville, Va. Lubricator sight feed indicated oil had stopped feeding to left cylinder and fireman was injured while attempting repairs on line of road; "Clean out feeds to lubricator" was reported on August 5; 1 injured.

\*\* November 24, 1927, locomotive 87, Roanoke, Va. Bonnet was screwed out of body of main air compressor throttle when throttle was being opened; bonnet not properly tightened in the body of compressor throttle; 1 injured.

\*\* December 15, 1927, locomotive 681, Hyde Park, Ohio. Injured while replacing cylinder cock valve lift rod which pulled out of slot in cylinder cock due to stop key missing; 1 injured.

\*\* January 22, 1928, locomotive 111, Bannan, Ohio. Fell from locomotive while attempting to free stuck bell; 1 injured.  
Four accidents; 4 injured.

#### NORFOLK SOUTHERN RAILROAD:

\*\* May 11, 1928, locomotive 108, near Wilson, N. C. Grate shaker bar slipped off fulcrum lever; 1 injured.  
One accident; 1 injured.

#### NORTHERN PACIFIC RAILWAY:

\*\* July 17, 1927, locomotive 2251, near Paha, Wash. Squirt hose burst; hose defective; 1 injured.

August 15, 1927, locomotive 2208, Moab, Wash. Cross lever operating front slide of ash pan broke through one side of slotted section due to old fracture; 1 injured.

September 13, 1927, locomotive 1500, Muir, Mont. Intermediate check valve body in left injector delivery pipe in cab cracked through cap thread fit and allowed cap to blow out, filling the cab with hot water and steam; 2 injured.

\* October 29, 1927, locomotive 2433, Toppenish, Wash. Bolts holding front coupler casting broke allowing cars to break loose and collide with other cars; both lower bolts in coupler casting defective; 1 injured.

\*\* November 16, 1927, locomotive 1713, near Spokane, Wash. Squirt hose pipe bushing broke off; pipe fittings of light construction and pipe bushing inserted into globe valve less than two threads; 1 injured.

November 22, 1927, locomotive 1717, Childs, Mont. Crown sheet failure caused by overheating due to low water. Water glass was located on left side of boiler head and engineer's view of water glass was obstructed by throttle rod, throttle lever, and quadrant; 2 injured.

\*\* January 4, 1928, locomotive 2169, Staples, Minn. Water glass burst breaking two of the glass panels in water glass shield; 1 injured.

\*\* January 27, 1928, locomotive 2608, near Highview, Mont. Tank hose blew off; 1 injured.

March 3, 1928, locomotive 2456, Staples, Minn. Squirt hose pipe nipple blew off due to not being clamped or properly secured; 1 injured.

\*\* March 6, 1928, locomotive 1168, Minneapolis, Minn. Cab arm rest gave way due to being insecurely fastened to window sill; 1 injured.

\*\* May 30, 1928, locomotive 1854, Sims, N. Dak. Undesired emergency application of brakes, account of vent valve on tender going into emergency, caused rough stop; 1 injured.

\* June 13, 1928, locomotive 1750, Wataga, Mont. Driving tire came off; 1 injured.

Twelve accidents; 14 injured.

#### OREGON SHORT LINE RAILROAD:

\* September 28, 1927, locomotive 2516, Senter, Idaho. Left main crank pin broke due to old defect; 1 injured.

\* October 16, 1927, locomotive 2021, Wheelon, Utah. Air hose between engine and tender blew off causing emergency application of brakes; lining of hose so deteriorated that clamp would not hold hose on connection; 1 injured.

November 22, 1927, locomotive 528, near Richmond, Utah. Arch tube pulled out of back flue sheet; tube did not extend through sheet far enough to be belled or beaded; distortion of tube due to overheat caused by accumulation of scale on interior of tube; 1 injured.

Three accidents; 3 injured.

#### PACIFIC LUMBER Co.:

September 16, 1927, locomotive 26, near Scotia, Calif. Crown sheet failure caused by overheating due to low water; water glass gasket leaking; right injector inoperative account of disk valve to steam ram broken off; bottom mounting of water glass partially stopped up with scale which restricted the opening to boiler; neither bottom mounting of water glass nor the gauge cocks extended into water space far enough to provide correct water registration; 1 killed, 1 injured.  
One accident; 1 killed, 1 injured.

#### PENNSYLVANIA RAILROAD:

July 14, 1927, locomotive 5338, Tuxedo, Md. Back end main rod floating bushing lateral liner, 1-inch thick, broke into at least three pieces and was thrown from rapidly moving locomotive. The design of this floating bushing assembly permits excessive lateral motion; 1 injured.

\*\* July 14, 1927, locomotive 1738, Coalport, Pa. Tender brake beam truss rod broke off between nut and brake head due to old fracture covering more than 50 per cent of cross-sectional area. Locomotive dispatched with this condition known and continued in service until brake beam became fouled in such manner as to necessitate its removal; 1 injured.

July 21, 1927, locomotive 3372, Stony Run, Md. Mouth of manually operated tank water scoop was distorted and failed to enter water trough when lowered, causing operating lever to be thrown ahead, striking and breaking employee's arm; 1 injured.

\*\* August 17, 1927, locomotive 7719, Crestline, Ohio. Shaker bar broke off at socket due to defective weld; 1 injured.

\*\* August 26, 1927, locomotive 3322, near Altamont, Ill. Pocket broke off grate shaker bar due to poor weld; 1 injured.

September 6, 1927, locomotive 7685, Canton, Ohio. A large slab of babbitt broke out of crosshead and was thrown from locomotive, striking track employee; crosshead had not been tinned properly before being babbitted; 1 injured.

September 7, 1927, locomotive 8843, Fisher, Ind. Reverse lever latch came out of quadrant due to worn teeth on latch and quadrant; latch reported not holding on August 29 and September 2 and 3; 1 injured.

September 10, 1927, locomotive 6971, Marysville, Pa. Numeral light socket in headlight housing fell account of both lugs of the porcelain socket being broken around the two stove bolts securing it in place and caused short circuit which deenergized the magnet valve of the train control circuit and rendered the forestalling feature ineffective, causing an undesired brake application; 2 injured.

September 20, 1927, locomotive 1600, Liddonfield, Pa. Portion of brake beam safety guard was cast from under tender while running about 45 miles per hour and struck track employee; guard had been burned through with a cutting torch previous to accident and only one of the two holes for supporting bolts in the part of guard that was thrown off showed evidence of having contained a bolt; 1 injured.

\*\* September 21, 1927, locomotive 6913, Marysville, Pa. Coupler pulled out of rear end of tender, causing emergency application of brakes; 1 injured.

September 29, 1927, locomotive 2845, Jersey City, N. J. Fire hose burst; hose worn and deteriorated; 1 injured.

September 29, 1927, locomotive 7630, Orrville, Ohio. Plug came out of exhaust cavity of steam end of left air compressor, causing fireman who was working on compressor to fall from running board; 1 injured.

October 4, 1927, locomotive 4473, Erie, Pa. Flue failed at defective safe end weld; 1 injured.

October 25, 1927, locomotive 3864, Pittsburgh, Pa. Smoke box door hinges broke through rivet holes and door fell striking employee; 98 per cent of the break was old defect which was covered over with heavy coating of paint; 1 injured.

November 18, 1927, locomotive 9828, Cambridge, Ohio. Flue broke off at front flue sheet due to being reduced by corrosion; 1 injured.

December 4, 1927, locomotive 6872, Summerhill, Pa. Locomotive derailed and turned over, causing derailment of tender and first two cars of train. Derailment occurred as train was being diverted to another track on a curve to the right and left lead wheel of engine truck went over rail near heel of frog due to engine running to the left; driving spring rigging on left side out of equalization, due to equalizers shifted and roller bearings and seats worn; left Nos. 1 and 2 driving box wedges stuck; trailer truck radius bar pin and bushing worn. Spring rigging had been reported 48 times since October 10; 1 killed, 2 injured.

December 10, 1927, locomotive 5184, Baltimore, Md. Wire used to tie back cab doors shut struck employee in eye; door not properly secured in closed position account of stop missing and doors not provided with proper and standard latches; 1 injured.

\*\* December 19, 1927, locomotive 3318, Croyland, Pa. Shovel caught on rivet in shoveling sheet; bottom head of rivet was broken off permitting rivet to work up above shoveling sheet; 1 injured.

December 23, 1927, locomotive 864, Jersey City, N. J. Handrail on right side of sloping tender failed due to forward support pulling out of socket and handrail

breaking off at forward tee; threads entirely destroyed in flanged socket supporting front section of handrail and handrail not properly secured in socket; handrail was reported on December 17 and a new nipple was applied in forward support but it was not secured in socket; 1 injured.

December 23, 1927, locomotive 4067, Perth Amboy Junction, N. J. Reflex type water glass burst; 1 injured.

January 1, 1928, locomotive 374, Cresson, Pa. Bonnet of water regulating valve unscrewed out of injector body while injector was in operation; 1 injured.

January 16, 1928, locomotive 3251, Malvern, Pa. Rear cab curtain fell from hangers due to not being properly secured when rolled up; hangers not large enough to accommodate the rolled curtain and not properly spaced to engage ends of curtain rod; 1 injured.

January 20, 1928, locomotive 553, West Morrisville, Pa. Tender brake beam hanger broke through both legs due to old fractures covering approximately 95 per cent of their cross sections, permitting brake beam to drop and brake shoe to catch in switch and cause derailment of first car in train; 1 injured.

February 2, 1928, locomotive 3199, Edgemoor, Del. Steam escaping from snow blower caused employee to fall from footboard; steam pipe to snow blower had been blanked off with a 3/16-inch hole in it which permitted steam and water to be discharged in the face of a person standing on left front footboard; 1 injured.

\*\*February 17, 1928, locomotive 1299, Lockhaven, Pa. Ash pan hose pulled off nozzle due to not being properly clamped; 1 injured.

February 24, 1928, locomotive 6868, near Cresson, Pa. Flue failed at back flue sheet due to being heavily prossered; the heavy working of the flue also caused a longitudinal crack which extended to the water side of flue sheet; 3 injured.

February 27, 1928, locomotive 5208, Philadelphia, Pa. Steam heat regulating valve did not seat properly when shut off; 1 injured.

\*\*March 7, 1928, locomotive 2917, Camden, N. J. Fell from cab roof while attempting to open slide cab ventilator; operating lever of ventilator located above cab roof and not properly accessible; 1 injured.

March 10, 1928, locomotive 4254, South Akron, Ohio. Excessive steam leaks around cylinders, feed water pump, stoker, and piston rod packing on both sides obscured the vision of employee and caused him to miss handholds at gangway and rear of tender and be thrown to the ground; steam leaks reported repeatedly from March 1 to March 12; 1 injured.

April 3, 1928, locomotive 4687, Columbus, Ohio. Squirt hose valve worked open due to packing nut on valve spindle not securely tightened; 1 injured.

\*\*April 4, 1928, locomotive 7123, Logansport, Ind. Pilot beam handhold broke at foot of left bracket; 1 injured.

April 11, 1928, locomotive 9904, Corliss, Pa. Flue broke off just inside front flue sheet due to being thinned by corrosion to less than one-sixteenth inch for its entire circumference; 1 injured.

April 19, 1928, locomotive 7216, Cleveland, Ohio. Vertical cab handhold was loose at bottom end account of bolts missing, causing employee to fall; bottom end of handhold did not properly fit against cab support; 1 injured.

\*\*April 19, 1928, locomotive 907, Hagerstown, Md. Left front driving spring hanger broke, permitting driving spring to work out of position which allowed engine to drop and footboard to strike rail and bend back, causing injury to employee who was riding on footboard; 1 injured.

\*April 21, 1928, locomotive 6886, East Pittsburgh, Pa. Eccentric rod jaw bolt came out due to nut losing off; 1 injured.

May 2, 1928, locomotive 2951, Huntington, Pa. Turbo-generator starting valve extension rod bent and binding on support which was loose, rendering starting valve inoperative from the cab. Engineer fell while getting upon boiler to open valve at steam dome; 1 injured.

May 20, 1928, locomotive 4603, near Beddington, W. Va. Squirt hose valve worked open; 1 injured.

June 14, 1928, locomotive 4486, Columbus, Ohio. Flue failed at defective safe end weld; no indication of any uniting of metal for one-half the circumference of flue and the remainder was united only along inner surface; flue improperly applied in front flue sheet; 1 injured.

June 15, 1928, locomotive 4677, Scully, Pa. Nos. 1, 2, and 3 leaves of front engine truck spring failed through slotted ends between hangers, permitting spring to work out of stirrup and cause truck to leave the rails; 1 injured.

June 21, 1928, locomotive 1073, Nescopeck, Pa. Flue broke off flush with front flue sheet due to old fracture, caused by improper use of prosser, extending

the entire circumference of flue, approximately 80 per cent of which was entirely separated prior to the accident; 1 injured.

Forty accidents; 1 killed, 44 injured.

#### PEORIA & PEKIN UNION RAILWAY:

March 15, 1928, locomotive 16, near Wesley, Ill. Side rod broke due to old flaw covering approximately 45 per cent of cross-sectional area; 1 injured.

One accident; 1 injured.

#### PITTSBURGH & LAKE ERIE RAILROAD:

\* October 29, 1927, locomotive 9327, Struthers, Ohio. Cab window fell out due to not being properly secured; 1 injured.

One accident; 1 injured.

#### READING Co.:

September 27, 1927, locomotive 352, Yardley, Pa. Rear section of left running board handrail, 11 feet 4 inches in length, fell off while locomotive was running 50 miles per hour; end casting missing from rear end of handrail and front end not secured to splice bolt; 1 injured.

\*\* December 6, 1927, locomotive 384, Chestnut Hill, Pa. Lubricator condensing valve packing nut leaking; 1 injured.

January 27, 1928, locomotive 1342, Wayne Junction, Pa. Injector steam ram bonnet blew out due to improper fit; bonnet could be inserted into injector body to within two threads of its final seat before the threads engaged; 1 injured.

March 2, 1928, locomotive 109, Neshaminy Falls, Pa. Side rod lateral liner broke and was thrown from rapidly moving locomotive and struck track employee; old fracture covered entire cross-sectional area of lateral liner; 1 injured.

March 31, 1928, locomotive 1725, Meadowbrook, Pa. Stoker elevator pawl shifter would not remain in neutral position while stoker was in operation account of tapered end of catch pin being worn too blunt to properly hold in catch groove; 1 injured.

\*\* April 16, 1928, locomotive 608, Bethlehem, Pa. Right valve stem crosshead babbitt metal was broken and wedged fast between crosshead and guides which caused reverse lever to come to a sudden stop while being moved back; 1 injured.

\* May 9, 1928, locomotive 1071, Reading, Pa. Brake hanger pin broke due to being worn, permitting brake rigging to come down; 1 injured.

Seven accidents; 7 injured.

#### ST. LOUIS-SAN FRANCISCO RAILWAY:

\*\* August 11, 1927, locomotive 1261, Dublin, Tex. Driving spring hanger broke due to old fracture; 1 injured.

\*\* August 11, 1927, locomotive 1504, between Lebanon and Springfield, Mo. Fire door came open account of catch missing and brake shoe key applied in its stead; 1 injured.

\*\* January 26, 1928, locomotive 686, Kennett, Mo. Injured while tightening nut on throttle stem packing gland; leak at throttle stem packing reported on January 21, 23, 24, and 25 and locomotive continued in service between outlying terminals without repairs being made; 1 injured.

\*\* March 29, 1928, locomotive 964, Springfield, Mo. Back air compressor stopped account of reversing rod in compressor being broken. While engineer was holding onto hand wheel on stem of steam throttle valve to front compressor observing the defective compressor, the hand wheel pulled off stem causing him to fall to the ground; nut missing from outer end of valve stem and threaded end of stem broken off and end of stem had been riveted over to secure hand wheel; 1 injured.

\*\* May 1, 1928, locomotive (I. C.) 950, Birmingham, Ala. Employee cut by wire used as cotter key on injector; 1 injured.

May 11, 1928, locomotive 766, Chickasha, Okla. Crown sheet failure while in charge of engine watchman, caused by overheating due to low water; 2 killed, 3 injured.

Six accidents; 2 killed, 8 injured.

#### SAN ANTONIO, UVALDE & GULF RAILROAD:

\* September 4, 1927, locomotive 297, Corpus Christi, Tex. Coupler pocket pin on rear of tender broke causing emergency application of brakes; 2 injured.

One accident; 2 injured.

## SEABOARD AIR LINE RAILWAY:

July 9, 1927, locomotive 516, Richland, Ga. Employee's foot crushed between cab apron and cab while locomotive was on a sharp curve; strips, 1 inch wide and 16 inches long, had been trimmed off front edge of apron at both sides and cab apron hinges were too long; 1 injured.

\*September 13, 1927, locomotive 197, Cobb, Ga. Left eccentric broke and punched hole in boiler; 2 injured.

October 1, 1927, locomotive 513, Leslie, Ga. Valve gear radius rod broke at a defective weld and an old crack through dowel pin hole at front end of bar; 1 injured.

\*\*November 14, 1927, locomotive 359, Dinwiddie, Va. Right injector handle became disconnected account of lever bolt working out and when an attempt was made to close starting valve with a wrench, valve stem blew out and struck employee; 1 injured.

December 19, 1927, locomotive 1557, Hester, N. C. Crown sheet failure caused by overheating due to low water; locomotive being operated without a water glass account of water glass tube being broken (tube broke while on the outbound trip on the previous day); 1 injured.

\*January 17, 1928, locomotive 10, Fuller, S. C. Reverse lever came out of quadrant; reverse lever latch worn; 1 injured.

May 28, 1928, locomotive 1564, Oxford, N. C. Insufficient clearance between reverse lever and back head of boiler, due to stop block missing; 1 injured.

Seven accidents; 8 injured.

## SOUTHERN RAILWAY SYSTEM:

July 13, 1927, locomotive 283, Alspaugh, N. C. Squirt hose parted at splice; 1 injured.

July 21, 1927, locomotive 1685, Potomac Yard, Va. Rear longitudinal hand-rail on tender pulled out of right bracket account of rivet in bracket having lost out; 1 injured.

July 27, 1927, locomotive 769, Belleville, Ill. Main rod broke in upper jaw at keyway due to old fractures; 1 injured.

August 6, 1927, locomotive 1209, Friendship, N. C. Spring to whistle valve broke and a piece of spring lodged under whistle valve holding it open; 2 injured.

August 17, 1927, locomotive 6609, Cypress, Ala. Squirt hose nipple blew out of injector delivery pipe due to threads on nipple and in delivery pipe being badly worn; 1 injured.

August 20, 1927, locomotive 591, Clemmons, N. C. Flue failed near firebox end. Locomotive not held intact for inspection and condition of flue could not be determined after repairs had been made. Accumulation of scale and dirt in boiler and in water space between flues; 1 injured.

September 9, 1927, locomotive 4871, Greenville, S. C. Feed water heater boiler check stuck up, rendering feed water heater inoperative. A small coil spring which had been applied on top of check valve broke and part of it lodged under the check. The spring was not a part of the regular equipment; 1 injured.

\*\*September 12, 1927, locomotive 4550, Carroll, Ga. Fell from running board while attempting to repair whistle on line of road; "Whistle will not blow, stem bent," was reported on September 10 and proper repairs not made; 1 injured.

\*\*September 12, 1927, locomotive 4609, Zion Hill, S. C. Grease cup plug and hot grease blew out while plug was being loosened for the purpose of cooling main crank pin which was running hot account of brass keyed too tight and grease passage to pin stopped up; 1 injured.

September 22, 1927, locomotive 6290, Glen Mary, Tenn. Prong of the fork at end of extension handle on stoker engine throttle which engages wheel on valve spindle broke off; 1 injured.

\*\*October 1, 1927, locomotive 6453, Brandon, Ky. Steam heat hose burst between engine and tender; fountain valve leaking and steam heat valve shut off at rear of tender; 1 injured.

\*\*October 2, 1927, locomotive 1339, Monroe, Va. Short radial crown stay blew out of outside wrapper sheet while being calked under pressure; bolt was broken at or near inside firebox sheet and end of bolt in wrapper sheet had been hammered to the extent of completely destroying threads on bolt and enlarging the hole in wrapper sheet from  $1\frac{1}{8}$  inches to  $1\frac{1}{2}$  inches in diameter. Heavy formation of mud in telltale hole near point of breakage indicated that end of bolt in inside sheet was stopped up and not leaking and telltale hole in outer end was hammered closed; 1 injured.

November 9, 1927, locomotive 97, Topton, N. C. Supporting bracket of reverse lever quadrant broke where it had been reduced approximately 15 per cent by grinding. Reverse lever flew back and struck employee; 1 injured.

\*\*November 21, 1927, locomotive 1589, Richmond, Va. Insufficient clearance between floating lever connecting rod of power reverse gear and running board; 1 injured.

\*\*December 1, 1927, locomotive 1002, Hopkins, S. C. Reverse lever unexpectedly went to reverse position catching engineer's arm between lever and back panel of cab; reverse lever not in proper alignment with quadrant and insufficient clearance between lever and cab; lost motion in valve gear and valves out bad reported on November 14 and 27; valves reported out bad on November 20, 24, and 26; 1 injured.

\*\*December 16, 1927, locomotive 956, Camden, S. C. Journal box lid fell from tender, striking track employee; bolt hole in journal box was worn and bolt had been broken and was too short for application of nut or cotter pin to prevent it from working out; 1 injured.

\*\*December 21, 1927, locomotive 401, Lexington, N. C. Piece broke off left front footboard when employee attempted to mount it, causing him to fall to the ground; 1 injured.

\*\*March 20, 1928, locomotive 1326, Norcross, Ga. Main axle broke at fillet of left journal due to old fracture; 4 injured.

\*\*April 13, 1928, locomotive 1751, Columbia, S. C. Front edge of footboard split off causing employee to fall; footboard projected 3 inches beyond supporting brackets and failed through old crack; 1 injured.

\*\*April 20, 1928, locomotive 4635, Melrose, N. C. Ash pan blower pipe nipple entirely wasted away by corrosion, permitting hot water and steam to be forced out through ash pan opening when blower valve was opened; 1 injured.

\*\*May 22, 1928, locomotive 6254, near Montlake, Tenn. Main driving axle broke inside right wheel fit due to old defect covering approximately 60 per cent of cross-sectional area; 1 injured.

May 30, 1928, locomotive 1636, Jacksonville, Fla. Adjusting rod of driving brake broke due to old defect; 1 injured.

June 3, 1928, locomotive 883, near Ellerslie, Ga. Crown sheet failure caused by overheating due to low water; no contributory causes found; 1 killed, 1 injured.

Twenty-three accidents; 1 killed, 27 injured.

## SOUTHERN PACIFIC—LINES EAST:

\*September 10, 1927, locomotive (T. & N. O.) 309, Lockport, La. Driving spring broke; 1 injured.

October 7, 1927, locomotive (M. L. & T.) 82, Houston, Tex. Broken glass fell out of cab window and cut fireman's hand; 1 injured.

December 11, 1927, locomotive (G. H. & S. A.) 819, Shiner, Tex. Employee's foot caught between cab apron and cab floor due to insufficient clearance on left side account of locomotive being low on that side; 1 injured.

\*\*January 28, 1928, locomotive (G. H. & S. A.) 625, Sanderson, Tex. Slipped and fell while getting off locomotive at gangway account of handholds being wet and slippery due to condensation from a bad steam leak in flexible joint in train heater pipe which was caused by a defective gasket; 1 injured.

Four accidents; 4 injured.

## SOUTHERN PACIFIC—LINES WEST:

July 1, 1927, locomotive 1285, Yuma, Ariz. Body of globe valve used as lubricator drain valve failed at old fracture while being tightened under pressure; 1 injured.

\*\*July 22, 1927, locomotive 1833, Phoenix, Ariz. Muffler blew off blow-down valve account of threads on valve being defective; 1 injured.

August 16, 1927, locomotive 3249, Phoenix, Ariz. Reflex type water glass burst; face for water glass fit in frame was twisted out of true position; 1 injured.

September 16, 1927, locomotive 3250, Sparks, Nev. Threads in blow-off cock stripped, allowing roundhouse pit blow-off pipe to blow off and strike employee with great force when blow-off cock was opened with 175 pounds pressure on boiler. "Boiler very dirty" was reported by incoming engineer but by direction of the roundhouse foreman boiler washing was foregone and boiler was to be blown off in roundhouse pit and locomotive returned to service within two hours after its arrival; 1 injured.

\*October 13, 1927, locomotive 5030, Auburn, Calif. Lubricator plug blew out of supply pipe causing cylinder cocks to open; 1 injured.

October 14, 1927, locomotive 3268, Ocala, Nev. Knuckle of coupler at rear of tender broke vertically at pin hole causing train to part and air brakes to make emergency application; coupler knuckle contained numerous blow holes, the weight of this knuckle being 12 pounds less than normal standard weight for this type knuckle; 1 killed.

\*February 17, 1928, locomotive 3676, Los Angeles, Calif. Main pin broke; 1 injured.

February 23, 1928, locomotive 3073, Buckeye, Ariz. Spanner nut to injector heater valve loose; 1 injured.

March 1, 1928, locomotive 1684, Hardwick, Calif. Bolt holding cab arm rest broke which allowed back end of arm rest to drop, causing employee to fall; two bolts missing from arm rest brackets and the remaining two bolts were loose; 1 injured.

\*April 29, 1928, locomotive 1697, Watsonville Junction, Calif. Squirt hose burst; 1 injured.

June 13, 1928, locomotive (C. P.) 4316, near Pembroke, Ariz. Petticoat pipe dropped down in rear and swung forward covering exhaust nozzle tip and causing back draft; nuts lost off the two back bolts of the three bolts securing petticoat pipe account of threads on bolts undercut and nuts a very loose fit; 2 injured.

Eleven accidents; 1 killed, 11 injured.

#### TERMINAL RAILROAD ASSOCIATION OF ST. LOUIS:

March 26, 1928, locomotive 84, St. Louis, Mo. Handle of train line angle cock at front end of locomotive broke off; 1 injured.

May 26, 1928, locomotive 52, St. Louis, Mo. Squirt hose became disconnected at nipple due to clamp not being properly tightened; 1 injured.

Two accidents; 2 injured.

#### TEXAS & PACIFIC RAILWAY:

August 19, 1927, locomotive 311, near Shreveport, La. Crown sheet failure caused by overheating due to low water; 3 killed.

\*\* May 6, 1928, locomotive (M. K. T.) 807, Lancaster, Tex. Eccentric rod broke at weld causing reverse lever to disengage from quadrant and go forward suddenly, striking engineer; valves reported to be squared on April 4, 7, 10, 13, 14, 25, 26, 28, 30, and May 5; 1 injured.

Two accidents; 3 killed, 1 injured.

#### TEXAS PACIFIC—MISSOURI PACIFIC TERMINAL RAILROAD OF NEW ORLEANS:

\*\* October 10, 1927, locomotive (M. P.) 9421, New Orleans, La. Blower pipe in front end became disconnected due to improper application of reducer which engaged fitting only one thread; 2 injured.

One accident; 2 injured.

#### UNION PACIFIC RAILROAD:

November 27, 1927, locomotive 3651, Cheyenne, Wyo. Staybolt in crow-foot brace to inside throat sheet blew out while being caulked under pressure due to threads in throat sheet and brace being almost entirely gone and threads on bolt which screwed into brace being stripped and badly damaged; threads on throat sheet end of bolt were filled with scale, indicating that bolt had been leaking for some time, and head of bolt was heavily caulked; 1 injured.

One accident; 1 injured.

#### VIRGINIAN RAILWAY:

August 8, 1927, locomotive 734, Pax, W. Va. Squirt hose blew off pipe nipple due to not being securely clamped; 1 injured.

One accident; 1 injured.

#### WABASH RAILWAY:

\*\* September 7, 1927, locomotive 597, Detroit, Mich. Reverse lever counterbalance spring failed while engine was being reversed; spring band showed old fracture; 1 injured.

\*\* January 23, 1928, locomotive 2406, Truesdale, Mo. Fireman slipped on cab apron; cab apron worn; 1 injured.

January 30, 1928, locomotive 617, Decatur, Ill. Reverse lever not properly counterbalanced; 1 injured.

\*\* February 15, 1928, locomotive 2731, North Liberty, Ind. Grate shaker bar stuck on lever due to improper fit, then came off suddenly causing fireman to fall backward; 1 injured.

\*\* February 16, 1928, locomotive 2212, Oakwood, Mich. Plug blew out of blow-off cock pipe due to threads in pipe fitting being badly worn; blow-off cock reported leaking on February 4 and 10; 1 injured.

\*\* May 19, 1928, locomotive 2063, Taylorville, Ill. Left back driver brake hanger broke allowing rear driver brake beam to drop on rail; 1 injured.

\*\* June 27, 1928, locomotive 608, St. Louis, Mo. Insufficient clearance between reverse lever and boiler back head; 1 injured.

Seven accidents; 7 injured.

#### WESTERN MARYLAND RAILWAY:

\*\* October 17, 1927, locomotive 956, Hagerstown, Md. Bell rope broke causing employee's arm to be thrust through cab window; 1 injured.

January 7, 1928, locomotive 1106, Lumber, W. Va. Middle connection side rod broke; 1 injured.

Two accidents; 2 injured.

#### WESTERN PACIFIC RAILROAD:

August 6, 1927, locomotive 324, Constantia, Calif. Right main crank pin broke due to old fracture; 1 injured.

\*\* October 2, 1927, locomotive 309, Knolls, Utah. Insufficient clearance between grate shaker bar and back of cab; 1 injured.

Two accidents; 2 injured.

#### WHEELING & LAKE ERIE RAILWAY:

December 30, 1927, locomotive 4115, Norwalk, Ohio. Boiler check stuck open; considerable scale found on check wings and inside of sleeve; 1 injured.

One accident; 1 injured.

**ACCIDENTS AND CASUALTIES RESULTING FROM THE FAILURE  
OF LOCOMOTIVES OTHER THAN STEAM AND THEIR APPURTE-  
NANCES DURING THE FISCAL YEAR ENDED JUNE 30, 1928, BY  
ROADS**

[A star (\*) indicates accident taken from records of the Bureau of Statistics of the Interstate Commerce Commission.]

**LONG ISLAND RAILROAD:**

\*June 1, 1928, locomotive 323, Dunton, N. Y. Contact shoe broke off locomotive and fell between third rail and running rails, resulting in injury to employee; 1 injured.

One accident; 1 injured.

**NEW YORK CENTRAL—LINES EAST:**

January 10, 1928, locomotive 1102, New York, N. Y. Overhead contact shoe and air operating cylinder supporting base broke off due to an old fracture in base comprising approximately 50% of cross-sectional area and in falling caused a short circuit which burned employee who was on roof of auxiliary cab; 1 injured.

One accident; 1 injured.

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

May 29, 1928, locomotive 0312, Stamford, Conn. Rear pantagraph automatically raised to position due to defective operating mechanism, causing front pantagraph to become energized, resulting in an electric shock to an employee while in contact with it; 1 killed.

One accident; 1 killed.

**NORFOLK & WESTERN RAILWAY:**

July 20, 1927, locomotive 2502, Unit No. 2, Eckman, W. Va. Oil-type circuit breaker exploded while being closed manually; undesired operation of breaker due to ground in cable between breaker and transformer; 1 injured.

One accident; 1 injured.

TABLE XIII.—Number of steam locomotives inspected,

|   | Akron, Canton & Youngstown | Alabama, Tennessee & Northern | Alleghippa & Southern | Ann Arbor | Atchison, Topeka & Santa Fe | Atlanta & West Point |
|---|----------------------------|-------------------------------|-----------------------|-----------|-----------------------------|----------------------|
| 1                                       |                            |                               |                       | 1         | 50                          |                      |
| 2                                       | 4                          |                               |                       |           | 5                           |                      |
| 3                                       |                            |                               |                       |           |                             |                      |
| 4                                       |                            |                               |                       |           |                             |                      |
| 5                                       | 1                          |                               |                       |           | 15                          | 2                    |
| 6                                       |                            |                               |                       |           | 8                           |                      |
| 7                                       |                            |                               |                       |           | 26                          |                      |
| 8                                       | 2                          | 1                             | 7                     | 4         | 31                          | 1                    |
| 9                                       | 4                          |                               |                       |           | 10                          |                      |
| 10                                      | 3                          |                               | 1                     | 1         | 15                          |                      |
| 11                                      | 1                          |                               |                       |           | 4                           |                      |
| 12                                      |                            |                               |                       |           | 1                           |                      |
| 13                                      | 3                          |                               | 1                     |           | 38                          |                      |
| 14                                      | 1                          |                               |                       |           | 1                           | 1                    |
| 15                                      | 2                          |                               | 5                     |           | 82                          |                      |
| 16                                      | 6                          |                               |                       |           | 40                          |                      |
| 17                                      |                            |                               |                       |           | 3                           |                      |
| 18                                      | 2                          |                               | 2                     |           | 16                          |                      |
| 19                                      | 10                         |                               | 1                     |           | 14                          |                      |
| 20                                      | 3                          |                               |                       |           | 52                          |                      |
| 21                                      | 2                          |                               |                       |           | 2                           |                      |
| 22                                      | 1                          |                               |                       | 1         | 7                           |                      |
| 23                                      |                            |                               |                       |           | 26                          |                      |
| 24                                      | 3                          |                               |                       |           | 5                           |                      |
| 25                                      | 1                          |                               |                       |           | 18                          |                      |
| 26                                      |                            |                               |                       |           | 9                           |                      |
| 27                                      |                            |                               |                       |           | 34                          |                      |
| 28                                      | 2                          |                               | 1                     |           | 22                          |                      |
| 29                                      | 6                          | 1                             |                       |           | 20                          |                      |
| 30                                      |                            |                               | 1                     |           | 7                           |                      |
| 31                                      | 5                          | 1                             | 6                     |           | 134                         |                      |
| 32                                      | 1                          |                               |                       | 1         | 174                         |                      |
| 33                                      |                            |                               |                       |           | 8                           |                      |
| 34                                      |                            |                               |                       |           | 3                           |                      |
| 35                                      |                            |                               |                       |           | 8                           |                      |
| 36                                      | 1                          |                               |                       |           | 14                          |                      |
| 37                                      | 2                          |                               |                       |           | 12                          |                      |
| 38                                      |                            | 5                             |                       | 1         | 34                          | 2                    |
| 39                                      | 4                          |                               |                       | 1         | 34                          |                      |
| 40                                      |                            |                               | 1                     |           | 5                           |                      |
| 41                                      |                            |                               | 1                     |           | 12                          |                      |
| 42                                      | 1                          |                               |                       |           | 18                          |                      |
| 43                                      | 3                          |                               | 1                     | 1         | 58                          |                      |
| 44                                      |                            |                               |                       |           |                             |                      |
| 45                                      |                            |                               |                       | 1         | 38                          |                      |
| 46                                      | 10                         |                               | 1                     | 1         | 78                          | 2                    |
| 47                                      |                            |                               |                       |           | 29                          | 1                    |
| 48                                      |                            |                               |                       |           | 3                           |                      |
| 49                                      | 3                          |                               |                       |           | 12                          |                      |
| 50                                      | 2                          |                               |                       |           | 16                          |                      |
| 51                                      |                            |                               | 2                     |           | 29                          |                      |
| 52                                      | 1                          |                               |                       |           | 4                           |                      |
| 53                                      | 4                          |                               |                       |           | 19                          | 1                    |
| 54                                      |                            |                               |                       |           | 2                           |                      |
| 55                                      | 1                          |                               | 1                     | 2         | 44                          |                      |
| 56                                      |                            | 1                             |                       |           | 26                          |                      |
| 57                                      |                            | 2                             | 5                     |           | 32                          | 1                    |
| 58                                      |                            |                               | 1                     |           | 13                          |                      |
| 59                                      | 5                          |                               |                       |           | 81                          | 1                    |
| 60                                      |                            |                               |                       |           |                             |                      |
| 61                                      |                            | 1                             |                       |           | 66                          |                      |
| 62                                      | 4                          |                               | 2                     |           | 26                          |                      |
| 63                                      |                            |                               |                       |           | 51                          |                      |
| Number of defects.                      |                            |                               |                       |           |                             |                      |
|   | 104                        | 12                            | 40                    | 16        | 1,716                       | 12                   |
| Locomotives reported                    | 30                         | 16                            | 19                    | 59        | 2,067                       | 53                   |
| Locomotives inspected                   | 78                         | 16                            | 45                    | 114       | 3,320                       | 59                   |
| Locomotives defective                   | 33                         | 5                             | 10                    | 4         | 557                         | 6                    |
| Percentage of inspected found defective | 42                         | 31                            | 22                    | 4         | 17                          | 10                   |
| Locomotives ordered out of service      | 4                          |                               | 2                     |           | 10                          |                      |

found defective, and ordered from service, etc.

| Atlanta, Birmingham & Coast | Atlantic & Yadkin | Atlantic Coast Line | Baltimore & Ohio Lines East | Baltimore & Ohio Lines West | Bangor & Aroostook | Belt Ry. of Chicago | Bessemer & Lake Erie | Bethlehem Steel (Lakawanna) | Birmingham Southern | Boston & Albany | Boston & Maine | Buffalo & Susquehanna | Buffalo Creek | Buffalo, Rochester & Pittsburgh | Cambria & Indiana | Canadian National | Canadian Pacific |
|-----------------------------|-------------------|---------------------|-----------------------------|-----------------------------|--------------------|---------------------|----------------------|-----------------------------|---------------------|-----------------|----------------|-----------------------|---------------|---------------------------------|-------------------|-------------------|------------------|
| 2                           |                   |                     | 8                           | 41                          |                    | 5                   | 4                    |                             |                     |                 | 3              | 2                     |               |                                 |                   |                   |                  |
|                             |                   | 1                   | 3                           | 1                           | 1                  | 2                   | 1                    |                             |                     |                 | 2              |                       |               | 1                               |                   |                   |                  |
| 1                           |                   | 2                   | 1                           | 9                           |                    | 1                   | 1                    |                             |                     | 2               | 2              |                       |               |                                 |                   | 2                 | 1                |
| 2                           |                   | 4                   | 27                          | 25                          |                    | 3                   | 3                    |                             |                     | 1               | 1              |                       |               | 4                               |                   | 1                 | 1                |
| 3                           |                   |                     | 27                          | 20                          |                    | 3                   | 3                    |                             |                     | 1               | 1              |                       |               |                                 |                   | 1                 | 1                |
| 4                           |                   |                     | 104                         | 137                         | 1                  | 40                  | 12                   |                             |                     | 9               | 18             | 2                     |               | 3                               |                   | 12                | 1                |
| 5                           |                   | 23                  | 20                          | 96                          | 1                  | 5                   | 1                    |                             |                     | 3               | 14             |                       |               |                                 |                   | 6                 | 1                |
| 6                           |                   | 7                   | 20                          | 41                          |                    | 1                   | 1                    |                             |                     | 3               | 7              |                       |               | 3                               |                   | 1                 | 1                |
| 7                           |                   |                     | 28                          | 41                          |                    | 1                   | 1                    |                             |                     | 3               | 9              |                       |               | 2                               |                   | 2                 | 1                |
| 8                           |                   | 1                   | 10                          | 3                           |                    | 1                   | 1                    |                             |                     | 4               | 7              |                       |               | 3                               |                   | 2                 | 1                |
| 9                           |                   |                     | 1                           | 3                           |                    | 1                   | 1                    |                             |                     | 3               | 2              |                       |               | 2                               |                   | 2                 | 1                |
| 10                          |                   |                     | 68                          | 27                          | 1                  | 13                  | 1                    |                             |                     | 5               | 9              | 2                     |               | 7                               |                   | 1                 |                  |
| 11                          |                   |                     | 5                           | 6                           |                    |                     |                      |                             |                     |                 | 1              |                       |               |                                 |                   |                   |                  |
| 12                          |                   |                     | 82                          | 73                          |                    | 14                  | 3                    |                             |                     | 2               | 3              |                       |               | 7                               |                   | 1                 |                  |
| 13                          |                   |                     | 2                           | 5                           |                    | 2                   |                      |                             |                     |                 | 1              |                       |               |                                 |                   |                   |                  |
| 14                          |                   |                     | 10                          | 5                           | 1                  | 1                   |                      |                             |                     | 1               | 2              | 1                     |               | 1                               |                   | 2                 | 1                |
| 15                          |                   |                     | 16                          | 19                          |                    | 13                  | 2                    |                             |                     | 3               | 6              | 11                    |               | 6                               |                   | 2                 | 1                |
| 16                          |                   |                     | 35                          | 50                          | 1                  | 3                   | 2                    |                             |                     | 1               | 5              |                       |               | 1                               |                   | 6                 | 1                |
| 17                          |                   |                     | 58                          | 81                          |                    | 4                   | 7                    |                             |                     | 2               | 2              |                       |               | 3                               |                   | 35                | 3                |
| 18                          |                   |                     | 16                          | 22                          |                    | 4                   |                      |                             |                     | 1               | 9              | 1                     |               |                                 |                   |                   |                  |
| 19                          |                   |                     | 3                           | 4                           |                    | 3                   |                      |                             |                     |                 | 8              |                       |               |                                 |                   | 2                 |                  |
| 20                          |                   |                     | 42                          | 36                          |                    | 5                   | 5                    |                             |                     | 1               | 4              |                       |               | 1                               |                   | 2                 |                  |
| 21                          |                   |                     | 9                           | 1                           |                    | 1                   |                      |                             |                     |                 |                |                       |               |                                 |                   |                   |                  |
| 22                          |                   |                     | 13                          | 4                           |                    | 4                   | 1                    |                             |                     | 1               | 4              |                       |               | 2                               |                   | 2                 |                  |
| 23                          |                   |                     | 2                           | 3                           |                    | 1                   |                      |                             |                     |                 | 2              |                       |               |                                 |                   | 6                 |                  |
| 24                          |                   |                     | 3                           | 20                          |                    | 3                   | 3                    |                             |                     | 1               | 1              |                       |               | 5                               |                   | 6                 |                  |
| 25                          |                   |                     | 20                          | 13                          |                    | 3                   | 7                    |                             |                     | 1               | 10             | 2                     |               | 6                               |                   | 11                |                  |
| 26                          |                   |                     | 1                           | 8                           |                    | 1                   | 2                    |                             |                     |                 | 10             |                       |               | 1                               |                   | 1                 |                  |
| 27                          |                   |                     | 24                          | 24                          |                    | 1                   | 9                    |                             |                     | 3               | 14             | 4                     |               | 4                               |                   | 5                 | 5                |
| 28                          |                   |                     | 3                           | 2                           |                    | 2                   |                      |                             |                     |                 |                |                       |               |                                 |                   |                   |                  |
| 29                          |                   |                     | 9                           | 1                           |                    | 4                   | 1                    |                             |                     | 1               | 4              |                       |               | 2                               |                   | 2                 |                  |
| 30                          |                   |                     | 13                          | 4                           |                    | 1                   |                      |                             |                     |                 | 3              |                       |               | 4                               |                   | 2                 |                  |
| 31                          |                   |                     | 16                          | 9                           |                    | 3                   |                      |                             |                     | 4               | 11             |                       |               | 4                               |                   | 2                 |                  |
| 32                          |                   |                     | 20                          | 13                          |                    | 3                   | 7                    |                             |                     | 1               | 10             | 2                     |               | 5                               |                   | 6                 |                  |
| 33                          |                   |                     | 1                           | 8                           |                    | 1                   | 2                    |                             |                     |                 | 10             |                       |               | 1                               |                   | 1                 |                  |
| 34                          |                   |                     | 24                          | 24                          |                    | 1                   | 9                    |                             |                     | 3               | 14             | 4                     |               | 4                               |                   | 5                 | 5                |
| 35                          |                   |                     | 3                           | 2                           |                    | 2                   |                      |                             |                     |                 |                |                       |               |                                 |                   |                   |                  |
| 36                          |                   |                     | 97                          | 134                         | 3                  | 25                  | 15                   |                             |                     | 8               | 10             | 7                     |               | 12                              |                   | 8                 | 3                |
| 37                          |                   |                     | 192                         | 4                           | 6                  | 4                   | 4                    |                             |                     | 50              | 147            |                       |               | 3                               |                   | 2                 | 5                |
| 38                          |                   |                     | 11                          | 1                           | 1                  | 2                   |                      |                             |                     |                 | 18             |                       |               |                                 |                   | 1                 |                  |
| 39                          |                   |                     | 1                           | 1                           |                    | 1                   |                      |                             |                     |                 | 1              |                       |               |                                 |                   |                   |                  |
| 40                          |                   |                     | 19                          | 2                           |                    | 2                   |                      |                             |                     | 1               | 4              |                       |               |                                 |                   | 2                 |                  |
| 41                          |                   |                     | 23                          | 3                           |                    | 3                   |                      |                             |                     |                 | 3              | 4                     |               | 4                               |                   |                   |                  |
| 42                          |                   |                     | 18                          | 9                           |                    | 3                   |                      |                             |                     | 4               | 11             |                       |               |                                 |                   | 2                 |                  |
| 43                          |                   |                     | 23                          | 9                           |                    | 3                   |                      |                             |                     |                 | 3              | 4                     |               | 4                               |                   |                   |                  |
| 44                          |                   |                     | 16                          | 13                          |                    | 2                   |                      |                             |                     | 4               | 11             |                       |               |                                 |                   | 2                 |                  |
| 45                          |                   |                     | 5                           | 36                          |                    | 1                   |                      |                             |                     |                 | 4              |                       |               |                                 |                   | 6                 |                  |
| 46                          |                   |                     | 13                          | 23                          |                    | 1                   | 5                    |                             |                     | 11              | 3              |                       |               | 4                               |                   |                   |                  |
| 47                          |                   |                     | 36                          | 53                          |                    | 7                   |                      |                             |                     |                 | 1              | 4                     |               | 1                               |                   | 1                 |                  |
| 48                          |                   |                     | 5                           | 10                          |                    | 1                   |                      |                             |                     | 4               | 6              |                       |               | 3                               |                   | 1                 | 40               |
| 49                          |                   |                     | 2                           | 8                           |                    | 2                   |                      |                             |                     |                 | 2              |                       |               |                                 |                   |                   |                  |
| 50                          |                   |                     | 23                          | 8                           |                    | 2                   |                      |                             |                     | 2               | 4              |                       |               |                                 |                   | 1                 |                  |
| 51                          |                   |                     | 50                          | 74                          |                    | 2                   | 2                    |                             |                     | 2               | 2              | 1                     |               | 1                               |                   | 2                 |                  |
| 52                          |                   |                     | 89                          | 94                          |                    | 19                  | 15                   |                             |                     | 10              | 11             | 15                    |               | 10                              |                   | 14                | 4                |
| 53                          |                   |                     | 6                           | 5                           |                    | 5                   |                      |                             |                     |                 |                |                       |               |                                 |                   |                   |                  |
| 54                          |                   |                     | 27                          | 27                          |                    | 6                   | 1                    |                             |                     | 1               |                | 1                     |               | 1                               |                   | 1                 |                  |
| 55                          |                   |                     | 151                         | 155                         |                    | 8                   | 11                   |                             |                     | 15              | 38             | 11                    |               | 24                              |                   | 13                | 9                |
| 56                          |                   |                     | 7                           | 11                          |                    | 4                   | 1                    |                             |                     |                 |                |                       |               | 1                               |                   |                   | 46               |
| 57                          |                   |                     | 12                          | 19                          |                    | 9                   | 1                    |                             |                     |                 | 3              |                       |               | 1                               |                   |                   | 48               |
| 58                          |                   |                     | 57                          | 29                          |                    | 5                   | 9                    |                             |                     |                 | 4              | 6                     |               |                                 |                   | 14                |                  |
| 59                          |                   |                     | 8                           | 18                          |                    | 3                   | 4                    |                             |                     |                 | 5              | 3                     |               |                                 |                   |                   |                  |
| 60                          |                   |                     | 10                          | 14                          |                    | 1                   |                      |                             |                     | 5               | 5              |                       |               |                                 |                   | 3                 | 1                |
| 61                          |                   |                     | 21                          | 48                          |                    | 3                   | 4                    |                             |                     | 2               | 10             | 7                     |               | 4                               |                   | 6                 | 2                |
| 62                          |                   |                     | 47                          | 81                          |                    | 2                   | 3                    |                             |                     | 9               | 22             | 1                     |               | 5                               |                   | 2                 | 3                |
| 63                          |                   |                     | 3                           |                             |                    |                     |                      |                             |                     |                 |                |                       |               |                                 |                   |                   |                  |
|                             |                   |                     | 8                           | 20                          |                    | 4                   |                      |                             |                     |                 |                |                       |               |                                 |                   |                   |                  |
|                             |                   |                     | 53                          | 49                          | 1                  | 12                  | 1                    |                             |                     | 1               | 1              | 1                     |               | 1                               |                   | 1                 |                  |
|                             |                   |                     | 47                          | 74                          |                    | 4                   | 4                    |                             |                     | 3               | 14             | 4                     |               | 4                               |                   | 2                 |                  |
|                             |                   |                     | 34                          | 40                          | 2                  | 8                   | 6                    |                             |                     | 3               | 18             | 1                     |               | 4                               |                   | 7                 | 3                |
|                             |                   |                     | 1                           | 50                          |                    | 19                  |                      |                             |                     |                 | 17             | 2                     |               | 4                               |                   | 8                 | 24               |

TABLE XIII.—Number of steam locomotives inspected,

| Parts defective, inoperative or missing, or in violation of the rules |  | Carnegie Steel | Carolina & Northwestern | Central of Georgia | Central R. of New Jersey | Central Vermont | Charleston & Western Carolina |
|---|--|----------------|-------------------------|--------------------|--------------------------|-----------------|-------------------------------|
| 1   | Air compressors  | 3              |                         | 3                  | 12                       |                 |                               |
| 2   | Arch tubes   |                |                         |                    |                          |                 |                               |
| 3   | Ash pans or mechanism  |                |                         |                    | 3                        |                 |                               |
| 4   | Axles  |                |                         |                    |                          |                 |                               |
| 5   | Blow-off cocks   |                |                         | 3                  | 1                        |                 |                               |
| 6   | Boiler checks  | 1              |                         | 6                  |                          |                 |                               |
| 7   | Boiler shell   |                |                         | 6                  | 15                       | 1               |                               |
| 8   | Brake equipment  | 4              | 2                       | 6                  | 85                       |                 | 4                             |
| 9   | Cabs or cab windows  |                |                         | 6                  | 11                       | 2               | 1                             |
| 10  | Cab aprons or decks  |                |                         |                    | 12                       |                 | 1                             |
| 11  | Cab cards  | 1              |                         |                    | 5                        | 2               |                               |
| 12  | Coupling or uncoupling devices                               |                |                         |                    | 1                        |                 | 1                             |
| 13  | Crossheads, guides, pistons, or piston rods                  |                |                         | 7                  | 20                       |                 | 2                             |
| 14  | Crown bolts  |                |                         |                    |                          |                 |                               |
| 15  | Cylinders, saddles, or steam chests                          | 5              | 7                       | 29                 |                          |                 |                               |
| 16  | Cylinder cocks or rigging                                    | 1              | 2                       | 14                 |                          |                 |                               |
| 17  | Domes or dome caps   |                |                         | 3                  |                          |                 |                               |
| 18  | Draft gear   | 1              |                         | 9                  | 18                       | 1               |                               |
| 19  | Draw gear  |                |                         | 4                  | 12                       | 1               |                               |
| 20  | Driving boxes, shoes, wedges, pedestals, or braces           |                |                         | 7                  | 14                       | 6               | 1                             |
| 21  | Fire-box sheets  | 1              |                         | 4                  | 3                        |                 |                               |
| 22  | Flues  | 1              |                         | 2                  | 2                        |                 |                               |
| 23  | Frames, tail pieces or braces, locomotive                    |                |                         | 6                  | 12                       | 1               |                               |
| 24  | Frames, tender   |                |                         | 2                  | 1                        |                 |                               |
| 25  | Gauges or gauge fittings, air                                |                |                         | 7                  |                          |                 |                               |
| 26  | Gauges or gauge fittings, steam                              |                |                         | 2                  | 10                       |                 |                               |
| 27  | Gauge cocks  | 1              |                         | 6                  | 41                       | 2               | 5                             |
| 28  | Grate shakers  |                |                         |                    | 8                        |                 |                               |
| 29  | Handholds  | 1              |                         | 4                  | 22                       | 1               |                               |
| 30  | Injectors, inoperative                                       |                |                         |                    |                          |                 |                               |
| 31  | Injectors and connections                                    | 8              |                         | 20                 | 44                       |                 |                               |
| 32  | Inspections or tests not made as required                    |                | 8                       | 14                 | 58                       | 4               | 17                            |
| 33  | Lateral motion   | 1              |                         |                    | 5                        |                 |                               |
| 34  | Lights, cab or classification                                |                |                         |                    | 1                        |                 |                               |
| 35  | Lights, headlights   |                |                         | 1                  | 19                       |                 |                               |
| 36  | Lubricator or shields  |                |                         | 4                  | 4                        |                 |                               |
| 37  | Mud rings  |                |                         | 1                  | 4                        | 1               |                               |
| 38  | Packing nuts   |                |                         | 4                  | 11                       | 1               |                               |
| 39  | Packing, piston rod and valve stem                           | 9              |                         | 5                  | 37                       | 1               |                               |
| 40  | Pilot or pilot beams   |                |                         | 3                  | 6                        |                 |                               |
| 41  | Plugs or studs   |                |                         | 1                  | 1                        |                 |                               |
| 42  | Reversing gear   |                |                         | 3                  | 10                       |                 | 2                             |
| 43  | Rods, main or side, crank pins or collars                    | 8              |                         | 7                  | 21                       | 3               | 1                             |
| 44  | Safety valves  |                |                         |                    | 1                        |                 |                               |
| 45  | Sanders  |                |                         |                    | 15                       |                 |                               |
| 46  | Springs or spring rigging                                    | 2              | 3                       | 39                 | 59                       | 2               | 1                             |
| 47  | Squirt hose  |                |                         | 6                  |                          | 1               |                               |
| 48  | Staybolts  | 3              |                         |                    |                          | 2               | 1                             |
| 49  | Staybolts, broken  | 11             |                         | 10                 |                          |                 |                               |
| 50  | Steam pipes  |                |                         | 1                  | 13                       |                 |                               |
| 51  | Steam valves   | 1              |                         | 9                  | 8                        | 1               |                               |
| 52  | Steps  | 2              |                         | 10                 |                          |                 |                               |
| 53  | Tanks or tank valves   | 2              |                         | 10                 | 20                       |                 | 4                             |
| 54  | Telltale holes   |                |                         |                    |                          | 1               |                               |
| 55  | Throttle or throttle rigging                                 | 2              |                         | 2                  | 16                       | 1               | 1                             |
| 56  | Trucks, engine or trailing                                   |                | 1                       |                    | 33                       | 3               | 1                             |
| 57  | Trucks, tender   |                |                         | 5                  | 46                       |                 | 4                             |
| 58  | Valve motion   | 2              |                         |                    | 8                        |                 |                               |
| 59  | Washout plugs  | 1              |                         | 6                  | 5                        |                 | 1                             |
| 60  | Train control equipment                                      |                |                         |                    | 2                        |                 |                               |
| 61  | Water glass, fittings or shield                              | 2              |                         | 5                  | 11                       |                 |                               |
| 62  | Wheels   | 8              |                         | 4                  | 183                      |                 | 1                             |
| 63  | Miscellaneous—Signal appliances, badge plates, brakes (hand) | 1              |                         | 1                  | 15                       |                 | 1                             |
| Number of defects   |  | 81             | 16                      | 247                | 884                      | 39              | 51                            |
| Locomotives reported  |  | 46             | 12                      | 346                | 558                      | 86              | 61                            |
| Locomotives inspected   |  | 76             | 32                      | 458                | 781                      | 197             | 67                            |
| Locomotives defective   |  | 18             | 8                       | 86                 | 257                      | 18              | 18                            |
| Percentage of inspected found defective                               |  | 24             | 25                      | 19                 | 33                       | 9               | 27                            |
| Locomotives ordered out of service                                    |  | 8              |                         | 4                  | 6                        | 1               |                               |

found defective, and ordered from service, etc.—Continued

| Chesapeake & Ohio | Chicago & Alton | Chicago & Eastern Illinois | Chicago & Illinois Midland | Chicago & Northwestern | Chicago & Western Indiana | Chicago, Burlington & Quincy | Chicago Great Western | Chicago, Indianapolis & Louisville | Chicago, Milwaukee, St. Paul & Pacific | Chicago River & Indiana | Chicago, Rock Island & Pacific | Chicago, St. Paul, Minn. & Omaha | Chicago Short Line | Chicago West Pullman & Southern | Cleveland Cincinnati, Chicago & St. Louis | Clinchfield | Colorado & Southern |
|-------------------|-----------------|----------------------------|----------------------------|------------------------|---------------------------|------------------------------|-----------------------|------------------------------------|--|-------------------------|--------------------------------|----------------------------------|--------------------|---------------------------------|---|-------------|---------------------|
| 11                | 2               | 1                          |                            | 19                     | 1                         | 38                           | 4                     | 2                                  | 11                                     |                         | 46                             | 8                                |                    | 1                               | 16  |             | 12                  |
| 6                 |                 |                            |                            | 3                      |                           | 1                            | 1                     |                                    | 1                                      |                         | 3                              | 1                                |                    |                                 | 2   |             | 1                   |
| 1                 |                 |                            |                            |                        |                           | 4                            |                       |                                    |  |                         | 8                              |                                  |                    |                                 | 2   |             | 3                   |
| 1                 |                 |                            |                            |                        |                           | 1                            |                       |                                    |  |                         | 1                              |                                  |                    |                                 |   |             | 4                   |
| 4                 |                 |                            |                            |                        |                           | 7                            |                       |                                    |  |                         | 10                             |                                  |                    |                                 |   |             | 5                   |
| 1                 |                 |                            |                            |                        |                           | 1                            |                       |                                    |  |                         | 23                             |                                  |                    |                                 |   |             | 6                   |
| 1                 |                 |                            |                            |                        |                           | 1                            |                       |                                    |  |                         | 21                             |                                  |                    |                                 |   |             | 6                   |
| 7                 |                 |                            |                            |                        |                           | 6                            |                       |                                    |  |                         | 23                             |                                  |                    |                                 |   |             | 7                   |
| 12                |                 |                            |                            |                        |                           | 7                            |                       |                                    |  |                         | 23                             |                                  |                    |                                 |   |             | 8                   |
| 34                |                 |                            |                            |                        |                           | 18                           |                       |                                    |  |                         | 41                             |                                  |                    |                                 |   |             | 8                   |
| 18                |                 |                            |                            |                        |                           | 3                            |                       |                                    |  |                         | 14                             |                                  |                    |                                 |   |             | 9                   |
| 9                 |                 |                            |                            |                        |                           | 2                            |                       |                                    |  |                         | 7                              |                                  |                    |                                 |   |             | 10                  |
| 3                 |                 |                            |                            |                        |                           | 1                            |                       |                                    |  |                         | 5                              |                                  |                    |                                 |   |             | 11                  |
| 1                 |                 |                            |                            |                        |                           | 4                            |                       |                                    |  |                         | 4                              |                                  |                    |                                 |   |             | 12                  |
| 30                |                 |                            |                            |                        |                           | 31                           |                       |                                    |  |                         | 46                             |                                  |                    |                                 |   |             | 13                  |
| 2                 |                 |                            |                            |                        |                           | 2                            |                       |                                    |  |                         | 2                              |                                  |                    |                                 |   |             | 14                  |
| 7                 |                 |                            |                            |                        |                           | 3                            |                       |                                    |  |                         | 4                              |                                  |                    |                                 |   |             | 14                  |
| 90                |                 |                            |                            |                        |                           | 46                           |                       |                                    |  |                         | 159                            |                                  |                    |                                 |   |             | 15                  |
| 13                |                 |                            |                            |                        |                           | 40                           |                       |                                    |  |                         | 44                             |                                  |                    |                                 |   |             | 15                  |
| 2                 |                 |                            |                            |                        |                           | 26                           |                       |                                    |  |                         | 14                             |                                  |                    |                                 |   |             | 16                  |
| 8                 |                 |                            |                            |                        |                           | 5                            |                       |                                    |  |                         | 4                              |                                  |                    |                                 |   |             | 17                  |
| 28                |                 |                            |                            |                        |                           | 29                           |                       |                                    |  |                         | 24                             |                                  |                    |                                 |   |             | 18                  |
| 65                |                 |                            |                            |                        |                           | 22                           |                       |                                    |  |                         | 37                             |                                  |                    |                                 |   |             | 19                  |
| 10                |                 |                            |                            |                        |                           | 2                            |                       |                                    |  |                         | 43                             |                                  |                    |                                 |   |             | 20                  |
| 2                 |                 |                            |                            |                        |                           | 4                            |                       |                                    |  |                         | 14                             |                                  |                    |                                 |   |             | 21                  |
| 20                |                 |                            |                            |                        |                           | 15                           |                       |                                    |  |                         | 7                              |                                  |                    |                                 |   |             | 22                  |
| 10                |                 |                            |                            |                        |                           | 5                            |                       |                                    |  |                         | 62                             |                                  |                    |                                 |   |             | 23                  |
| 4                 |                 |                            |                            |                        |                           | 8                            |                       |                                    |  |                         | 8                              |                                  |                    |                                 |   |             | 24                  |
| 13                |                 |                            |                            |                        |                           | 18                           |                       |                                    |  |                         | 24                             |                                  |                    |                                 |   |             | 25                  |
| 7                 |                 |                            |                            |                        |                           | 11                           |                       |                                    |  |                         | 14                             |                                  |                    |                                 |   |             | 26                  |
| 3                 |                 |                            |                            |                        |                           | 1                            |                       |                                    |  |                         | 7                              |                                  |                    |                                 |   |             | 27                  |
| 2                 |                 |                            |                            |                        |                           | 16                           |                       |                                    |  |                         | 18                             |                                  |                    |                                 |   |             | 28                  |
| 6                 |                 |                            |                            |                        |                           | 1                            |                       |                                    |  |                         | 2                              |                                  |                    |                                 |   |             | 29                  |
| 56                |                 |                            |                            |                        |                           | 40                           |                       |                                    |  |                         | 133                            |                                  |                    |                                 |   |             | 30                  |
| 45                |                 |                            |                            |                        |                           | 38                           |                       |                                    |  |                         | 223                            |                                  |                    |                                 |   |             | 31                  |
| 5                 |                 |                            |                            |                        |                           | 4                            |                       |                                    |  |                         | 3                              |                                  |                    |                                 |   |             | 32                  |
| 6                 |                 |                            |                            |                        |                           | 3                            |                       |                                    |  |                         | 6                              |                                  |                    |                                 |   |             | 33                  |
| 7                 |                 |                            |                            |                        |                           | 4                            |                       |                                    |  |                         | 3                              |                                  |                    |                                 |   |             | 34                  |
| 7                 |                 |                            |                            |                        |                           | 3                            |                       |                                    |  |                         | 13                             |                                  |                    |                                 |   |             | 35                  |
| 7                 |                 |                            |                            |                        |                           | 3                            |                       |                                    |  |                         | 8                              |                                  |                    |                                 |   |             | 36                  |
| 13                |                 |                            |                            |                        |                           | 5                            |                       |                                    |  |                         | 43                             |                                  |                    |                                 |   |             | 37                  |
| 20                |                 |                            |                            |                        |                           | 27                           |                       |                                    |  |                         | 41                             |                                  |                    |                                 |   |             | 38                  |
| 4                 |                 |                            |                            |                        |                           | 9                            |                       |                                    |  |                         | 6                              |                                  |                    |                                 |   |             | 39                  |
| 8                 |                 |                            |                            |                        |                           | 6                            |                       |                                    |  |                         | 1                              |                                  |                    |                                 |   |             | 40                  |
| 25                |                 |                            |                            |                        |                           | 11                           |                       |                                    |  |                         | 29                             |                                  |                    |                                 |   |             | 41                  |
| 44                |                 |                            |                            |                        |                           | 63                           |                       |                                    |  |                         | 118                            |                                  |                    |                                 |   |             | 42                  |
| 11                |                 |                            |                            |                        |                           | 10                           |                       |                                    |  |                         | 62                             |                                  |                    |                                 |   |             | 43                  |
| 18                |                 |                            |                            |                        |                           | 31                           |                       |                                    |  |                         | 37                             |                                  |                    |                                 |   |             | 44                  |
| 74                |                 |                            |                            |                        |                           | 59                           |                       |                                    |  |                         | 136                            |                                  |                    |                                 |   |             | 45                  |
| 4                 |                 |                            |                            |                        |                           | 4                            |                       |                                    |  |                         | 23                             |                                  |                    |                                 |   |             | 46                  |
| 4                 |                 |                            |                            |                        |                           | 3                            |                       |                                    |  |                         | 4                              |                                  |                    |                                 |   |             | 47                  |
| 7                 |                 |                            |                            |                        |                           | 22                           |                       |                                    |  |                         | 18                             |                                  |                    |                                 |   |             | 48                  |
| 10                |                 |                            |                            |                        |                           | 14                           |                       |                                    |  |                         | 16                             |                                  |                    |                                 |   |             | 49                  |
| 7                 |                 |                            |                            |                        |                           | 8                            |                       |                                    |  |                         | 7                              |                                  |                    |                                 |   |             | 50                  |
| 1                 |                 |                            |                            |                        |                           | 3                            |                       |                                    |  |                         | 9                              |                                  |                    |                                 |   |             | 51                  |
| 2                 |                 |                            |                            |                        |                           | 15                           |                       |                                    |  |                         | 34                             |                                  |                    |                                 |   |             | 52                  |
| 7                 |                 |                            |                            |                        |                           | 1                            |                       |                                    |  |                         | 6                              |                                  |                    |                                 |   |             | 53                  |
| 25                |                 |                            |                            |                        |                           | 28                           |                       |                                    |  |                         | 30                             |                                  |                    |                                 |   |             | 54                  |
| 24                |                 |                            |                            |                        |                           | 29                           |                       |                                    |  |                         | 28                             |                                  |                    |                                 |   |             | 55                  |
| 14                |                 |                            |                            |                        |                           | 35                           |                       |                                    |  |                         | 44                             |                                  |                    |                                 |   |             | 56                  |
| 11                |                 |                            |                            |                        |                           | 2                            |                       |                                    |  |                         | 18                             |                                  |                    |                                 |   |             | 57                  |
| 38                |                 |                            |                            |                        |                           | 18                           |                       |                                    |  |                         | 7                              |                                  |                    |                                 |   |             | 58                  |
| 34                |                 |                            |                            |                        |                           | 25                           |                       |                                    |  |                         | 64                             |                                  |                    |                                 |   |             | 59                  |
| 19                |                 |                            |                            |                        |                           | 33                           |                       |                                    |  |                         | 40                             |                                  |                    |                                 |   |             | 60                  |
| 14                |                 |                            |                            |                        |                           | 11                           |                       |                                    |  |                         | 66                             |                                  |                    |                                 |   |             | 61                  |
| 970               | 100             | 394                        | 70                         | 1,088                  | 24                        | 1,480                        | 218                   | 231                                | 1,011                                  | 2                       | 2,271                          | 414                              | 19                 | 92                              | 723                                       | 51          | 511                 |
| 1,017             | 318             | 341                        | 21                         | 1,958                  | 27                        | 1,766                        | 265                   | 164                                | 1,852                                  | 75                      | 1,491                          | 353                              | 12                 | 11                              | 973                                       | 88          | 163                 |
| 1,565             | 451             | 496                        | 61                         | 3,405                  | 11                        | 3,069                        | 533                   | 309                                | 2,935                                  | 20                      | 3,152                          | 696                              | 6                  | 23                              | 1,146                                     | 71          | 297                 |
| 326               | 40              | 129                        | 22                         | 358                    | 5                         | 523                          | 73                    | 71                                 | 345                                    | 1                       | 648                            | 157                              | 3                  | 13                              | 250                                       | 11          | 136                 |
| 21                | 9               | 26                         | 36                         | 11                     | 45                        | 17                           | 14                    | 23                                 | 12                                     | 5                       | 21                             | 23                               | 50                 | 67                              | 22  | 15          | 46                  |
| 8                 | 3               | 13                         | 2                          | 9                      | 1                         | 20                           |                       |                                    | 10                                     |                         | 27                             | 3                                |                    | 3                               | 18  | 1           | 7                   |

TABLE XIII.—Number of steam locomotives inspected,

| Parts defective, inoperative or missing, or in violation of the rules |  | Colorado & Wyoming | Columbus & Greenville | Conemaugh & Black Lick | Copper Range | Copper River & Northwestern | Cornwall |
|---|--|--------------------|-----------------------|------------------------|--------------|-----------------------------|----------|
| 1   | Air compressors  | 1                  |                       |                        |              |                             | 1        |
| 2   | Arch tubes   |                    |                       |                        |              |                             |          |
| 3   | Ash pans or mechanism  |                    |                       |                        |              |                             |          |
| 4   | Axles  |                    |                       |                        |              |                             |          |
| 5   | Blow-off cocks   |                    |                       |                        |              |                             |          |
| 6   | Boiler checks  |                    | 1                     |                        |              |                             |          |
| 7   | Boiler shell   |                    | 1                     | 2                      |              |                             |          |
| 8   | Brake equipment  | 10                 |                       |                        | 2            |                             | 2        |
| 9   | Cabs or cab windows  | 4                  |                       |                        |              |                             |          |
| 10  | Cab aprons or decks  |                    |                       |                        |              |                             |          |
| 11  | Cab cards  |                    |                       |                        |              |                             |          |
| 12  | Coupling or uncoupling devices                               |                    |                       |                        |              |                             | 2        |
| 13  | Crossheads, guides, pistons, or piston rods                  |                    |                       | 1                      |              |                             | 1        |
| 14  | Crown bolts  |                    |                       |                        |              |                             | 2        |
| 15  | Cylinders, saddles, or steam chests                          | 8                  |                       | 2                      |              |                             | 1        |
| 16  | Cylinder cocks or rigging                                    | 1                  |                       |                        |              |                             |          |
| 17  | Domes or dome caps   | 1                  |                       |                        |              |                             |          |
| 18  | Draft gear   | 6                  |                       |                        | 1            |                             | 2        |
| 19  | Draw gear  |                    |                       |                        |              |                             |          |
| 20  | Driving boxes, shoes, wedges, pedestals, or braces           | 3                  |                       | 1                      | 1            |                             |          |
| 21  | Fire-box sheets  | 1                  |                       |                        |              |                             |          |
| 22  | Flues  |                    |                       |                        |              |                             | 4        |
| 23  | Frames, tail pieces or braces, locomotive                    |                    |                       |                        |              |                             |          |
| 24  | Frames, tender   |                    |                       |                        |              |                             |          |
| 25  | Gauges or gauge fittings, air                                |                    |                       |                        |              |                             |          |
| 26  | Gauges or gauge fittings, steam                              | 2                  |                       |                        |              |                             |          |
| 27  | Gauge cocks  | 1                  |                       | 1                      |              |                             |          |
| 28  | Grate shakers  |                    |                       |                        | 1            |                             | 1        |
| 29  | Handholds  |                    |                       |                        | 1            |                             | 3        |
| 30  | Injectors, inoperative                                       |                    |                       |                        |              |                             |          |
| 31  | Injectors and connections                                    | 4                  |                       | 1                      | 1            |                             | 1        |
| 32  | Inspections or tests not made as required                    | 2                  |                       |                        | 1            |                             | 7        |
| 33  | Lateral motion   |                    |                       |                        |              |                             |          |
| 34  | Lights, cab or classification                                |                    |                       |                        |              |                             |          |
| 35  | Lights, headlights   | 1                  |                       |                        |              |                             | 1        |
| 36  | Lubricator or shields  |                    |                       |                        |              |                             |          |
| 37  | Mud rings  |                    |                       |                        | 1            |                             |          |
| 38  | Packing nuts   | 1                  |                       |                        |              |                             | 1        |
| 39  | Packing, piston rod and valve stem                           | 1                  |                       |                        |              |                             |          |
| 40  | Pilot or pilot beams   |                    |                       |                        |              |                             |          |
| 41  | Plugs or studs   |                    |                       | 1                      | 1            |                             |          |
| 42  | Reversing gear   |                    |                       |                        |              |                             |          |
| 43  | Rods, main or side, crank pins or collars                    | 4                  |                       |                        | 1            |                             |          |
| 44  | Safety valves  |                    |                       |                        |              |                             |          |
| 45  | Sanders  |                    |                       |                        |              |                             |          |
| 46  | Springs or spring rigging                                    | 4                  |                       | 1                      |              |                             | 1        |
| 47  | Squirt hose  | 1                  |                       |                        |              |                             |          |
| 48  | Staybolts  |                    |                       |                        |              |                             | 2        |
| 49  | Staybolts, broken  |                    |                       |                        |              |                             | 7        |
| 50  | Steam pipes  |                    |                       | 1                      | 1            |                             | 1        |
| 51  | Steam valves   |                    |                       | 1                      | 1            |                             |          |
| 52  | Steps  |                    |                       |                        |              |                             | 4        |
| 53  | Tanks or tank valves   | 3                  |                       |                        |              |                             |          |
| 54  | Telltale holes   |                    |                       |                        |              |                             |          |
| 55  | Throttle or throttle rigging                                 |                    |                       |                        |              |                             | 1        |
| 56  | Trucks, engine or trailing                                   |                    |                       |                        |              |                             |          |
| 57  | Trucks, tender   | 2                  |                       | 23                     | 1            |                             |          |
| 58  | Valve motion   | 3                  |                       |                        |              |                             |          |
| 59  | Washout plugs  |                    |                       |                        |              |                             | 1        |
| 60  | Train control equipment                                      |                    |                       |                        |              |                             |          |
| 61  | Water glass, fittings or shield                              |                    |                       |                        | 1            |                             | 3        |
| 62  | Wheels   |                    |                       | 2                      | 2            |                             |          |
| 63  | Miscellaneous—Signal appliances, badge plates, brakes (hand) |                    |                       |                        | 1            |                             |          |
| Number of defects   |  | 64                 | 3                     | 39                     | 18           |                             | 51       |
| Locomotives reported  |  | 27                 | 27                    | 33                     | 20           | 19                          | 10       |
| Locomotives inspected   |  | 53                 | 20                    | 15                     | 21           |                             | 32       |
| Locomotives defective   |  | 15                 | 3                     | 7                      | 9            |                             | 14       |
| Percentage of inspected found defective                               |  | 28                 | 15                    | 47                     | 43           |                             | 44       |
| Locomotives ordered out of service                                    |  | 5                  |                       | 1                      |              |                             |          |

found defective, and ordered from service, etc.—Continued

| Cumberland & Pennsylvania | Davenport, Rock Island & Northwestern | Delaware & Hudson | Delaware, Lackawanna & Western | Denver & Rio Grande Western | Denver & Salt Lake | Detroit & Mackinac | Detroit & Toledo Shore Line | Detroit Terminal | Detroit, Toledo & Iron-ton | Donora Southern | Duluth & Iron Range | Duluth & Northeastern | Duluth, Missabe & Northern | Duluth, South Shore & Atlantic | East Broad Top R. R. & Coal | East St. Louis Junction | East Tennessee & Western North Carolina |
|---------------------------|---------------------------------------|-------------------|--------------------------------|-----------------------------|--------------------|--------------------|-----------------------------|------------------|----------------------------|-----------------|---------------------|-----------------------|----------------------------|--------------------------------|-----------------------------|-------------------------|---|
|                           |                                       | 1                 | 9                              | 47                          | 1                  |                    |                             |                  |                            |                 | 4                   |                       |                            | 1                              |                             | 2                       |   |
| 1                         |                                       | 1                 | 1                              | 3                           |                    |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   |                                |                             |                    |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           | 1                                     |                   | 1                              | 5                           |                    |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 3                              | 7                           | 1                  | 1                  |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
| 2                         |                                       |                   | 14                             | 3                           |                    |                    | 1                           | 1                |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 33                             | 42                          |                    |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           | 2                                     |                   | 14                             | 64                          | 7                  |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 2                              | 8                           |                    |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 1                              | 2                           |                    |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 1                              | 1                           |                    |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
| 1                         |                                       |                   | 3                              | 17                          | 53                 |                    | 4                           |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   |                                |                             |                    |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
| 1                         |                                       |                   | 1                              | 44                          | 28                 |                    | 14                          |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 3                              | 25                          | 7                  |                    | 4                           |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 1                              | 6                           | 7                  |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 7                              | 17                          | 3                  |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 12                             | 23                          | 6                  |                    | 6                           |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 4                              | 13                          | 1                  |                    | 1                           |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 2                              | 1                           | 1                  |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 1                              | 2                           | 2                  |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 1                              | 15                          | 13                 |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   |                                |                             |                    |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 3                              | 6                           | 8                  |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 11                             | 8                           | 2                  |                    | 2                           |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 9                              | 19                          | 2                  |                    | 1                           |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 3                              | 3                           | 3                  |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 1                              | 10                          | 10                 |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   |                                |                             |                    |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 3                              | 25                          | 4                  |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 16                             | 3                           | 1                  |                    | 2                           |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 55                             | 4                           | 7                  |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 16                             | 8                           |                    |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 2                              | 3                           | 1                  |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 10                             | 4                           |                    |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 3                              | 3                           |                    |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 9                              | 36                          | 3                  |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 2                              | 7                           |                    |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 10                             | 85                          | 6                  |                    | 8                           |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 12                             | 46                          | 5                  |                    | 1                           |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 8                              | 8                           | 3                  |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 4                              | 1                           | 1                  |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 3                              | 4                           |                    |                    |                             | 3                |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 7                              | 6                           |                    |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 21                             | 16                          | 1                  |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 3                              | 6                           |                    |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 27                             | 18                          |                    |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 3                              | 12                          | 26                 |                    | 1                           |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   |                                |                             |                    |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 3                              | 20                          | 21                 |                    | 1                           | 2                | 1                          | 2               | 1                   |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 2                              | 8                           | 16                 |                    | 2                           |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 19                             | 39                          | 3                  |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 13                             | 22                          | 1                  |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 20                             | 60                          | 4                  |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 1                              | 4                           |                    |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 2                              | 3                           |                    |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 9                              | 36                          | 3                  |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 1                              | 2                           |                    |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 10                             | 85                          | 6                  |                    | 8                           |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 12                             | 46                          | 5                  |                    | 1                           |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 8                              | 8                           | 3                  |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 4                              | 1                           | 1                  |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 3                              | 4                           |                    |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 7                              | 6                           |                    |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 21                             | 16                          | 1                  |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 3                              | 6                           |                    |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 27                             | 18                          |                    |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 3                              | 12                          | 26                 |                    | 1                           |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   |                                |                             |                    |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 3                              | 20                          | 21                 |                    | 1                           | 2                | 1                          | 2               | 1                   |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 2                              | 8                           | 16                 |                    | 2                           |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 19                             | 39                          | 3                  |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 13                             | 22                          | 1                  |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 20                             | 60                          | 4                  |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 1                              | 4                           |                    |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 2                              | 3                           |                    |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 9                              | 36                          | 3                  |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 1                              | 2                           |                    |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 10                             | 85                          | 6                  |                    | 8                           |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 12                             | 46                          | 5                  |                    | 1                           |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 8                              | 8                           | 3                  |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 4                              | 1                           | 1                  |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 3                              | 4                           |                    |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 7                              | 6                           |                    |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 21                             | 16                          | 1                  |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 3                              | 6                           |                    |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 27                             | 18                          |                    |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 3                              | 12                          | 26                 |                    | 1                           |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   |                                |                             |                    |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 3                              | 20                          | 21                 |                    | 1                           | 2                | 1                          | 2               | 1                   |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 2                              | 8                           | 16                 |                    | 2                           |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 19                             | 39                          | 3                  |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 13                             | 22                          | 1                  |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 20                             | 60                          | 4                  |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 1                              | 4                           |                    |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 2                              | 3                           |                    |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 9                              | 36                          | 3                  |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 1                              | 2                           |                    |                    |                             |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 10                             | 85                          | 6                  |                    | 8                           |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |
|                           |                                       |                   | 12                             | 46                          | 5                  |                    | 1                           |                  |                            |                 |                     |                       |                            |                                |                             |                         |   |

TABLE XIII.—Number of steam locomotives inspected,

| Parts defective, inoperative or missing, or in violation of the rules | Elgin, Joliet & Eastern | Erie  | Florida East Coast | Fort Smith & Western | Fort Worth & Denver City | Galveston, Houston & Henderson |
|---|-------------------------|-------|--------------------|----------------------|--------------------------|--------------------------------|
|   | 1 Air compressors       | 1     | 77                 |                      | 2                        |                                |
| 2 Arch tubes  |                         | 6     |                    |                      |                          |                                |
| 3 Ash pans or mechanism   |                         | 8     |                    | 1                    |                          |                                |
| 4 Axles   |                         | 1     |                    |                      |                          |                                |
| 5 Blow-off cocks  |                         | 45    | 1                  |                      |                          |                                |
| 6 Boiler checks   | 2                       | 89    |                    |                      | 1                        |                                |
| 7 Boiler shell  | 1                       | 75    |                    | 3                    |                          |                                |
| 8 Brake equipment   | 12                      | 265   | 1                  | 6                    | 7                        |                                |
| 9 Cabs or cab windows   | 2                       | 109   |                    |                      |                          |                                |
| 10 Cab aprons or decks  | 1                       | 60    |                    |                      | 2                        |                                |
| 11 Cab cards  |                         | 12    |                    |                      | 7                        |                                |
| 12 Coupling or uncoupling devices                                     |                         | 4     |                    |                      |                          |                                |
| 13 Crossheads, guides, pistons, or piston rods                        | 7                       | 121   |                    |                      | 1                        |                                |
| 14 Crown bolts  |                         | 3     |                    |                      | 1                        |                                |
| 15 Cylinders, saddles, or steam chests                                | 1                       | 109   |                    | 6                    | 3                        |                                |
| 16 Cylinder cocks or rigging  | 1                       | 27    |                    |                      | 3                        |                                |
| 17 Domes or dome caps   |                         | 23    |                    |                      |                          |                                |
| 18 Draft gear   | 3                       | 130   |                    |                      |                          |                                |
| 19 Draw gear  |                         | 98    |                    | 2                    |                          |                                |
| 20 Driving boxes, sboes, wedges, pedestals, or braces                 | 4                       | 73    |                    |                      | 2                        |                                |
| 21 Fire-box sheets  | 2                       | 33    |                    |                      | 1                        |                                |
| 22 Flues  | 1                       | 21    |                    |                      |                          |                                |
| 23 Frames, tail pieces or braces, locomotive                          | 1                       | 104   |                    | 3                    | 1                        |                                |
| 24 Frames, tender   |                         | 23    |                    |                      |                          |                                |
| 25 Gauges or gauge fittings, air                                      | 3                       | 80    |                    |                      | 1                        |                                |
| 26 Gauges or gauge fittings, steam                                    | 1                       | 81    |                    | 1                    | 1                        |                                |
| 27 Gauge cocks  |                         | 99    |                    |                      | 1                        |                                |
| 28 Grate shakers  | 2                       | 17    |                    |                      |                          |                                |
| 29 Handholds  | 1                       | 83    |                    |                      |                          |                                |
| 30 Injectors, inoperative   |                         | 1     |                    |                      |                          |                                |
| 31 Injectors and connections  | 8                       | 467   |                    | 1                    | 8                        |                                |
| 32 Inspections or tests not made as required                          | 3                       | 230   |                    | 17                   | 10                       |                                |
| 33 Lateral motion   | 4                       | 92    |                    |                      |                          |                                |
| 34 Lights, cab or classification                                      |                         | 12    |                    |                      |                          |                                |
| 35 Lights, headlights   |                         | 29    |                    |                      |                          |                                |
| 36 Lubricator or shields  | 2                       | 53    |                    |                      |                          |                                |
| 37 Mud rings  | 3                       | 54    |                    |                      |                          |                                |
| 38 Packing nuts   |                         | 43    |                    |                      |                          |                                |
| 39 Packing, piston rod and valve stem                                 | 1                       | 67    |                    | 2                    | 2                        |                                |
| 40 Pilot or pilot beams   |                         | 17    |                    | 1                    |                          |                                |
| 41 Plugs or studs   | 1                       | 55    |                    | 1                    | 1                        |                                |
| 42 Reversing gear   | 1                       | 53    |                    |                      |                          |                                |
| 43 Rods, main or side, crank pins or collars                          | 5                       | 444   |                    | 4                    | 2                        |                                |
| 44 Safety valves  |                         | 6     |                    |                      |                          |                                |
| 45 Sanders  |                         | 55    |                    | 1                    |                          |                                |
| 46 Springs or spring rigging  | 3                       | 462   |                    | 9                    | 1                        |                                |
| 47 Squirt hose  |                         | 25    | 3                  |                      |                          |                                |
| 48 Staybolts  |                         | 27    |                    |                      |                          |                                |
| 49 Staybolts, broken  | 4                       | 112   |                    |                      |                          |                                |
| 50 Steam pipes  |                         | 88    |                    |                      |                          |                                |
| 51 Steam valves   |                         | 86    |                    |                      | 1                        |                                |
| 52 Steps  | 5                       | 99    |                    | 1                    |                          |                                |
| 53 Tanks or tank valves   |                         | 209   |                    | 1                    |                          |                                |
| 54 Telltale holes   |                         | 2     |                    |                      |                          |                                |
| 55 Throttle or throttle rigging                                       | 3                       | 135   |                    |                      | 2                        |                                |
| 56 Trucks, engine or trailing   | 1                       | 173   |                    | 1                    | 1                        |                                |
| 57 Trucks, tender   | 1                       | 196   |                    | 1                    | 0                        |                                |
| 58 Valve motion   |                         | 74    |                    |                      | 1                        |                                |
| 59 Washout plugs  | 1                       | 104   |                    | 3                    |                          |                                |
| 60 Train control equipment  |                         | 5     |                    |                      |                          |                                |
| 61 Water glass, fittings or shield                                    |                         | 128   |                    | 1                    | 3                        |                                |
| 62 Wheels   | 1                       | 75    |                    | 5                    | 2                        |                                |
| 63 Miscellaneous—Signal appliances, badge plates, brakes (hand)       | 4                       | 96    |                    | 1                    | 1                        |                                |
| Number of defects   | 97                      | 5,650 | 10                 | 83                   | 57                       |                                |
| Locomotives reported  | 267                     | 1,110 | 250                | 26                   | 109                      | 12                             |
| Locomotives inspected   | 297                     | 2,138 | 178                | 44                   | 107                      | 3                              |
| Locomotives defective   | 27                      | 1,056 | 8                  | 18                   | 24                       |                                |
| Percentage of inspected found defective                               | 9                       | 49    | 4                  | 41                   | 18                       |                                |
| Locomotives ordered out of service                                    |                         | 157   |                    | 2                    | 2                        |                                |

found defective, and ordered from service, etc.—Continued

| Georgia & Florida | Georgia | Grand Trunk Western | Great Northern | Green Bay & Western | Gulf Coast Lines | Gulf, Colorado & Santa Fe | Gulf, Mobile & Northern | Hocking Valley | Huntingdon & Broad Top Mountain | Illinois Central | Illinois Terminal | Indiana Harbor Belt | Indianapolis Union | International Great Northern | Interstate | Jacksonville Terminal | Kansas City, Mexico & Orient |
|-------------------|---------|---------------------|----------------|---------------------|------------------|---------------------------|-------------------------|----------------|---------------------------------|------------------|-------------------|---------------------|--------------------|------------------------------|------------|-----------------------|------------------------------|
|                   |         | 9                   | 18             |                     | 2                | 3                         |                         | 8              | 5                               | 19               |                   |                     |                    |                              |            | 3                     | 9                            |
|                   |         |                     | 4              |                     |                  |                           |                         | 2              |                                 |                  |                   |                     |                    |                              |            | 1                     |                              |
|                   |         | 1                   | 5              |                     |                  |                           |                         |                |                                 | 1                |                   |                     |                    |                              |            |                       |                              |
|                   |         | 8                   | 17             | 1                   |                  | 1                         | 1                       | 6              | 5                               | 5                |                   |                     |                    |                              |            |                       | 3                            |
|                   |         | 10                  | 22             | 1                   |                  | 1                         |                         | 3              | 2                               | 2                |                   |                     |                    |                              |            |                       | 1                            |
|                   |         | 3                   | 30             |                     |                  |                           |                         | 7              | 8                               | 8                |                   | 1                   |                    |                              |            |                       | 1                            |
|                   |         | 13                  | 146            | 21                  | 20               | 45                        | 2                       | 17             | 5                               | 34               |                   | 1                   | 1                  | 9                            | 10         |                       | 65                           |
|                   |         | 23                  | 53             | 3                   | 1                | 5                         | 3                       | 12             |                                 | 12               |                   |                     |                    |                              |            |                       | 3                            |
|                   |         | 6                   | 19             | 5                   | 4                | 8                         |                         | 4              |                                 | 7                | 1                 |                     |                    |                              |            |                       | 2                            |
|                   |         | 2                   | 7              | 3                   | 2                | 3                         |                         | 3              |                                 | 4                |                   |                     |                    |                              |            |                       | 4                            |
|                   |         | 2                   | 6              | 2                   | 1                | 2                         |                         | 2              |                                 | 1                |                   |                     |                    |                              |            |                       | 2                            |
|                   |         | 3                   | 11             | 5                   | 4                | 14                        | 1                       | 4              |                                 | 9                |                   |                     |                    | 2                            | 17         |                       | 15                           |
|                   |         | 2                   | 6              |                     |                  |                           |                         | 2              |                                 | 6                |                   |                     |                    |                              |            |                       | 15                           |
|                   |         | 2                   | 1              |                     |                  | 1                         |                         | 1              |                                 | 6                |                   |                     |                    |                              |            |                       | 28                           |
|                   | 1       | 8                   | 27             |                     | 1                | 22                        |                         | 24             | 1                               | 27               |                   |                     |                    |                              |            |                       | 15                           |
|                   |         | 4                   | 27             | 2                   | 2                | 6                         | 1                       | 7              |                                 | 14               |                   |                     | 4                  |                              |            |                       | 15                           |
|                   |         | 5                   | 4              |                     |                  |                           |                         | 3              |                                 | 3                |                   |                     |                    |                              |            |                       |                              |
|                   |         | 10                  | 29             | 2                   | 1                | 4                         |                         | 10             | 2                               | 12               |                   |                     |                    |                              |            |                       | 12                           |
|                   | 1       | 3                   | 37             | 3                   | 2                | 3                         |                         | 15             | 3                               | 17               | 1                 |                     |                    | 1                            | 2          |                       | 18                           |
|                   |         | 17                  | 15             | 2                   | 2                | 8                         |                         | 3              | 3                               | 17               |                   |                     |                    | 3                            | 3          |                       | 20                           |
|                   | 1       | 6                   | 8              |                     | 1                | 1                         | 4                       | 4              |                                 | 11               |                   |                     |                    | 2                            | 2          |                       | 22                           |
|                   | 1       | 1                   | 5              |                     | 26               | 29                        | 1                       | 2              | 2                               | 6                |                   |                     |                    | 1                            | 1          |                       | 23                           |
|                   | 1       | 29                  | 1              | 2                   | 9                | 2                         | 2                       | 7              | 1                               | 7                |                   |                     | 1                  | 10                           |            |                       | 6                            |
|                   |         | 28                  | 2              |                     |                  |                           |                         | 5              |                                 | 3                |                   |                     |                    | 1                            |            |                       | 24                           |
|                   |         | 7                   | 7              |                     |                  | 4                         |                         | 1              |                                 | 6                |                   |                     |                    | 1                            |            |                       | 7                            |
|                   |         | 18                  | 16             |                     | 2                | 5                         | 5                       | 1              |                                 | 5                |                   |                     |                    | 2                            | 3          |                       | 4                            |
|                   | 1       | 13                  | 10             |                     | 1                | 6                         | 2                       | 3              |                                 | 20               |                   |                     |                    | 3                            | 7          |                       | 15                           |
|                   |         | 3                   | 21             |                     | 3                | 21                        |                         | 2              |                                 | 5                |                   |                     |                    | 1                            | 1          |                       | 28                           |
|                   |         | 15                  | 38             | 3                   | 1                | 7                         |                         | 1              | 2                               | 12               |                   |                     |                    | 3                            | 3          |                       | 11                           |
|                   |         | 2                   | 2              |                     |                  |                           |                         |                |                                 |                  |                   |                     |                    | 7                            | 15         |                       | 30                           |
|                   | 4       | 3                   | 95             | 7                   | 9                | 26                        | 7                       | 25             | 3                               | 34               |                   |                     | 2                  | 7                            | 15         |                       | 59                           |
|                   | 10      | 5                   | 244            | 5                   | 15               | 48                        | 1                       | 27             | 3                               | 69               |                   |                     | 1                  | 7                            | 1          |                       | 44                           |
|                   |         | 3                   | 13             | 1                   |                  | 4                         |                         | 8              |                                 | 3                |                   |                     |                    | 1                            | 4          |                       | 32                           |
|                   |         | 1                   | 22             |                     |                  |                           |                         | 1              |                                 | 1                |                   |                     |                    |                              |            |                       | 33                           |
|                   |         | 4                   | 7              | 1                   | 1                | 1                         |                         | 5              |                                 | 7                |                   |                     |                    | 1                            |            |                       | 4                            |
|                   |         | 8                   | 6              | 1                   | 3                | 2                         |                         | 1              |                                 | 8                |                   |                     |                    |                              |            |                       | 5                            |
|                   | 3       | 3                   | 28             | 4                   | 2                | 3                         | 4                       | 8              |                                 | 14               | 1                 |                     | 1                  | 3                            |            |                       | 5                            |
|                   |         | 2                   | 15             |                     | 18               | 8                         |                         | 8              |                                 | 24               |                   |                     |                    | 2                            |            |                       | 2                            |
|                   |         | 6                   | 10             |                     | 1                | 1                         | 1                       | 2              | 1                               | 1                |                   |                     |                    | 2                            | 2          |                       | 1                            |
|                   |         | 4                   | 18             |                     | 5                | 4                         |                         | 4              |                                 | 3                |                   |                     |                    | 2                            |            |                       | 4                            |
|                   | 2       | 4                   | 12             | 1                   | 6                | 6                         |                         | 7              |                                 | 5                |                   |                     |                    | 1                            | 3          |                       | 5                            |
|                   | 1       | 8                   | 44             | 1                   | 1                | 24                        |                         | 8              | 11                              | 35               |                   |                     |                    | 3                            | 23         |                       | 22                           |
|                   |         | 1                   | 13             |                     |                  |                           |                         | 1              |                                 | 2                |                   |                     |                    |                              |            |                       | 1                            |
|                   |         | 26                  | 30             |                     | 9                |                           |                         | 12             |                                 | 14               |                   |                     |                    | 1                            |            |                       | 2                            |
|                   | 1       | 12                  | 101            | 8                   | 3                | 36                        | 2                       | 27             | 6                               | 27               | 1                 |                     |                    | 1                            | 9          |                       | 16                           |
|                   |         | 2                   | 6              | 1                   |                  | 7                         |                         | 1              |                                 | 3                |                   |                     |                    | 4                            |            |                       | 6                            |
|                   |         | 4                   | 8              |                     | 5                |                           |                         | 1              |                                 | 6                |                   |                     |                    | 6                            |            |                       | 4                            |
|                   |         | 28                  | 37             |                     | 2                | 5                         | 8                       | 2              | 27                              | 6                |                   |                     |                    | 6                            | 7          |                       | 11                           |
|                   | 1       | 8                   | 22             | 1                   | 2                | 5                         |                         | 3              |                                 | 2                |                   |                     |                    | 4                            |            |                       | 2                            |
|                   |         | 13                  | 12             |                     |                  |                           |                         | 8              |                                 | 7                |                   |                     |                    |                              |            |                       | 5                            |
|                   | 1       | 16                  | 58             | 10                  | 1                | 8                         | 5                       | 6              | 1                               | 21               |                   |                     |                    | 4                            |            |                       | 8                            |
|                   |         | 7                   | 32             |                     | 1                | 3                         | 1                       | 17             |                                 | 10               |                   |                     |                    | 1                            | 10         |                       | 1                            |
|                   |         | 5                   | 9              |                     |                  | 1                         |                         | 2              | 1                               | 4                |                   |                     |                    |                              |            |                       | 1                            |
|                   |         | 13                  | 53             | 7                   | 3                | 6                         | 2                       | 7              |                                 | 5                |                   |                     |                    | 1                            | 1          |                       | 9                            |
|                   |         | 1                   | 31             |                     | 6                | 29                        | 1                       | 4              |                                 | 23               |                   |                     |                    | 13                           |            |                       | 14                           |
|                   | 2       | 2                   | 7              | 59                  | 8                | 10                        | 1                       | 24             | 1                               | 23               | 2                 |                     | 1                  | 12                           |            |                       | 18                           |
|                   |         | 1                   | 6              |                     | 1                | 13                        |                         | 3              |                                 | 5                |                   |                     |                    | 1                            | 5          |                       | 13                           |
|                   | 1       | 1                   | 49             | 1                   | 3                | 16                        | 3                       | 17             |                                 | 42               |                   |                     |                    | 2                            | 7          |                       | 20                           |
|                   |         | 19                  | 71             |                     | 3                | 11                        | 5                       | 6              | 2                               | 16               | 1                 |                     |                    | 1                            |            |                       | 20                           |
|                   |         | 11                  | 21             | 3                   | 2                | 16                        |                         | 3              |                                 | 10               |                   |                     |                    | 2                            | 8          |                       | 6                            |
|                   |         | 1                   | 4              | 33                  | 1                | 4                         | 14                      | 5              |                                 | 10               |                   |                     |                    | 2                            | 1          |                       | 12                           |
|                   | 32      | 19                  | 515            | 1,816               | 116              | 112                       | 491                     | 54             | 412                             | 59               | 736               | 7                   | 6                  | 9                            | 56         | 228                   | 542                          |
|                   | 32      | 71                  | 381            | 1,241               | 45               | 112                       | ATSF                    | 75             | 156                             | 15               | 1,882             | 14                  | 132                | 22                           | 165        | 12                    | 76                           |
|                   | 45      | 98                  | 423            | 2,092               | 80               | 210                       | 392                     | 153            | 242                             | 33               | 2,845             | 8                   | 104                | 34                           | 393        | 44                    | 155                          |
|                   | 14      | 31                  | 136            | 608                 | 33               | 29                        | 113                     | 22             | 113                             | 13               | 240               | 3                   | 3                  | 3                            | 25         | 42                    | 90                           |
|                   | 31      | 9                   | 82             | 29                  | 41               | 13                        | 29                      | 14             | 47                              | 39               | 8                 | 38                  | 3                  | 9                            | 6          | 95                    | 58                           |
|                   |         |                     | 5              | 26                  | 1                | 3                         | 13                      | 4              | 8                               | 1                | 13                |                     |                    | 1                            | 13         |                       | 22                           |

TABLE XIII.—Number of steam locomotives inspected,

| Parts defective, inoperative or missing, or in violation of the rules |  | Kansas City Southern | Kansas City Terminal | Kansas, Oklahoma & Gulf | Kentucky & Indiana Terminal | Kirby Lumber Co. | Lake Superior & Ishpeming |
|---|--|----------------------|----------------------|-------------------------|-----------------------------|------------------|---------------------------|
| 1   | Air compressors  | 4                    |                      | 1                       |                             |                  |                           |
| 2   | Arch tubes   |                      |                      |                         |                             |                  |                           |
| 3   | Ash pans or mechanism  |                      |                      |                         |                             |                  |                           |
| 4   | Axles  |                      |                      |                         |                             |                  |                           |
| 5   | Blow-off cocks   |                      |                      |                         |                             |                  |                           |
| 6   | Boiler checks  |                      |                      | 1                       |                             |                  |                           |
| 7   | Boiler shell   |                      |                      | 1                       |                             |                  |                           |
| 8   | Brake equipment  | 5                    | 2                    | 9                       |                             | 8                | 12                        |
| 9   | Cabs or cab windows  |                      |                      | 1                       |                             |                  |                           |
| 10  | Cab aprons or decks  | 1                    |                      | 3                       |                             | 1                | 1                         |
| 11  | Cab cards  |                      |                      | 1                       |                             |                  |                           |
| 12  | Coupling or uncoupling devices                               |                      |                      | 3                       |                             |                  |                           |
| 13  | Crossheads, guides, pistons, or piston rods                  |                      | 1                    | 1                       |                             |                  |                           |
| 14  | Crown bolts  |                      |                      |                         |                             | 2                |                           |
| 15  | Cylinders, saddles, or steam chests                          | 1                    |                      | 18                      |                             | 3                |                           |
| 16  | Cylinder cocks or rigging                                    | 1                    |                      | 7                       |                             |                  |                           |
| 17  | Domes or dome caps   | 1                    |                      |                         |                             |                  |                           |
| 18  | Draft gear   | 2                    |                      | 4                       |                             |                  |                           |
| 19  | Draw gear  |                      |                      | 1                       |                             | 1                | 2                         |
| 20  | Driving boxes, shoes, wedges, pedestals, or braces           | 2                    |                      | 5                       |                             |                  |                           |
| 21  | Fire-box sheets  |                      |                      |                         |                             |                  | 1                         |
| 22  | Flues  |                      |                      |                         |                             |                  |                           |
| 23  | Frames, tail pieces or braces, locomotive                    | 4                    |                      | 2                       |                             |                  |                           |
| 24  | Frames, tender   |                      |                      |                         |                             |                  |                           |
| 25  | Gauges or gauge fittings, air                                | 2                    |                      |                         |                             |                  | 2                         |
| 26  | Gauges or gauge fittings, steam                              |                      | 2                    | 1                       |                             |                  | 1                         |
| 27  | Gauge cocks  | 3                    | 1                    | 3                       |                             |                  | 4                         |
| 28  | Grate shakers  |                      | 1                    |                         |                             |                  |                           |
| 29  | Handholds  | 1                    |                      | 2                       |                             |                  | 1                         |
| 30  | Injectors, inoperative                                       |                      |                      |                         |                             |                  |                           |
| 31  | Injectors and connections                                    | 4                    |                      | 22                      |                             | 1                |                           |
| 32  | Inspections or tests not made as required                    | 6                    |                      | 25                      |                             | 1                | 1                         |
| 33  | Lateral motion   | 1                    |                      | 2                       |                             |                  | 4                         |
| 34  | Lights, cab or classification                                |                      |                      | 1                       |                             |                  |                           |
| 35  | Lights, headlights   |                      |                      |                         |                             |                  |                           |
| 36  | Lubricator or shields  |                      |                      | 2                       |                             |                  |                           |
| 37  | Mud rings  |                      |                      |                         |                             |                  |                           |
| 38  | Packing nuts   | 1                    |                      |                         |                             |                  | 1                         |
| 39  | Packing, piston rod and valve stem                           | 1                    |                      | 6                       |                             | 1                |                           |
| 40  | Pilot or pilot beams   |                      |                      | 4                       |                             |                  |                           |
| 41  | Plugs or studs   |                      |                      | 3                       |                             |                  |                           |
| 42  | Reversing gear   | 1                    | 1                    | 1                       |                             |                  |                           |
| 43  | Rods, main or side, crank pins or collars                    | 2                    | 1                    | 4                       |                             |                  |                           |
| 44  | Safety valves  |                      |                      |                         |                             |                  |                           |
| 45  | Sanders  |                      |                      |                         |                             |                  |                           |
| 46  | Springs or spring rigging                                    | 3                    |                      | 10                      |                             | 1                | 1                         |
| 47  | Squirt hose  | 2                    |                      | 1                       |                             |                  |                           |
| 48  | Stay bolts   | 2                    |                      |                         |                             |                  |                           |
| 49  | Stay bolts, broken   |                      |                      |                         |                             |                  | 5                         |
| 50  | Steam pipes  | 1                    | 1                    | 4                       |                             |                  |                           |
| 51  | Steam valves   |                      |                      |                         |                             |                  |                           |
| 52  | Steps  |                      |                      | 3                       |                             |                  |                           |
| 53  | Tanks or tank valves   |                      | 1                    | 2                       |                             |                  |                           |
| 54  | Telltale holes   |                      |                      | 1                       |                             |                  | 1                         |
| 55  | Throttle or throttle rigging                                 | 2                    | 1                    | 1                       |                             |                  |                           |
| 56  | Trucks, engine or tralling                                   |                      |                      | 6                       |                             |                  |                           |
| 57  | Trucks, tender   | 3                    |                      | 2                       |                             |                  |                           |
| 58  | Valve motion   | 1                    | 2                    |                         |                             |                  |                           |
| 59  | Washout plugs  | 2                    |                      | 4                       |                             |                  |                           |
| 60  | Train-control equipment                                      |                      |                      |                         |                             |                  |                           |
| 61  | Water glass, fittings or shield                              |                      |                      | 4                       |                             | 1                | 2                         |
| 62  | Wheels   | 1                    |                      | 14                      |                             |                  | 1                         |
| 63  | Miscellaneous—Signal appliances, badge plates, brakes (hand) | 1                    |                      | 1                       |                             |                  |                           |
| Number of defects   |  | 60                   | 14                   | 187                     |                             | 20               | 40                        |
| Locomotives reported  |  | 163                  | 30                   | 31                      | 30                          | 10               | 34                        |
| Locomotives inspected   |  | 241                  | 39                   | 69                      | 9                           | 10               | 29                        |
| Locomotives defective   |  | 22                   | 7                    | 29                      |                             | 5                | 11                        |
| Percentage of inspected found defective                               |  | 9                    | 18                   | 42                      |                             | 50               | 38                        |
| Locomotives ordered out of service                                    |  |                      | 1                    | 6                       |                             | 1                | 2                         |

found defective, and ordered from service, etc.—Continued

| Lake Superior Terminal & Transfer | Lake Terminal | Lehigh & Hudson River | Lehigh & New England | Lehigh Valley | Hitchfield & Madison | Long Island | Los Angeles & Salt Lake | Louisiana & Arkansas | Louisiana & Northwest | Louisiana Railway & Navigation Co. | Louisville & Nashville | Louisville, Henderson & St. Louis | McCloud River | McKeesport Connecting | Macon, Dublin & Savannah | Maine Central | Maryland & Pennsylvania |
|-----------------------------------|---------------|-----------------------|----------------------|---------------|----------------------|-------------|-------------------------|----------------------|-----------------------|------------------------------------|------------------------|-----------------------------------|---------------|-----------------------|--------------------------|---------------|-------------------------|
| 1                                 | 3             | 2                     | 32                   | 2             |                      | 1           |                         |                      |                       | 2                                  | 32                     | 1                                 |               |                       |                          | 1             | 1                       |
|                                   |               |                       | 1                    |               |                      |             |                         |                      |                       |                                    | 1                      |                                   |               |                       |                          |               |                         |
|                                   | 1             |                       |                      |               |                      | 1           |                         |                      |                       |                                    |                        |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 3                    | 2             |                      |             |                         |                      |                       |                                    | 9                      |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 20                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 18                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 22                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 123                    |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 25                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 21                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 9                      |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 2                      |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 21                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 6                      |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 3                      |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 8                      |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 2                      |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 3                      |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 80                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 154                    |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 39                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 12                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 5                      |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 32                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 1                      |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 13                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 82                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 77                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 3                      |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 24                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 168                    |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 28                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 34                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 6                      |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 2                      |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 4                      |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 14                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 7                      |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 2                      |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 6                      |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 1                      |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 17                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 2                      |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 6                      |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 21                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 1                      |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 12                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 20                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 9                      |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 1                      |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 8                      |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 1                      |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 4                      |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 62                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 7                      |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 90                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 3                      |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 1                      |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 105                    |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 1                      |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 47                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 10                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 30                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 2,305                  |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 338                    |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 41                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 14                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 16                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 12                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 2,114                  |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 570                    |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 8                      |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 13                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 2                      |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 16                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 29                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 28                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 34                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 32                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 14                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 40                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 305                    |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 338                    |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 41                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 14                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 16                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 12                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 2,114                  |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 570                    |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 8                      |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 13                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 2                      |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 16                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 29                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 28                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 34                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 32                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 14                     |                                   |               |                       |                          |               |                         |
|                                   |               |                       | 1                    | 1             |                      |             |                         |                      |                       |                                    | 40                     |                                   |               |                       |                          |               |                         |

TABLE XIII.—Number of steam locomotives inspected, found defective, and ordered from service, etc.—Continued

| Parts defective, inoperative or missing, or in violation of the rules | Number of locomotives inspected |                  |                |                    |                         |                                | Number of locomotives found defective |                           |                             |                    |                     |                                 |                      |                           |                   |                       |                  |               |                        |             |         |                                    |                          |                 |    |
|---|---------------------------------|------------------|----------------|--------------------|-------------------------|--------------------------------|---------------------------------------|---------------------------|-----------------------------|--------------------|---------------------|---------------------------------|----------------------|---------------------------|-------------------|-----------------------|------------------|---------------|------------------------|-------------|---------|------------------------------------|--------------------------|-----------------|----|
|   | Mercer Valley                   | Michigan Central | Midland Valley | Minareis & Western | Minneapolis & St. Louis | Minneapolis, Northfield & Sou. | Minneapolis, St. Paul & S. S. M.      | Minnesota & International | Minnesota, Dakota & Western | Minnesota Transfer | Mississippi Central | Mississippi River & Bonne Terre | Mississippi Southern | Missouri & North Arkansas | Missouri-Illinois | Missouri-Kansas-Texas | Missouri Pacific | Mobile & Ohio | Monongahela Connecting | Monongahela | Montour | Nashville, Chattanooga & St. Louis | Nevada-California-Oregon | Nevada Northern |    |
| 1 Air compressors.....  |                                 | 28               | 3              |                    | 1                       |                                | 3                                     |                           |                             |                    |                     | 1                               | 6                    |                           | 3                 | 22                    |                  | 1             |                        |             |         | 3                                  |                          |                 | 1  |
| 2 Arch tubes.....   |                                 | 2                |                |                    |                         |                                | 1                                     |                           | 1                           |                    |                     |                                 | 1                    |                           |                   | 3                     |                  |               | 2                      |             |         |                                    | 1                        |                 | 2  |
| 3 Ash pans or mechanism.....  |                                 |                  |                |                    |                         |                                |                                       |                           |                             |                    |                     |                                 |                      |                           |                   |                       |                  |               |                        |             |         |                                    |                          |                 | 3  |
| 4 Axles.....  |                                 |                  |                |                    |                         |                                |                                       |                           |                             |                    |                     |                                 |                      |                           |                   |                       |                  |               |                        |             |         |                                    |                          |                 | 4  |
| 5 Blow-off cocks.....   |                                 | 9                | 2              |                    |                         |                                | 1                                     |                           | 1                           |                    |                     |                                 |                      |                           |                   | 15                    | 1                | 3             |                        |             |         | 3                                  |                          |                 | 4  |
| 6 Boiler checks.....  | 2                               | 23               | 1              |                    | 1                       |                                | 1                                     |                           | 1                           |                    |                     |                                 | 3                    |                           |                   | 7                     | 4                | 1             |                        |             |         | 3                                  |                          |                 | 5  |
| 7 Boiler shell.....   |                                 | 17               | 7              |                    | 1                       |                                | 1                                     |                           |                             |                    |                     |                                 |                      |                           |                   | 5                     | 1                | 1             |                        |             |         | 6                                  |                          |                 | 6  |
| 8 Brake equipment.....  | 4                               | 49               | 8              |                    | 5                       | 1                              |                                       |                           |                             |                    |                     |                                 | 1                    | 1                         | 1                 | 7                     | 3                | 1             |                        |             |         | 6                                  |                          |                 | 7  |
| 9 Cabs or cab windows.....  |                                 | 70               | 2              |                    | 12                      |                                | 20                                    | 1                         | 26                          | 1                  | 1                   | 2                               | 29                   | 1                         | 5                 | 62                    | 8                | 11            |                        |             |         | 18                                 |                          |                 | 8  |
| 10 Cab aprons or decks.....   | 1                               | 32               | 2              |                    |                         |                                | 2                                     |                           | 2                           |                    |                     |                                 | 21                   | 7                         |                   | 19                    |                  |               |                        |             |         | 4                                  |                          |                 | 9  |
| 11 Cab cards.....   | 1                               | 4                | 1              |                    |                         |                                | 2                                     |                           | 7                           |                    |                     | 2                               | 2                    | 7                         |                   | 4                     |                  |               |                        |             |         | 1                                  |                          |                 | 10 |
| 12 Coupling or uncoupling devices.....                                |                                 | 5                | 2              |                    |                         |                                | 2                                     |                           | 1                           |                    |                     | 2                               | 2                    | 2                         |                   | 2                     |                  |               |                        |             |         | 2                                  |                          |                 | 11 |
| 13 Crossheads, guides, pistons, or piston rods.....                   |                                 | 20               | 1              |                    | 2                       |                                | 1                                     |                           | 2                           |                    |                     | 1                               | 1                    | 1                         |                   | 7                     |                  |               |                        |             |         | 1                                  |                          |                 | 12 |
| 14 Crown bolts.....   |                                 | 2                |                |                    |                         |                                | 1                                     |                           | 1                           |                    |                     | 1                               | 11                   |                           | 2                 | 19                    | 1                | 5             |                        |             |         | 1                                  |                          |                 | 13 |
| 15 Cylinders, saddles, or steam chests.....                           | 4                               | 19               | 22             |                    | 4                       |                                | 1                                     |                           | 1                           |                    |                     |                                 | 17                   | 1                         |                   | 1                     |                  |               |                        |             |         | 7                                  |                          |                 | 14 |
| 16 Cylinder cocks or rigging.....                                     | 1                               | 4                | 9              |                    | 1                       |                                | 2                                     |                           | 1                           | 1                  |                     | 1                               | 6                    | 2                         | 1                 | 44                    | 2                | 7             |                        |             |         | 7                                  |                          |                 | 15 |
| 17 Domes or dome caps.....  |                                 | 12               |                |                    |                         |                                | 7                                     |                           | 1                           |                    |                     |                                 | 6                    | 1                         |                   | 18                    |                  |               |                        |             |         | 1                                  |                          |                 | 16 |
| 18 Draft gear.....  | 1                               | 12               | 3              |                    | 2                       | 2                              |                                       |                           |                             |                    |                     |                                 |                      |                           |                   | 2                     |                  |               |                        |             |         |                                    |                          |                 | 17 |
| 19 Draw gear.....   |                                 | 40               | 3              |                    |                         | 1                              | 5                                     | 1                         | 6                           | 2                  |                     |                                 | 9                    | 3                         |                   | 15                    | 1                | 6             |                        |             |         | 7                                  |                          |                 | 18 |
| 20 Driving boxes, shoes, wedges, pedestals, or braces.....            |                                 | 45               | 3              |                    | 3                       |                                |                                       |                           | 1                           | 1                  | 1                   | 3                               | 1                    | 3                         | 2                 | 13                    |                  | 1             |                        |             |         | 15                                 |                          |                 | 19 |
| 21 Fire-box sheets.....   |                                 | 11               |                |                    | 1                       |                                |                                       |                           |                             |                    |                     |                                 | 15                   |                           | 1                 | 6                     | 1                | 3             |                        |             |         | 4                                  |                          |                 | 20 |
| 22 Flues.....   |                                 | 4                |                |                    |                         |                                |                                       |                           | 1                           |                    |                     |                                 | 3                    | 1                         |                   | 13                    |                  | 1             | 3                      |             |         | 10                                 |                          |                 | 21 |
| 23 Frames, tail pieces or braces, locomotive.....                     |                                 | 2                | 4              |                    |                         |                                |                                       |                           | 2                           |                    |                     |                                 | 2                    |                           |                   | 4                     | 2                |               |                        |             |         | 1                                  |                          |                 | 22 |
| 24 Frames, tender.....  |                                 | 1                |                |                    |                         |                                |                                       |                           | 1                           | 1                  |                     |                                 | 3                    |                           |                   | 18                    | 5                | 3             |                        |             |         | 14                                 |                          | 1               | 23 |
| 25 Gauges or gauge fittings, air.....                                 | 3                               | 5                | 1              |                    |                         |                                |                                       |                           | 2                           |                    |                     |                                 | 3                    |                           |                   | 1                     |                  |               |                        |             |         | 2                                  |                          |                 | 24 |
| 26 Gauges or gauge fittings, steam.....                               |                                 | 22               |                |                    | 1                       |                                | 2                                     |                           | 2                           |                    |                     |                                 | 3                    | 1                         | 1                 | 9                     | 1                | 1             |                        |             |         | 1                                  |                          |                 | 25 |
| 27 Gauge cocks.....   | 1                               | 15               | 1              |                    |                         |                                | 3                                     |                           | 2                           |                    |                     |                                 | 9                    | 1                         | 1                 | 19                    | 3                | 1             |                        |             |         | 3                                  |                          | 1               | 26 |
| 28 Grate shakers.....   |                                 | 18               |                |                    |                         |                                | 1                                     |                           | 2                           |                    |                     |                                 | 15                   |                           | 3                 | 8                     |                  |               |                        |             |         | 6                                  |                          |                 | 27 |
| 29 Handholds.....   | 3                               | 35               | 1              |                    |                         |                                | 3                                     |                           | 3                           |                    |                     |                                 | 6                    |                           | 1                 | 14                    |                  |               |                        |             |         | 3                                  |                          |                 | 28 |
| 30 Injectors, inoperative.....  | 1                               |                  |                |                    |                         |                                |                                       |                           | 1                           |                    | 1                   |                                 | 4                    |                           |                   | 6                     |                  |               |                        |             |         | 3                                  |                          |                 | 29 |
| 31 Injectors and connections.....                                     | 3                               | 114              | 13             |                    | 8                       | 2                              | 8                                     |                           | 9                           |                    |                     |                                 | 28                   | 1                         | 10                | 51                    | 5                | 9             | 3                      |             |         | 30                                 |                          |                 | 30 |
| 32 Inspections or tests not made as required.....                     | 1                               | 25               | 26             |                    | 6                       |                                | 7                                     | 1                         | 2                           |                    | 2                   | 1                               | 45                   | 12                        | 14                | 10                    | 1                |               |                        |             |         | 2                                  |                          |                 | 31 |
| 33 Lateral motion.....  |                                 | 5                | 2              |                    |                         |                                | 2                                     |                           | 1                           |                    |                     |                                 | 3                    |                           |                   | 6                     |                  |               |                        |             |         | 5                                  |                          |                 | 32 |
| 34 Lights, cab or classification.....                                 |                                 | 1                | 1              |                    |                         |                                | 1                                     |                           | 1                           |                    |                     |                                 | 1                    |                           |                   | 6                     |                  | 1             | 5                      |             |         | 1                                  |                          |                 | 33 |
| 35 Lights, headlights.....  |                                 | 6                | 1              |                    |                         | 1                              | 2                                     |                           | 2                           |                    |                     |                                 | 1                    |                           |                   | 2                     |                  |               |                        |             |         | 1                                  |                          |                 | 34 |
| 36 Lubricator or shields.....   |                                 | 5                | 3              |                    | 1                       |                                | 2                                     |                           | 1                           |                    |                     |                                 | 1                    |                           |                   | 4                     | 1                | 1             |                        |             |         | 1                                  |                          |                 | 35 |
| 37 Mud rings.....   |                                 | 17               | 6              |                    |                         |                                |                                       |                           | 2                           |                    |                     |                                 | 1                    |                           | 1                 | 13                    |                  |               |                        |             |         | 2                                  |                          |                 | 36 |
| 38 Packing nuts.....  |                                 | 33               |                |                    |                         |                                |                                       |                           | 1                           |                    |                     |                                 | 1                    |                           |                   | 5                     |                  | 2             |                        |             |         | 11                                 |                          |                 | 37 |
| 39 Packing, piston rod and valve stem.....                            |                                 | 4                | 7              |                    | 1                       | 1                              | 3                                     |                           | 3                           | 4                  | 2                   | 3                               | 9                    | 7                         | 2                 | 24                    | 3                |               |                        |             |         | 14                                 |                          |                 | 38 |
| 40 Pilot or pilot beams.....  |                                 | 1                |                |                    |                         |                                | 1                                     |                           | 1                           |                    |                     |                                 | 5                    |                           |                   | 11                    | 4                | 2             |                        |             |         | 5                                  |                          |                 | 39 |
| 41 Plugs or studs.....  |                                 | 13               | 4              |                    | 1                       |                                | 1                                     |                           | 1                           |                    |                     |                                 | 3                    |                           | 1                 | 5                     |                  | 3             |                        |             |         | 2                                  |                          |                 | 40 |
| 42 Reversing gear.....  |                                 | 13               | 1              |                    | 1                       |                                | 3                                     |                           | 3                           |                    |                     |                                 | 3                    |                           | 1                 | 6                     | 1                | 1             |                        |             |         | 6                                  |                          |                 | 41 |
| 43 Rods, main or side, crank pins or collars.....                     | 1                               | 49               | 13             |                    | 1                       |                                | 8                                     |                           | 5                           |                    |                     |                                 | 19                   | 3                         | 5                 | 20                    |                  |               |                        |             |         | 2                                  |                          |                 | 42 |
| 44 Safety valves.....   |                                 | 1                |                |                    |                         |                                |                                       |                           | 1                           |                    |                     |                                 | 1                    |                           |                   | 17                    | 12               | 9             | 5                      |             |         | 13                                 |                          |                 | 43 |
| 45 Sanders.....   |                                 | 35               | 1              |                    | 1                       |                                | 3                                     |                           | 3                           |                    |                     |                                 | 1                    |                           |                   | 3                     |                  |               |                        |             |         | 8                                  |                          |                 | 44 |
| 46 Springs or spring rigging.....                                     |                                 | 52               | 13             |                    | 5                       |                                | 11                                    |                           | 3                           |                    |                     |                                 | 1                    |                           | 2                 | 7                     |                  |               |                        |             |         | 1                                  |                          |                 | 45 |
| 47 Squirt hose.....   |                                 | 16               | 1              |                    | 3                       | 1                              |                                       |                           | 1                           | 1                  |                     |                                 | 4                    |                           | 3                 | 56                    | 2                | 10            | 3                      |             |         | 26                                 |                          |                 | 46 |
| 48 Staybolts.....   |                                 | 11               | 2              |                    | 1                       |                                | 1                                     |                           | 1                           |                    |                     | 1                               | 7                    | 1                         |                   | 4                     |                  | 1             |                        |             |         | 2                                  |                          |                 | 47 |
| 49 Staybolts, broken.....   |                                 | 17               | 4              |                    | 6                       |                                | 8                                     |                           | 2                           |                    | 10                  |                                 | 13                   |                           | 1                 | 7                     |                  | 1             |                        |             |         | 7                                  |                          |                 | 48 |
| 50 Steam pipes.....   |                                 | 24               | 1              |                    | 2                       | 2                              |                                       |                           |                             |                    |                     |                                 | 4                    |                           |                   | 9                     |                  |               |                        |             |         | 8                                  |                          |                 | 49 |
| 51 Steam valves.....  |                                 | 43               | 1              |                    |                         |                                |                                       |                           |                             |                    |                     |                                 | 9                    |                           |                   | 14                    |                  | 3             |                        |             |         | 8                                  |                          |                 | 50 |
| 52 Steps.....   | 1                               | 36               |                |                    | 9                       | 2                              | 7                                     |                           | 1                           |                    |                     |                                 | 1                    |                           | 7                 | 7                     |                  |               |                        |             |         | 3                                  |                          |                 | 51 |
| 53 Tanks or tank valves.....  |                                 | 35               | 1              |                    |                         |                                | 3                                     |                           | 1                           |                    |                     |                                 | 6                    |                           | 1                 | 7                     | 4                | 5             |                        |             |         | 7                                  |                          |                 | 52 |
| 54 Telltale holes.....  |                                 | 5                |                |                    | 1                       |                                | 3                                     |                           | 1                           |                    |                     |                                 | 7                    |                           | 1                 | 8                     | 1                | 1             |                        |             |         | 18                                 |                          |                 | 53 |
| 55 Throttle or throttle rigging.....                                  |                                 | 49               | 2              |                    | 3                       |                                | 4                                     |                           | 5                           |                    |                     |                                 | 1                    |                           | 1                 | 9                     | 1                | 1             |                        |             |         | 2                                  | 1                        |                 | 54 |
| 56 Trucks, engine or trailing.....                                    |                                 | 29               | 7              |                    | 1                       |                                | 8                                     |                           | 1                           |                    |                     |                                 | 5                    | 4                         |                   | 1                     | 1                | 2             |                        |             |         | 3                                  |                          |                 | 55 |
| 57 Trucks, tender.....  |                                 | 30               | 5              |                    | 1                       | 1                              | 10                                    |                           | 3                           | 3                  |                     |                                 | 20                   |                           | 3                 | 28                    | 1                |               |                        |             |         | 12                                 |                          |                 | 56 |
| 58 Valve motion.....  |                                 | 5                | 4              |                    |                         |                                |                                       |                           | 1                           |                    |                     |                                 | 5                    | 1                         | 4                 | 23                    | 5                | 1             |                        |             |         | 24                                 |                          | 1               | 57 |
| 59 Washout plugs.....   | 1                               | 74               | 7              |                    | 9                       |                                | 1                                     |                           |                             |                    |                     |                                 | 8                    |                           | 5                 | 17                    | 1                | 1             |                        |             |         | 10                                 |                          |                 | 58 |
| 60 Train control equipment.....                                       |                                 | 1                |                |                    |                         |                                |                                       |                           |                             |                    |                     |                                 | 5                    |                           | 5                 | 53                    | 16               |               |                        |             |         | 29                                 |                          |                 | 59 |
| 61 Water glass, fittings or shield.....                               | 1                               | 46               | 4              |                    | 1                       | 1                              | 9                                     |                           | 8                           |                    |                     |                                 | 7                    | 1                         | 6                 | 27                    | 6                | 3             |                        |             |         | 7                                  |                          |                 | 60 |
| 62 Wheels.....  | 3                               | 14               | 3              |                    | 3                       |                                | 5                                     |                           | 1                           |                    |                     |                                 | 10                   | 1                         | 4                 | 12                    |                  | 9             |                        |             |         | 7                                  |                          |                 | 61 |
| 63 Miscellaneous—Signal appliances, badge plates, brakes (hand).....  |                                 | 21               | 5              |                    | 2                       |                                | 2                                     |                           | 2                           | 1                  |                     |                                 | 1                    |                           | 3                 | 20                    | 4                |               |                        |             |         | 10                                 |                          |                 | 62 |
| Number of defects.....  | 33                              | 1,336            | 214            |                    | 101                     | 19                             | 175                                   | 6                         | 124                         | 19                 | 16                  | 42                              | 415                  | 78                        | 103               | 929                   | 117              | 117           | 22                     |             | 415     | 4                                  | 5                        | 63              |    |
| Locomotives reported.....   | 10                              | 650              | 97             | 10                 | 218                     | 10                             | 478                                   | 21                        | 11                          | 20                 | 18                  | 14                              | 27                   | 14                        | 535               | 1,283                 | 235              | 36            |                        |             | 69      | 21                                 | 260                      | 12              | 16 |
| Locomotives inspected.....  | 17                              | 819              | 31             | 7                  | 485                     | 11                             | 780                                   | 15                        | 11                          | 57                 | 32                  | 38                              | 67                   | 58                        | 991               | 2,190                 | 347              | 46            |                        |             | 110     | 33                                 | 579                      | 13              | 14 |
| Locomotives defective.....  | 7                               | 364              | 30             |                    | 47                      | 8                              | 14                                    | 4                         |                             | 40                 | 9                   | 4                               | 59                   | 21                        | 30                | 306                   | 50               | 17            |                        |             | 9       |                                    | 117                      | 2               | 3  |
| Percentage of inspected found defective.....                          | 41                              | 44               | 31             |                    | 10                      | 73                             | 18                                    | 27                        |                             | 70                 | 28                  | 11                              | 89                   | 31                        | 33                | 33                    | 14               | 14            |                        |             | 8       |                                    | 20                       | 15              | 21 |
| Locomotives ordered out of service.....                               | 5                               | 16               | 6              |                    | 1                       |                                | 14                                    | 3                         |                             | 3                  | 2                   | 3                               | 10                   | 3                         | 3                 | 12                    | 3                | 9             |                        |             |         | 4                                  |                          |                 |    |

TABLE XIII.—Number of steam locomotives inspected,

| Parts defective, inoperative or missing, or in violation of the rules | Number of steam locomotives inspected |                            |                       |                       |                               |
|---|---------------------------------------|----------------------------|-----------------------|-----------------------|-------------------------------|
|   | Newburgh & South Shore                | New Orleans Great Northern | New York Central East | New York Central West | New York, Chicago & St. Louis |
| 1 Air compressors.....  | 2                                     |                            | 19                    | 55                    | 11                            |
| 2 Arch tubes.....   |                                       |                            |                       | 3                     |                               |
| 3 Ash pans or mechanism.....  |                                       |                            | 3                     | 1                     |                               |
| 4 Axles.....  |                                       |                            |                       | 1                     |                               |
| 5 Blow-off cocks.....   |                                       |                            | 10                    | 11                    | 15                            |
| 6 Boiler checks.....  |                                       | 1                          | 39                    | 35                    | 5                             |
| 7 Boiler shell.....   |                                       |                            | 16                    | 40                    | 4                             |
| 8 Brake equipment.....  | 2                                     | 1                          | 63                    | 62                    | 33                            |
| 9 Cabs or cab windows.....  | 1                                     |                            | 13                    | 22                    | 14                            |
| 10 Cab aprons or decks.....   | 1                                     |                            | 12                    | 23                    | 10                            |
| 11 Cab cards.....   |                                       | 1                          | 6                     | 7                     | 1                             |
| 12 Coupling or uncoupling devices.....                                |                                       |                            |                       | 3                     | 2                             |
| 13 Crossheads, guides, pistons, or piston rods.....                   | 1                                     |                            | 46                    | 53                    | 18                            |
| 14 Crown bolts.....   |                                       |                            |                       | 3                     | 2                             |
| 15 Cylinders, saddles, or steam chests.....                           |                                       |                            | 29                    | 53                    | 13                            |
| 16 Cylinder cocks or rigging.....                                     |                                       |                            | 4                     | 17                    | 8                             |
| 17 Domes or dome caps.....  |                                       |                            | 2                     | 8                     |                               |
| 18 Draft gear.....  | 5                                     |                            | 31                    | 36                    | 2                             |
| 19 Draw gear.....   | 1                                     | 3                          | 27                    | 43                    | 18                            |
| 20 Driving boxes, shoes, wedges, pedestals, or braces.....            |                                       |                            | 28                    | 56                    | 2                             |
| 21 Fire-box sheets.....   |                                       |                            | 5                     | 10                    | 3                             |
| 22 Flues.....   |                                       |                            | 1                     | 7                     | 1                             |
| 23 Frames, tail pieces or braces, locomotive.....                     | 2                                     |                            | 39                    | 15                    | 4                             |
| 24 Frames, tender.....  |                                       |                            | 5                     | 4                     |                               |
| 25 Gauges or gauge fittings, air.....                                 | 1                                     | 2                          | 4                     | 14                    | 5                             |
| 26 Gauges or gauge fittings, steam.....                               | 2                                     | 2                          | 23                    | 18                    | 10                            |
| 27 Gauge cocks.....   | 1                                     | 1                          | 17                    | 7                     | 10                            |
| 28 Grate shakers.....   |                                       |                            | 8                     | 13                    | 5                             |
| 29 Handholds.....   | 2                                     |                            | 42                    | 43                    | 19                            |
| 30 Injectors, inoperative.....  |                                       |                            | 2                     | 2                     | 1                             |
| 31 Injectors and connections.....                                     | 6                                     |                            | 98                    | 137                   | 36                            |
| 32 Inspections or tests not made as required.....                     | 7                                     |                            | 114                   | 58                    | 52                            |
| 33 Lateral motion.....  |                                       |                            | 13                    | 11                    | 1                             |
| 34 Lights, cab or classification.....                                 |                                       |                            |                       | 14                    | 2                             |
| 35 Lights, headlights.....  | 1                                     |                            | 4                     | 13                    | 6                             |
| 36 Lubricator or shields.....   |                                       |                            | 7                     | 23                    | 9                             |
| 37 Mud rings.....   |                                       |                            | 12                    | 23                    | 9                             |
| 38 Packing nuts.....  | 1                                     |                            | 6                     | 21                    | 23                            |
| 39 Packing, piston rod and valve stem.....                            | 2                                     |                            | 6                     | 28                    | 15                            |
| 40 Pilot or pilot beams.....  | 1                                     |                            | 2                     | 2                     | 2                             |
| 41 Plugs or studs.....  |                                       |                            | 11                    | 16                    | 7                             |
| 42 Reversing gear.....  | 2                                     |                            | 23                    | 31                    | 11                            |
| 43 Rods, main or side, crank pins or collars.....                     |                                       |                            | 112                   | 116                   | 25                            |
| 44 Safety valves.....   |                                       |                            |                       | 1                     |                               |
| 45 Sanders.....   | 1                                     |                            | 18                    | 27                    | 16                            |
| 46 Springs or spring rigging.....                                     | 4                                     |                            | 135                   | 108                   | 39                            |
| 47 Squirt hose.....   | 1                                     |                            | 12                    | 6                     | 4                             |
| 48 Staybolts.....   |                                       |                            | 5                     | 18                    | 2                             |
| 49 Staybolts, broken.....   |                                       |                            | 2                     | 3                     | 12                            |
| 50 Steam pipes.....   | 1                                     |                            | 20                    | 37                    | 11                            |
| 51 Steam valves.....  |                                       |                            | 13                    | 12                    | 3                             |
| 52 Steps.....   | 1                                     |                            | 30                    | 54                    | 8                             |
| 53 Tanks or tank valves.....  | 2                                     |                            | 45                    | 59                    | 15                            |
| 54 Telltale holes.....  |                                       |                            |                       | 3                     | 2                             |
| 55 Throttle or throttle rigging.....                                  | 1                                     |                            | 69                    | 59                    | 4                             |
| 56 Trucks, engine or trailing.....                                    | 2                                     | 2                          | 26                    | 29                    | 9                             |
| 57 Trucks, tender.....  | 1                                     |                            | 38                    | 30                    | 7                             |
| 58 Valve motion.....  | 1                                     |                            | 38                    | 72                    | 52                            |
| 59 Washout plugs.....   |                                       |                            |                       | 3                     |                               |
| 60 Train control equipment.....                                       |                                       |                            |                       | 60                    | 20                            |
| 61 Water glass, fittings or shield.....                               | 3                                     |                            | 83                    | 34                    | 8                             |
| 62 Wheels.....  | 1                                     |                            | 34                    | 38                    | 1                             |
| 63 Miscellaneous—Signal appliances, badge plates, brakes (hand).....  | 1                                     |                            | 34                    | 37                    | 1                             |
| Number of defects.....  | 52                                    | 20                         | 1,531                 | 1,814                 | 618                           |
| Locomotives reported.....   | 31                                    | 37                         | 1,791                 | 1,383                 | 497                           |
| Locomotives inspected.....  | 29                                    | 32                         | 1,975                 | 1,535                 | 834                           |
| Locomotives defective.....  | 12                                    | 10                         | 465                   | 471                   | 189                           |
| Percentage of inspected found defective.....                          | 41                                    | 31                         | 24                    | 31                    | 23                            |
| Locomotives ordered out of service.....                               | 2                                     | 16                         |                       | 42                    | 12                            |

found defective, and ordered from service, etc.—Continued

| Parts defective, inoperative or missing, or in violation of the rules | Number of steam locomotives inspected |                           |                   |                  |                  |                           |                      |                             |                        |                   |   |                        |              |                      |
|---|---------------------------------------|---------------------------|-------------------|------------------|------------------|---------------------------|----------------------|-----------------------------|------------------------|-------------------|---|------------------------|--------------|----------------------|
|   | New York, Ontario & Western           | Norfolk & Portsmouth Belt | Norfolk & Western | Norfolk Southern | Northern Pacific | Northern Pacific Terminal | Northwestern Pacific | Ogden Union Railway & Depot | Oklahoma City-Ada-Toka | Oregon Short Line | Oregon-Washington Railroad & Navigation | Pataasco & Back Rivers | Pennsylvania | Peoria & Pekin Union |
| 1 Air compressors.....  | 4                                     |                           | 6                 |                  | 13               |                           |                      | 1                           | 1                      |                   | 3                                       |                        | 238          |                      |
| 2 Arch tubes.....   |                                       |                           |                   |                  | 1                |                           |                      |                             |                        |                   |   |                        | 16           |                      |
| 3 Ash pans or mechanism.....  |                                       |                           |                   |                  | 1                |                           |                      |                             |                        |                   |   |                        | 24           |                      |
| 4 Axles.....  |                                       |                           |                   |                  |                  |                           |                      |                             |                        |                   |   |                        |              |                      |
| 5 Blow-off cocks.....   |                                       |                           |                   |                  |                  |                           |                      |                             |                        |                   |   |                        | 36           |                      |
| 6 Boiler checks.....  | 2                                     | 2                         | 12                | 11               | 3                |                           |                      |                             | 1                      | 1                 |   |                        | 188          | 2                    |
| 7 Boiler shell.....   | 2                                     | 2                         | 12                | 11               | 3                |                           |                      |                             | 2                      | 2                 |   |                        | 196          | 1                    |
| 8 Brake equipment.....  | 1                                     | 1                         | 11                | 1                | 9                |                           |                      |                             | 1                      | 2                 |   |                        | 984          | 21                   |
| 9 Cabs or cab windows.....  | 7                                     | 1                         | 29                | 7                | 79               | 1                         |                      |                             | 15                     | 7                 |   |                        | 216          | 16                   |
| 10 Cab aprons or decks.....   | 1                                     | 1                         | 11                | 5                | 17               |                           |                      |                             | 4                      | 5                 |   |                        | 78           | 25                   |
| 11 Cab cards.....   | 2                                     | 1                         | 15                | 6                | 10               |                           |                      |                             | 22                     | 1                 |   |                        | 25           | 4                    |
| 12 Coupling or uncoupling devices.....                                | 1                                     |                           | 4                 |                  | 3                |                           |                      |                             | 1                      |                   |   |                        | 8            | 1                    |
| 13 Crossheads, guides, pistons, or piston rods.....                   | 1                                     |                           | 5                 |                  | 7                |                           |                      |                             | 2                      | 2                 |   |                        | 637          | 8                    |
| 14 Crown bolts.....   | 8                                     |                           | 16                |                  | 8                |                           | 2                    | 5                           | 2                      | 1                 |   |                        | 10           | 4                    |
| 15 Cylinders, saddles, or steam chests.....                           | 1                                     | 3                         | 68                | 10               | 11               | 3                         |                      |                             | 13                     | 4                 |   |                        | 688          | 4                    |
| 16 Cylinder cocks or rigging.....                                     | 6                                     | 1                         | 9                 | 5                | 2                |                           |                      |                             | 1                      | 3                 |   |                        | 150          | 4                    |
| 17 Domes or dome caps.....  |                                       |                           | 8                 | 2                | 4                |                           |                      |                             | 2                      | 2                 |   |                        | 88           | 2                    |
| 18 Draft gear.....  |                                       |                           | 2                 | 2                | 2                |                           |                      |                             | 3                      | 1                 | 2                                       |                        | 110          | 3                    |
| 19 Draw gear.....   | 9                                     |                           | 7                 | 3                | 19               |                           | 1                    |                             | 7                      | 2                 | 3                                       |                        | 224          | 15                   |
| 20 Driving boxes, shoes, wedges, pedestals, or braces.....            | 2                                     |                           | 15                | 4                | 19               | 3                         |                      |                             | 2                      | 3                 |   |                        | 496          | 3                    |
| 21 Fire-box sheets.....   | 23                                    |                           | 44                | 9                | 8                |                           |                      |                             | 2                      | 3                 |   |                        | 147          | 1                    |
| 22 Flues.....   | 4                                     | 2                         | 19                | 8                | 3                |                           |                      |                             | 1                      | 1                 |   |                        | 60           | 2                    |
| 23 Frames, tail pieces or braces, locomotive.....                     |                                       |                           | 4                 | 1                | 6                |                           |                      |                             | 2                      | 3                 |   |                        | 185          | 1                    |
| 24 Frames, tender.....  | 15                                    | 2                         | 16                | 1                | 6                |                           |                      |                             | 20                     | 2                 |   |                        | 29           | 3                    |
| 25 Gauges or gauge fittings, air.....                                 | 1                                     | 1                         | 4                 | 4                | 6                |                           |                      |                             | 2                      | 1                 |   |                        | 51           | 3                    |
| 26 Gauges or gauge fittings, steam.....                               | 10                                    | 3                         | 3                 | 1                | 5                |                           |                      |                             | 4                      | 1                 |   |                        | 105          | 12                   |
| 27 Gauge cocks.....   | 13                                    |                           | 11                | 1                | 4                |                           |                      |                             | 1                      | 1                 |   |                        | 205          | 21                   |
| 28 Grate shakers.....   | 2                                     |                           | 1                 | 2                | 1                |                           |                      |                             | 2                      | 1                 |   |                        | 44           | 6                    |
| 29 Handholds.....   | 7                                     |                           | 8                 | 2                | 9                |                           |                      |                             | 3                      | 1                 |   |                        | 112          | 9                    |
| 30 Injectors, inoperative.....  |                                       |                           | 2                 |                  | 2                |                           |                      |                             | 1                      | 1                 |   |                        | 8            | 3                    |
| 31 Injectors and connections.....                                     | 31                                    | 5                         | 44                | 22               | 36               | 1                         |                      |                             | 14                     | 5                 |   | 1,091                  | 33           | 42                   |
| 32 Inspections or tests not made as required.....                     | 37                                    |                           | 33                | 2                | 210              |                           | 3                    |                             | 3                      | 2                 |   | 1,116                  | 4            | 64                   |
| 33 Lateral motion.....  | 24                                    |                           | 4                 | 6                | 3                |                           |                      |                             | 2                      | 2                 |   |                        | 67           | 1                    |
| 34 Lights, cab or classification.....                                 | 1                                     |                           |                   |                  | 3                |                           |                      |                             |                        |                   |   |                        | 6            |                      |
| 35 Lights, headlights.....  | 1                                     |                           | 3                 | 1                | 13               |                           |                      |                             |                        |                   |   |                        | 6            | 4                    |
| 36 Lubricator or shields.....   | 1                                     | 2                         | 2                 | 1                | 5                |                           |                      |                             | 2                      | 1                 |   |                        | 102          | 1                    |
| 37 Mud rings.....   | 3                                     |                           | 8                 | 3                | 1                |                           |                      |                             | 1                      | 1                 |   |                        | 177          | 4                    |
| 38 Packing nuts.....  | 1                                     | 1                         | 9                 | 3                | 1                |                           |                      |                             | 4                      |                   |   |                        | 100          | 23                   |
| 39 Packing, piston rod and valve stem.....                            | 4                                     |                           | 22                | 2                | 6                |                           |                      |                             | 1                      | 1                 |   |                        | 516          | 5                    |
| 40 Pilot or pilot beams.....  | 1                                     |                           | 1                 | 1                | 8                |                           |                      |                             | 1                      | 1                 |   |                        | 56           | 5                    |
| 41 Plugs or studs.....  | 6                                     |                           | 15                | 4                | 1                |                           |                      |                             | 1                      | 1                 |   |                        | 162          | 2                    |
| 42 Reversing gear.....  | 14                                    | 4                         | 37                | 6                | 18               |                           |                      |                             | 11                     | 1                 | 3                                       |                        | 864          | 5                    |
| 43 Rods, main or side, crank pins or collars.....                     | 2                                     |                           | 2                 | 3                | 2                |                           |                      |                             | 1                      | 2                 |   |                        | 36           | 2                    |
| 44 Safety valves.....   | 13                                    |                           | 25                | 3                | 14               |                           |                      |                             | 3                      | 11                |   |                        | 147          | 19                   |
| 45 Sanders.....   | 5                                     |                           | 5                 | 10               | 66               | 2                         | 1                    |                             | 21                     | 3                 |   |                        | 934          | 13                   |
| 46 Springs or spring rigging.....                                     | 2                                     |                           | 13                | 5                | 10               |                           |                      |                             | 2                      | 2                 |   |                        | 43           | 4                    |
| 47 Squirt hose.....   | 2                                     |                           | 7                 | 2                | 2                |                           |                      |                             | 5                      | 1                 |   |                        | 126          | 2                    |
| 48 Staybolts.....   | 2                                     |                           | 10                | 2                | 3                |                           |                      |                             | 1                      | 3                 |   |                        | 38           | 5                    |
| 49 Staybolts, broken.....   | 14                                    |                           | 4                 | 1                | 32               |                           |                      |                             | 1                      | 4                 | 3                                       |                        | 219          | 14                   |
| 50 Steam pipes.....   | 9                                     |                           | 9                 | 1                | 6                |                           |                      |                             | 3                      | 4                 |   |                        | 205          | 19                   |
| 51 Steam valves.....  | 2                                     |                           | 14                | 2                | 1                |                           |                      |                             | 7                      | 4                 |   |                        | 131          | 20                   |
| 52 Steps.....   | 2                                     |                           | 10                | 2                | 2                |                           |                      |                             | 4                      | 1                 |   |                        | 280          | 19                   |
| 53 Tanks or tank valves.....  | 2                                     |                           | 7                 | 2                | 1                |                           |                      |                             | 1                      | 1                 |   |                        | 19           | 11                   |
| 54 Telltale holes.....  | 7                                     |                           | 13                | 14               | 1                |                           |                      |                             | 4                      | 1                 |   |                        | 471          | 11                   |
| 55 Throttle or throttle rigging.....                                  | 15                                    |                           | 18                | 17               | 22               |                           |                      |                             | 1                      | 3                 |   |                        | 294          | 2                    |
| 56 Trucks, engine or trailing.....                                    | 7                                     |                           | 18                | 17               | 22               |                           |                      |                             | 15                     | 5                 |   |                        | 419          | 6                    |
| 57 Trucks, tender.....  | 3                                     |                           | 23                | 4                | 14               |                           |                      |                             | 2                      | 6                 |   |                        | 470          | 6                    |
| 58 Valve motion.....  | 22                                    |                           | 13                | 3                | 37               |                           |                      |                             | 6                      | 3                 |   |                        | 335          | 3                    |
| 59 Washout plugs.....   | 7                                     |                           | 8                 | 3                | 16               |                           |                      |                             | 1                      | 12                |   |                        | 59           | 1                    |
| 60 Train control equipment.....                                       | 10                                    |                           | 23                | 6                | 8                |                           |                      |                             | 17                     | 4                 |   |                        | 225          | 11                   |
| 61 Water glass, fittings or shield.....                               | 1                                     |                           |                   |                  | 6                |                           |                      |                             | 1                      | 4                 |   |                        | 186          | 5                    |
| 62 Wheels.....  | 1                                     |                           |                   |                  | 6                |                           |                      |                             | 4                      | 2                 |   |                        | 175          | 4                    |
| 63 Miscellaneous—Signal appliances, badge plates, brakes (hand).....  | 363                                   | 41                        | 736               | 196              | 829              | 18                        | 13                   | 26                          | 224                    | 107               | 145                                     | 55                     | 14,687       | 3                    |
| Number of defects.....  | 363                                   | 41                        | 736               | 196              | 829              | 18                        | 13                   | 26                          | 224                    | 107               | 145                                     | 55                     | 14,687       | 3                    |
| Locomotives reported.....   | 179                                   | 22                        | 888               | 107              | 1,161            | 11                        | 70                   | 10                          | 22                     | 334               | 287                                     | 24                     | 6,653        | 32                   |
| Locomotives inspected.....  | 287                                   | 55                        | 1,163             | 252              | 1,656            | 51                        | 95                   | 15                          | 32                     | 480               | 528                                     | 28                     | 10,149       | 11                   |
| Locomotives defective.....  | 108                                   | 25                        | 325               | 82               | 302              | 10                        | 6                    | 8                           | 29                     | 63                | 68                                      | 15                     | 3,604        | 2                    |
| Percentage of inspected found defective.....                          | 38                                    | 45                        | 28                | 37               | 18               | 20                        | 6                    | 53                          | 91                     | 15                | 12                                      | 54                     | 36           | 18                   |
| Locomotives ordered out of service.....                               | 10                                    | 1                         | 16                | 7                | 12               |                           |                      |                             | 11                     | 1                 |   |                        | 240          | 5                    |
| Locomotives ordered out of service.....                               | 10                                    | 1                         | 16                | 7                | 12               |                           |                      |                             | 11                     | 1                 |   |                        | 240          | 5                    |

TABLE XIII.—Number of steam locomotives inspected, found defective, and ordered from service, etc.—Continued

| Parts defective, inoperative or missing, or in violation of the rules | Pittsburgh & West Virginia | Pittsburgh, Chartiers & Youghiogheny | Pittsburg, Shawmut & Northern | Portland Terminal | Public Belt of New Orleans | Quebec Central | Quincy, Omaha & Kansas City | Raritan River | Reading | Republic Iron & Steel (Allegheny) | Republic Iron & Steel (Ohio) | Richmond, Fredericksburg & Potomac | Rio Grande Southern | River Terminal | Rutland | St. Joseph & Grand Island | St. Louis & Hannibal | St. Louis-San Francisco | St. Louis Southwestern | San Antonio, Uvalde & Gulf | San Diego & Arizona | Sandy River & Rangeley Lakes | San Joaquin & Eastern | Savannah & Atlanta |    |    |
|---|----------------------------|--------------------------------------|-------------------------------|-------------------|----------------------------|----------------|-----------------------------|---------------|---------|-----------------------------------|------------------------------|------------------------------------|---------------------|----------------|---------|---------------------------|----------------------|-------------------------|------------------------|----------------------------|---------------------|------------------------------|-----------------------|--------------------|----|----|
|   | 1 Air compressors.....     | 5                                    |                               | 1                 |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         | 27                     | 2                          |                     |                              |                       |                    |    | 1  |
| 2 Arch tubes.....   | 1                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 2  |
| 3 Ash pans or mechanism.....  |                            |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 3  |
| 4 Axles.....  |                            |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 4  |
| 5 Blow-off cocks.....   |                            |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 5  |
| 6 Boiler checks.....  |                            |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 6  |
| 7 Boiler shell.....   |                            |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 7  |
| 8 Brake equipment.....  | 8                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 8  |
| 9 Cabs or cab windows.....  |                            |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 9  |
| 10 Cab aprons or decks.....   |                            |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 10 |
| 11 Cab cards.....   | 2                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 11 |
| 12 Coupling or uncoupling devices.....                                |                            |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 12 |
| 13 Crossheads, guides, pistons, or piston rods.....                   | 4                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 13 |
| 14 Crown bolts.....   | 1                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 14 |
| 15 Cylinders, saddles, or steam chests.....                           | 4                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 15 |
| 16 Cylinder cocks or rigging.....                                     |                            |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 16 |
| 17 Domes or dome caps.....  |                            |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 17 |
| 18 Draft gear.....  | 3                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 18 |
| 19 Draw gear.....   | 1                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 19 |
| 20 Driving boxes, shoes, wedges, pedestals, or braces.....            | 1                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 20 |
| 21 Fire-box sheets.....   | 2                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 21 |
| 22 Flues.....   | 1                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 22 |
| 23 Frames, tail pieces or braces, locomotive.....                     | 2                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 23 |
| 24 Frames, tender.....  |                            |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 24 |
| 25 Gauges or gauge fittings, air.....                                 | 4                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 25 |
| 26 Gauges or gauge fittings, steam.....                               | 3                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 26 |
| 27 Gauge cocks.....   | 2                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 27 |
| 28 Grate shakers.....   | 1                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 28 |
| 29 Handholds.....   | 2                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 29 |
| 30 Injectors, inoperative.....  |                            |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 30 |
| 31 Injectors and connections.....                                     | 6                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 31 |
| 32 Inspections or tests not made as required.....                     | 1                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 32 |
| 33 Lateral motion.....  | 9                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 33 |
| 34 Lights, cab or classification.....                                 |                            |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 34 |
| 35 Lights, headlights.....  |                            |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 35 |
| 36 Lubricator or shields.....   | 2                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 36 |
| 37 Mudrings.....  | 3                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 37 |
| 38 Packing nuts.....  |                            |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 38 |
| 39 Packing, piston rod and valve stem.....                            | 3                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 39 |
| 40 Pilot or pilot beams.....  | 2                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 40 |
| 41 Plugs or studs.....  | 1                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 41 |
| 42 Reversing gear.....  | 1                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 42 |
| 43 Rods, main or side, crank pins or collars.....                     | 6                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 43 |
| 44 Safety valves.....   | 1                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 44 |
| 45 Sanders.....   | 10                         |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 45 |
| 46 Springs or spring rigging.....                                     | 2                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 46 |
| 47 Squirr hose.....   | 1                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 47 |
| 48 Staybolts.....   | 1                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 48 |
| 49 Staybolts, broken.....   | 7                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 49 |
| 50 Steam pipes.....   | 1                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 50 |
| 51 Steam valves.....  | 1                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 51 |
| 52 Steps.....   | 9                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 52 |
| 53 Tanks or tank valves.....  | 7                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 53 |
| 54 Telltale holes.....  |                            |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 54 |
| 55 Throttle or throttle rigging.....                                  | 1                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 55 |
| 56 Trucks, engine or trailing.....                                    | 5                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 56 |
| 57 Trucks, tender.....  | 2                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 57 |
| 58 Valve motion.....  | 4                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 58 |
| 59 Washout plugs.....   |                            |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 59 |
| 60 Train control equipment.....                                       |                            |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 60 |
| 61 Water glass, fittings or shield.....                               |                            |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 61 |
| 62 Wheels.....  | 2                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 62 |
| 63 Miscellaneous—Signal appliances, badge plates, brakes (hand).....  | 3                          |                                      |                               |                   |                            |                |                             |               |         |                                   |                              |                                    |                     |                |         |                           |                      |                         |                        |                            |                     |                              |                       |                    |    | 63 |
| Number of defects.....  | 144                        |                                      | 38                            | 14                | 6                          | 6              | 20                          | 54            | 2,000   | 155                               | 49                           | 16                                 | 30                  | 17             | 23      | 110                       | 938                  | 137                     | 11                     | 15                         |                     |                              |                       |                    | 27 |    |
| Locomotives reported.....   | 30                         | 10                                   | 35                            | 25                | 16                         | 10             | 10                          | 10            | 1,000   | 11                                | 24                           | 110                                | 13                  | 17             | 84      | 38                        | 22                   | 935                     | 252                    | 18                         | 18                  | 12                           | 12                    | 13                 |    |    |
| Locomotives inspected.....  | 71                         | 6                                    | 60                            | 16                | 22                         | 3              | 36                          | 20            | 1,711   |                                   | 24                           | 116                                | 28                  | 17             | 106     | 69                        | 37                   | 1,602                   | 371                    | 62                         | 43                  | 16                           | 6                     | 15                 |    |    |
| Locomotives defective.....  | 14                         | 5                                    | 11                            | 6                 | 6                          | 1              | 5                           | 10            | 300     |                                   | 21                           | 21                                 | 7                   | 7              | 8       | 7                         | 30                   | 289                     | 46                     | 5                          | 9                   |                              |                       | 9                  |    |    |
| Percentage of inspected found defective.....                          | 30                         |                                      | 18                            | 38                | 27                         | 33             | 14                          | 50            | 30      |                                   | 88                           | 18                                 | 25                  | 41             | 8       | 10                        | 81                   | 18                      | 12                     | 8                          | 21                  |                              |                       | 60                 |    |    |
| Locomotives ordered out of service.....                               | 9                          |                                      | 5                             | 1                 | 1                          |                | 1                           | 1             | 1       |                                   | 18                           |                                    |                     |                |         | 1                         | 6                    | 8                       | 8                      |                            | 1                   |                              |                       |                    |    |    |

TABLE XIII.—Number of steam locomotives inspected, found defective, and ordered from service, etc.—Continued

| Parts defective, inoperative or missing, or in violation of the rules | Seaboard Air Line      | Sierra Railway of California | Stoss-Sheffield Steel & Iron | South Buffalo | Southern Pacific East | Southern Pacific West | Southern Pacific of Mexico | Southern | Spokane Internationals | Spokane, Portland & Seattle | Steelton & Highspire | Sumpter Valley | Tennessee Central | Tennessee, Coal, Iron & Railroad | Terminal R. R. Association of St. Louis | Texas & Pacific | Texas-Mexican | Texas Pacific-Missouri Pacific of N. O. | Tionesta Valley | Toledo, Peoria & Western | Toledo Terminal | Tonopah & Goldfield | Toronto-Hamilton & Buffalo | Tremont & Gulf |    |
|---|------------------------|------------------------------|------------------------------|---------------|-----------------------|-----------------------|----------------------------|----------|------------------------|-----------------------------|----------------------|----------------|-------------------|----------------------------------|---|-----------------|---------------|---|-----------------|--------------------------|-----------------|---------------------|----------------------------|----------------|----|
|   | 1 Air compressors..... | 24                           |                              |               | 1                     | 5                     | 16                         |          | 8                      |                             | 1                    |                |                   | 11                               |   |                 | 1             |   |                 |                          |                 |                     |                            |                |    |
| 2 Arch tubes.....   | 1                      |                              |                              |               |                       |                       |                            | 2        |                        |                             |                      |                |                   |                                  |   |                 |               |   |                 |                          |                 |                     |                            |                | 2  |
| 3 Ash pans or mechanism.....  | 5                      |                              |                              |               |                       |                       |                            | 2        |                        |                             |                      |                | 1                 |                                  |   |                 |               |   |                 |                          |                 |                     |                            |                | 3  |
| 4 Axles.....  |                        |                              |                              |               |                       |                       |                            |          |                        |                             |                      |                |                   |                                  |   |                 |               |   |                 |                          |                 |                     |                            |                | 4  |
| 5 Blow-off cocks.....   | 18                     |                              |                              |               |                       |                       |                            | 5        |                        |                             |                      |                | 5                 |                                  |   |                 |               |   |                 |                          |                 |                     |                            |                | 5  |
| 6 Boiler checks.....  | 31                     |                              |                              |               | 1                     | 14                    |                            | 17       | 2                      |                             |                      |                | 6                 |                                  |   |                 |               |   |                 |                          |                 |                     |                            |                | 6  |
| 7 Boiler shell.....   | 8                      |                              |                              | 2             | 4                     | 14                    |                            | 10       | 2                      |                             |                      |                | 6                 |                                  |   |                 |               |   |                 |                          |                 |                     |                            |                | 7  |
| 8 Brake equipment.....  | 149                    |                              | 3                            | 4             | 28                    | 76                    |                            | 74       | 1                      | 22                          |                      |                | 64                |                                  |   | 6               | 3             | 2                                       |                 |                          | 1               |                     |                            |                | 8  |
| 9 Cabs or cab windows.....  | 26                     |                              |                              |               | 3                     | 29                    |                            | 24       | 5                      |                             |                      |                |                   |                                  |   |                 |               |   |                 |                          | 3               |                     |                            |                | 9  |
| 10 Cab aprons or decks.....   | 7                      |                              |                              |               | 1                     | 9                     |                            | 6        |                        | 2                           |                      |                |                   |                                  |   | 1               |               |   |                 |                          | 3               |                     |                            |                | 10 |
| 11 Cab cards.....   | 3                      |                              | 2                            | 1             |                       | 3                     |                            | 4        |                        |                             |                      |                |                   |                                  |   |                 |               |   |                 |                          | 1               |                     |                            |                | 11 |
| 12 Coupling or uncoupling devices.....                                | 3                      |                              |                              |               |                       | 5                     |                            | 1        |                        |                             |                      |                | 3                 |                                  |   |                 |               |   |                 |                          |                 |                     |                            |                | 12 |
| 13 Crossheads, guides, pistons, or piston rods.....                   | 32                     |                              |                              |               | 11                    | 30                    |                            | 31       |                        | 3                           | 1                    |                | 9                 |                                  |   | 2               | 1             |   | 1               |                          | 1               |                     |                            |                | 13 |
| 14 Crown bolts.....   | 1                      |                              |                              |               | 3                     | 8                     |                            | 2        |                        |                             |                      |                | 8                 |                                  |   |                 |               |   |                 |                          |                 |                     |                            |                | 14 |
| 15 Cylinders, saddles, or steam chests.....                           | 20                     |                              |                              |               | 14                    | 28                    |                            | 51       |                        |                             |                      |                | 9                 |                                  |   | 1               | 2             |   |                 |                          | 3               |                     |                            |                | 15 |
| 16 Cylinder cocks or rigging.....                                     | 6                      |                              |                              |               | 3                     | 5                     |                            | 15       | 2                      |                             |                      |                | 4                 |                                  |   |                 | 5             |   |                 |                          |                 |                     |                            |                | 16 |
| 17 Domes or dome caps.....  | 5                      |                              |                              |               |                       | 3                     |                            | 3        |                        |                             |                      |                | 3                 |                                  |   |                 |               |   |                 |                          |                 |                     |                            |                | 17 |
| 18 Draft gear.....  | 49                     |                              |                              | 2             | 2                     | 14                    |                            | 27       | 1                      | 1                           | 1                    |                | 16                |                                  | 1                                       | 3               | 1             |   |                 |                          |                 |                     |                            |                | 18 |
| 19 Draw gear.....   | 33                     |                              |                              | 2             | 11                    | 21                    |                            | 27       |                        | 5                           |                      |                | 7                 |                                  |   |                 |               |   |                 |                          | 1               |                     |                            |                | 19 |
| 20 Driving boxes, shoes, wedges, pedestals, or braces.....            | 35                     |                              |                              |               | 4                     | 22                    |                            | 13       |                        | 2                           |                      |                | 42                |                                  |   | 1               | 1             |   |                 |                          |                 |                     |                            |                | 20 |
| 21 Fire-box sheets.....   | 13                     |                              |                              |               | 5                     | 7                     |                            | 9        |                        |                             |                      |                | 17                |                                  |   |                 |               |   |                 |                          | 4               |                     |                            |                | 21 |
| 22 Flues.....   | 16                     |                              |                              |               | 4                     | 9                     |                            | 13       |                        |                             | 1                    |                | 5                 |                                  |   |                 |               |   |                 |                          |                 |                     |                            |                | 22 |
| 23 Frames, tail pieces or braces, locomotive.....                     | 45                     |                              |                              | 1             | 5                     | 13                    |                            | 31       |                        | 2                           |                      | 1              | 29                |                                  |   | 1               |               |   |                 |                          |                 |                     |                            |                | 23 |
| 24 Frames, tender.....  | 5                      |                              |                              |               |                       | 3                     |                            | 6        |                        |                             |                      |                |                   |                                  |   |                 |               |   |                 |                          |                 |                     |                            |                | 24 |
| 25 Gauges or gauge fittings, air.....                                 | 2                      |                              |                              | 1             | 2                     | 6                     |                            | 12       |                        |                             |                      |                | 2                 |                                  |   |                 |               |   |                 |                          |                 |                     |                            |                | 25 |
| 26 Gauges or gauge fittings, steam.....                               | 8                      |                              |                              | 3             | 4                     | 9                     |                            | 29       |                        |                             |                      |                | 9                 |                                  |   |                 | 4             |   |                 |                          | 2               |                     |                            |                | 26 |
| 27 Gauge cocks.....   | 53                     |                              | 1                            | 1             | 6                     | 33                    |                            | 5        |                        |                             |                      |                | 8                 |                                  |   |                 |               |   |                 |                          | 2               |                     |                            |                | 27 |
| 28 Grate shakers.....   | 14                     |                              |                              | 1             |                       |                       |                            | 17       |                        |                             |                      |                | 5                 |                                  |   |                 |               |   |                 |                          |                 |                     |                            |                | 28 |
| 29 Handholds.....   | 14                     |                              |                              | 1             | 8                     | 15                    |                            | 2        |                        |                             |                      |                | 8                 |                                  |   |                 |               |   |                 |                          | 3               |                     |                            |                | 29 |
| 30 Injectors, inoperative.....  | 1                      |                              |                              |               |                       | 18                    |                            | 1        |                        |                             |                      |                |                   |                                  |   |                 |               |   |                 |                          |                 |                     |                            |                | 30 |
| 31 Injectors and connections.....                                     | 170                    |                              | 4                            |               | 18                    | 56                    |                            | 75       | 1                      | 1                           | 4                    |                | 21                |                                  | 1                                       | 1               | 3             |   |                 |                          | 3               |                     |                            |                | 31 |
| 32 Inspections or tests not made as required.....                     | 150                    |                              |                              |               | 23                    | 161                   |                            | 123      | 9                      | 29                          |                      | 1              | 2                 |                                  | 14                                      | 7               | 2             | 1                                       |                 |                          | 4               |                     |                            |                | 32 |
| 33 Lateral motion.....  | 25                     |                              |                              |               |                       | 16                    |                            | 8        |                        |                             |                      |                | 20                |                                  |   |                 |               |   |                 |                          |                 |                     |                            |                | 33 |
| 34 Lights, cab or classification.....                                 |                        |                              |                              |               |                       | 2                     |                            | 1        |                        |                             |                      |                |                   |                                  |   |                 |               |   |                 |                          |                 |                     |                            |                | 34 |
| 35 Lights, headlights.....  | 10                     |                              |                              |               |                       | 9                     |                            | 7        |                        | 3                           |                      |                | 1                 |                                  |   |                 |               |   |                 |                          |                 |                     |                            |                | 35 |
| 36 Lubricator or shields.....   | 2                      |                              |                              |               | 3                     | 2                     |                            | 10       |                        |                             |                      |                | 20                |                                  | 2                                       |                 | 1             | 1                                       |                 |                          |                 |                     |                            |                | 36 |
| 37 Mud rings.....   | 26                     |                              |                              |               |                       | 9                     |                            | 7        |                        |                             |                      |                |                   |                                  |   |                 |               |   |                 |                          | 2               |                     |                            |                | 37 |
| 38 Packing nuts.....  | 107                    |                              | 1                            | 2             |                       | 26                    |                            | 20       |                        |                             | 1                    |                | 2                 |                                  | 7                                       |                 |               |   |                 |                          |                 |                     |                            |                | 38 |
| 39 Packing, piston rod and valve stem.....                            | 20                     |                              |                              |               | 8                     | 11                    |                            | 27       |                        |                             | 1                    |                | 2                 |                                  |   | 3               |               |   |                 |                          |                 |                     |                            |                | 39 |
| 40 Pilot or pilot beams.....  | 12                     |                              |                              | 2             | 4                     | 8                     |                            | 11       |                        |                             |                      |                | 2                 |                                  |   | 4               |               |   |                 |                          |                 |                     |                            |                | 40 |
| 41 Plugs or studs.....  | 10                     |                              |                              |               |                       | 6                     |                            | 5        |                        |                             |                      |                | 6                 |                                  |   |                 |               |   |                 |                          | 1               |                     |                            |                | 41 |
| 42 Reversing gear.....  | 20                     |                              |                              |               | 6                     | 7                     |                            | 10       |                        |                             |                      |                | 6                 |                                  |   |                 |               |   |                 |                          |                 |                     |                            |                | 42 |
| 43 Rods, main or side, crank pins or collars.....                     | 76                     |                              | 3                            |               | 14                    | 36                    |                            | 54       |                        | 5                           |                      |                | 53                |                                  |   | 3               | 2             |   | 1               |                          |                 |                     |                            |                | 43 |
| 44 Safety valves.....   | 2                      |                              |                              |               |                       |                       |                            | 2        |                        |                             |                      |                | 2                 |                                  |   |                 |               |   |                 |                          |                 |                     |                            |                | 44 |
| 45 Sanders.....   | 13                     |                              |                              | 2             |                       | 25                    |                            | 6        |                        | 3                           |                      |                |                   |                                  |   |                 |               |   |                 |                          |                 |                     |                            |                | 45 |
| 46 Springs or spring rigging.....                                     | 109                    |                              |                              | 7             | 21                    | 38                    |                            | 52       |                        | 5                           |                      | 1              | 56                |                                  | 4                                       | 2               | 1             |   | 1               | 5                        |                 |                     |                            |                | 46 |
| 47 Squirt hose.....   | 1                      |                              |                              | 1             |                       | 6                     |                            | 4        |                        |                             |                      |                | 1                 |                                  |   |                 |               |   |                 |                          |                 |                     |                            |                | 47 |
| 48 Staybolts.....   | 18                     |                              |                              | 4             |                       | 10                    |                            | 15       |                        | 1                           |                      |                | 21                |                                  |   |                 |               |   |                 |                          |                 |                     |                            |                | 48 |
| 49 Staybolts, broken.....   | 50                     |                              | 2                            | 1             | 11                    | 6                     |                            | 37       | 3                      | 3                           |                      |                | 18                |                                  |   |                 |               |   |                 |                          | 1               |                     |                            |                | 49 |
| 50 Steam pipes.....   | 50                     |                              |                              | 1             |                       | 21                    |                            | 12       |                        |                             |                      |                | 5                 |                                  | 2                                       |                 |               |   |                 |                          |                 |                     |                            |                | 50 |
| 51 Steam valves.....  | 39                     |                              |                              |               | 1                     | 6                     |                            | 12       |                        |                             |                      |                | 2                 |                                  |   |                 |               |   |                 |                          |                 |                     |                            |                | 51 |
| 52 Steps.....   | 46                     |                              |                              | 3             | 2                     | 12                    |                            | 15       |                        | 1                           | 2                    |                | 11                |                                  |   | 4               |               | 1                                       |                 |                          |                 |                     |                            |                | 52 |
| 53 Tanks or tank valves.....  | 118                    |                              |                              | 3             | 5                     | 27                    |                            | 44       |                        | 4                           |                      |                | 9                 |                                  |   | 1               |               |   |                 | 2                        |                 |                     |                            |                | 53 |
| 54 Telltale holes.....  | 2                      |                              |                              |               | 2                     | 2                     |                            | 2        |                        | 1                           |                      |                | 6                 |                                  |   |                 |               |   |                 |                          |                 |                     |                            |                | 54 |
| 55 Throttle or throttle rigging.....                                  | 44                     |                              |                              |               |                       | 14                    |                            | 35       |                        | 2                           |                      |                | 3                 |                                  |   | 1               |               |   |                 |                          |                 |                     |                            |                | 55 |
| 56 Trucks, engine or trailing.....                                    | 53                     |                              |                              |               | 14                    | 28                    |                            | 34       |                        |                             |                      |                | 29                |                                  |   | 1               | 3             |   |                 |                          |                 |                     |                            |                | 56 |
| 57 Trucks, tender.....  | 104                    |                              |                              |               | 13                    | 16                    |                            | 26       |                        | 13                          |                      |                | 40                |                                  | 1                                       |                 |               |   |                 |                          | 1               |                     | 4                          |                | 57 |
| 58 Valve motion.....  | 5                      |                              |                              |               |                       | 10                    |                            | 15       |                        |                             |                      |                | 12                |                                  |   | 2               |               |   |                 |                          |                 |                     |                            |                | 58 |
| 59 Washout plugs.....   | 129                    |                              | 1                            |               | 3                     | 27                    |                            | 41       |                        |                             |                      |                | 15                |                                  |   | 1               | 1             |   |                 |                          |                 |                     |                            |                | 59 |
| 60 Train control equipment.....                                       |                        |                              |                              |               |                       | 1                     |                            | 9        |                        |                             |                      |                |                   |                                  |   |                 |               |   |                 |                          |                 |                     |                            |                | 60 |
| 61 Water glass, fittings or shield.....                               | 53                     |                              | 1                            | 2             | 3                     | 34                    |                            | 39       |                        | 3                           | 3                    | 1              | 4                 |                                  |   | 1               |               |   |                 |                          | 1               | 1                   |                            |                | 61 |
| 62 Wheels.....  | 57                     |                              |                              | 5             | 5                     | 50                    |                            | 31       |                        | 2                           |                      |                | 15                |                                  | 5                                       | 2               | 1             | 2                                       |                 |                          | 1               | 1                   | 2                          |                | 62 |
| 63 Miscellaneous—Signal appliances, badge plates, brakes (hand).....  | 12                     |                              |                              |               | 1                     | 26                    |                            | 21       |                        | 1                           |                      |                | 5                 |                                  |   |                 |               |   |                 |                          |                 |                     |                            |                | 63 |
| Number of defects.....  | 2,160                  |                              | 15                           | 58            | 294                   | 1,129                 |                            | 15       | 44                     | 123                         | 13                   | 5              | 669               |                                  | 46                                      | 43              | 40            | 4                                       | 5               | 48                       | 51              |                     |                            |                |    |
| Locomotives reported.....   | 786                    | 10                           | 15                           | 29            | 687                   | 1,740                 |                            | 61       | 3,222                  | 11                          | 100                  | 15             | 10                | 44                               | 61                                      | 183             | 360           | 17                                      | 17              | 14                       | 26              | 21                  | 10                         | 13             |    |
| Locomotives inspected.....  | 1,605                  | 6                            | 4                            | 35            | 861                   | 2,206                 |                            | 6        | 3,162                  | 18                          | 151                  | 32             | 13                | 207                              | 58                                      | 459             | 19            | 24                                      | 13              | 28                       | 35              | 6                   |                            | 9              |    |
| Locomotives defective.....  | 856                    |                              | 3                            | 12            | 95                    | 518                   |                            | 3        | 473                    | 9                           | 35                   | 10             | 5                 | 135                              |   | 17              | 13            | 10                                      | 1               | 12                       | 13              |                     |                            |                |    |
| Percentage of inspected found defective.....                          | 53                     |                              | 75                           | 34            | 11                    | 23                    |                            | 1        | 15                     | 80                          | 23                   | 31             | 38                | 65                               |   | 29              | 3             | 53                                      | 4               | 7                        | 43              | 37                  |                            |                |    |
| Locomotives ordered out of service.....                               | 40                     |                              |                              | 4             | 5                     | 25                    |                            | 1        | 15                     | 2                           |                      |                | 27                |                                  | 4                                       | 1               |               |   | 1               | 2                        | 1               |                     |                            |                |    |

TABLE XIII.—Number of steam locomotives inspected, found defective, and ordered from service, etc.—Continued

| Parts defective, inoperative or missing, or in violation of the rules | Trinity & Brazos Valley | Uintah | Ulster & Delaware | Union Pacific | Union | Upper Merion & Plymouth | Utah | Virginia | Wabash | Washington Terminal | Western Allegheny | Western Maryland | Western Pacific | Wheeler & Lake Erie | Wheeler Steel Corporation | Wichita Falls & Southern | Winston-Salem Southbound | Woodward Iron Co. | Wrightsville & Ten-mile | Youngstown Sheet & Tube Co. | Roads with less than 10 locomotives | Total defects |       |       |
|---|-------------------------|--------|-------------------|---------------|-------|-------------------------|------|----------|--------|---------------------|-------------------|------------------|-----------------|---------------------|---------------------------|--------------------------|--------------------------|-------------------|-------------------------|-----------------------------|-------------------------------------|---------------|-------|-------|
|   | 1 Air compressors.....  |        |                   |               | 13    | 1                       |      |          |        |                     |                   |                  | 2               | 4                   | 5                         | 1                        |                          |                   |                         |                             |                                     |               | 76    | 1,282 |
| 2 Arch tubes.....   |                         |        |                   | 3             |       |                         |      |          |        |                     |                   | 2                | 4               | 1                   | 1                         |                          |                          |                   |                         |                             |                                     | 6             | 103   |       |
| 3 Ash pans or mechanism.....  |                         |        |                   |               |       |                         |      |          |        |                     |                   | 2                |                 |                     |                           |                          |                          |                   |                         |                             |                                     | 10            | 133   |       |
| 4 Axles.....  |                         |        |                   |               |       |                         |      |          |        |                     |                   |                  |                 |                     |                           |                          |                          |                   |                         |                             |                                     | 3             | 7     |       |
| 5 Blow-off cocks.....   |                         |        | 1                 | 2             |       |                         |      |          |        |                     |                   | 1                | 7               | 1                   | 1                         |                          |                          |                   |                         |                             |                                     | 17            | 469   |       |
| 6 Boiler checks.....  |                         |        | 1                 | 2             |       |                         |      | 1        |        |                     |                   | 1                | 4               |                     | 1                         |                          |                          |                   |                         |                             |                                     | 64            | 914   |       |
| 7 Boiler shell.....   |                         |        | 1                 | 1             |       |                         |      | 2        |        |                     |                   | 7                | 4               |                     |                           |                          |                          | 1                 |                         |                             |                                     | 66            | 954   |       |
| 8 Brake equipment.....  |                         |        |                   | 1             |       | 1                       |      | 3        |        |                     |                   | 4                | 4               |                     |                           |                          |                          |                   | 4                       |                             |                                     | 469           | 5,214 |       |
| 9 Cabs or cab windows.....  |                         |        | 6                 | 26            | 1     | 3                       |      | 8        | 5      | 1                   |                   | 14               | 5               | 13                  | 2                         |                          |                          |                   |                         |                             |                                     | 115           | 1,670 |       |
| 10 Cab aprons or decks.....   |                         |        |                   | 14            |       |                         |      | 5        |        |                     |                   | 10               | 5               | 5                   |                           |                          |                          |                   |                         |                             |                                     | 93            | 852   |       |
| 11 Cab cards.....   |                         |        | 4                 |               |       | 2                       |      | 1        |        |                     |                   | 4                | 6               | 6                   |                           |                          |                          |                   |                         |                             |                                     | 103           | 378   |       |
| 12 Coupling or uncoupling devices.....                                |                         |        |                   | 1             |       |                         |      |          |        |                     |                   |                  |                 |                     |                           |                          |                          |                   |                         |                             |                                     | 51            | 179   |       |
| 13 Crossheads, guides, pistons, or piston rods.....                   |                         |        |                   | 14            | 1     | 1                       |      | 3        |        |                     |                   | 1                | 4               | 28                  | 1                         | 2                        |                          |                   | 2                       |                             |                                     | 120           | 2,088 |       |
| 14 Crown bolts.....   |                         |        |                   | 2             |       |                         |      |          |        |                     |                   |                  |                 | 2                   | 4                         |                          |                          |                   |                         |                             |                                     | 25            | 164   |       |
| 15 Cylinders, saddles, or steam chests.....                           |                         |        |                   | 29            |       | 9                       |      | 23       | 4      |                     |                   | 19               | 6               | 30                  | 3                         |                          |                          |                   |                         | 1                           |                                     | 236           | 3,264 |       |
| 16 Cylinder cocks or rigging.....                                     |                         |        |                   | 13            |       | 2                       |      | 3        | 7      |                     |                   | 1                | 1               | 10                  | 1                         |                          |                          |                   |                         |                             |                                     | 65            | 1,007 |       |
| 17 Domes or dome caps.....  |                         |        |                   | 1             |       |                         |      | 3        | 7      |                     |                   | 1                | 2               | 10                  | 1                         |                          |                          |                   |                         |                             |                                     | 12            | 281   |       |
| 18 Draft gear.....  |                         |        |                   | 1             |       |                         |      |          |        |                     |                   | 1                | 2               | 2                   | 1                         |                          |                          |                   |                         |                             |                                     | 178           | 1,453 |       |
| 19 Draw gear.....   |                         |        |                   | 7             | 2     | 4                       |      | 1        | 2      |                     |                   | 2                | 3               | 15                  | 5                         | 1                        | 1                        |                   |                         |                             |                                     | 206           | 1,650 |       |
| 20 Driving boxes, shoes, wedges, pedestals, or braces.....            |                         |        |                   | 4             |       | 1                       |      | 1        | 3      |                     |                   | 3                | 7               | 8                   | 1                         |                          |                          |                   |                         |                             |                                     | 138           | 1,990 |       |
| 21 Fire-box sheets.....   |                         |        |                   | 21            |       | 1                       |      | 4        | 1      |                     |                   | 3                | 3               | 22                  | 2                         |                          |                          |                   |                         |                             |                                     | 72            | 730   |       |
| 22 Flues.....   |                         |        |                   | 3             |       |                         |      |          |        |                     |                   | 4                | 4               | 3                   |                           |                          |                          |                   |                         |                             |                                     | 74            | 464   |       |
| 23 Frames, tail pieces or braces, locomotive.....                     |                         |        | 1                 | 2             | 1     | 1                       |      |          |        |                     |                   | 2                | 2               | 4                   | 2                         |                          |                          |                   |                         |                             |                                     | 135           | 1,354 |       |
| 24 Frames, tender.....  |                         |        |                   | 5             |       |                         |      | 3        |        |                     |                   | 4                | 4               | 4                   |                           |                          |                          |                   |                         |                             |                                     | 39            | 256   |       |
| 25 Gauges or gauge fittings, air.....                                 |                         |        |                   | 1             |       |                         |      | 1        |        |                     |                   | 2                | 2               | 1                   |                           |                          |                          |                   |                         |                             |                                     | 23            | 461   |       |
| 26 Gauges or gauge fittings, steam.....                               |                         |        |                   | 8             |       | 1                       |      | 1        |        |                     |                   | 1                | 1               | 7                   |                           |                          |                          |                   |                         |                             |                                     | 48            | 969   |       |
| 27 Gauge cocks.....   |                         |        |                   | 7             |       | 1                       |      |          |        |                     |                   | 6                | 5               | 15                  | 1                         |                          | 1                        |                   |                         |                             |                                     | 116           | 1,413 |       |
| 28 Grate shakers.....   |                         |        |                   | 7             |       | 1                       |      |          |        |                     |                   | 1                | 1               | 13                  |                           |                          |                          |                   |                         |                             |                                     | 12            | 377   |       |
| 29 Handholds.....   |                         |        |                   | 2             |       |                         |      |          |        |                     |                   | 4                | 3               | 4                   |                           |                          |                          |                   |                         |                             |                                     | 221           | 1,373 |       |
| 30 Injectors, inoperative.....  |                         |        | 6                 | 2             |       | 3                       |      | 2        | 1      |                     |                   | 4                | 3               | 18                  | 2                         |                          |                          | 1                 | 1                       |                             |                                     | 9             | 93    |       |
| 31 Injectors and connections.....                                     |                         |        |                   | 1             |       | 1                       |      | 1        |        |                     |                   |                  |                 | 1                   |                           |                          |                          |                   |                         |                             |                                     | 391           | 5,563 |       |
| 32 Inspections or tests not made as required.....                     |                         |        | 6                 | 30            | 1     | 6                       |      | 3        | 4      |                     |                   | 18               | 9               | 42                  | 6                         | 1                        | 1                        |                   | 1                       |                             |                                     | 590           | 6,623 |       |
| 33 Lateral motion.....  |                         |        |                   | 5             |       | 30                      |      | 8        |        |                     |                   | 15               | 15              | 55                  | 16                        | 4                        |                          |                   |                         |                             |                                     | 77            | 699   |       |
| 34 Lights, cab or classification.....                                 |                         |        |                   | 2             |       |                         |      |          |        |                     |                   |                  | 3               | 7                   |                           |                          |                          |                   |                         |                             |                                     | 14            | 118   |       |
| 35 Lights, headlights.....  |                         |        |                   | 1             |       |                         |      |          |        |                     |                   | 1                | 1               | 5                   | 4                         | 1                        |                          |                   |                         |                             |                                     | 48            | 571   |       |
| 36 Lubricator or shields.....   |                         |        |                   | 1             |       |                         |      |          |        |                     |                   | 4                | 1               | 1                   |                           |                          |                          |                   |                         |                             |                                     | 24            | 500   |       |
| 37 Mud rings.....   |                         |        |                   | 2             |       |                         |      |          |        |                     |                   | 1                | 1               | 9                   | 1                         |                          |                          | 1                 |                         |                             |                                     | 59            | 822   |       |
| 38 Packing nuts.....  |                         |        |                   | 1             |       | 8                       |      |          |        |                     |                   | 3                | 1               | 7                   | 1                         |                          |                          |                   |                         | 2                           |                                     | 143           | 1,265 |       |
| 39 Packing, piston rod and valve stem.....                            |                         |        | 2                 | 2             |       |                         |      | 5        | 2      |                     |                   | 6                | 3               | 7                   | 5                         |                          |                          |                   |                         |                             |                                     | 186           | 1,904 |       |
| 40 Pilot or pilot beams.....  |                         |        |                   | 15            |       | 5                       |      | 1        |        |                     |                   | 3                | 3               | 22                  | 2                         |                          |                          |                   |                         |                             |                                     | 36            | 386   |       |
| 41 Plugs or studs.....  |                         |        |                   | 1             |       |                         |      |          |        |                     |                   | 3                | 1               | 1                   |                           |                          |                          |                   |                         |                             |                                     | 37            | 619   |       |
| 42 Reversing gear.....  |                         |        |                   | 1             |       |                         |      |          |        |                     |                   | 3                | 1               | 1                   |                           |                          |                          |                   |                         | 2                           |                                     | 41            | 967   |       |
| 43 Rods, main or side, crank pins or collars.....                     |                         |        |                   | 2             |       |                         |      |          |        |                     |                   | 3                | 3               | 14                  | 1                         |                          |                          |                   |                         |                             |                                     | 365           | 4,152 |       |
| 44 Safety valves.....   |                         |        |                   | 28            | 1     | 2                       |      | 4        | 4      |                     |                   | 8                | 5               | 34                  | 5                         | 3                        |                          |                   |                         | 1                           |                                     | 14            | 172   |       |
| 45 Sanders.....   |                         |        |                   | 2             | 1     |                         |      |          |        |                     |                   |                  |                 | 7                   |                           |                          |                          |                   |                         |                             |                                     | 42            | 1,031 |       |
| 46 Springs or spring rigging.....                                     |                         |        | 1                 | 25            | 3     |                         |      | 1        |        |                     |                   | 10               | 6               | 59                  | 6                         | 1                        |                          |                   |                         |                             |                                     | 326           | 4,939 |       |
| 47 Squirt hose.....   |                         |        |                   | 2             | 1     |                         |      |          |        |                     |                   |                  | 1               | 6                   |                           |                          |                          |                   |                         |                             |                                     | 42            | 478   |       |
| 48 Staybolts.....   |                         |        |                   | 3             | 1     |                         |      |          |        |                     |                   |                  |                 | 3                   | 1                         |                          |                          |                   |                         |                             |                                     | 49            | 590   |       |
| 49 Staybolts, broken.....   |                         |        |                   | 6             |       |                         |      | 2        |        |                     |                   | 3                | 2               | 20                  | 2                         |                          |                          |                   |                         |                             |                                     | 783           | 1,867 |       |
| 50 Steam pipes.....   |                         |        |                   | 7             | 2     |                         |      | 1        |        |                     |                   | 1                | 1               | 6                   | 1                         |                          |                          |                   |                         |                             |                                     | 36            | 1,020 |       |
| 51 Steam valves.....  |                         |        |                   | 3             |       |                         |      |          |        |                     |                   | 2                | 2               | 5                   |                           |                          |                          |                   |                         |                             |                                     | 33            | 708   |       |
| 52 Steps.....   |                         |        |                   | 9             | 1     | 1                       |      | 1        |        |                     |                   | 2                | 2               | 11                  | 4                         |                          |                          |                   |                         |                             |                                     | 299           | 1,817 |       |
| 53 Tanks or tank valves.....  |                         |        | 2                 | 16            | 1     | 6                       |      | 1        | 2      |                     |                   | 1                | 1               | 6                   | 1                         |                          | 1                        | 1                 |                         |                             |                                     | 122           | 1,941 |       |
| 54 Telltale holes.....  |                         |        |                   | 1             |       |                         |      |          |        |                     |                   | 2                | 2               | 5                   |                           |                          |                          |                   |                         |                             |                                     | 93            | 241   |       |
| 55 Throttle or throttle rigging.....                                  |                         |        |                   | 8             | 1     | 3                       |      |          | 2      |                     |                   | 6                | 2               | 6                   | 2                         |                          |                          |                   |                         |                             |                                     | 120           | 1,859 |       |
| 56 Trucks, engine or trailing.....                                    |                         |        | 2                 | 11            |       |                         |      | 6        | 1      |                     |                   | 3                | 2               | 11                  |                           |                          |                          | 1                 |                         |                             |                                     | 181           | 1,914 |       |
| 57 Trucks, tender.....  |                         |        | 1                 | 7             |       | 2                       |      | 2        | 1      |                     |                   | 5                | 11              | 13                  | 2                         | 3                        | 2                        |                   |                         |                             |                                     | 360           | 2,610 |       |
| 58 Valve motion.....  |                         |        |                   | 1             | 1     |                         |      | 2        |        |                     |                   | 11               | 2               | 16                  | 3                         |                          |                          |                   |                         |                             |                                     | 34            | 1,262 |       |
| 59 Washout plugs.....   |                         |        |                   | 19            |       | 4                       |      | 1        | 1      |                     |                   | 9                | 3               | 20                  |                           |                          |                          |                   |                         |                             |                                     | 83            | 2,211 |       |
| 60 Train control equipment.....                                       |                         |        |                   | 1             |       |                         |      |          |        |                     |                   |                  |                 |                     |                           |                          |                          |                   |                         |                             |                                     |               | 112   | 60    |
| 61 Water glass, fittings or shield.....                               |                         |        |                   | 10            | 3     | 5                       |      | 3        | 1      |                     |                   | 11               | 4               | 16                  | 2                         | 1                        |                          |                   |                         |                             |                                     | 205           | 2,115 |       |
| 62 Wheels.....  |                         |        | 1                 | 11            | 4     | 2                       |      | 2        |        |                     |                   | 6                | 10              | 4                   | 11                        | 1                        |                          |                   |                         |                             |                                     | 245           | 1,609 |       |
| 63 Miscellaneous—Signal appliances, badge plates, brakes (hand).....  |                         |        | 1                 | 10            |       |                         |      | 3        | 1      |                     |                   | 1                | 5               | 5                   | 1                         |                          |                          |                   |                         |                             |                                     | 64            | 1,273 |       |
| Number of defects.....  | 24                      | 37     | 423               | 29            | 103   |                         | 2    | 93       | 59     | 3                   |                   | 236              | 181             | 692                 | 109                       | 32                       | 9                        | 2                 | 21                      | 2                           | 7,954                               | 85,530        |       |       |
| Locomotives reported.....   | 37                      | 10     | 29                | 867           | 159   | 12                      | 16   | 161      | 684    | 18                  | 13                | 276              | 165             | 191                 | 16                        | 18                       | 12                       | 15                | 13                      | 10                          | 2,352                               | 65,940        |       |       |
| Locomotives inspected.....  | 50                      | 15     | 68                | 1,404         | 40    | 53                      | 47   | 196      | 1,213  | 11                  | 9                 | 347              | 278             | 354                 | 28                        | 17                       | 15                       | 6                 | 27                      | 36                          | 3,315                               | 100,415       |       |       |
| Locomotives defective.....  | 8                       |        | 14                | 163           | 7     | 28                      | 2    | 48       | 25     | 2                   |                   | 91               | 58              | 160                 | 19                        | 7                        | 6                        | 2                 | 5                       | 1                           | 1,455                               | 24,051        |       |       |
| Percentage of inspected found defective.....                          | 16                      |        | 21                | 12            | 18    | 53                      | 4    | 24       | 2      | 18                  |                   | 26               | 21              | 48                  | 68                        | 41                       | 40                       | 33                | 19                      | 3                           | 44                                  | 24            |       |       |
| Locomotives ordered out of service.....                               |                         |        |                   | 8             | 2     | 6                       |      |          |        |                     |                   | 5                |                 | 15                  | 4                         |                          |                          |                   |                         |                             | 301                                 | 1,725         |       |       |



