

INTERSTATE COMMERCE COMMISSION

FIFTY-FIRST ANNUAL REPORT
OF THE
DIRECTOR OF LOCOMOTIVE INSPECTION
TO THE
INTERSTATE COMMERCE COMMISSION

FISCAL YEAR ENDED
JUNE 30, 1962



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**ANNUAL REPORT OF THE
DIRECTOR OF LOCOMOTIVE INSPECTION**

DECEMBER 3, 1962.

To the Interstate Commerce Commission:

In compliance with section 7 of the act of February 17, 1911, as amended, the Fifty-first Annual Report of the Director of Locomotive Inspection, covering the work of the fiscal year ended June 30, 1962, is respectfully submitted.

Summaries are given, by railroads, of all accidents which resulted in serious injury or death to one or more persons due to the failure of parts and appurtenances of locomotives, as reported and investigated under section 8 of the Locomotive Inspection Act. Accidents which occurred as a result of failure of parts and appurtenances of locomotives, which resulted in damage to property or equipment but not serious injury or death, are not included in this report. For additional information concerning railroad accidents, see Accident Bulletin, prepared by the Bureau of Transport Economics and Statistics.

Tables contained in the report show the results of inspection of locomotives, the number of accidents and resultant casualties caused by failure of some part or appurtenance of individual locomotives, and the parts and appurtenances which caused accidents and casualties. The tabulated inspection data cover the number of locomotives for which reports were filed, the number inspected, the number and percentage found defective, the number for which written notices for repairs were issued in accordance with section 6 of the act, and the total number of defects found and reported. Tables are included to show, by railroads, all locomotive defects found by district locomotive inspectors. Data for preceding years are given where possible for comparative purposes.

**GENERAL CONDITIONS OF LOCOMOTIVES AND INVESTIGATION OF
ACCIDENTS**

During the year, 9.6 percent of the locomotives inspected by our inspectors were found with defects or errors in inspection that should have been corrected before the locomotives were put into use. Four hundred and eighty-eight locomotives were ordered withheld from service by our inspectors because of the presence of defects that ren-

dered the locomotives immediately unsafe; this is a decrease of 16 locomotives compared with the preceding year.

Results of locomotive inspections made by district locomotive inspectors in performance of duties prescribed under section 6 of the act are shown in the following table:

Reports and inspections—steam locomotives, locomotive units other than steam, and multiple operated electric locomotive units

| | Year ended June 30— | | | | | |
|---|---------------------|--------|---------|---------|--------|--------|
| | 1957 | 1958 | 1959 | 1960 | 1961 | 1962 |
| Number of locomotives for which reports were filed..... | 37,353 | 36,905 | 36,069 | 35,645 | 35,074 | 34,789 |
| Number inspected..... | 100,607 | 95,593 | 105,347 | 108,629 | 98,332 | 94,592 |
| Number found defective..... | 9,887 | 8,394 | 10,912 | 11,126 | 9,399 | 9,050 |
| Percent of inspected found defective..... | 9.8 | 8.8 | 10.4 | 10.2 | 9.6 | 9.6 |
| Number ordered out of service..... | 518 | 395 | 648 | 531 | 504 | 488 |
| Number of defects found..... | 26,385 | 21,532 | 32,330 | 32,830 | 28,308 | 26,032 |

As indicated in the preceding table there was a decrease in the number of locomotives for which carriers were filing reports on June 30, 1962, as compared to the number being filed on June 30, 1961. The decrease resulted from 110 steam locomotives being retired during the year, and a decrease of 175 in the number of other than steam and multiple operated electric locomotive units for which reports were filed during the same period.

During the year, district locomotive inspectors devoted 9,026½ days to regular inspections of locomotives, 374 days making shop inspections to determine that repairs and tests were being made to meet the requirements of the law and rules, 322½ days investigating accidents, 722½ days on special assignment relating to locomotive inspection including investigating complaints regarding possible violations of the law and rules, 439½ days conferring with carrier representatives and officials, and 1,874½ days at their respective headquarters reviewing and processing inspection and repair reports filed by the carriers and performing other office work.

Tables I, II, and III in the appendix show details of defective parts and appurtenances of steam locomotives, locomotive units other than steam, and multiple operated electric locomotive units reported, inspected, found defective, and ordered out of service. If the reported defective parts shown by the tables are considered, those parts which may be expected to require most maintenance will be indicated, and inspection and repair programs may be set up accordingly.

Detailed results of inspections of steam locomotives, locomotive units other than steam, and multiple operated electric locomotive units are shown, by carriers, in tables IV, V, and VI in the appendix.

INVESTIGATION OF ACCIDENTS

Accidents reported under requirements of the law and Commission rules were investigated and appropriate action taken to prevent recurrence so far as possible. All district inspectors were advised of details and causes of unusual accidents to better assist them in their safety promotional contacts. The dissemination of such information combined with the active enforcement of the requirements has been effective in promotion of locomotive safety and has resulted in a decreasing accident trend.

Sixty-seven accidents occurred in connection with all types of locomotives in which 73 persons were injured. Compared with the preceding year there was a decrease of 4 accidents and a decrease of 4 injuries.

Of the 67 accidents, 8 were caused by the defective condition of floors, steps, and passageways of diesel-electric locomotives. Four of the 8 resulted from accumulation of oil on walking surfaces of the locomotives, a decrease of 10 compared with the preceding year.

Fifteen accidents were caused by defective condition of cab seats, compared with 7 in the previous year.

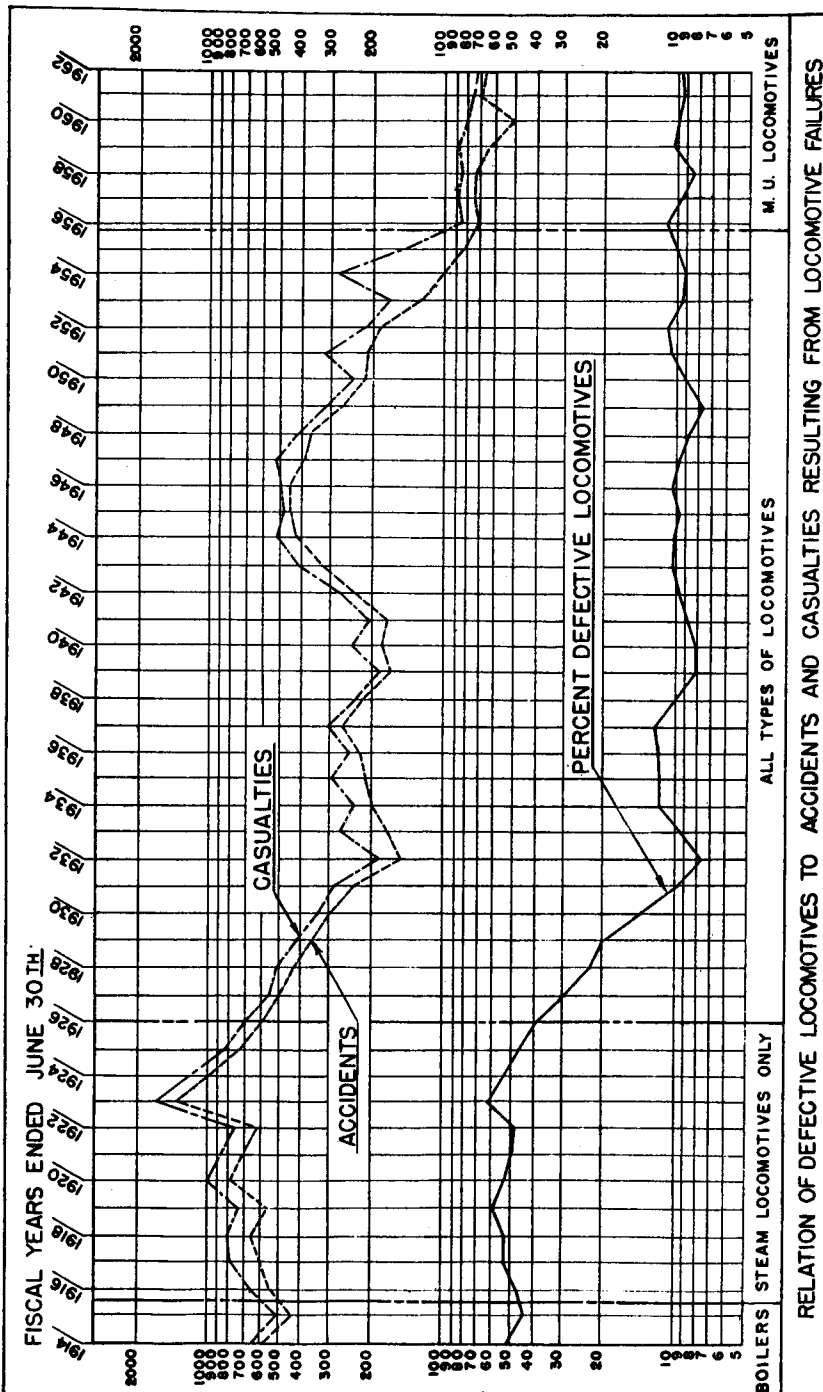
The following table provides details of accidents and casualties during the past 6 years caused by failure of some part or appurtenance of locomotives, and indicates increases or decreases in accidents and casualties:

Accidents and casualties caused by failure of some part or appurtenance of steam locomotives, locomotive units other than steam, and multiple operated electric locomotive units

| | Year ended June 30— | | | | | |
|--|---------------------|------|------|------|-------|------|
| | 1957 | 1958 | 1959 | 1960 | 1961 | 1962 |
| Number of accidents..... | 75 | 72 | 66 | 50 | 71 | 67 |
| Percent increase or decrease from previous year..... | 12.7 | 4.0 | 8.3 | 24.2 | 142.0 | 5.6 |
| Number of persons killed..... | 0 | 0 | 0 | 0 | 0 | 0 |
| Percent increase or decrease from previous year..... | 100 | 0 | 0 | 0 | 0 | 0 |
| Number of persons injured..... | 90 | 86 | 90 | 81 | 77 | 73 |
| Percent increase or decrease from previous year..... | 113.9 | 4.4 | 14.7 | 10.0 | 4.9 | 5.2 |

¹ Increase.

The chart on page 4 shows the relation between the percentage of defective locomotives and the number of accidents and casualties which have resulted from defective parts and appurtenances and illustrates the effect of operating locomotives in defective condition.



RELATION OF DEFECTIVE LOCOMOTIVES TO ACCIDENTS AND CASUALTIES RESULTING FROM LOCOMOTIVE FAILURES

Data is given for the past 5 years on the distribution of casualties among railroad personnel by occupations and nonemployees in the following table:

Number of casualties classified according to occupation—steam locomotives, locomotive units other than steam, and multiple operated electric locomotive units

| | Year ended June 30— | | | | | | | | | |
|----------------------------|---------------------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
| | 1958 | | 1959 | | 1960 | | 1961 | | 1962 | |
| | Killed | Injured | Killed | Injured | Killed | Injured | Killed | Injured | Killed | Injured |
| Members of train crews: | | | | | | | | | | |
| Engineers..... | | 21 | | 22 | | 17 | | 14 | | 23 |
| Firemen..... | | 36 | | 31 | | 21 | | 44 | | 37 |
| Brakemen..... | | 11 | | 10 | | 11 | | 11 | | 8 |
| Conductors..... | | 5 | | 4 | | 2 | | 3 | | 2 |
| Switchmen..... | | | | | | 1 | | 2 | | 1 |
| Maintenance employees..... | | | | 1 | | 2 | | | | 2 |
| Other employees..... | | 1 | | 1 | | 6 | | 3 | | |
| Nonemployees..... | | 12 | | 21 | | 21 | | | | |
| Total..... | 0 | 86 | 0 | 90 | 0 | 81 | 0 | 77 | 0 | 73 |

The following table illustrates the parts or appurtenances of locomotives that caused the accidents which occurred during the past fiscal year:

Accidents and casualties resulting from failure of steam locomotives, tenders, locomotives other than steam, multiple operated electric locomotive units and their appurtenances

| Part or appurtenance which caused accident | Year ended June 30, 1962 | | |
|---|--------------------------|----------|-----------|
| | Accidents | Killed | Injured |
| Air compressors..... | 0 | 0 | 0 |
| Air reservoirs, fittings, safety and check valves..... | 0 | 0 | 0 |
| Boiler: | | | |
| Explosions..... | 0 | 0 | 0 |
| Fuel explosions in firebox..... | 0 | 0 | 0 |
| Steam valves, piping and blowers..... | 2 | 0 | 2 |
| Brakes and brake rigging..... | 3 | 0 | 3 |
| Cab: | | | |
| Doors and windows..... | 8 | 0 | 8 |
| Seats..... | 15 | 0 | 15 |
| Control equipment—mechanical, electrical, pneumatic or electro-pneumatic..... | 0 | 0 | 0 |
| Couplers, draft and drawgear..... | 1 | 0 | 1 |
| Electrical equipment: | | | |
| Insulation, short circuits, or electrical flashes..... | 8 | 0 | 8 |
| Fans and shutters..... | 2 | 0 | 2 |
| Fires due to liquid fuel or debris..... | 0 | 0 | 0 |
| Floors, steps and passageways..... | 8 | 0 | 8 |
| Internal-combustion engines and turbines: | | | |
| Crankcase or air-box explosions..... | 13 | 0 | 18 |
| Exhaust and cooling systems..... | 5 | 0 | 6 |
| Fuel injectors and connections..... | 0 | 0 | 0 |
| Fuel injectors..... | 2 | 0 | 2 |
| Miscellaneous..... | | | |
| Total..... | 67 | 0 | 73 |

SPECIFICATIONS AND ALTERATION REPORTS

In compliance with rule 54 of the Rules and Instructions for Inspection and Testing of Steam Locomotives, 5 specifications and 2 alteration reports for steam locomotives were submitted by carriers. Under rules 328 and 329 of the Rules and Instructions for Inspection and Testing of Locomotives Other Than Steam, 634 specifications and 1,242 alteration reports for locomotive units, and 68 specifications and 159 alteration reports for heating boilers mounted in locomotive units were submitted by carriers. As required by rule 449 for Multiple Operated Electric Locomotive Units Designed to Carry Freight and/or Passenger Traffic, 36 specifications and 2 alteration reports were submitted by carriers. The information contained in these specifications and reports was analyzed and corrective measures were taken when discrepancies were found.

INSPECTION AND REPAIR REPORTS

Inspection and repair reports filed with district inspectors during the year totaled 3,669 under rules 51 and 53 of the Rules and Instructions for Inspection and Testing of Steam Locomotives; 384,377 under rules 331 and 332 of the Rules and Instructions for Inspection and Testing of Locomotives Other Than Steam; and 31,455 under rule 451 for Multiple Operated Electric Locomotive Units Designed to Carry Freight and/or Passenger Traffic.

EXTENSION OF TIME FOR REMOVAL OF FLUES

Under rule 10 of the Rules and Instructions for Inspection and Testing of Steam Locomotives, 28 applications for extension of time for removal of flues were submitted. After investigation, extensions were granted for the full period requested in 21 applications. One extension was denied, and a shorter extension than requested was granted for one locomotive because of conditions disclosed by our investigations. Four applications were canceled for various reasons and one application is pending. An extension was granted for the full period requested in the one application pending on July 1, 1961.

SUITS FOR PENALTIES

During the year, 14 cases involving 22 counts for alleged violations of the Locomotive Inspection Act and rules prescribed thereunder were transmitted to United States attorneys for prosecution. Judgment was confessed in 12 cases on 20 counts and penalties totaling

\$5,000 were assessed. Nine cases, involving 11 counts, were pending in the district courts at the end of the year. The following is a brief summary of the cases:

CASES INSTITUTED AND DISPOSED OF DURING THE YEAR

U.S. v. Tennessee Central Railway Company, consisting of two causes of action, involved the use of a diesel-electric locomotive unit when the driving brakes were cut out in violation of rule 201(c). Judgment was confessed on both counts and a penalty of \$500 was assessed.

U.S. v. Texas and New Orleans Railroad Company, consisting of three causes of action, involved the use of three diesel-electric locomotive units when the air brakes were cut out in violation of rule 201(c). Judgment was confessed on all three counts and a penalty of \$750 was assessed.

U.S. v. St. Louis Southwestern Railway Company, consisting of three causes of action, involved the use of three diesel-electric locomotive units when the air brakes were cut out in violation of rule 201(c). Judgment was confessed on all three counts and a penalty of \$750 was assessed.

U.S. v. St. Louis Southwestern Railway Company, consisting of two causes of action, involved the use of two diesel-electric locomotive units when the slipping or sliding wheel alarms were cut out in violation of rule 201(d). Judgment was confessed on both counts and a penalty of \$500 was assessed.

U.S. v. The Kansas City Southern Railway Company, consisting of one cause of action, involved the failure to immediately report by wire to the Director of Locomotive Inspection, at his office in Washington, D.C., an accident resulting in serious injury to an employee as a result of the failure of the cab seat of a locomotive, as required by rule 335. Judgment was confessed and a penalty of \$250 was assessed.

OTHER CASES DISPOSED OF DURING THE YEAR

U.S. v. The New York Central Railroad Company, consisting of three causes of action, involved the use of three diesel-electric locomotives when a monthly inspection had not been made as required by rule 331(a). Judgment was confessed on all three counts and a penalty of \$750 was assessed.

U.S. v. Wabash Railroad Company, consisting of one cause of action, involved the failure to immediately report by wire to the Director of Locomotive Inspection, at his office in Washington, D.C., an accident resulting in serious injury to an employee as a result of a diesel-electric locomotive crankcase explosion, as required by rule 335. Judgment was confessed and a penalty of \$250 was assessed.

U.S. v. The Pennsylvania Railroad Company, consisting of one cause of action, involved the use of a diesel-electric locomotive unit when the oil cooler was leaking oil in violation of rules 203(a) and 262(b). Judgment was confessed and a penalty of \$250 was assessed.

U.S. v. The Baltimore and Ohio Rail Road Company, consisting of one cause of action, involved the use of a diesel-electric locomotive unit when the rotair valve was defective, in violation of rule 204(a). Judgment was confessed and a penalty of \$250 was assessed.

U.S. v. The Pennsylvania Railroad Company, consisting of one cause of action, involved the use of one diesel-electric locomotive unit when the main reservoir had not been given the prescribed hydrostatic and hammer tests, as required by rule 206 (a) and (b). Judgment was confessed and a penalty of \$250 was assessed.

U.S. v. The New York Central Railroad Company, consisting of one cause of action, involved the use of a diesel-electric locomotive unit when the main reservoir had not been given the prescribed hydrostatic and hammer tests as required by rule 206 (a) and (b). Judgment was confessed and a penalty of \$250 was assessed.

U.S. v. Missouri Pacific Railroad Company, consisting of one cause of action, involved failure to immediately report by wire to the Director of Locomotive Inspection at his office in Washington, D.C., an accident resulting in serious injury to an employee when a locomotive cab seat failed, as required by rule 335. Judgment was confessed and a penalty of \$250 was assessed.

CASES PENDING AT THE CLOSE OF THE YEAR

U.S. v. Northern Pacific Railway Company, consisting of two causes of action, involves the failure to immediately report to the Director of Locomotive Inspection, at his office in Washington, D.C., by wire, an accident resulting in serious injury to an employee when said employee came in contact with an electrically energized part or appurtenance of a diesel-electric locomotive unit, as required by rule 335, and also involves the failure to immediately confirm by mail its wire reporting said accident, as required by rule 335.

U.S. v. Claremont and Concord Railway Company, Inc., consisting of two causes of action, involves the failure to file a specification card, size 8 x 10½ inches, Form No. 4, for a steam locomotive, in the office of the Director of Locomotive Inspection, as required by rule 54, and when a duplicate of the report of the inspection of the interior and exterior of the boiler of the locomotive had not been filed with the inspector in charge, as required by rules 9 and 15.

U.S. v. Missouri Pacific Railroad Company, consisting of one cause of action, involves the use of a diesel-electric locomotive unit when the remote control shut off valve was defective, in violation of rules 203(a) and 321(a).

U.S. v. Georgia Railroad, Lessee Organization, consisting of one cause of action, involves the failure to immediately report to the Director of Locomotive Inspection, at his office in Washington, D.C., by wire, an accident resulting in serious injury to two employees as a result of a diesel-electric locomotive crankcase explosion, as required by rule 335.

U.S. v. Georgia Railroad, Lessee Organization, consisting of one cause of action, involves the failure to preserve intact the part or parts of a diesel-electric locomotive affected by an accident, as required by section 32 of Title 45 of the United States Code.

U.S. v. The New York Central Railroad Company, consisting of one cause of action, involves the failure to immediately report to the Director of Locomotive Inspection, at his office in Washington, D.C., by wire, an accident resulting in serious injury to an employee when said employee came in contact with an electrically energized part or appurtenance of a diesel-electric locomotive unit, as required by rule 335.

U.S. v. New York, Susquehanna & Western Railroad Company, consisting of one cause of action, involves the use of a diesel-electric unit on which an out-of-service report had been filed when an inspection and report had not been made before said locomotive was again returned to service, as required by rule 331(d).

U.S. v. The New York Central Railroad Company, consisting of one cause of action, involves the use of a diesel-electric locomotive unit when the rear truck brakes were cut out and in a defective condition, in violation of rules 203(a) and 204(a).

U.S. v. The Pittsburgh and Lake Erie Railroad Company, consisting of one cause of action, involves the failure to immediately report to the Director of Locomotive Inspection, at his office in Washington, D.C., by wire, an accident resulting in serious injury to an employee when a locomotive cab seat failed, as required by rule 335.

APPEALS

No formal appeals from decisions of district inspectors were filed by the carriers.

JOHN A. HALL,
Director of Locomotive Inspection.

ACCIDENTS AND CASUALTIES RESULTING FROM THE FAILURE OF STEAM LOCOMOTIVES, TENDERS, LOCOMOTIVES OTHER THAN STEAM, MULTIPLE OPERATED ELECTRIC LOCOMOTIVE UNITS AND THEIR APPURTENANCES, DURING THE FISCAL YEAR ENDED JUNE 30, 1962, BY ROADS

[A double star ** indicates accidents not properly reported, as required by rules 55, 162, 335, and 454.]

ATLANTIC COAST LINE RAILROAD:

January 26, 1962, unit 513, Selma, N.C. Bell crank loose on shutter operating over shaft; one employee injured.
One accident; one employee injured.

BALTIMORE AND OHIO RAILROAD:

October 16, 1961, unit 4590, M & K Junction, W. Va. Hatch closure sheet became dislodged from its position and struck employee; one employee injured.
November 8, 1961, unit 4621, Niles Junction, Ohio. Crankcase explosion caused by defective piston; one employee injured.
January 28, 1962, unit 9209, Brunswick, Md. Crankcase explosion due to ineffective thrust bearing and fuel oil dilution of lube oil; one employee injured.
May 13, 1962, unit 4463, Salem, Ill. Employee slipped on oil on engineroom floor; one employee injured.
Four accidents; four employees injured.

BOSTON AND MAINE RAILROAD:

December 4, 1961, unit 6209, Rockport, Mass. Employee dropped cab seat backrest due to loose and missing screws; one employee injured.
December 18, 1961, unit 6213, Concord, Mass. Failure of cab seat caused by broken bolt at mounting bracket attaching seat frame to bulkhead; one employee injured.
January 12, 1962, unit 4227-A, Deerfield, Mass. Flashover in main generator resulting in fire; one employee injured.
Three accidents; three employees injured.

CENTRAL RAILROAD OF NEW JERSEY:

March 28, 1962, unit 71, Valley, N.J. Crankcase explosion caused by overheated piston; one employee injured.
One accident; one employee injured.

CHESAPEAKE AND OHIO RAILWAY:

December 22, 1961, unit 8011, North Mountain, Va. Flashover at main generator resulting in engineroom fire; one employee injured.
One accident; one employee injured.

CHICAGO AND NORTH WESTERN RAILWAY:

February 25, 1962, unit 1242, Sioux City, Iowa. Cab seat cushion and backrest became separated from seat pedestal causing employee to fall backwards to the floor; one employee injured.
May 18, 1962, unit 89, Sioux City, Iowa. Cab seat was not secured to seat pedestal, causing employee to fall to cab floor; one employee injured.
Two accidents; two employees injured.

CHICAGO, BURLINGTON AND QUINCY RAILROAD:

August 23, 1961, unit 9214, Ottawa, Ill. Crankcase explosion resulting from the use of combustible cleaning material; one employee injured.
January 18, 1962, unit 128-D, near Camp Point, Ill. Electrical flash in high voltage cabinet; one employee injured.
Two accidents; two employees injured.

CHICAGO, ROCK ISLAND AND PACIFIC RAILROAD:

July 30, 1961, unit 1222, LaSalle, Ill. Cab door stuck due to defective door and door latch assembly causing employee to slip; one employee injured.

October 16, 1961, unit 622, east of Seneca, Ill. Defective guard over rotating equipment resulted in insufficient operating clearance; one employee injured.

October 19, 1961, unit 628, between Palo and Shellsburg, Iowa. Employee slipped on leaves on passageway floor; one employee injured.

Three accidents; three employees injured.

ERIE-LACKAWANNA RAILROAD:

February 8, 1962, unit 546, Taylor, Pa. Crankcase explosion caused by overheated connecting rod bearings; one employee injured.

April 27, 1962, unit 858, Hammond, Ind. Employee sustained injury to his right side when cab door handle became detached from the door causing him to fall against the locomotive car body; one employee injured.

Two accidents; two employees injured.

FLORIDA EAST COAST RAILWAY:

March 13, 1962, unit 502, Wabasso, Fla. Crankcase explosion due to failure of main bearings; two employees injured.

One accident; two employees injured.

GEORGIA RAILROAD:

**February 3, 1962, unit 1025, Thomson, Ga. Crankcase explosion caused by overheated main bearings; two employees injured.

One accident; two employees injured.

ILLINOIS CENTRAL RAILROAD:

December 1, 1961, unit 9229, North Forreston, Ill. Failure of cab seat due to defective weld; one employee injured.

One accident; one employee injured.

KANSAS CITY SOUTHERN RAILWAY:

**October 21, 1961, unit 50-D, near DeQuincy, La. Cab seat became detached from pedestal bracket and fell to floor; one employee injured.

One accident; one employee injured.

LOUISVILLE AND NASHVILLE RAILROAD:

March 30, 1962, unit 811, Howard, Ky. Crankcase explosion caused by overheated crankshaft main bearings; two employees injured.

One accident; two employees injured.

MISSOURI-KANSAS-TEXAS RAILROAD:

August 7, 1961, unit 22, Dallas, Tex. Employee fell and injured his knee when his heel caught on stick used to keep door open. Door opening device was missing; one employee injured.

August 15, 1961, unit 65-D, Denton, Tex. Employee slipped on oil on floor; one employee injured.

October 13, 1961, unit 80-A, Spanish Lake, Mo. Insufficient clearance around cab door latch handle; one employee injured.

December 8, 1961, unit 6, Denison, Tex. Employees inhaled exhaust fumes from diesel engine; two employees injured.

May 17, 1962, unit 89-A, Parsons, Kans. Crankcase explosion caused by overheated piston; one employee injured.

Five accidents; six employees injured.

MISSOURI PACIFIC RAILROAD:

January 30, 1962, unit 8021, Palestine, Tex. Employee injured when forced to escape through another unit as steam filled the boiler compartment due to failure of steam heat line union; one employee injured.

February 3, 1962, unit 9119, St. Louis, Mo. Upper window pane fell from rear cab door striking employee; one employee injured.

Two accidents; two employees injured.

NEW YORK CENTRAL RAILROAD:

July 24, 1961, unit 9613, Ecorse, Mich. Cab door handle became disconnected causing the employee to lose his balance and fall; one employee injured.

September 5, 1961, unit 849, Buffalo, N.Y. Defective cab seat adjusting mechanism; one employee injured.

November 19, 1961, unit 8511, Syracuse, N.Y. Engine exhaust gases entering cab; one employee injured.

January 6, 1962, unit 5803, Detroit, Mich. Crankcase explosion caused by defective engine blower; two employees injured.

February 17, 1962, unit 1760, Carthage, N.Y. Left cab seat backrest broke away from seat and fell to floor due to failure of seat back pivot pins; one employee injured.

** March 1, 1962, unit 8807, Charleston, W. Va. Collision resulting from the operation of a locomotive with ineffective brakes; one employee injured.

** March 3, 1962, unit 9108, Cleveland, Ohio. Employee received electrical arc burns when installing cooling fan fuse; one employee injured.

May 31, 1962, unit 865, Allston, Mass. Employee tripped on defective cab door threshold; one employee injured.

June 6, 1962, unit 8503, West Springfield, Mass. Collision resulting from the operation of a locomotive with ineffective brakes; one employee injured.

June 22, 1962, unit 282, Ossining, N.Y. Employee fell to cab floor due to improperly secured cab seat; one employee injured.

June 24, 1962, unit 3345, Liverpool, N.Y. Flashover in main generator; one employee injured.

Eleven accidents; twelve employees injured.

NEW YORK, NEW HAVEN AND HARTFORD RAILROAD:

July 17, 1961, units 0784 and 0767, en route Boston, Mass., to New Haven, Conn. Gas inhalation resulting from defective engine exhaust manifolds; one employee injured.

January 15, 1962, unit 519, between Chelmsford and Lowell, Mass. Failure of cab seat caused by missing and defective swivel plate clamps; one employee injured.

Two accidents; two employees injured.

NORTHERN PACIFIC RAILWAY:

** August 27, 1961, unit 6003-C, Perham, Minn. Flash in high voltage cabinet; one employee injured.

February 26, 1962, unit 241, Spring Gulch, Mont. Employee sustained leg injuries when he slipped and fell while removing driver brake shoe; one employee injured.

Two accidents; two employees injured.

PENNSYLVANIA RAILROAD:

July 23, 1961, unit MU-153, Wayne, Pa. Failure of cab seat due to defective hinge; one employee injured.

July 27, 1961, unit 9378, Shadyside, Ohio. Employee received first and second degree burns when engine cooling water hose ruptured; one employee injured.

August 14, 1961, unit 9485-A, Columbus, Ohio. Cab seat backrest became detached due to defective hinge brackets; one employee injured.

September 14, 1961, unit 4923, Pennsylvania Station, N.Y. Defective steam line globe valve; one employee injured.

September 18, 1961, unit 9629-A, near New Florence, Pa. Crankcase explosion caused by defective piston; one employee injured.

December 15, 1961, unit 4883, South Elizabeth, N.J. Employee sustained electrical flash burns while attempting to change blower motor circuit fuses; one employee injured.

December 26, 1961, unit 9269, Jersey City, N.J. Crankcase explosion due to failure of connecting rod bearings; two employees injured.

January 22, 1962, unit 9477-A, Bowerston, Ohio. Crankcase explosion caused by lack of lubrication of No. 1 piston resulting in incomplete combustion; one employee injured.

May 18, 1962, unit 5866-A, Mill Creek, Pa. Employee suffered injury to his hand while attempting to remove defective cooling fan hatch coverplate; one employee injured.

Nine accidents; ten employees injured.

PITTSBURGH AND LAKE ERIE RAILROAD:

** April 7, 1962, unit 8659, East Youngstown, Ohio. Failure of cab seat due to defective weld; one employee injured.

May 11, 1962, unit 8714, Campbell, Ohio. Employee slipped on worn nonskid running board while closing hood door; one employee injured.

Two accidents; two employees injured.

SOUTHERN RAILWAY:

March 2, 1962, unit 4172, Leadvale, Tenn. Cab seat cushion and backrest became separated from seat pedestal causing employee to fall backwards to the floor; one employee injured.

One accident; one employee injured.

SOUTHERN PACIFIC COMPANY:

August 20, 1961, unit 6420, Tecolote, N. Mex. Flash in high voltage cabinet when employee attempted to manually close dynamic brake contactors; one employee injured.

August 23, 1961, unit 5728, Emigrant Gap, Calif. Inoperative cab door latch necessitated entrance through another unit resulting in fall and injury to employee; one employee injured.

September 12, 1961, unit 6025, Rocklin, Calif. Employee was overcome by smoke and fumes while extinguishing fire; one employee injured.

October 14, 1961, unit 6162, El Paso, Tex. Employee slipped on rear door threshold; one employee injured.

Four accidents; four employees injured.

TEXAS AND PACIFIC RAILWAY:

December 19, 1961, unit 2009, Big Spring, Tex. Employee slipped on oil on passageway floor; one employee injured.

December 26, 1961, unit 1530-B, Wickett, Tex. Employee slipped on oil on passageway floor; one employee injured.

December 29, 1961, unit 2000, Fort Worth, Tex. Employee fell alighting from pilot step when his pants cuff caught on defective coupler pin lifting lever; one employee injured.

Three accidents; three employees injured.

UNION PACIFIC RAILROAD:

November 18, 1961, unit 414, Cheyenne, Wyo. Employee slipped on a piece of chipped ice on cab floor; one employee injured.

May 13, 1962, unit 55, between Oliver and Dix, Nebr. Failure of cab seat backrest causing employee to fall backwards to the floor; one employee injured.

Two accidents; two employees injured.

TABLE I.—Number of steam locomotives reported, inspected, found defective, and ordered out of service

| | Year ended June 30— | | | | | |
|---|---------------------|-------|-------|------|------|------|
| | 1957 | 1958 | 1959 | 1960 | 1961 | 1962 |
| Parts defective, inoperative or missing, or in violation of the rules | | | | | | |
| 1 Air compressors..... | 83 | 13 | 11 | 4 | 2 | |
| 2 Arch tubes..... | 1 | 1 | 2 | | | |
| 3 Ashpans and mechanism..... | 4 | | | | | |
| 4 Axles..... | | | | | | |
| 5 Blow-off cocks..... | 30 | 2 | | | | |
| 6 Boiler checks..... | 26 | 9 | 3 | 3 | 2 | |
| 7 Boiler shell..... | 20 | 3 | 1 | | | |
| 8 Brake equipment..... | 256 | 85 | 35 | 19 | 16 | 7 |
| 9 Cabs, cab windows, and curtains..... | 101 | 21 | 3 | 3 | 2 | |
| 10 Cab aprons and decks..... | 22 | 7 | 3 | | 2 | 1 |
| 11 Cab cards..... | 18 | 6 | 4 | 2 | 3 | 8 |
| 12 Coupling and uncoupling devices..... | 8 | 3 | 6 | 1 | | |
| 13 Crossheads, guides, pistons, and piston rods..... | 107 | 22 | 11 | 6 | 3 | |
| 14 Crown bolts..... | 2 | | | | | |
| 15 Cylinders, saddles, and steam chests..... | 157 | 17 | 7 | 2 | | |
| 16 Cylinder cocks and rigging..... | 54 | 11 | 1 | 3 | 1 | 1 |
| 17 Domes and dome caps..... | 13 | | | 1 | | 1 |
| 18 Draft gear..... | 45 | 17 | 8 | 6 | 2 | 1 |
| 19 Draw gear..... | 23 | 6 | 1 | 1 | 1 | 1 |
| 20 Driving boxes, shoes, wedges, pedestals, and braces..... | 72 | 21 | 6 | 1 | 1 | |
| 21 Firebox sheets..... | 23 | | 1 | | | |
| 22 Flues..... | 12 | | 2 | 1 | 3 | |
| 23 Frames, tail pieces, and braces, locomotive..... | 22 | 5 | 3 | | 2 | 1 |
| 24 Frames, tender..... | 4 | | | | | |
| 25 Gages and gage fittings, air..... | 25 | 8 | 3 | 1 | | 1 |
| 26 Gages and gage fittings, steam..... | 28 | 4 | 1 | 3 | 2 | |
| 27 Gage cocks..... | 43 | 15 | 5 | 2 | 5 | |
| 28 Grate shakers and fire doors..... | 34 | 6 | 1 | 1 | | |
| 29 Handholds..... | 33 | 8 | 12 | 5 | 5 | 3 |
| 30 Injectors, inoperative..... | 4 | 1 | 1 | 1 | 1 | |
| 31 Injectors and connections..... | 198 | 37 | 15 | 9 | 4 | 2 |
| 32 Inspections and tests not made as required..... | 24 | 12 | 10 | | 8 | 8 |
| 33 Lateral motion..... | 24 | 10 | 2 | 1 | | 2 |
| 34 Lights, cab and classification..... | 7 | 4 | 1 | 1 | 1 | |
| 35 Lights, headlight..... | 18 | 5 | 3 | 1 | | |
| 36 Lubricators and shields..... | 16 | 3 | 1 | | | |
| 37 Mud rings..... | 6 | 3 | 3 | | | 1 |
| 38 Packing nuts..... | 62 | 14 | 10 | 4 | 1 | |
| 39 Packing, piston rod and valve stem..... | 74 | 5 | 8 | | | |
| 40 Pilots and pilot beams..... | 8 | 2 | 2 | 1 | | 1 |
| 41 Plugs and studs..... | 16 | | | | 1 | |
| 42 Reversing gear..... | 39 | 11 | 5 | 1 | | |
| 43 Rods, main and side, crankpins, and collars..... | 108 | 22 | 11 | 6 | 2 | |
| 44 Safety valves..... | 9 | 1 | | 1 | | |
| 45 Sanders..... | 72 | 9 | 3 | 7 | 3 | 2 |
| 46 Springs and spring rigging..... | 212 | 32 | 25 | 4 | 2 | |
| 47 Squirt hose..... | 14 | | | | | |
| 48 Staybolts..... | 20 | 6 | 3 | 1 | 6 | 3 |
| 49 Staybolts, broken..... | 12 | 9 | 19 | 8 | | 1 |
| 50 Steam pipes..... | 27 | 5 | 4 | 2 | 1 | |
| 51 Steam valves..... | 7 | 2 | 3 | 1 | | 1 |
| 52 Steps..... | 42 | 20 | 6 | 6 | 3 | 2 |
| 53 Tanks and tank valves..... | 99 | 16 | 5 | 3 | | |
| 54 Telltale holes..... | 6 | 1 | | | | |
| 55 Throttle and throttle rigging..... | 48 | 9 | 6 | 5 | | |
| 56 Trucks, engine and trailing..... | 42 | 5 | 2 | 2 | | 1 |
| 57 Trucks, tender..... | 51 | 10 | 11 | 7 | | 1 |
| 58 Valve motion..... | 55 | 7 | 4 | | | |
| 59 Washout plugs..... | 39 | 1 | 2 | 7 | | 1 |
| 60 Stokers..... | 33 | 3 | 2 | | | |
| 61 Water glasses, fittings, and shields..... | 75 | 20 | 9 | 3 | | |
| 62 Wheels..... | 39 | 7 | 13 | 1 | 1 | 1 |
| 63 Miscellaneous—Signal appliances, badge plates, brakes (hand)..... | 68 | 9 | 6 | 2 | 1 | |
| Number of defects..... | 2,840 | 592 | 325 | 149 | 89 | 52 |
| Locomotives reported..... | 3,868 | 2,422 | 1,490 | 788 | 367 | 257 |
| Locomotives inspected..... | 5,983 | 2,324 | 967 | 356 | 243 | 195 |
| Locomotives defective..... | 737 | 159 | 77 | 38 | 27 | 14 |
| Percentage of inspected found defective..... | 12.3 | 6.8 | 8.0 | 10.7 | 11.1 | 7.2 |
| Locomotives ordered out of service..... | 99 | 22 | 16 | 3 | 4 | 3 |

TABLE II.—Number of locomotive units other than steam reported, inspected, found defective, and ordered out of service

| | Year ended June 30— | | | | | |
|--|---------------------|--------|---------|---------|--------|--------|
| | 1957 | 1958 | 1959 | 1960 | 1961 | 1962 |
| Parts defective, inoperative or missing, or in violation of the rules | | | | | | |
| 1 Air compressors..... | 328 | 232 | 337 | 290 | 208 | 203 |
| 2 Axles, truck and driving..... | 34 | 59 | 100 | 126 | 91 | 71 |
| 3 Batteries..... | 35 | 15 | 16 | 21 | 25 | 29 |
| 4 Boilers..... | 208 | 172 | 313 | 284 | 213 | 190 |
| 5 Brake equipment..... | 2,906 | 2,469 | 3,477 | 3,617 | 3,066 | 2,658 |
| 6 Cabs and cab windows..... | 1,030 | 962 | 1,419 | 1,407 | 840 | 801 |
| 7 Cab cards..... | 187 | 145 | 231 | 274 | 181 | 166 |
| 8 Cab floors, aprons, and deck plates..... | 1,940 | 2,020 | 2,768 | 2,461 | 2,235 | 2,276 |
| 9 Clutches..... | | 2 | 3 | 6 | 4 | 4 |
| 10 Controllers, relays, circuit breakers, magnet valves and switch groups..... | 360 | 348 | 613 | 704 | 565 | 504 |
| 11 Coupling and uncoupling devices..... | 116 | 132 | 172 | 131 | 144 | 97 |
| 12 Current collecting apparatus..... | 6 | 3 | 4 | 11 | 5 | 6 |
| 13 Draft gear..... | 253 | 357 | 489 | 420 | 402 | 349 |
| 14 Draw gear..... | 121 | 128 | 173 | 160 | 108 | 123 |
| 15 Driving boxes, shoes, and wedges..... | 154 | 135 | 144 | 223 | 148 | 169 |
| 16 Frames or frame braces..... | 30 | 17 | 23 | 19 | 55 | 81 |
| 17 Fuel system..... | 2,431 | 2,307 | 3,343 | 2,702 | 2,193 | 2,184 |
| 18 Gages or fittings, air..... | 289 | 166 | 277 | 254 | 163 | 142 |
| 19 Gages or fittings, steam..... | 36 | 58 | 41 | 37 | 28 | 28 |
| 20 Gears and pinions..... | 10 | 19 | 35 | 25 | 156 | 505 |
| 21 Handholds..... | 208 | 217 | 230 | 244 | 210 | 181 |
| 22 Inspections and tests not made as required..... | 703 | 623 | 682 | 1,063 | 847 | 685 |
| 23 Insulation and safety devices..... | 133 | 228 | 210 | 209 | 163 | 179 |
| 24 Internal-combustion engine defects, parts and appurtenances..... | 5,174 | 3,817 | 6,555 | 7,184 | 6,124 | 5,880 |
| 25 Jack shafts..... | | 1 | 1 | | 1 | 1 |
| 26 Jumpers and cable connectors..... | 442 | 306 | 355 | 350 | 434 | 346 |
| 27 Lateral motion, wheels..... | 35 | 46 | 25 | 49 | 28 | 63 |
| 28 Lights, cab and classification..... | 260 | 321 | 480 | 404 | 269 | 151 |
| 29 Lights, headlight..... | 35 | 32 | 46 | 34 | 18 | 19 |
| 30 Meters, volt and ampere..... | 34 | 24 | 31 | 30 | 22 | 18 |
| 31 Motors and generators..... | 671 | 472 | 787 | 821 | 759 | 780 |
| 32 Pilots and pilot beams..... | 61 | 41 | 75 | 64 | 54 | 43 |
| 33 Plugs and studs..... | | | | | 1 | |
| 34 Quills..... | 6 | 32 | 46 | 24 | 5 | 17 |
| 35 Rods, main, side, and drive shafts..... | 5 | 1 | 1 | 5 | | 2 |
| 36 Sanders..... | 2,023 | 2,310 | 3,613 | 3,602 | 3,131 | 2,351 |
| 37 Springs and spring rigging, driving and truck..... | 370 | 380 | 542 | 512 | 415 | 397 |
| 38 Staybolts, broken or defective..... | | | | | | |
| 39 Steam pipes..... | 164 | 141 | 182 | 131 | 93 | 113 |
| 40 Steps, footboards, et cetera..... | 827 | 292 | 408 | 372 | 307 | 256 |
| 41 Switches, hand-operated, and fuses..... | 16 | 16 | 11 | 17 | 16 | 16 |
| 42 Transformers, resistors, and rheostats..... | 10 | 2 | 4 | 4 | 6 | 3 |
| 43 Trucks..... | 552 | 510 | 823 | 765 | 692 | 657 |
| 44 Water tanks..... | 19 | 31 | 32 | 30 | 25 | 22 |
| 45 Water glasses, fittings, and shields..... | 5 | 4 | 2 | 1 | 1 | 3 |
| 46 Warning signal appliances..... | 154 | 124 | 179 | 142 | 148 | 127 |
| 47 Wheels..... | 256 | 189 | 382 | 798 | 805 | 755 |
| 48 Miscellaneous..... | 736 | 762 | 1,491 | 1,400 | 1,210 | 997 |
| Number of defects..... | 23,373 | 20,668 | 31,171 | 31,427 | 26,614 | 24,648 |
| Locomotive units reported..... | 30,740 | 31,755 | 31,862 | 32,186 | 32,074 | 31,917 |
| Locomotive units inspected..... | 93,187 | 91,522 | 102,149 | 105,702 | 95,689 | 91,493 |
| Locomotive units defective..... | 9,031 | 8,067 | 10,473 | 10,638 | 9,000 | 8,702 |
| Percentage of inspected found defective..... | 9.7 | 8.8 | 10.3 | 10.1 | 9.4 | 9.5 |
| Locomotive units ordered out of service..... | 417 | 372 | 628 | 517 | 469 | 467 |

TABLE III.—Number of multiple operated electric locomotive units reported, inspected, found defective, and ordered out of service

| Parts defective, inoperative or missing, or in violation of the rules | Year ended June 30— | | | | | |
|--|---------------------|-------|-------|-------|-------|-------|
| | 1957 | 1958 | 1959 | 1960 | 1961 | 1962 |
| 1 Air compressors..... | 4 | 2 | 1 | 4 | — | 2 |
| 2 Axles, truck and driving..... | — | 8 | 87 | 53 | 40 | 34 |
| 4 Batteries..... | — | — | — | — | — | — |
| 5 Boilers..... | — | — | — | — | — | — |
| 6 Brake equipment..... | 18 | 23 | 188 | 491 | 951 | 835 |
| 8 Cabs and cab windows..... | — | 2 | 25 | 26 | 11 | 12 |
| 9 Cab cards..... | 8 | 13 | 5 | 8 | 9 | 4 |
| 10 Cab floors, aprons, and deck plates..... | — | 1 | 2 | — | 1 | — |
| 11 Clutches..... | — | — | — | — | — | — |
| 12 Controllers, relays, circuit breakers, magnet valves and switch groups..... | — | 1 | 2 | 9 | 8 | 16 |
| 13 Coupling and uncoupling devices..... | — | — | — | — | 1 | 2 |
| 14 Current collecting apparatus..... | 20 | 25 | 65 | 115 | 151 | 99 |
| 16 Draft gear..... | — | 1 | 15 | 11 | 22 | 9 |
| 17 Draw gear..... | — | 9 | 2 | 20 | 16 | 16 |
| 18 Driving boxes, shoes, and wedges..... | — | 2 | 3 | 3 | 3 | 5 |
| 20 Frames or frame braces..... | — | — | — | — | — | — |
| 22 Fuel system..... | — | — | — | — | — | — |
| 23 Gages or fittings, air..... | — | 1 | 8 | 5 | 4 | 1 |
| 24 Gages or fittings, steam..... | — | — | — | — | — | — |
| 25 Gears and pinions..... | — | — | — | — | — | — |
| 26 Handholds..... | 7 | 45 | 46 | 61 | 14 | 11 |
| 28 Inspections and tests not made as required..... | 46 | 22 | 30 | 52 | 61 | 55 |
| 29 Insulation and safety devices..... | 1 | — | 23 | 87 | 78 | 29 |
| 30 Internal-combustion engine defects, parts and appurtenances..... | — | — | — | — | — | — |
| 32 Jack shafts..... | — | — | — | — | — | — |
| 33 Jumpers and cable connectors..... | 5 | 3 | 10 | 16 | 13 | 10 |
| 35 Lateral motion, wheels..... | — | — | — | — | — | — |
| 36 Lights, cab and classification..... | 1 | — | 24 | 42 | 23 | 16 |
| 37 Lights, headlight..... | — | — | 4 | 29 | 5 | 2 |
| 39 Meters, volt and ampere..... | — | — | — | — | — | — |
| 40 Motors and generators..... | 3 | — | 31 | 23 | 15 | 21 |
| 42 Pilots and pilot beams..... | — | — | 2 | 1 | — | — |
| 43 Plugs and studs..... | — | — | — | — | — | — |
| 44 Quills..... | — | — | — | — | — | — |
| 46 Rods, main, side, and drive shafts..... | — | — | — | — | — | — |
| 48 Sanders..... | — | — | — | 1 | — | — |
| 49 Springs and spring rigging, driving and truck..... | 25 | 10 | 8 | 17 | 8 | 28 |
| 51 Staybolts, broken or defective..... | — | — | — | — | — | — |
| 53 Steam pipes..... | — | — | — | — | — | — |
| 54 Steps, footboards, et cetera..... | — | — | — | — | — | — |
| 55 Switches, hand-operated, and fuses..... | 1 | — | 1 | 3 | 5 | 20 |
| 56 Transformers, resistors, and rheostats..... | — | — | 5 | 14 | 19 | 7 |
| 57 Trucks..... | 23 | 98 | 222 | 152 | 98 | 66 |
| 59 Water tanks..... | — | — | — | — | — | — |
| 60 Water glasses, fittings, and shields..... | — | — | — | — | — | — |
| 61 Warning signal appliances..... | 1 | — | 1 | — | — | — |
| 62 Wheels..... | 2 | — | 3 | 5 | 37 | 23 |
| 63 Miscellaneous..... | 7 | 6 | 17 | 1 | 3 | 5 |
| Number of defects..... | 172 | 272 | 834 | 1,254 | 1,605 | 1,332 |
| Locomotive units reported..... | 2,745 | 2,728 | 2,717 | 2,671 | 2,633 | 2,615 |
| Locomotive units inspected..... | 1,437 | 1,747 | 2,231 | 2,571 | 2,400 | 2,904 |
| Locomotive units defective..... | 119 | 168 | 362 | 450 | 372 | 334 |
| Percentage of inspected found defective..... | 8.3 | 9.6 | 16.2 | 17.5 | 15.5 | 11.6 |
| Locomotive units ordered out of service..... | 2 | 1 | 4 | 11 | 31 | 18 |

TABLE IV.—Number of steam locomotives reported, inspected, found defective, and ordered out of service, et cetera—by carriers

| Parts defective, inoperative or missing, or in violation of the rules | Denver & Rio Grande Western | Duluth, Missabe & Iron Range | Lake Superior & Ishpeming | Union Pacific | Roads with less than 10 locomotives | Total |
|---|-----------------------------|------------------------------|---------------------------|---------------|-------------------------------------|-------|
| 1 Air compressors..... | — | — | — | — | — | — |
| 2 Arch tubes..... | — | — | — | — | — | — |
| 3 Ashpans and mechanism..... | — | — | — | — | — | — |
| 4 Axles..... | — | — | — | — | — | — |
| 5 Blow-off cocks..... | — | — | — | — | — | — |
| 6 Boiler checks..... | — | — | — | — | — | — |
| 7 Boiler shell..... | — | — | — | — | — | — |
| 8 Brake equipment..... | — | — | — | — | 7 | 7 |
| 9 Cabs, cab windows, and curtains..... | — | — | — | — | — | — |
| 10 Cab aprons and decks..... | — | — | — | — | 1 | 1 |
| 11 Cab cards..... | — | — | — | — | 8 | 8 |
| 12 Coupling and uncoupling devices..... | — | — | — | — | — | — |
| 13 Crossheads, guides, pistons, and piston rods..... | — | — | — | — | — | — |
| 14 Crown bolts..... | — | — | — | — | — | — |
| 15 Cylinders, saddles, and steam chests..... | — | — | — | — | — | — |
| 16 Cylinder cocks and rigging..... | — | — | — | — | 1 | 1 |
| 17 Domes and dome caps..... | — | — | — | — | 1 | 1 |
| 18 Draft gear..... | — | — | — | — | 1 | 1 |
| 19 Draw gear..... | — | — | — | — | 1 | 1 |
| 20 Driving boxes, shoes, wedges, pedestals, and braces..... | — | — | — | — | — | — |
| 21 Firebox sheets..... | — | — | — | — | — | — |
| 22 Flues..... | — | — | — | — | — | — |
| 23 Frames, tail pieces, and braces, locomotive..... | — | — | — | — | 1 | 1 |
| 24 Frames, tender..... | — | — | — | — | — | — |
| 25 Gages and gage fittings, air..... | — | — | — | — | 1 | 1 |
| 26 Gages and gage fittings, steam..... | — | — | — | — | — | — |
| 27 Gage cocks..... | — | — | — | — | — | — |
| 28 Grate shakers and fire doors..... | — | — | — | — | — | — |
| 29 Handholds..... | — | — | — | — | 3 | 3 |
| 30 Injectors, inoperative..... | — | — | — | — | — | — |
| 31 Injectors and connections..... | — | — | — | — | 2 | 2 |
| 32 Inspections and tests not made as required..... | — | — | — | — | 8 | 8 |
| 33 Lateral motion..... | — | — | — | — | 2 | 2 |
| 34 Lights, cab and classification..... | — | — | — | — | — | — |
| 35 Lights, headlight..... | — | — | — | — | — | — |
| 36 Lubricators and sbields..... | — | — | — | — | — | — |
| 37 Mud rings..... | — | — | — | — | 1 | 1 |
| 38 Packing nuts..... | — | — | — | — | — | — |
| 39 Packing, piston rod and valve stem..... | — | — | — | — | — | — |
| 40 Pilots and pilot beam..... | — | — | — | — | 1 | 1 |
| 41 Plugs and studs..... | — | — | — | — | — | — |
| 42 Reversing gear..... | — | — | — | — | — | — |
| 43 Rods, main and side, crankpins, and collars..... | — | — | — | — | — | — |
| 44 Safety valves..... | — | — | — | — | — | — |
| 45 Sanders..... | — | — | — | — | 2 | 2 |
| 46 Springs and spring rigging..... | — | — | — | — | — | — |
| 47 Squirt hose..... | — | — | — | — | — | — |
| 48 Staybolts..... | — | — | — | — | 3 | 3 |
| 49 Staybolts, broken..... | — | — | — | — | 1 | 1 |
| 50 Steam pipes..... | — | — | — | — | — | — |
| 51 Steam valves..... | — | — | — | — | 1 | 1 |
| 52 Steps..... | — | — | — | — | 2 | 2 |
| 53 Tanks and tank valves..... | — | — | — | — | — | — |
| 54 Telltale holes..... | — | — | — | — | — | — |
| 55 Throttle and throttle rigging..... | — | — | — | — | — | — |
| 56 Trucks, engine and trailer..... | — | — | — | — | 1 | 1 |
| 57 Trucks, tender..... | — | — | — | — | 1 | 1 |
| 58 Valve motion..... | — | — | — | — | — | — |
| 59 Washout plugs..... | — | — | — | — | 1 | 1 |
| 60 Stokers..... | — | — | — | — | — | — |
| 61 Water glasses, fittings, and shields..... | — | — | — | — | — | — |
| 62 Wheels..... | — | — | — | — | 1 | 1 |
| 63 Miscellaneous—Signal appliances, badge plates, brakes (hand)..... | — | — | — | — | — | — |
| Number of defects..... | — | — | — | — | 52 | 52 |
| Locomotives reported..... | 22 | 23 | 11 | 30 | 171 | 257 |
| Locomotives inspected..... | 47 | — | 3 | — | 145 | 195 |
| Locomotives defective..... | — | — | — | — | 14 | 14 |
| Percentage of inspected found defective..... | — | — | — | — | 9.7 | 7.2 |
| Locomotives ordered out of service..... | — | — | — | — | 3 | 3 |

TABLE V.—Number of locomotive units other than steam reported, inspected,

| Parts defective, inoperative or missing, or in violation of the rules | Chicago, Rock Island & Pacific | | | | | | | | | | | | |
|---|----------------------------------|---------------------------|-------------|---------------------|--------------------|------------------------|-----------------|-------------------|-----------------------------|-----------------------------|------------------|---------------------------|-----|
| | Chicago South Shore & South Bend | Cincinnati Union Terminal | Clinchfield | Colorado & Southern | Colorado & Wyoming | Conemaugh & Black Lick | Cuyahoga Valley | Delaware & Hudson | Denver & Rio Grande Western | Detroit & Toledo Shore Line | Detroit Terminal | Detroit, Toledo & Ironton | |
| 1 Air compressors | 7 | | | | | | | 4 | | | | | |
| 2 Axles, truck and driving | 6 | | | | | | | | | | | | |
| 3 Batteries | 3 | | | | | | | | | | | | |
| 4 Boilers | 20 | | | | | | | | | | | | |
| 5 Brake equipment | 232 | | 6 | | | | | 20 | 4 | | | 3 | |
| 6 Cabs and cab windows | 48 | | | 1 | | | | 14 | 1 | | | | |
| 7 Cab cards | 7 | | | | | | | 1 | 1 | | | | |
| 8 Cab floors, aprons and deck plates | 114 | | | | | | | 36 | 2 | | | | |
| 9 Clutches | | | | | | | | | | | | | |
| 10 Controllers, relays, circuit breakers, magnet valves and switch groups | 20 | | | | | | | | | | | | |
| 11 Current collecting apparatus | 4 | | | | | | | | 1 | 1 | | | |
| 12 Draft gear | 6 | | | | | | | 6 | | | | | |
| 13 Draw gear | 19 | | | | | | | 3 | | | | | |
| 14 Driving boxes, shoes and wedges | 6 | | | | | | | | | | | | |
| 15 Frames or frame braces | | | | | | | | | | | | | |
| 16 Fuel system | 84 | | 3 | | | | | 47 | 2 | 1 | | | |
| 17 Gages or fittings, air | 7 | | 1 | | | | | | | | | | |
| 18 Gages or fittings, steam | 5 | | | | | | | | | | | | |
| 19 Gears and pinions | 39 | | | | | | | 2 | | | | | |
| 20 Handholds | 2 | | | | | | | 1 | | 1 | 2 | | |
| 21 Inspections and tests not made as required | 34 | | | | | | 2 | 10 | 1 | | | | |
| 22 Insulation and safety devices | 7 | | | | | | | | | | | | |
| 23 Internal-combustion engine defects, parts and appurtenances | 182 | | | 3 | | | | 280 | 8 | 5 | 3 | | |
| 24 Jack shafts | | | | | | | | | | | | | |
| 25 Jumpers and cable connectors | 13 | | | | | | | 1 | 6 | | | | |
| 26 Lateral motion, wheels | 7 | | | | | | | | | | | | |
| 27 Lights, cab and classification | 3 | | | | | | | | | | | | |
| 28 Lights, headlight | 2 | | | | | | | | | | | | |
| 29 Meters, volt and ampere | 21 | | | | | | | | | | | | |
| 30 Motors and generators | 2 | | | | | | | 5 | | | | | |
| 31 Pilots and pilot beams | | | | | | | | | | | | | |
| 32 Plugs and studs | 2 | | | | | | | | | | | | |
| 33 Quills | | | | | | | | | | | | | |
| 34 Rods, main, side, and drive shafts | | | | | | | | | | | | | |
| 35 Sanders | 213 | | | 3 | | | | 6 | 7 | | 2 | | |
| 36 Springs and spring rigging, driving and truck | 21 | | | 1 | | | | 1 | | 2 | 1 | | |
| 37 Staybolts, broken or defective | | | | | | | | | | | | | |
| 38 Steam pipes | 2 | | | | | | | 1 | | | | | |
| 39 Steps, footboards, et cetera | 10 | | | | | | | 5 | | | | 2 | |
| 40 Switches, hand-operated, and fuses | 2 | | | | | | | | | | | | |
| 41 Transformers, resistors and rheostats | | | | | | | | | | | | | |
| 42 Trucks | 37 | | | | | | | 4 | 1 | | | | |
| 43 Water tanks | | | | | | | | | | | | | |
| 44 Water glasses, fittings and shields | | | | | | | | | | | | | |
| 45 Warning signal appliances | 7 | | | | | | | 1 | | | | | |
| 46 Wheels | 31 | | | 1 | | | | | | 1 | 2 | | |
| 47 Miscellaneous | 49 | | | | | | | 32 | | | | | |
| Number of defects | 1,275 | | | 11 | 8 | | | 2 | 478 | 41 | 14 | 12 | |
| Locomotive units reported | 548 | 17 | 12 | 66 | 58 | 20 | 28 | 10 | 161 | 257 | 16 | 14 | 44 |
| Locomotive units inspected | 2,284 | 42 | 4 | 156 | 542 | 75 | 37 | 20 | 825 | 1,472 | 84 | 31 | 132 |
| Locomotive units defective | 443 | | | 7 | 4 | | | 1 | 109 | 23 | 1 | 2 | 3 |
| Percentage of inspected found defective | 19.4 | | | 4.5 | 0.7 | | | 5.0 | 13.2 | 1.6 | 1.2 | 6.5 | 2.3 |
| Locomotive units ordered out of service | 30 | | | 1 | | | | 1 | 1 | | 1 | | |

1 Atchison, Topeka & Santa Fe.

found defective, and ordered out of service, et cetera—by carriers—Continued

| Parts defective, inoperative or missing, or in violation of the rules | Chicago, Rock Island & Pacific | | | | | | | | | | | | |
|---|----------------------------------|---------------------------|-------------|---------------------|--------------------|------------------------|-----------------|-------------------|-----------------------------|-----------------------------|------------------|---------------------------|-----|
| | Chicago South Shore & South Bend | Cincinnati Union Terminal | Clinchfield | Colorado & Southern | Colorado & Wyoming | Conemaugh & Black Lick | Cuyahoga Valley | Delaware & Hudson | Denver & Rio Grande Western | Detroit & Toledo Shore Line | Detroit Terminal | Detroit, Toledo & Ironton | |
| 1 Air compressors | 7 | | | | | | | 4 | | | | | |
| 2 Axles, truck and driving | 6 | | | | | | | | | | | | |
| 3 Batteries | 3 | | | | | | | | | | | | |
| 4 Boilers | 20 | | | | | | | | | | | | |
| 5 Brake equipment | 232 | | 6 | | | | | 20 | 4 | | | 3 | |
| 6 Cabs and cab windows | 48 | | | 1 | | | | 14 | 1 | | | | |
| 7 Cab cards | 7 | | | | | | | 1 | 1 | | | | |
| 8 Cab floors, aprons and deck plates | 114 | | | | | | | 36 | 2 | | | | |
| 9 Clutches | | | | | | | | | | | | | |
| 10 Controllers, relays, circuit breakers, magnet valves and switch groups | 20 | | | | | | | | | | | | |
| 11 Current collecting apparatus | 4 | | | | | | | | 1 | 1 | | | |
| 12 Draft gear | 6 | | | | | | | 6 | | | | | |
| 13 Draw gear | 19 | | | | | | | 3 | | | | | |
| 14 Driving boxes, shoes and wedges | 6 | | | | | | | | | | | | |
| 15 Frames or frame braces | | | | | | | | | | | | | |
| 16 Fuel system | 84 | | 3 | | | | | 47 | 2 | 1 | | | |
| 17 Gages or fittings, air | 7 | | 1 | | | | | | | | | | |
| 18 Gages or fittings, steam | 5 | | | | | | | | | | | | |
| 19 Gears and pinions | 39 | | | | | | | 2 | | | | | |
| 20 Handholds | 2 | | | | | | | 1 | | 1 | 2 | | |
| 21 Inspections and tests not made as required | 34 | | | | | | 2 | 10 | 1 | | | | |
| 22 Insulation and safety devices | 7 | | | | | | | | | | | | |
| 23 Internal-combustion engine defects, parts and appurtenances | 182 | | | 3 | | | | 280 | 8 | 5 | 3 | | |
| 24 Jack shafts | | | | | | | | | | | | | |
| 25 Jumpers and cable connectors | 13 | | | | | | | 1 | 6 | | | | |
| 26 Lateral motion, wheels | 7 | | | | | | | | | | | | |
| 27 Lights, cab and classification | 3 | | | | | | | | | | | | |
| 28 Lights, headlight | 2 | | | | | | | | | | | | |
| 29 Meters, volt and ampere | 21 | | | | | | | | | | | | |
| 30 Motors and generators | 2 | | | | | | | 5 | | | | | |
| 31 Pilots and pilot beams | | | | | | | | | | | | | |
| 32 Plugs and studs | 2 | | | | | | | | | | | | |
| 33 Quills | | | | | | | | | | | | | |
| 34 Rods, main, side, and drive shafts | | | | | | | | | | | | | |
| 35 Sanders | 213 | | | 3 | | | | 6 | 7 | | 2 | | |
| 36 Springs and spring rigging, driving and truck | 21 | | | 1 | | | | 1 | | 2 | 1 | | |
| 37 Staybolts, broken or defective | | | | | | | | | | | | | |
| 38 Steam pipes | 2 | | | | | | | 1 | | | | | |
| 39 Steps, footboards, et cetera | 10 | | | | | | | 5 | | | | 2 | |
| 40 Switches, hand-operated, and fuses | 2 | | | | | | | | | | | | |
| 41 Transformers, resistors and rheostats | | | | | | | | | | | | | |
| 42 Trucks | 37 | | | | | | | 4 | 1 | | | | |
| 43 Water tanks | | | | | | | | | | | | | |
| 44 Water glasses, fittings and shields | | | | | | | | | | | | | |
| 45 Warning signal appliances | 7 | | | | | | | 1 | | | | | |
| 46 Wheels | 31 | | | 1 | | | | | | 1 | 2 | | |
| 47 Miscellaneous | 49 | | | | | | | 32 | | | | | |
| Number of defects | 1,275 | | | 11 | 8 | | | 2 | 478 | 41 | 14 | 12 | |
| Locomotive units reported | 548 | 17 | 12 | 66 | 58 | 20 | 28 | 10 | 161 | 257 | 16 | 14 | 44 |
| Locomotive units inspected | 2,284 | 42 | 4 | 156 | 542 | 75 | 37 | 20 | 825 | 1,472 | 84 | 31 | 132 |
| Locomotive units defective | 443 | | | 7 | 4 | | | 1 | 109 | 23 | 1 | 2 | 3 |
| Percentage of inspected found defective | 19.4 | | | 4.5 | 0.7 | | | 5.0 | 13.2 | 1.6 | 1.2 | 6.5 | 2.3 |
| Locomotive units ordered out of service | 30 | | | 1 | | | | 1 | 1 | | 1 | | |

1 Atchison, Topeka & Santa Fe.

TABLE V.—Number of locomotive units other than steam reported, inspected, found defective, and ordered out of service, et cetera—by carriers—Continued

| | Toronto, Hamilton & Buffalo | Union Pacific | Union Railroad | Wabash | Washington Terminal | Western Maryland | Western Pacific | Youngstown & Northern | Roads with less than 10 locomotive units | Total |
|----|-----------------------------|---------------|----------------|--------|---------------------|------------------|-----------------|-----------------------|--|--------|
| 1 | | | | | | | | | 2 | 203 |
| 2 | | 3 | | | | | | | | 71 |
| 4 | | 4 | | | | | | | | 29 |
| 4 | | | | 2 | | | | | | 190 |
| 5 | | 5 | | 6 | | | | | | 2,658 |
| 6 | | 70 | 36 | | | 4 | | 46 | | 2,801 |
| 8 | | 12 | 14 | | | | | 18 | | 166 |
| 9 | | 10 | | | | | 3 | 9 | | 2,276 |
| 10 | | 103 | 24 | | | | 8 | 11 | | 4 |
| 11 | | | | | | | | 1 | | 504 |
| 12 | | | | | | | | 1 | | 97 |
| 13 | | 7 | 1 | 10 | | | 1 | 12 | | 6 |
| 14 | | 3 | | 5 | | | | | | 349 |
| 14 | | | | | | | | 6 | | 123 |
| 16 | | 1 | | 1 | | | | 3 | | 169 |
| 17 | | 1 | | | | | | 1 | | 81 |
| 18 | | 5 | | | | | | 2 | | 2,184 |
| 20 | | 4 | | 4 | | | 1 | 21 | | 142 |
| 22 | | 46 | 16 | | | | 5 | 1 | | 28 |
| 23 | | 4 | | | | | | 2 | | 505 |
| 24 | | 2 | | | | | | 3 | | 181 |
| 25 | | 4 | 8 | | | | | 2 | | 685 |
| 26 | | 4 | | 1 | | | | 3 | | 179 |
| 28 | | 15 | | 3 | | | 3 | 36 | | 5,880 |
| 29 | | 4 | | 5 | | | | 3 | | 1 |
| 30 | | | | | | | | 34 | | 346 |
| 32 | | 251 | 69 | | | | 55 | 1 | | 63 |
| 33 | | | | | | | | 1 | | 151 |
| 35 | | 24 | | 1 | | | 1 | 2 | | 19 |
| 36 | | 1 | | 4 | | | | 2 | | 18 |
| 36 | | | | | | | | 1 | | 780 |
| 37 | | | | | | | | 3 | | 43 |
| 39 | | 1 | | 1 | | | | | | 17 |
| 40 | | 15 | | 3 | | | 1 | 3 | | 2 |
| 42 | | 3 | | | | | | | | 1 |
| 43 | | | | | | | | | | 2 |
| 44 | | | | | | | | | | 17 |
| 46 | | | | | | | | 1 | | 2 |
| 48 | | 98 | 30 | | | | 3 | 28 | | 2,351 |
| 49 | | 10 | | 1 | | | 2 | 6 | | 397 |
| 51 | | | | | | | | | | 113 |
| 53 | | 3 | | 7 | | | | 7 | | 256 |
| 54 | | 3 | | | | | | | | 16 |
| 55 | | | | | | | | | | 3 |
| 56 | | | | | | | | | | 16 |
| 57 | | 10 | | 7 | | | | 12 | | 657 |
| 59 | | | | 3 | | | | | | 22 |
| 60 | | | | | | | | | | 3 |
| 61 | | 1 | | 2 | | | | 4 | | 127 |
| 62 | | 7 | | | | | 6 | 21 | | 755 |
| 63 | | 26 | | 5 | | | 5 | 8 | | 997 |
| | | 760 | 1 | 270 | | | 98 | 306 | | 24,648 |
| | | 10 | 1,371 | 130 | 312 | 25 | 126 | 175 | 12 | 1,392 |
| | | 2 | 5,356 | 48 | 920 | 15 | 306 | 623 | 11 | 2,107 |
| | | 344 | 1 | 102 | | | 42 | 115 | | 8,702 |
| | | 6.4 | 2.1 | 11.1 | | | 6.7 | 5.5 | | 9.5 |
| | | 7 | | 4 | | | | 21 | | 467 |

TABLE VI.—Number of multiple operated electric locomotive units reported, inspected, found defective, and ordered out of service, et cetera—by carriers

| | Baltimore & Ohio | Chicago, North Shore & Milwaukee | Chicago, South Shore & South Bend | Erie-Lackawanna | Illinois Central | Long Island | New York Central | New York, New Haven & Hartford | Pennsylvania | Reading | Total |
|----|------------------|----------------------------------|-----------------------------------|-----------------|------------------|-------------|------------------|--------------------------------|--------------|---------|-------|
| 1 | | | | | | | | | | | 2 |
| 2 | | | | | | 2 | | | | | 6 |
| 4 | | | | | | | 1 | | | | 27 |
| 4 | | | | | | | | | | | 80 |
| 5 | | | | | | | | | | | 1 |
| 6 | | | | | 3 | | | | | | 27 |
| 8 | | | | | | | 713 | 12 | | | 6 |
| 9 | | | | | | | | 1 | | | 1 |
| 10 | | | | | | | | 1 | | | 2 |
| 11 | | | | | | | | | | | 1 |
| 12 | | | | | | | | | | | 15 |
| 13 | | | | | | | | 1 | | | 1 |
| 14 | | | | | | | | | | | 27 |
| 16 | | | | | | | 70 | 2 | | | 1 |
| 17 | | | | | | | | 6 | | | 1 |
| 18 | | | | | | | | 1 | | | 2 |
| 20 | | | | | 1 | | | | | | 6 |
| 22 | | | | | | | | | | | 1 |
| 23 | | | | | | | | | | | 1 |
| 24 | | | | | | | | | | | 1 |
| 25 | | | | | | | | | | | 2 |
| 26 | | | | | | | | | | | 7 |
| 28 | | | | | | | | | | | 24 |
| 29 | | | | | 5 | | | 7 | 19 | | 12 |
| 30 | | | | | | | | | | | 17 |
| 32 | | | | | | | | | | | 6 |
| 33 | | | | | | | | 1 | 3 | | 1 |
| 35 | | | | | | | | | | | 1 |
| 36 | | | | | | | 1 | 15 | | | 1 |
| 37 | | | | | | | | | | | 1 |
| 39 | | | | | | | | | | | 1 |
| 40 | | | | | | | | | | | 4 |
| 42 | | | | | | | | | | | 1 |
| 43 | | | | | | | | | | | 2 |
| 44 | | | | | | | | | | | 1 |
| 46 | | | | | | | | | | | 2 |
| 48 | | | | | | | | | | | 4 |
| 49 | | | | | | | | | | | 4 |
| 51 | | | | | | | | | | | 1 |
| 53 | | | | | | | | | | | 11 |
| 54 | | | | | | | | | | | 2 |
| 55 | | | | | | | | | | | 5 |
| 56 | | | | | | | | | | | 2 |
| 57 | | | | | | | | | | | 7 |
| 59 | | | | | | | | | | | 2 |
| 60 | | | | | | | | | | | 7 |
| 61 | | | | | | | | | | | 1 |
| 62 | | | | | | | | | | | 1 |
| 63 | | | | | | | | | | | 3 |
| | | | | | 21 | | 108 | 914 | 43 | 246 | 1,332 |
| | 48 | 138 | 65 | 267 | 280 | 660 | 352 | 221 | 448 | 136 | 2,615 |
| | 23 | 12 | 34 | 417 | 108 | 684 | 665 | 323 | 543 | 95 | 2,904 |
| | | | | 14 | | 44 | 163 | 22 | 91 | | 334 |
| | | | | 3.4 | | 6.4 | 24.5 | 6.8 | 16.8 | | 11.5 |
| | | | | 2 | | 1 | 2 | 5 | 8 | | 18 |