

SOUTHERN PACIFIC COMPANY.

— — — — —
TIME TABLE No. 1,

== FOR THE ==

HOUSTON DIVISION

— — — — —
TO TAKE EFFECT WEDNESDAY, FEB. 6th, 1889, AT 12:01 A. M.

— — — — —
Standard Time: Central or 90th Meridian.

— — — — —
For the Government and Information of Employes only, and not for public use or information. The Company reserves the right to vary therefrom as circumstances may require.

— — — — —
A. C. HUTCHINSON,
General Manager.

J. RUTTSCHNITT,
Assistant Manager.

W. G. VAN VLECK,
General Agent.

J. J. McQUEENEY,
Superintendent.

HOUSTON DIVISION.--HOUSTON TO GLIDDEN.

WEST.							STATIONS	EAST.								
THIRD CLASS.	SECOND CLASS.				FIRST CLASS.		DISTANCE FROM HOUSTON		DISTANCE FROM GLIDDEN	FIRST CLASS.		SECOND CLASS.				THIRD CLASS.
Freight No. 118. Daily Except Sunday.	Mixed No. 110. Daily Except Sunday.	Freight No. 26. Daily.	Freight No. 24. Daily.	Freight No. 22. Daily.	Passenger No. 20. Daily.	Passenger No. 18. Daily.				Passenger No. 17. Daily.	Passenger No. 19. Daily.	Freight No. 21. Daily.	Freight No. 23. Daily.	Freight No. 25. Daily.	Mixed No. 109. Daily Except Sunday.	Freight No. 117. Daily Except Sunday.
					11 25 am	7 20 pm	362.08	†...New Orleans..	451.08	6 55 am	3 10 pm					
7 00 am		11 30 pm	7 30 pm	9 35 pm	2 30 am	9 45 am	.0	362.08 †...Houston....	89.0	4 20 pm	11 55 pm	6 30 pm	10 00 am	2 45 am	5 30 pm	
					2 35	9 50	1.0	1.0 †H. & T. C Depot	88.0	4 15	11 50					
					2 50	10 15	2.0	1.0 H. & T. C Cross'g	87.0	3 50	11 35					
7 08		11 38	7 40	9 45	s 3 00	s 10 25	2.0	0.0 †...Chaney June..	87.0	s 3 40	s 11 25	6 20	9 52	2 37	5 20	
7 20		11 50 pm	7 51	10 00	3 07	f 10 32	4.7	2 7 ...Tewena.....	84.3	f 3 34	11 19	6 08	9 41	2 25	5 06	
							4.8	0.1 T. W. N. G. Cro.	84.2							
7 41		12 19 am	8 16	10 28	f 3 18	s 10 43	10.0	5.2 †...Stella.....	79.0	s 3 22	f 11 08	5 30	9 19	2 02	4 38	
8 05		12 46	8 43	10 55	3 30	f 10 55	15.5	5.5 ...Lotus.....	73.5	f 3 10	10 55	4 55	8 55	1 39	4 09	
8 30		1 15	9 10	11 15	3 42	s 11 07	21.0	4.9 †...Stafford..w	68.0	s 2 58	10 43	4 20	8 30	1 15	3 40	
							25.9	1.6 ...Cunningham..	63.1	f 2 50						
9 09		1 50	9 40	11 35	s 3 56	s 11 21	27.5	6.5 †...Walker....	61.5	s 2 44	10 29	3 40	7 58	12 49	3 05	
9 48		2 23	10 13	11 56 pm	s 4 13	s 11 37	34.0	3.3 †...Richmond..	55.0	s 2 28	s 10 13	3 00	7 25	12 22	2 28	
10 10		2 43	10 35	12 10 am	s 4 23	s 11 50	37.3	0.4 †...Rosenberg.w	51.7	s 2 15	s 10 03	2 39	7 05	12 10 am	1 45	
10 30					4 28	s 11 55 am	37.7	6.3 G., C. & S. F. Cr.	51.3	s 2 10	s 9 58				1 15	
							44.0	4.5 ...Randon.....	45.0	f 1 53	9 40	1 53	6 33	11 15 pm	12 45	
11 01		3 15	11 15	12 37	4 46	f 12 15 pm	48.5	4.5 ...Navili.....	40.5	1 44	9 30	1 20	6 12	10 50	12 25 pm	
11 20		3 36	11 35	12 55	4 56	12 25	53.0	4.5 †...East Bernardw	36.0	s 1 31	f 9 18	12 38	5 48	10 25	11 44 am	
11 44 am		4 03	11 55 pm	1 15	f 5 09	s 12 38	58.0	5.0 ...Nottawa....	31.0	1 19	9 06	12 10 pm	5 22	10 00	11 22	
12 10 pm		4 29	12 18 am	1 37	5 22	12 51	63.0	5.0 †...New Phila..	26.0	s 1 05	f 8 53	11 41 am	4 53	9 31	11 00	
1 05		4 53	12 42	1 58	f 5 35	s 1 05	69.8	6.8 S.A. & A.P. Cross'g	19.2							
							70.0	0.2 †...Eagle Lake.w	19.0	s 12 47	s 8 36	11 03	4 20	8 55	10 30	
2 15		5 28	1 15	2 28	s 5 54	s 1 23	76.0	6.0 ...Ramsey.....	13.0	f 12 30	8 20	10 29	3 54	8 20	9 35	
2 50		5 57	1 45	2 54	6 11	f 1 40	82.5	6.5 ...Alleyton....	6.5	s 12 12	f 8 03	9 51	3 22	7 40	8 40	
3 17		6 30	2 15	3 22	f 6 30	s 1 58	83.5	1.0 †...Smith Junction	5.5						2 45 pm	
3 45		11 00 am					86.0	2.5 †...Columbus...	3.0	s 12 03 pm	s 7 53	9 30	3 00	7 19	2 30	
		4 15	6 47	2 31	3 45	s 6 41	89.0	3.0 †...Glidden....	.0	11 55 am	7 45 pm	9 15 am	2 45 am	7 00 pm	1 40	
4 15		11 20	6 47	2 31	3 45	s 6 41									1 25 pm	
5 00 pm		11 50 am	7 00 am	2 45 am	4 00 am	6 50 am									7 30 am	
					12 25 pm		216.00	127.0 †...San Antonio..	127.00	6 30 am	2 15 pm					
					12 50 pm	7 45 pm		634.30 †...El Paso....	761.30		1 50 pm					
					2 15 pm		850.30				12 15 pm					

HOUSTON DIVISION.---GLIDDEN TO SAN ANTONIO.

WEST							DISTANCE FROM GLIDDEN	STATIONS	DISTANCE FROM SAN ANTONIO	EAST						
THIRD CLASS	SECOND CLASS.				FIRST CLASS					FIRST CLASS.		SECOND CLASS.				THIRD CLASS
Freight No. 118 Daily	Freight	Freight No. 26 Daily	Freight No. 24 Daily	Freight No. 22 Daily	Passenger No. 20 Daily	Passenger No. 18 Daily				Passenger No. 17 Daily	Passenger No. 19 Daily	Freight No. 21 Daily	Freight No. 23 Daily	Freight No. 25 Daily	Freight	Freight No. 117 Daily
					11 25 am	7 20 pm	449.19	..New Orleans..	576.19	6 55 am	3 10 pm					
					2 25 am	9 40 am		560.19		4 25 pm	12 01 am					
					2 30 am	9 45 am	89.0	..Houston..	216.0	4 20 pm	11 55 pm					
								89.0								
8 30 am		7 30 am	8 30 am	4 30 am	7 00 am	2 25 pm	.0	..Glidden..	127.0	11 45 am	7 35 pm	8 30 am	2 00 am	6 15 pm	8 00 pm	
9 05		8 00	3 59	4 58	7 17	s 2 40	7.0	..Borden..	120.0	s 11 30	7 19	8 00	1 28	5 41	7 19	
9 42		8 26	4 24	5 21	s 7 33	s 2 54	13.0	..Weimar..	114.0	s 11 17	s 7 03	7 33	1 00	5 10	6 46	
10 35		9 05	5 01	5 59	8 00	8 15	22.0	..Schulenburg..	105.0	10 55	6 40	6 55	12 19 am	4 25	5 55	
11 15		9 30	5 30	6 25	8 20	f 3 35	28.5	..Engle... w	98.5	f 10 14	6 03	6 25	11 50 pm	3 53	5 25	
11 50 am		9 55	5 55	6 53	s 8 38	s 4 09	34.5	..Flatonia.. w	92.5	s 9 55	s 5 48	5 55	11 25	3 25	4 53	
								0.3								
12 25 pm		10 15	6 20	7 20	9 10	f 4 23	34.8	S. A. & A. P. Cross'g	92.2							
1 10		10 39	6 52	7 55	s 9 29	s 4 41	40.1	..Pierson..	86.9	f 9 42	5 34	5 29	11 00	2 59	4 23	
1 55		11 02	7 25	8 29	9 45	f 4 59	47.0	..Waelder..	80.0	s 9 29	s 5 16	4 54	10 30	2 26	3 44	
2 25		11 22	7 53	8 57	s 9 59	s 5 14	54.0	..Sandy Fork.. w	73.0	f 9 12	4 59	4 19	9 58	1 55	3 02	
2 51		11 39	8 15	9 15	10 09	f 5 25	60.0	..Harwood..	67.0	s 8 57	s 4 44	3 48	9 32	1 29	2 25	
3 20		11 55 am	8 35	9 34	s 10 20	s 5 36	64.7	..Ivy..	62.3	f 8 46	4 34	3 25	9 12	1 10	1 50	
4 05		12 20 pm	9 07	10 02	s 10 36	f 5 54	69.0	..Luling... w	58.0	s 8 35	s 4 23	3 02	8 52	12 50	1 15	
								7.1								
4 30		12 37	9 29	10 21	s 10 47	s 6 05	76.1	..Sullivan..	50.9	f 8 19	4 05	2 26	8 20	12 20 pm	12 20 pm	
4 58		1 00	9 53	10 45	10 36	f 5 54	77.3	..Sand Pit..	49.7							
5 20		1 15	10 10	11 10	s 10 59	s 6 14	81.0	..Kingsbury..	46.0	s 8 08	s 3 54	2 02	7 59	11 57 am	11 40 am	
5 50		1 40	10 40	11 36	s 11 00	f 6 20	86.6	..Ilka..	40.4	f 7 55	3 40	1 35	7 32	11 30	11 00	
6 15		1 59	11 10	11 36	s 11 10	s 6 30	90.6	..Seguin... w	36.4	s 7 45	s 3 30	1 15	7 14	11 10	10 10	
6 48		2 29	11 40	11 36	11 24	f 6 44	97.5	..Hilda..	29.5	f 7 31	3 17	12 45	6 44	10 40	9 38	
7 04		2 44	11 45 am	12 40	s 11 34	s 6 54	102.3	..Marion..	24.7	s 7 21	s 3 07	12 25 am	6 15	10 20	9 15	
7 33		3 07	12 12 pm	1 06	11 50	f 7 11	110.4	..Cibolo..	16.6	f 7 04	2 51	11 50 pm	5 41	9 44	8 35	
7 55		3 25	12 40	1 25	s 11 58 am	s 7 18	114.0	..Converse..	13.0	s 6 56	s 2 44	11 37	5 27	9 28	8 19	
8 00 pm		3 30 pm	12 45 pm	1 30 pm	12 12 pm	f 7 33	120.7	..Kirby..	6.3	f 6 43	2 30	11 11	5 00	8 57	7 45	
					12 23	7 43	125.7	..East Yard..	1.3	6 32	2 17	10 50	4 40	8 35	7 20	
					12 25 pm	7 45 pm	127.0	..San Antonio..	.0	6 30 am	2 15 pm	10 45 pm	4 35 pm	8 30 am	7 15 am	
								5.0								
								1.3								
								634.24								
					2 15 pm		761.24	..El Paso..	334.24		12 15 pm					

HOUSTON DIVISION. GONZALES BRANCH.

WEST.				DISTANCE FROM HARWOOD	STATIONS	DISTANCE FROM GONZALES	EAST.			
SECOND CLASS.		FIRST CLASS.					FIRST CLASS.		SECOND CLASS.	
Mixed No. 119 Daily.	Mixed No. 121 Daily.	Mixed No. 122 Daily.	Mixed No. 120 Daily.				Mixed No. 119 Daily.	Mixed No. 121 Daily.		
		5 30 pm	9 20 am	.0	†... Harwood ...	12.3	8 30 am	5 00 pm		
		5 55	9 45	5.8	... Kokernot ...	6.5	8 05	4 35		
		6 20 pm	10 15 am	12.3	†... Gonzales0	7 40 am	4 10 pm		

HOUSTON DIVISION. LAGRANGE TO SMITH JUNCTION.

WEST.		DISTANCE FROM SMITH JUNCT.	STATIONS	DISTANCE FROM LAGRANGE	EAST.	
SECOND CLASS.	FIRST CLASS.				FIRST CLASS.	SECOND CLASS.
Mixed No. 110 Daily except Sunday.						Mixed No. 109 Daily except Sunday.
2 45 pm		.0	†... Smith Junc. ...	28.5		11 00 am
			4.3			
3 03		4.3	... Boschers ... w	24.2		10 40
			12.2			
4 00		16.5	†... Ellinger ...	12.0		9 40
			12.0			
5 00 pm		28.5	†... La Grange0		8 40 am

HOUSTON DIVISION. HARRISBURG TO STELLA.

WEST.		DISTANCE FROM STELLA.	STATIONS	DISTANCE FROM HARRISBURG	EAST.	
SECOND CLASS.	FIRST CLASS.				FIRST CLASS.	SECOND CLASS.
	Mixed 112				Mixed 111	
		.0	... Stella ...	8.0		2 30 pm
			0.2			
		0.2	... I. & G. N. Crossing ...	7.8		
			4.8			
		5.0	... G., C. & S. F. Crossing ...	3.0		
			3.0			
		8.0	... Harrisburg0		1 30 pm

Trains Nos. 111 and 112 will run Mondays and Thursdays.

SPECIAL RULES.

†—Day Telegraph-stations.

‡—Day and Night Telegraph-stations.

w—Water-stations.

Standard time for the Houston Division will be shown by clock in Dispatchers office at San Antonio and Houston.

Irregular trains; and Regular trains not on time, will run carefully and look out for Switch Engines inside Yard Limits.

East-bound freight trains will take siding at Stella, Weimar, Ivy, Ilka and Hilda for west-bound freight trains, entering siding from west end.

The speed of all trains in the city limits of Houston, Richmond, Columbus, Waelder, Luling and San Antonio, must not exceed SIX miles per hour.

Stella and Harrisburg are Terminal-stations for Harrisburg branch trains.

Gonzales and Harwood are Terminal-stations for Gonzales branch trains.

Glidden, Smith Junction and LaGrange are Terminal-stations for LaGrange branch trains.

San Antonio, Glidden and Houston, are Terminal-stations for all main line trains.

All trains will register at Terminal-stations.

All Second and Third Class trains must get Clearance Cards at Rosenberg if there are no telegraph order for them.

Speed of Second and Third Class trains must not exceed TWENTY miles per hour between Houston and Rosenberg; TWELVE miles per hour between Rosenberg and Eagle Lake, and FIFTEEN miles per hour between Eagle Lake and Glidden.

Trains Nos. 109 and 110 have absolute right of track against all Second and Third Class trains between Smith Junction and Glidden.

East bound trains will come to a full stop before passing the semaphore at the west end of Houston yard, and will not proceed until the signal is changed from red to nothing by day and from a red to a green light by night.

SOUTHERN PACIFIC COMPANY—ATLANTIC SYSTEM.

GENERAL RULES.

GENERAL NOTICE.

It is of the utmost importance that proper rules for the government of the employes of a railroad company should be literally and absolutely enforced, in order to make such rules efficient. If they cannot or ought not to be enforced, they ought not to exist. Officers or employes whose duty it may be to make or enforce rules, however temporary or unimportant they may seem, should keep this clearly in mind. If in the judgment of any one whose duty it is to enforce a rule, such rule cannot or ought not to be enforced, he should at once bring it to the attention of those in authority.

All employes should be required to be polite and considerate in their intercourse with the public. The reputation and prosperity of a company depend greatly upon the promptness with which its business is conducted and the manner in which its patrons are treated by its employes.

GENERAL RULES.

1. The Rules herein set forth apply to and govern all roads operated by the ATLANTIC SYSTEM OF THE SOUTHERN PACIFIC COMPANY. They shall supersede all prior rules and instructions, in whatsoever form issued, which are inconsistent therewith.
2. In addition to these rules the Time-tables will contain special instructions, as the same may be found necessary. Special instructions, whether in conflict with these rules or not, which may be given by proper authority, whether upon the Time-tables or otherwise, shall be fully observed while in force.
3. The head of each department must be conversant with the rules, supply copies of them to his subordinates, see that they are understood, enforce obedience to them, and report to the proper officer all violations and the action taken thereon.
4. Every employe of this company whose duties are in any way prescribed by these rules must always have a copy of them at hand when on duty, and must be conversant with every rule. He must render all the assistance in his power in carrying them out, and immediately report any infringement of them to the head of his department.
5. The fact that any person enters, or remains in, the service of the company will be considered as an assurance of willingness to obey its rules. No one will be excused for the violation of any of them, even though not included in those applicable to his department.
6. If in doubt as to the meaning of any rule or special instructions, application must be made at once, to the proper authority, for an explanation. Ignorance is no excuse for neglect of duty.
7. All employes will be regarded as in the line of promotion, advancement depending upon the faithful discharge of duty, and capacity for increased responsibility.
8. Every employe, while on duty connected with the trains on any division of the road, is under the authority, and must conform to the orders, of the superintendent of that division.
9. Employes must wear the prescribed badges or uniforms while on duty.
10. Mail-agents, express messengers, parlor and sleeping car conductors and porters, news agents, and persons in charge of individual cars are subject, while on duty, to the rules governing employes of the company.

STANDARD TIME.

12. Observatory Standard Time is the only recognized standard, and will be transmitted from the Naval Observatory, Washington, D. C., to the designated offices.
13. The Standard Time will be telegraphed to all points from the designated offices at 11 A. M., Central Time, daily.
14. Certain clocks will be designated, on each division, as Standard Clocks.
15. Where station clocks are provided, station agents must see that they show correct time; but trainmen and enginemen must not take time from such clocks unless they are also designated as Standard Clocks.
16. Each conductor and engineman must have a reliable watch which has been examined and certified to on the Time Record Card, Form No. 2, by a responsible watchmaker. Conductors and enginemen entering service must file such certificates with the proper designated officer before they are allowed to take charge of trains or engines; and watches must be examined, and certificates renewed, every six months.
17. Each conductor and engineman must regulate his watch by the designated Standard Clock before starting on each trip, and register his name and the time at which he regulated his watch on a blank form (or in a book) provided for that purpose.
18. Conductors and enginemen whose duties prevent them from having access to a Standard Clock must compare daily with, and regulate their watches by, those of conductors and enginemen who have Standard Time, and have registered their names as above provided.

TIME TABLES.

19. A Time-table is the general law governing the arriving and leaving time of all regular trains at all stations. Time-tables will be issued from time to time, as may be necessary. The times given for each train on the Time-table is the Schedule of such train.
20. Each Time-table, from the moment it takes effect, supersedes the preceding Time-table, and all special instructions relating thereto; and trains shall be run as directed thereby, subject to the rules. All regular trains on the road running according to the preceding Time-table shall, **UNLESS OTHERWISE DIRECTED**, assume the times and rights of trains of corresponding numbers on the new Time-table.
21. Upon the Time-table not more than two sets of figures are shown for a train at any station. The times at regular meeting or passing points are shown in **FULL FACED TYPE**; other times in ordinary type. When two times are shown for a train at any station, the earlier (placed in its proper position) is the arriving time and the later the leaving time. When but one time is shown in ordinary type it is the leaving time. When but one time is shown in **FULL FACED TYPE** it is the actual meeting or passing time. When both the arriving and leaving times are shown in **FULL FACED TYPE** it indicates that one or more trains are to be met or passed at or between those times. In all cases trains are required to clear and follow as per Rules 85 to 90, inclusive.
22. On the employes Time-table the words "daily," "daily, except Sunday," etc., printed at the head and foot in connection with a train, indicate how it shall be run. The figures

given at intermediate stations shall not be taken as indicating that a train will stop unless the rules require it.

The following signs placed before the figures indicate:

- "s"—regular stop.
 - "f"—stop on signal to receive or discharge passengers or freight.
 - "m"—stop for meals.
- Trains are designated by numbers and their class indicated on the Time-tables.

SIGNAL RULES.

SIGNALS.

23. Conductors, enginemen, firemen, brakemen, telegraph operators, station agents, switchmen, switch tenders, track foremen, road and bridge watchmen, and all other employes whose duties may require them to give signals must provide themselves with the proper appliances, and keep them in good order and always ready for immediate use.
24. Flags of the proper color must be used by day, and lamps of the proper color by night or whenever from fog or other cause the day signals cannot be clearly seen.
25. Red signifies **DANGER**, and is a signal to stop.
26. Green signifies **CAUTION**, and is a signal to go slowly.
27. White signifies **SAFETY**, and is a signal to go on.
28. Blue is a signal to be used by car inspectors.
29. An explosive cap or torpedo, placed on the top of the rail, is a signal to be used **IN ADDITION** to the regular signals. The explosion of **ONE** torpedo is a signal to **STOP** immediately; the explosion of **TWO** torpedoes is a signal to **REDUCE SPEED** immediately, and look out for a danger signal.
30. A fusee is an **EXTRA** danger signal, to be lighted and placed on the track at night, in cases of accident or emergency. A train finding a fusee burning upon the track must come to a stop, and not proceed until it is burned out.
31. A flag or lamp swung across the track, a hat or any object waved violently by any person on the track, signifies danger, and is a signal to stop.

TRAIN SIGNALS.

32. Each train, while running, must display two green flags by day and two green lights by night, one on each side of the rear of the train, as Markers, to indicate the rear of the train. Yard engines will not display Markers.
33. Each train running after sunset, or when obscured by fog or other cause, must display the head-light in front, and two or more red lights in the rear. Yard engines must display two green lights instead of red, except when provided with a head-light on both front and rear.
34. Each car on a passenger train while running must be in communication with the engine. In the absence of an equivalent appliance, a bell-cord must be attached to the signal-bell of the engine, passing through or over the entire length of the train, and secured to the rear end of it.
35. Two green flags by day and two green lights by night, displayed in the places provided for that purpose on the front of an engine, denote that the train is followed by another train, running on the same Schedule and entitled to the same Time-table rights as the train carrying the signals.
36. Two white flags by day and two white lights by night, displayed in the places provided for that purpose on the front of an engine, denote that the train is an extra. These signals must be displayed by all extra trains, but not by yard engines.

38. A blue flag by day and a blue light by night, placed on the end of a car, denote that car inspectors are at work under or about the car or train. The car or train thus protected must not be coupled to, or moved, until the blue signal is removed by the car inspectors. When a car or train standing on a siding is protected by a blue signal, other cars must not be placed in front of it so that the blue signal will be obscured, without first notifying the car inspector, that he may protect himself.

WHISTLE SIGNALS.

39. One **LONG** blast of the whistle is the signal for approaching stations, railroad crossings and junctions (thus, —).

40. One **SHORT** blast of the whistle is the signal to apply the brakes—stop (thus, -).

41. Two **LONG** blasts of the whistle is the signal to throw off the brakes (thus, — —).

42. Two **SHORT** blasts of the whistle is an answer to any signal, except "train parted" (thus, - -).

43. Three **LONG** blasts of the whistle (to be repeated until answered as provided in Rule No. 62) is a signal that the train has parted (thus, — — —).

44. Three **SHORT** blasts of the whistle, when the train is **STANDING** (to be repeated until answered as provided in Rule No. 61), is a signal that the train will back (thus, - - -).

45. Four **LONG** blasts of the whistle is the signal to call in the flagman (thus, — — — —).

46. Four **SHORT** blasts of the whistle is the engineman's call for signals from switch-tenders, watchmen, trainmen and others (thus, - - - -).

47. Five **SHORT** blasts of the whistle is a signal to the flagman to go back and protect the rear of the train (thus, - - - - -).

48. One **LONG** followed by two **SHORT** blasts of the whistle is a signal to be given by trains on single track, when displaying signals for a following train, to call the attention of trains of the same or inferior class to the signals displayed (thus, — - -). This signal to be answered as per Rule No. 42.

49. Two **LONG**, followed by two **SHORT**, blasts of the whistle is the signal for approaching road crossings at grade (thus, — — - -).

50. A succession of **SHORT** blasts of the whistle is an alarm for persons or cattle on the track, and calls the attention of trainmen to danger ahead.

See page 7, Westinghouse Air Brake Rules.

BELL-CORD SIGNALS.

51. One tap of the signal-bell, when the train is **STANDING**, is the signal to start.

52. Two taps of the signal-bell, when the train is **RUNNING**, is the signal to stop at once.

53. Two taps of the signal-bell, when the train is **STANDING**, is the signal to call in the flagman.

54. Three taps of the signal-bell, when the train is **RUNNING**, is the signal to stop at the next station.

55. Three taps of the signal-bell, when the train is **STANDING**, is the signal to back the train.

56. Four taps of the signal-bell, when the train is **RUNNING**, is the signal to reduce speed.

57. When one tap of the signal-bell is heard while the train is **RUNNING**, the engineman must immediately ascertain if the train is parted, and, if so, be governed by Rule No. 103.

58. Signals of the same number of sounds shall have the same significance when given by other appliances than bell-cords and signal-bells.

LAMP SIGNALS.

59. A lamp swung across the track is the signal to stop.

60. A lamp raised and lowered vertically is the signal to move ahead.

61. A lamp swung vertically in a circle across the track, when the train is **STANDING**, is the signal to move back.

62. A lamp swung vertically in a circle at arm's length across the track, when the train is **RUNNING**, is the signal that the train has parted.

63. A flag, or the hand, moved in any of the directions given above, will indicate the same signal as given by a lamp.

FIXED SIGNALS.

64. Fixed signals are placed at junctions, railroad crossings, stations and other points that require special protection. Special instructions will be issued indicating their position and use.

RULES GOVERNING THE USE OF SIGNALS.

65. A signal imperfectly displayed, or the absence of a signal at a place where a signal is usually shown, must be regarded as a danger signal, and the fact reported to the Superintendent.

66. The unnecessary use of the whistle is prohibited; when necessary in shifting at stations and in yards the engine-bell should be rung, and the whistle used only when required by rule or law, or when necessary to prevent accident.

67. The whistle must not be sounded while passing a passenger train, except in cases of emergency or danger, or when required by the rules.

68. When a danger signal (except a fixed signal) is displayed to stop a train, it must be acknowledged as provided in Rule No. 42.

69. The engine-bell must be rung before starting a train, and when running through tunnels and the streets of towns or cities.

70. The engine-bell must be rung for a quarter of a mile before reaching every road crossing at grade, and until it is passed; and the whistle must be sounded at all whistling-posts.

71. When two or more engines are coupled to the head of a train, the leading engine only shall display the signals as provided in Rules Nos. 36 and 37.

72. One flag or light displayed as a classification signal will be regarded the same as if two were displayed; but conductors and enginemen will be held responsible for the proper display of all train signals.

73. When a train is being pushed by an engine (except when shifting and making up trains in yards) a white light must be displayed on the front of the leading car at night, or when the train is obscured by fog or other cause.

74. When a train turns out to meet or pass another train the red lights must be removed and green displayed as soon as the track is clear; but the red must again be displayed before returning to its own track.

Head-lights on engines when on side tracks waiting for trains, must be covered as soon the track is clear and the train has stopped.

76. White signals must be used by watchmen at public road and street crossings to prevent persons and teams from crossing when trains are approaching. Danger signals must be used only when necessary to stop trains.

77. Torpedoes must not be placed near stations or road crossings, where persons are liable to be injured by them.

78. All signals must be used strictly in accordance with the rules, and trainmen and enginemen must keep a constant lookout for signals.

TRAIN RULES.

CLASSIFICATION OF TRAINS.

79. All trains are designated as regular or extra. Regular trains are those represented on the Time-table, and may consist of one or more sections. All sections of a train, except the last, must display signals as provided in Rule No. 36. Extra trains are those not represented on the Time-table. An engine without cars, in service on the road, shall be considered a train.

80. All regular trains are classified on the Time-table with regard to their priority of right to the track; trains of the first-class being superior to those of the second and all succeeding classes, and trains of the second-class being superior to those of the third and all succeeding classes; and so on indefinitely. The terms passenger, freight or mixed are descriptive and do not refer to class.

81. Extra trains may be distinguished as:

- Passenger Special;
- Extra;
- Work Extra.

82. All extra trains are of inferior class to all regular trains of whatever class.

MOVEMENT OF TRAINS.

83. A train of inferior class must in all cases keep out of the way of a train of superior class.

84. East bound trains have the absolute right of track over trains of the same class running in the opposite direction.

Note—Trains proceeding towards New Orleans will be called East Bound; trains proceeding away from New Orleans will be called West Bound.

85. When trains of the same class meet, the train not having right of track must take the siding and be clear of the main track before the leaving time of the opposing train; but such train must not pass the switch to back in on a siding, until after the arrival of the opposing train, unless otherwise directed by special instructions. When necessary to back in on siding, before passing the switch, a flagman must be sent out in the direction of the opposing train as per Rule No. 99.

86. When a train of inferior class meets a train of superior class, the train of inferior class must take the siding and clear the train of superior class **FIVE** minutes. A train of inferior class must keep **FIVE** minutes off the time of a train of superior class following it.

87. A train must not leave a station to follow a passenger train until **TEN** minutes after the departure of such passenger train. (See Rule 334.)

88. Passenger trains running in the same direction must keep not less than **TEN** minutes apart. (See Rule 334.)

89. Freight trains following each other must keep not less than **TEN** minutes apart (except in closing up at stations or at meeting and passing points.) (See Rule 334.)

90. No train must leave a station expecting to meet or to be passed at the next station by a train having the right of track, unless it has full schedule time to make the meeting or passing point, or unless it has the full time allowed between stations to make the meeting or passing point, and clear the track by the times required by Rules Nos. 85 and 86.

91. A train not having right of track must be entirely clear of the main track by the time it is required by rule to clear an opposing train or a train running in the same direction; failing to do so, it must be immediately protected, as provided in Rule No. 99.

92. Except at meeting or passing points as provided in Rules Nos. 85 to 91, inclusive, no train must arrive at a station in advance of its schedule arriving time, when shown.

No train must leave a station in advance of its schedule leaving time.

93. All trains must **STOP** at schedule meeting or passing points, if the train to be met or passed is of the same class, unless the switches are plainly seen to be right, and the track clear. The point at which a train should **STOP** is the switch used by the train to be met or passed in going on the siding.

When the expected train of the same class is not found at the schedule meeting or passing point, the train having right of track must approach all sidings prepared to stop, until the expected train is met or passed.

94. All trains must approach junctions, railroad crossings at grade, and drawbridges, prepared to stop, and must not proceed until the switches or signals are seen to be right, or the track is plainly seen to be clear. Where required by law, all trains must stop.

95. No train must leave a junction, a terminal, or other starting point, until it is ascertained that all trains due, which have the right of track against it, have arrived.

96. When a passenger train is detained at any of its usual stops more than three minutes, the flagman must go back with danger signals and protect his train, as provided in Rule No. 99;

but if it stops at any unusual point, the flagman must immediately go back far enough to be seen from a train moving in the same direction when it is at least thirteen telegraph poles from the rear of his own train, and if the stop is over three minutes he must be governed by Rule No. 99.

NOTE—When necessary to protect front end of train the front brakeman will be subject to orders and instructions of engineer.

97. When a freight train is detained at any of its usual stops more than three minutes, where the rear of the train can be plainly seen from a train moving in the same direction at a distance of at least fifteen telegraph poles, the flagman must go back with danger signals not less than one pole, and as much further as may be necessary to protect his train; but if the rear of his train cannot be plainly seen at a distance of at least fifteen telegraph poles, or if it stops at any point that is not its usual stopping place, the flagman must go back far enough to be seen from a train moving in the same direction when it is at least fifteen telegraph poles from the rear of his own train; and if his train should be detained until within ten minutes of the time of a passenger train moving in the same direction, he must be governed by Rule No. 99.

NOTE—When necessary to protect front end of train the front brakeman will be subject to orders and instructions of engineer.

98. When it is necessary for the flagman to go back to protect the rear of his train, the next brakeman must immediately take the flagman's position on the train, and remain there until relieved by the flagman; and on passenger trains the train porter must take the place of the front brakeman whenever necessary.

99. When a train is stopped by an accident or obstruction, the flagman must immediately go back with danger signals to stop any train moving in the same direction. At a point thirteen telegraph poles from the rear of his train he must place **ONE** torpedo on the rail; he must then continue to go back at least fifteen telegraph poles from the rear of his train and place **TWO** torpedoes on the rail, ten yards apart (one rail length), when he may return to a point thirteen telegraph poles from the rear of his train, and he must remain there until recalled by the whistle of his engine; but if a passenger train is due within **TEN** minutes, he must remain until it arrives. When he comes in, he will remove the torpedo nearest to the train, but the **TWO** torpedoes must be left on the rail as a caution signal to any following train.

NOTE—When necessary to protect front end of train the front brakeman will be subject to orders and instructions of engineer.

103. If a train should part while in motion, trainmen must use great care to prevent the detached parts from coming into collision. Enginemen must give the signal as provided in Rule No. 43, and keep the front part of the train in motion until the detached portion is stopped. The front portion will have the right to go back, regardless of all trains, to recover the detached portion, first sending a flagman with danger signals thirteen telegraph poles in the direction in which the train is to be backed, and running with great caution, at a speed not exceeding four miles per hour. All the precautions required by the Rules must also be taken to protect the train against opposing trains. **THE DETACHED PORTION MUST NOT BE MOVED OR PASSED AROUND UNTIL THE FRONT PORTION COMES BACK.** This Rule applies to trains of every class. An exception will only be made to the above when it is known that the detached portion has been stopped, and when the whole occurrence is in plain view, no curves or other obstructions intervening, so that signals can be seen from both portions of the train. In that event the conductor and engineman may arrange for the re-coupling, using the greatest caution.

104. When a train is being pushed by an engine (except when shifting and making up trains in yards), a flagman must be stationed in a conspicuous position on the front of the leading car, so as to perceive the first sign of danger and immediately signal the engineman.

105. A train starting from a station, or leaving a junction, when a train of the same class running in the same direction is overdue, will proceed on its own time and rights, and the

overdue train will run as provided in Rule 88 or 89. (See Rule 522.)

106. A train which is delayed, and falls back on the time of another train of the same class, does not lose its rights.

107. Regular trains twelve hours or more behind their schedule time lose all their rights.

108. A train overtaking another train of the same or superior class, **DISABLED SO THAT IT CANNOT MOVE**, will run around it, assuming the rights and taking the orders of the disabled train, to the next telegraph office which is open, where it will report to the Superintendent. The disabled train will assume the rights of the last train passing it, till the next telegraph office is reached.

109. All messages or orders respecting the movement of trains or the condition of track or bridges must be in writing.

110. Trains must not display signals for a following train without an order from the Superintendent.

111. Passenger-special and extra trains must not be run without an order from the Superintendent.

112. When signals displayed for a following train are taken down at any point before the following train arrives, the conductor must inform the Superintendent promptly by telegraph, and also the operator or switchtender; and the latter, unless there is some other provision for the purpose, must notify all opposing trains of the same or inferior class leaving that point before the train arrives for which signals were displayed.

If signals are taken down at a point where there is no operator, switchtender, or other provision for the purpose, the conductor must notify all opposing trains of the same or inferior class until he reaches the next telegraph office, when he must inform the Superintendent; and the operator unless there is some other provision for the purpose, must notify all opposing trains of the same or inferior class until directed otherwise by the Superintendent.

If the train for which signals were displayed leaves the main line at a point where there is no operator, switch tender, or other provision for the purpose, a flagman must be left to notify opposing trains that it has arrived.

113. Work trains will be run as extras under special orders, and will be assigned working limits.

114. Great care must be exercised by the trainmen of a train approaching a station where any train is receiving or discharging passengers.

116. No person will be permitted to ride on an engine except the engineman, fireman and other designated employes, in the discharge of their duties, without a written order from the proper authority.

117. Conductors will be held responsible for the proper adjustment of the switches used by them and their trainmen, except where switchtenders are stationed.

Whoever opens a switch shall remain at it until it is closed, unless relieved by some other competent employe.

When there is more than one train to use a switch it must not be left open unless one of the trainmen of the following train is at the switch and takes charge of it.

118. Accidents, detention of trains, failure in the supply of water or fuel, or defects in the track or bridges, must be promptly reported by telegraph to the Superintendent.

119. No train shall leave a station without a signal from its conductor.

120. Conductors and enginemen will be held equally responsible for the violation of any of the rules governing the safety of their trains, **AND THEY MUST TAKE EVERY PRECAUTION FOR THE PROTECTION OF THEIR TRAINS, EVEN IF NOT PROVIDED FOR BY THE RULES.**

121. **IN ALL CASES OF DOUBT AND UNCERTAINTY, TAKE THE SAFE COURSE AND RUN NO RISKS.**

SPECIAL RULES.

ALL EMPLOYEES.

300. The use of Intoxicating Drinks is strictly forbidden. Total abstinence in this particular is necessary to safety in operating the road. Any employe drinking intoxicating liquors (or smoking on Passenger Trains) while on duty, will be dismissed from the service of the Company, and all employes are required to report immediately to the Superintendent any violation of this Rule.

301. When a person is discharged from one department or division of the company's service he **SHALL NOT BE EMPLOYED** in another place without the consent of the officer who dismissed him, or that of the Head of the Department or Division to which he belonged, subject to the approval of the General Manager.

303. No employe, whatever may be his rank, will be allowed to absent himself from duty without permission from the Head of the Department in which he is engaged.

304. Engineers and firemen are at all times under the direction of the Superintendent of the division on which they are working, after crossing the turn-table for service. In emergencies, the employes of all departments must promptly obey the orders of the Superintendent.

305. All accidents must be reported by wire, from nearest telegraph station, to the Superintendent, and a written report on Form M. 23, must be forwarded to the proper officer.

306. It is made the duty of every employe in the service, regardless of departments, to report defects in Road or Bridges or obstructions of any kind, wherever met, to the Superintendent, and, if possible, to the nearest section master or bridge foreman. When necessary, flags and torpedoes must be left to notify approaching trains; and when there is any reason to believe that the safety of the track or of any structure is endangered through floods, fires or other causes, every employe before attempting its use, must make a personal inspection, using all precautions in the interest of life and property.

TRAINMEN.

307. Freight and work trains must not, at any time, exceed a speed of one mile in two and one-half (2½) minutes. On specified portions of track, limits of speed will be defined by special Division instructions.

308. At all schedule meeting stations and at meeting stations made by time orders for trains of the same class, the train having the right of track must, if the train to be met has not arrived, wait three minutes beyond its schedule leaving time, or the time stated by the order, and will then proceed, keeping three minutes behind its schedule time, until the expected train is met.

309. Trainmen must consult bulletin boards daily.

310. Conductors and brakemen of **ALL** trains meeting or passing, or when approaching a station, **MUST BE OUT** looking for signals, and be prepared to do anything required for safety or expedition.

a. Engineers on approaching stations, must sound one long blast of the whistle, which will be answered by the operator, if the station is a telegraph station, by a change of his signal from Red to nothing by day, and from a Red to a White light by night. Should the whistle not be answered in the proper manner by the operator, the engineer will then sound four short blasts of the whistle as a call for signals. In case a train or any part of it has passed the telegraph office, and although still at the station, Operators will not accept orders from Dispatcher for such train until Conductor and Engineer have been notified in person that they are held for orders.

311. Trains will be under the control of the conductors (see Rule 120).

312. Immediately before starting out on their runs, conductors must go in person to telegraph office and ask for orders. Conductors must register their trains at register stations which will be indicated for each Division in special instructions.

313. Conductors and trainmen of all trains are required to be at the station at least thirty minutes before the time of departure. They must see that their train is in proper order and everything in readiness to start.

314. Shortly before reaching a station at which the train stops, the conductor, brakeman or porter must pass through each coach, except the sleeping cars, and announce twice, distinctly, with closed doors, the name of the station they are approaching. On arrival at terminal stations, they must remain with their train until passengers have alighted, and see that all needful assistance is given them.

315. In leaving cars at sidings, care must be used to leave wagon roads in daily use by the public unobstructed their entire width. When trains remain at stations to exceed five minutes, the train must be cut to open a passage or roadway if there be any persons who desire to cross.

316. Conductors must prevent passengers endangering themselves by imprudent exposure. The circumstances under which passengers may be ejected from trains are fully covered below. **USE NO UNNECESSARY FORCE.**

a. A railroad company has the right to eject from its trains any passenger who refuses upon demand to produce a proper ticket or other transportation, or pay his fare to his destination, and he may be expelled at any point on the line of the road, whether at a station or otherwise, with this limitation: In case a person is, by reason of any infirmity, unable to travel or find his way from the point where he is put off to a dwelling-house or town, or the weather is so inclement as to render it unsafe or inhuman to eject a person at a point other than a station, then such person should be ejected from the train at a station where suitable accommodations can be procured for his safety and comfort.

b. Drunken or disorderly persons, or others whose conduct and appearance is such as is calculated to operate as a serious annoyance to other passengers, or is disgusting, or a passenger who is guilty of gross misconduct, either by insulting or assaulting other passengers or train employes, who uses vile or profane language in the car, or who threatens to assault other passengers or train employes, may lawfully be expelled from the train at any place, provided the place is not such as to cause want or injury; this may be done whether fare has been paid or not.

317. Conductors of freight trains not equipped with automatic brake must see that brakemen govern the rate of speed of their trains while descending a grade. The brakes should never be applied so as to slip the wheels, and in descending heavy grades, brakemen should see that the brakes are not kept on so long as to heat the wheels. To avoid this, the brakes should be frequently changed from one car to another.

318. Conductors of freight trains will be held responsible for the faithful performance of duty by the brakemen on their trains. They must require the doors of all **FREIGHT CARS** in their trains **TO BE CLOSED**, and must, in all cases, when ascending or descending grades, station themselves on the rear part of the train, and see that their brakemen are at their posts.

319. When a freight train is composed of two or more sections running on the same time, the rear train must do the local work, and, if allowed to take passengers, is the only one on which they will be carried under any circumstances, except persons in charge of live stock.

320. Conductors must comply with instructions of agents in placing cars and doing other station work. If necessary to disturb the cars for loading or unloading, they must be re-pealed in the same condition as found. In case agent's orders

are unreasonable, the fact must be reported to Superintendent. It is the duty of agents to report violations of this rule and all cases where conductors refuse cars that are ready to go.

321. Conductors must see that the words "bad order" are written with chalk on both sides of disabled cars left at stations, defective parts marked with a cross. In no case must a car be left on a grade, or at stations, without the brake being set and wheels blocked.

322. Potter (three link) draw heads must be connected with the two outside, or one centre link, but the outside links must not be used to couple with a single drawhead.

323. Work Extras must not use main track without special orders. They must be kept ten (10) minutes out of the way of all scheduled trains, but will have the right to work whenever freight trains are thirty (30) minutes late, taking care to flag approaching trains thirteen telegraph poles in both directions. Conductors of work trains must notify the dispatcher's office the night previous of the limits within which they desire to work the following day. If it should become necessary to go outside of such limit, it must be done with flag to next telegraph office, where orders must be obtained.

324. Great care must be exercised by all persons when coupling cars. Inasmuch as the coupling apparatus of cars or of engines cannot be uniform in style, size or strength, and is liable to be broken, and, from various causes, to render it dangerous to expose the hands, arms or person, of those engaged in coupling between them, all employes are **ENJOINED** before coupling cars or engines, to **EXAMINE**, so as to **KNOW** the kind and condition of the drawhead, drawbar, link and coupling apparatus; and are prohibited from placing in trains any car with a defective coupling until they have first reported its defective condition to the Conductor. Sufficient time is allowed, and may be taken by employes, in all cases, to make the examination required. Coupling by hand is strictly prohibited in all cases where a stick can be used to guide the link or shackle; and each yardmaster, switchman, brakeman, or other employe who may be expected to couple cars, is required to provide himself at all times with a stick for that purpose.

325. Every employe is required to exercise the utmost caution to avoid injury to himself or to his fellows, and especially in the switching or other movement of trains. Jumping on or off trains or engines in motion, entering between cars in motion to uncouple them, and all similar imprudences, are forbidden. Conductors, yardmasters, foremen, and all others in authority, are instructed to enforce this rule and to punish all violators of it. No person who is careless of others or himself shall be continued in the service of this Company.

326. Great care must be taken to prevent killing live stock. Bring the train to a full stop if necessary. Should any be killed or struck, the engineers must report in writing on blank form M. P. and M. 68, to proper officer.

327. Irregular trains, and regular trains behind time, must sound the whistle repeatedly in obscure places to warn section and bridgemen. The same precautions must be used in fogs and snow storms.

328. Freight trains and work extras must approach and pass all stations carefully with train under full control, expecting to find the main track, inside of yard limit boards, occupied by trains doing work. Irregular trains and regular trains not on time will run carefully and look out for switch engines inside yard limit posts.

329. Enginemen and firemen must not, at the same time, absent themselves from the engine while on duty.

330. Come to full stop at all drawbridges, and railroad crossings at grade.

331. Dampers of ash pans must in all cases be closed while engines are crossing bridges and passing wood yards.

STATION AGENTS.

332. Station agents are required to see that the doors of all cars on the side tracks are securely fastened, that the brakes are set and the cars far enough from the main track as not to endanger passing trains, and that the wheels of all cars on side tracks are properly blocked. Cars must *never be allowed to stand on the main track.*

333. Station agents will be held responsible for the proper security and position of the switches, and must in no case allow them to be turned from the main track, except when a train is to leave or enter a side track.

334. Station agents and operators must keep trains the proper time limit apart with their fixed signals. (See Rules 87, 88 and 89.)

YARDMEN.

335. Yardmasters will have charge, and direct the movements of all trains and engines whilst at their stations. They must see that all trains are properly made up at the time of leaving, as per Time-table. Before going on duty, yardmasters must report for, and receive in writing, all instructions regarding incoming and outgoing trains.

336. Yardmasters will be held responsible for the proper position of their switches, which must be set for all trains. This will not relieve engineers from blame for running through an open switch.

337. All main line switches in yards must invariably be set and locked for main track. Inside switches must be left as found.

338. Yard engines, within their limits, may use the main track day and night, keeping out of the way of all regular and irregular trains. Irregular trains must approach yard limits with train under full control.

SECTIONMEN AND BRIDGEMEN.

339. Section Foreman, or a reliable man, must pass over and examine their sections daily, and ascertain that the track, slopes, cuts and bridges are safe. This should be done in the morning.

340. They must see that no lumber, wood, stone, materials or tools are placed at any time within six feet of the rail.

341. Before a rail or frog is taken out, or any obstruction is caused to the main track, or when any break or obstruction is discovered, the danger signal must be sent out in both directions, at least **FIFTEEN** telegraph poles from the point of danger, and a competent man must remain and keep it displayed until he is recalled by the Foreman, which must not be done until the track is known to be safe.

342. In stormy weather Section Foremen must be out with their men (day or night), with proper signals, and watch those places most liable to wash or be disturbed.

343. It is also the duty of Trackmen to put out fires set by engines, and to guard the property of others, as well as that of the Railroad Company, exposed to such fires, whether responsibility attaches to the Company or not.

344. Sectionmen must pay particular attention to the telegraph lines. In case the wires are found broken or on the ground, crossed or in any way obstructed, they must be repaired, in a temporary manner **IMMEDIATELY**, and where such repairs are impracticable, notice must be given to the nearest telegraph office by messenger or the earliest means practicable.

345. At all times when work is going on which renders it necessary for trains to reduce speed, a green flag must be set at side of track at least **FIFTEEN** telegraph poles from the spot, on Engineer's side, in each direction, as a caution to approaching trains to run slowly. After severe rains or a thaw, a hand car must be sent over the road before the passage of regular trains.

346. Hand cars or other property belonging to the Company must not be used except for the business of the Company.

347. Sectionmen must, at all times, hold themselves in readiness to aid the passage of trains, and in case of accident, must obey the orders of the Conductor of the delayed train.

348. Every man at work on the track must bear in mind that in operating the road under telegraph orders a train may **PASS AT ANY MOMENT**.

349. Section Foremen must see that their gangs are always supplied with proper signal flags, lanterns, etc., and that they are thoroughly instructed as to their use.

350. Section Foremen must see that fences on each side of the road and at crossings are in good order, and that cattle-guards are in repair. A break in a fence should not be overlooked, and when it cannot be repaired for want of material, the Section Foreman must give the Roadmaster immediate notice of it, stating what material is required. When fences are taken down for any purpose they must be replaced without unnecessary delay.

351. A report of all stock injured or killed must be forwarded on form T. D. 26 to Superintendent by first train.

352. All property found on the road must be forwarded to the Superintendent, or notice given him of being found.

TEXAS STATE LAWS GOVERNING RAILROAD EMPLOYEES.

353. Art. 4228.—Every Conductor, Baggage Master, Engineer, Brakeman, or other servant of any such railroad corporation, employed in a passenger train, or at stations for passengers, shall wear upon his hat or cap a badge which shall indicate his office, and the initial letters of the style of the corporation by which he is employed.

354. Art. 4229.—No Conductor or Collector without such badge, shall demand or be entitled to receive from any passenger any fare, toll, ticket, or exercise any of the powers of his office, and no other of the said officers or servants, without such badge, shall have any authority to meddle or interfere with the passengers, their baggage or property.

355. Art. 4232.—A bell of at least thirty pounds weight, or a steam whistle shall be placed on each locomotive, and the whistle shall be blown or the bell rung the distance of at least eighty rods from the place where the railroad shall cross any public road or street, and that such bell shall be kept ringing until it shall have crossed such public road or street; and each locomotive engine approaching a place where two lines of railway cross each other shall, before reaching such railway crossing, be brought to a full stop. And any engineer having charge of such engine and neglecting to comply with any of the provisions of this Act, shall be fined in any sum not less than five nor more than one hundred dollars for such neglect, and the corporation operating such railroad shall be liable for all damages which shall be sustained by any person by reason of any such neglect.

356. Art. 4233.—In forming a passenger train, baggage or freight or merchandise or lumber cars shall not be placed in rear of passenger cars; and if they, or any of them, shall be so placed and any accident happens to life or limb, the officer or agent who so directed or knowingly suffered such an arrangement, and the Conductor and Engineer of the train shall each and all be held guilty of intentionally causing the injury and be punished accordingly.

The attention of all employes is called to the extracts of law published above.

Engineers are cautioned against any failure to comply with the law concerning whistling and bell-ringing, and are instructed to use **BOTH** the whistle and the bell at highway crossings.

RULES FOR THE MOVEMENT OF TRAINS BY TELEGRAPHIC ORDERS.

500. Special orders, directing movements varying from or additional to the Time-table, will be issued by the authority and over the signature of the Superintendent. They are not to be

used for movements that can be provided for by rule or Time-table. They must not contain information or instructions not essentially a part of them.

They must be brief and clear, and the prescribed forms must be used when applicable; and there must be no erasures, alterations or interlineations.

501. Each order must be given in the same words to all persons or trains directly affected by it, so that each shall have a duplicate of what is given to the others. Preferably an order should include but one specified movement.

502. Orders will be numbered consecutively for each day as issued, beginning with No. 1 at midnight.

503. Orders must be addressed to those who are to execute them, naming the place at which each is to receive his copy. Those for a train must be addressed to the conductor and engineman, and also to a person acting as pilot. A copy for each person addressed must be supplied by the operator.

504. Each order must be written in full in a book provided for the purpose at the Superintendent's office; and with it must be recorded the names of trainmen and others who have signed for the order; the time and signals, showing when and from what offices the order and responses were transmitted, and the train dispatcher's initials. These records must be made at once on the original copy, and not afterward, from memory or memoranda.

505. The terms "superior right" and "inferior right," in these rules, refer to the rights of trains under the Time-table and Train Rules, and not to rights under Special Orders.

506. When an order is to be transmitted, the signal "31" (as provided in Rule 509), meaning "Train Order," will be given to each office addressed, followed by the word "copy," and a figure indicating the number of copies to be made, if more or less than three—thus, "31 copy 5."

507. An order to be sent to two or more offices must be transmitted simultaneously to as many as practicable. The several addresses must be in the order of superiority of rights of trains, and each office will take only its proper address. When not sent simultaneously to all, the order must be sent first for the train having the superior right of track.

508. Operators receiving orders must write them out in manifold during transmission and make the requisite number of copies at one writing, or trace others from one of the copies first made.

509. When an order has been transmitted, preceded by the signal "31" operators receiving it must (unless otherwise directed) repeat it back at once from the manifold copy, and in the succession in which their several offices have been addressed. Each operator repeating must observe whether the others repeat correctly. After the order has been repeated correctly by the operators required at the time to repeat it, the response "O. K." authorized by the train dispatcher, will be sent simultaneously to as many as practicable, naming each office. Each operator must write this on the order with the time, and then reply "11 O. K." with his office signal.

Those to whom the order is addressed, must then sign their names to the copy of the order to be retained by the operator, and he will send their signatures to the Superintendent. The response "complete," with the Superintendent's initials, will then be given, when authorized by the train dispatcher. Each operator receiving this response will then write on each copy the word "complete;" the time; and his last name in full; and will then deliver a copy to each person included in the address, and each must read his copy aloud to the operator.

510. For an order preceded by the signal "31," "complete" must not be given to the order for delivery to a train of inferior right until "O. K." has been given to and acknowledged by the operator who receives the order for the train of superior right. Whenever practicable, the signature of the conductor and engineman of the train of superior right must be taken to

the order and "complete" given before the train of inferior right is allowed to act on it.

AFTER "O. K." has been given and acknowledged, and **BEFORE** "complete" has been given, the order must be treated as a holding order for the train addressed, but must not be otherwise acted on until "complete" has been given.

If the line fails **BEFORE AN OFFICE HAS RECEIVED AND ACKNOWLEDGED "O. K."** to an order preceded by the signal "31" the order at that office is of no effect, and must be there treated as if it had not been sent.

513. The order, the "O. K." and the "complete" must each, in transmitting, be preceded by "31" and the number of the order, thus, "31, No. 10." In transmitting the signatures of a conductor and engineman they must be preceded by "31," the number of the order, and the train number, thus, "31, No. 10, Train No. 5." After each transmission and response the sending operator must give his office signal.

514. The operator who receives and delivers an order must preserve the lowest copy. On this must appear the signatures of those who sign for the order, and on it he must record the time when he receives it; the responses; the time when they are received; his own name; the date, and the train number, for which places are provided in the blanks. These copies must be sent to the Superintendent.

515. For orders delivered at the Superintendent's office the requirements as to record and delivery will be the same as at other points.

516. Orders to persons in charge of work requiring the use of tracks in yards or at other points, authorizing such use when trains are late, must be delivered in the same way as to conductors of trains.

517. An order to be delivered to a train at a point not a telegraph station, or while the office is closed, must be addressed to—

"*C. and E. No. — (at —), care of —,*" and forwarded and delivered by the conductor or other person in whose care it is addressed. "Complete" will be given upon the signature of the person by whom the order is to be delivered, who must be supplied with copies for the conductor and engineman addressed, and a copy upon which he shall take their signatures. This copy he must deliver to the first operator accessible, who must preserve it, and at once advise the train dispatcher of its having been received.

Orders so delivered to a train must be compared by those receiving them with the copy held by the person delivering and acted on as if "complete" had been given in the ordinary way.

Orders must not be sent in the manner herein provided, to trains the right of which are thereby restricted.

518. When a train is named in an order, all its sections are included unless particular sections are specified, and each section included must have copies addressed and delivered to it.

519. Meeting orders must not be sent for delivery to trains at the meeting point if it can be avoided. When it cannot be avoided, special precautions must be taken by the train dispatchers and operators to insure safety.

There should be, if possible, at least one telegraph office between those at which opposing trains receive meeting orders.

Orders should not be sent an unnecessarily long time before delivery, or to points unnecessarily distant from where they are to be executed. No orders (except those affecting the train at that point), should be delivered to a freight train at a station where it has much work, until after the work is done.

520. A train, or any section of a train, must be governed strictly by the terms of orders addressed to it and must not assume rights not conferred by such orders. In all other respects it must be governed by the Train Rules and Time-table.

521. Orders once in effect continue so until fulfilled, superseded or annulled. Orders held by or issued for a regular train

which has lost its rights, as provided by Rule 107, are annulled and other trains will be governed accordingly.

522. A fixed signal must be used at each train order office which shall display red at all times when there is an operator on duty, except when changed to white to allow a train to pass.

While red is displayed, all trains must come to a full stop and any train thus stopped must not proceed without an order addressed to such train, or a clearance card on a specified form stating over the operator's signature that he has no orders for it. Operators must be prepared with other signals to use promptly if the fixed signal should fail to work properly. If a signal is not displayed at a night office, trains which have not been previously notified must stop and inquire the cause, and report the facts to the Superintendent from the next open telegraph office. (See Rule 334.)

NOTE—Operators at terminals must give regular trains clearance cards when they have no orders for them.

523. Operators will promptly record and report to the Superintendent the time of departure of all trains and the direction in which extra trains are moving. They will record the arriving time of trains and report it when so directed.

524. Regular trains will be designated in orders by their schedule numbers, as "No. 10," or "2d No. 10," adding engine numbers; extra trains by engine numbers, as "Extra 798;" and all other numbers by figures. The direction of the movement of Extras will be added when necessary, as "East" or "West." Time will be stated in figures only.

525. The following signs and abbreviations may be used:

Initials for Superintendent's signature.

Such office and other signals as are arranged by the Superintendent.

C & E—for Conductor and Engineman.

O K—as provided in these rules.

Min—for Minutes.

Junc—for Junction.

Frt—for Freight.

No—for Number.

Eng—for Engine.

Sec—for Section.

Opr—for Operator.

9—to clear the line for Train Orders.

15—for Operators to ask for or to repeat Train Orders.

31—for Train Order as provided in the rules.

The usual abbreviations for the names of the months.

526. Orders used by conductors must be sent by them, daily, to the Superintendent.

527. Enginemen will place their orders in the clip before them until executed.

FORMS OF TRAIN ORDERS.

Form A.—Fixing Meeting Point for Opposing Trains.

_____ and _____ will meet at _____

EXAMPLES.

No. 1, Engine 40, and No. 2, Engine 50, will meet at Bombay.

No. 1, Engine 40, and 2d No. 2 will meet at Siam.

No. 1, Engine 40, and Extra 95 will meet at Hong Kong.

Extra 652 West and Extra 231 East will meet at Yokohama.

Trains receiving this order will, with respect to each other, run to the designated point, and having arrived there will pass in the manner provided by the Rules.

Form B.—Authorizing a Train to Run Ahead of or Pass another Train Running in the Same Direction.

(1.) _____ will pass _____ at _____.

(2.) _____ will run ahead of _____, from _____ (to _____).

EXAMPLES.

(1.)—No. 1, Engine 40, will pass No. 3, Engine 36, at Khartoum.

(2.)—No. 4, Engine 90, will run ahead of No. 6, Engine 42, from Bengal (to Madras).

When under this order a train is to pass another, both trains will run according to rule to the designated point, and there arrange for the rear train to pass promptly.

Form C.—Giving a Train of Inferior Right the Right of Track Against an Opposing Train of Superior Right.

_____ has right of track against _____ (_____) to _____

EXAMPLES.

(1.)—No. 2, Engine 96, has right of track against No. 1, Engine 37. Mecca to Mirbat.

(2.)—Extra 37 has right of track against No. 3, Engine 14, Natal to Rattam.

This order gives a train of inferior right the right of track against one of superior right, to a designated point, when a definite meeting point cannot be fixed.

If the trains meet at the designated point, the train of inferior right must take the siding, unless the rules or orders otherwise indicate.

Under this order, as illustrated by example (1), if the train of superior right reaches the designated point before the other arrives it may proceed, provided it keeps clear of the schedule time of the train of inferior right as many minutes as the inferior train was before required by the Train Rules to keep clear of the superior train.

If the train of superior right, before meeting, reaches a point beyond that named in the order, the conductor must stop the other train where it is met and inform it of his arrival.

Under example (2) the superior train cannot go beyond the designated point until the extra train arrives.

When the train of inferior right has reached the designated point, the order is fulfilled, and the train must then be governed by Time-table and Train Rules or further orders.

The following modification of this form of order will be applicable for giving a work train the right of track over all other trains, in case of a wreck or break in the track.

EXAMPLE.

Work Extra 275 has right of track over all trains between Stockholm and Edinburgh.

This gives the work train the exclusive right of the track between the points designated.

Form D.—Giving all Regular Trains the Right of Track Over a Given Train.

All regular trains have right of track against _____ (between _____ and _____).

EXAMPLE.

All regular trains have right of track against No. 1, Engine 40, between Moscow and Berlin.

This order gives to any regular train of inferior right receiving it the right of track over the train named in the order, and the latter must clear the schedule times of all regular trains, the same as if it were an extra.

Form E.—Time Orders.

(1.) _____ will run _____ late from _____ to _____.

(2.) _____ will wait at _____ until _____ for _____.

EXAMPLES.

(1) No. 1, Engine 40, will run 20 minutes late from Joppa to Mainz.

(2.) No. 1, Engine 40, will wait at Muscat until 10 a. m. for No. 2, Engine 36.

Form (1) makes the schedule time of the train named, between the points mentioned, as much later as the time stated in the order, and any other train receiving the order is required to run with respect to this later time, the same as before required to run with respect to the regular schedule time. The time in the order should be such as can be easily added to the Schedule time.

Under Form (2) the train of superior right must not pass the designated point before the time given unless the other train has arrived. The train of inferior right is required to run with respect to the time specified the same as before required to run with respect to the regular Schedule time of the train of superior right.

Form F.—For sections of Regular Trains.

_____ will carry signals (_____) to _____ for _____.

EXAMPLES.

No. 1, Engine 40, will carry signals Astrakhan to Cabul for Engine 85.

2d No. 1 will carry signals London to Dover for Engine 90.

This may be modified as follows:

Engines 70, 85 and 90 will run as 1st, 2d and 3rd sections of No. 1, London to Dover.

For discontinuing a section:

Engine 85 is discontinued as (_____) section of No. 1 from Dover.

If there are other sections following add:

Other sections will change numbers accordingly.

The character of train for which signals are carried may be stated. Each section affected by the order must have copies, and must arrange signals accordingly.

Form G.—For Arranging a Schedule for a Passenger Special Train.

(1.)—Engine _____ will run as passenger special, leaving _____ on _____ on the following schedule, and will have the right of track over all trains:

Leave _____.

Arrive _____.

EXAMPLE.

(1.) Engine 77 will run as passenger special, leaving Turin on Thursday, February 17th, on the following schedule, and will have the right of track over all trains:

Leave Turin 11:30 p. m.

Pekin 12:35 a. m.

Canton 1:47 a. m.

Arrive Rome 2:22 a. m.

Example (1) may be varied by specifying particular trains over which the special shall or shall not have right of track, and any train over which the special train is thus given the right of track must clear its time as many minutes as such train is required to clear the schedule time of a first-class train.

(2.) Engine _____ will run as passenger special, leaving _____ on _____ with the rights of a _____ class train (_____), on the following schedule, which shall be for this train a supplement to Time-table No. —.

Leave _____.

Arrive _____.

EXAMPLE.

(2.) Engine 75 will run as passenger special, leaving Geneva, Thursday, February 17th, with the rights of a (first) class train

(east) on the following Schedule, which shall be for this train a supplement to Time-table No. 10 :

Leave Geneva 10 a. m.

Pekin 10:30 a. m., passing No. 12.

Canton 11 a. m., meeting No. 7.

Arrive Athens 11:30 a. m.

Example (2) will be in each case a temporary supplement to the current Time-table, and the designation of meeting and passing points is to be taken as the same as such designation by full-faced type on the Time-table, and the Rules are to govern in the same way.

Form H.--Extra Trains (Freight and Work.)

—will run extra from— to—.

EXAMPLE.

(a.) Engine 99 will run extra from Berber to Gaza.

A train receiving an order to run extra is not required to guard against opposing extras, unless directed by order to do so, but must keep entirely clear of all regular trains as required by rule.

A "work train" is an extra, for which the above form will be used for a direct run in one direction. The authority to occupy a specified portion of the track, as an extra while working, will be given in the following form :

(b.) Engine 292 will work as an extra from (7 a. m.) (until 6 p. m.) (or to-day) between Berne and Turin.

The working limits should be as short as practicable, to be changed as the progress of the work may require. The above may be combined, thus :

(c.) Engine 292 will run extra (from Berne) to Turin and work as an extra from 7 a. m. until 6 p. m. between Turin and Rome.

When an order has been given to "work" between designated points, no other extra must be authorized to run over that part of the track without provision for passing the work train.

When it is anticipated that a work train may be where it cannot be reached for meeting or passing orders, it may be directed to report for orders at a given time and place, or an order may be given that it shall clear the track for a designated extra, in the following form :

(d.) Work Extra 292 will keep clear of Extra 223, east, between Antwerp and Brussels after 2:10 p. m.

In this case, Extra 223 must not pass either of the points named before 2:10 p. m., at which time the work train must be out of the way between those points.

When the passage of an extra train over the working limits cannot be anticipated by these or other orders to the work train, an order must be given to such extra, to protect itself against the work train in the following form :

(e.) Extra 76 will protect itself against Work Extra 95 between Lyons and Paris.

This may be added to the order to run extra.

A work train when met or overtaken by an extra must allow it to pass without unnecessary detention.

When the conditions are such that it may be considered desirable to require that work trains shall at all times protect themselves while on working limits, this may be done under the following arrangements. To example (b) add the following words :

(f) protecting itself against all trains.

A train receiving this order must, whether standing or moving, protect itself within the working limits (and in both directions on a single track) against all trains, in the manner provided in Rule 99.

When an extra receives orders to run over working limits it must be advised that the work train is within those limits by adding to example (a) the words

(g.) Engine 292 is working as an extra between Berne and Turin

A train receiving this order must run expecting to find the work train within the limits named.

Form J.—Holding Order.

Hold —.

EXAMPLES.

(1.) Hold No. 2, Engine 96.

Hold all trains (east).

As any order for which "O K" has been given and acknowledged operates as a holding order for the train to which it is addressed, this form will only be used in special cases, to hold trains until orders can be given or for some other emergency. The reason for holding may be added, as "for orders."

This order is not to be used for holding a train, while orders are given to other trains against it, which are not at the same time given to it in duplicate. It must be respected by conductors and engine-men of trains thereby directed to be held as if addressed to them. Conductors when informed of the order must sign for it, and their signatures must be sent and "complete" obtained.

When a train has been so held it must not go until the order to hold is annulled, or an order is given in the form "— may go." This must be addressed to the person or persons to whom the order to hold was addressed and must be delivered in the same manner.

Form K.—Annulling a Schedule Train.

— of — is annulled.

EXAMPLES.

(1.) No. 1 of Feb. 29th is annulled.

(2.) No. 3, due to leave Naples Saturday, Feb. 29th, is annulled.

Adding "from (Alaska)," or "between (Alaska) and (Halifax)," when appropriate.

This order takes away all rights of the train annulled and authorizes any train or person receiving it to use the track as if the train annulled were not on the Time-table.

If a train is annulled to a point named, its rights beyond that point remain unaffected.

The train dispatcher may direct any operator to omit repeating back an order annulling a train, until he has occasion to deliver it.

When a train has been annulled it must not be again restored under its original number by special order.

Form L.—Annulling or Superseding an Order.

"Order No. — is annulled."

This will recite the full order annulled, and will be numbered, transmitted and signed for as other orders.

If the order which is annulled has not been delivered to a train, the annulling order will not repeat it, but will be in the following form :

Order No. — for trains — and — is annulled, and will be addressed to the operator, who will destroy all copies but his own, and write on it

Annulled by Order No. —.

An order superseding another may be given, adding "this supersedes Order No. —," or adding "instead of —."

EXAMPLE.

No. 1 and 2 will meet at Sparta, instead of at Thebes.

An order that has been annulled or superseded must not be again restored by special order under its original number.

In the address of an order annulling or superseding another order, the train first named must be that to which rights were given by the order annulled or superseded and when the order is not transmitted simultaneously to all concerned, it must be first sent to the point at which that train is to receive it.

INSTRUCTIONS

GOVERNING THE USE OF THE

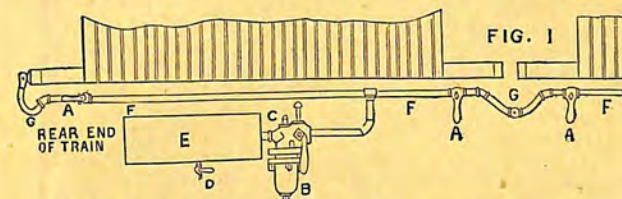
WESTINGHOUSE AIR BRAKE

TRAINMEN.

The term **Straight Air** is used to designate the original Westinghouse Air Brake system, which operates by compressed air applied from the reservoir on the engine. The pressure is conveyed directly through pipes and couplings to the brake cylinders, and the brakes are released by the escape of the compressed air through the engineer's valve on the engine.

This system does not require the use of the auxiliary reservoir E or triple valve C, and when the handle of the four-way cock points down, as in Fig. 1 (straight air), these devices are out of use.

THE WESTINGHOUSE STRAIGHT AIR BRAKE.



EXPLANATION.—A A, STOP COCKS IN MAIN BRAKE PIPE. B, FOUR-WAY COCK HANDLE. C, TRIPLE VALVE. D, RELEASE COCK IN AUXILIARY RESERVOIR. E, AUXILIARY RESERVOIR. F F, MAIN BRAKE PIPE. G G, HOSE AND COUPLINGS.

The **Automatic Air Brake** is an improvement on the straight air system, being self-acting.

The brakes are applied by allowing compressed air to escape from the train pipe, hence the bursting of a hose, or the breaking of the train in two, applies the brake at once without the intervention of any one.

The self-acting principle lies in the triple-valve which is held in position by the compressed air in the train pipe. On a reduction of pressure the valve falls and allows the supply of compressed air, carried under each car in the reservoir, to rush into the brake cylinder and apply the brake.

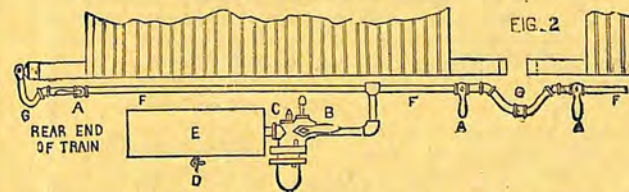
It is important to note that the method of applying the **Straight** brake is just the opposite to the **Automatic** brake.

To apply the **Straight**, air-pressure is put in the train pipe.

To apply the **Automatic** brake, air-pressure is reduced in the train pipe.

The four-way cock handle B must be horizontal under every car when this system is used.

THE WESTINGHOUSE AUTOMATIC AIR BRAKE.

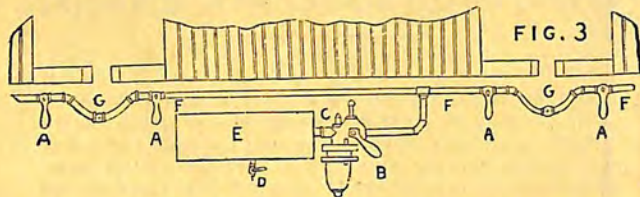


EXPLANATION.—A A, STOP COCKS IN MAIN BRAKE PIPE. B, FOUR-WAY COCK HANDLE. C, TRIPLE VALVE. D, RELEASE COCK IN AUXILIARY RESERVOIR. E, AUXILIARY RESERVOIR. F F, MAIN BRAKE PIPE. G G, HOSE AND COUPLINGS.

If from any cause the brakes do not operate on a car, the four-way cock handle should be turned to the midway position, in which case the air passes through the train pipe without any effect on the brakes whatever.

All the cars in a train must be set for **Straight** or **Automatic** air, as the two systems will not work together.

AIR SHUT OFF FROM BRAKES ON THIS CAR.



EXPLANATION.—A A, STOP COCKS IN MAIN BRAKE PIPE. B, FOUR-WAY COCK HANDLE. C, TRIPLE VALVE. D, RELEASE COCK IN AUXILIARY RESERVOIR. E, AUXILIARY RESERVOIR. F F, MAIN BRAKE PIPE. G G, HOSE AND COUPLINGS.

In making up trains all the couplings must be united so that the brakes will apply throughout the train. All the cocks in the train pipes must be open (handles down), except the one on the rear end of the last coach, which must be closed (handle horizontal), and couplin, hung on hook. (See Figs. 1, 2, A and G.)

In detaching engines or cars, the couplings must invariably be parted by hand, the cocks in train pipe being closed before uncoupling. This will prevent setting of brakes.

At stations where the train has to be broken, or where cars have to be taken or left, trainmen must not turn the stop-cock or disconnect hose until the brakes have been released by the engineer.

If the brakes are applied when the engine is not attached, they can be released by opening the release cock under each auxiliary reservoir on passenger trains, and on freight trains by placing the four-way cock in the cut out or midway position, Fig. 3 B.

The conductor's valve for the application of the brakes from the inside of the car must never be used except in cases of emergency. Inspectors must examine this valve each trip to be certain it is tight and in working order.

At terminals the brakes must be applied immediately after coupling the engine, and the conductor must see that this test is made, and must know that **All** brakes apply and release properly before starting.

At stations where there are no inspectors, the conductor must make this test in person. When not in use the hose must be coupled to the hooks provided for the purpose.

INSPECTORS.

Brakes should be adjusted so that the pistons will travel no more than 8 or 9 inches on passenger, and 6 or 7 inches on freight cars.

Slack in connections must be taken up by dead levers.

Brake cylinders must be cleaned and oiled once in two months, and the date of oiling marked on cylinder with chalk.

Cylinders must be kept free of gum and dirt so that they will release immediately.

In damp weather the triple valve must be drained daily. To do this, slack bottom nut half a turn, let water escape, then screw up again.

Inspectors must examine each car in the train and be certain that every brake applies and releases properly before signalling to the engineer that all is right.

Inspectors must always keep a supply of fixtures on hand for repairs, and will be held responsible for trains leaving stations with brakes not in perfect working order.

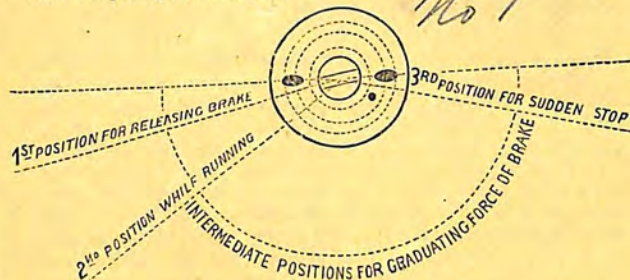
ENGINEERS.

Engineers must see that the steam cylinder is kept well lubricated that the air cylinder is sparingly lubricated with a small quantity of valve oil (tallow or lard oil must not be used in the air cylinder); that the pump is constantly run, but not faster than is necessary to maintain the required pressure, which, for express trains, must be from 70 to 80 lbs.

For ordinary stops the brakes should be applied lightly by opening the valve or cock and closing it gently when the pressure has been

reduced 8 to 12 lbs. on the gauge. The brakes are fully applied when the pressure as shown on the gauge is reduced 20 lbs.; any further reduction is waste of air.

In releasing the brakes, the handle of the brake valve must be moved quite against the stop and be kept there for about ten seconds, and then moved back against the intermediate stop, which is the feed position, where it must remain while train is moving. The handle must never be left midway between the two stops, as this will nearly if not quite close the passage to train pipe.



The brakes, as has been explained, are applied when the pressure in the brake pipe is suddenly reduced, and released when the pressure is restored.

It is of very great importance that every engineer should bear in mind that the air pressure may sometimes reduce slowly, owing to the steam pressure getting low, or from the stopping of the pump, or from a leakage in some of the pipes when one or more cars are detached for switching purposes, and that in consequence it has been found absolutely necessary to provide each cylinder with what is called a leakage groove, preventing the application of the brakes when the pressure is slowly reduced, as would result from any of the above causes.

This provision against the accidental application of the brakes must be taken into consideration, or else it will some times happen that all of the brakes will not be applied when such is the intention, simply because the air has been discharged so slowly from the brake-pipe that it only represents a considerable leakage, and thus allows the air under some cars to be wasted.

It is thus very essential to discharge air enough in the first instance, and with sufficient rapidity, to cause all of the leakage-grooves to be closed, when they will remain closed until the brakes have been released. In no case should the reduction in the brake-pipe for closing the leakage-grooves be less than four or five pounds, which will move all pistons out so that the brake-shoes will be only slightly bearing against the wheels. After this first reduction the pressure can be reduced to suit the circumstances.

On a long train, if the engineer's brake-valve be opened suddenly, and then quickly closed, the pressure in the brake pipe, as indicated by the gauge, will be suddenly and considerably reduced on the engine, and will then be increased by the air pressure coming from the rear of the train; hence it is important to always close the engineer's brake-valve slowly, and in such a manner that the pressure as indicated by the gauge will not be increased, or else the brakes on the engine and tender, and sometimes on the first one or two cars, will come off when they should remain on. It is likewise very important, while the brakes are on, to keep the engineer's brake-valve in such a position that the brake-pipe pressure cannot be increased by leakage from the main reservoir; for any increase of pressure in the brake-pipe causes the brakes to come off.

On long down-grades it is important to be able to control the speed of the train, and at the same time to maintain a good working pressure. This is easily accomplished by running the pump at a good speed, so that the main reservoir will accumulate a high pressure while the brakes are on. When, after using the brake some time, the pressure has been reduced to sixty pounds, the train pipes and reservoirs should be discharged as much as possible before the speed has increased to the maximum allowed. A greater time for recharging is obtained by considerably reducing the speed of the train just before recharging and taking advantage of the variation in the grades.

To release the brakes with certainty, it is important to have a higher pressure in the main reservoir than in the main pipe. If an engineer feels that some of his brakes are not off, it is best to turn the handle of the engineer's brake-valve just far enough to shut off the main reservoir and then pump up fifteen to twenty pounds extra, which will insure the release of all the brakes; all this can be done while the train is in motion.

For ordinary stops, great economy in the use of air is effected by, in the first instance, letting out from eight to twelve pounds pressure while the train is at speed, taking care to begin a sufficient distance from the station.

No man is fully competent to use air brakes who does not study and practice their application and release, without jerking and lurching the cars. This is specially disagreeable on passenger trains, and can be avoided, ordinarily, by releasing the brakes gradually before a full stop, so that all brakes will be off at the moment a stop is made.

Running into meeting points, stations and terminals at excessive speeds, relying on making fancy or exhibition stops by violent application of the brake, is strictly prohibited. Such stops are disagreeable to passengers and are extremely destructive to rolling-stock.

Recent experiments have shown that emergency stops on long freight trains are about as damaging to the cars as collisions.

Engineers, upon finding that the brakes have been applied automatically, or by train men, must at once aid in stopping the train by turning the handle of the brake-valve towards the right, thus preventing escape of air from the main reservoir.

AIR GAUGE COCK.

Attached to engineer's brake-valve, at the point where the air passes from the valve to the air gauge, is a small cock called Air Gauge Cock, whose use is to turn the air into the gauge whether running with straight or automatic air.

When using **Automatic** air, place the handle in position to open the passage from engineer's valve to the gauge.

When using **Straight** air open the passage from the main reservoir to the gauge.

DRIVER BRAKES.

Driver brakes must be tested daily at points indicated by Mast or Mechanics, to insure their being in good order. Any defect in them must be reported in general report of defects.

Driver brakes must not be used except in emergencies, as their use causes shocks both disagreeable and damaging.

The engineer should warn trainmen when the brakes have been applied in such a manner that they cannot be released from the engine by giving a succession of short double whistles.

J. KRUTTSCHNITT,
Ass't Manager.

A. C. HUTCHINSON,
M'l Manager.