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REPORT OF ACCIDENTS

ISSUED BY

The Colorado State Railroad Commission

FOR THE YEAR ENDING

December 31, 1909

AND

RECOMMENDATIONS FOR LEGISLATION

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To His Excellency,

JOHN F. SHAFROTH,

Governor of the State of Colorado:

Sir—The Colorado State Railroad Commission herewith submits its Annual Report of Accidents occurring on the various transportation lines operating within the State of Colorado, for the year ending December 31st, 1909, and at the same time respectfully outlines and submits certain recommendations pertaining to this subject, which, in the judgment of the Commission, should receive the favorable consideration of our legislature at as early a day as possible. These recommendations will tend, in a measure as least, to lessen our casualty record, and, at the same time, afford the traveling public and railway employes some additional assurance of safety other than they now enjoy on many of our railroads.

It seems to us that this is a matter of such vital importance to the people of this state that a special law covering this subject should be enacted at the very earliest possible moment, and, as we understand there is to be a special session of the legislature called for the purpose of enacting other important measures dear to the people, we urgently request that, inasmuch as the law under which we are acting is not at all clear or specific on the question of block signals, a law similar to the one attached to this report be brought to the attention of the legislature and it be asked to enact a law in conformity therewith.

Respectfully submitted,

THE COLORADO STATE RAILROAD COMMISSION,

By A. P. ANDERSON,

President.

WORTH L. SEELY,

Secretary.

Report of Accidents

The following statement of accidents is taken from the reports filed with the Commission for the year ending December 31st, 1909. Said reports date from June 8th, 1909, at which time the Commission, in order to facilitate the forwarding of reports of accidents as provided for under Section 27 of the act to regulate common carriers in this state, issued a circular order addressed to all carriers, and sent blank forms of reports to fill out and forward to the office of the Commission immediately after an accident occurred wherein there was loss of life or injury to any person.

Prior to the sending out of this circular order and the form of reports, our records in some instances had not been as complete as they should have been. Therefore, possibly some accidents where there was a loss of life or an injury may not have come to the notice of the Commission. However, the statistics given in the table are approximately correct.

The chief benefit of statistics of railway accidents is to point out to those in charge of railway operations and to the people of the state, that class of accidents which may be lessened by greater care on the part of railway employes, or greater uniformity in railway equipment and conditions of management. To render this service, it is necessary that casualties should be classified according to the class of persons by whom they are sustained and according to the kind of accidents from which they result.

The summaries of accidents in this report present statements of accidents resulting from the movement of trains, locomotives or cars only. Accidents arising from causes other than those resulting from the movement of trains, locomotives or cars *are not included in this report.*

The total number of casualties to persons on account of railway accidents, as shown by the reports filed with the Commission for the year ending December 31st, 1909, was 229, and this number would undoubtedly have been greater had they been reported to the Commission during the first part of the year prior to our sending out forms.

The number of persons killed during the year was 113, all of which have been reported. The number reported as injured was 116.

The figures show a large number of employes killed and injured, a result due, in part, to the heavy volume of business being done by the roads of this state, and the further fact that many of our mountain roads have long, heavy grades, and not infrequently the air pumps or brakes, for some unaccountable reason, fail to respond at the critical period, with the result that

the train is lost control of and rushes down the grade at such speed that it finally leaves the track and crashes into the abyss below, killing or maiming some or all of the crew. The employment of unskilled and untried men is often the cause of the most serious accidents. The operating officials of a railroad should use great care in selecting the men who are to have charge of trains. In many instances the most serious accidents where the loss of life is greatest, the same could have been averted had the men in charge of the train's movements exercised the authority and assumed the responsibility they are supposed to exercise. No man should be placed in charge of a train who is of a hesitating or doubtful nature; they should understand that upon them, to a very great degree, the safety of the train and its load of human freight depends. It is such thoughtlessness or negligence as this that, in a measure at least, is responsible for some of the most serious accidents in this state, and to some extent the operating departments of the roads are responsible, for the reason that greater care and better judgment should be exercised on their part in the matter of promoting men to positions of such importance.

We give below the statistical table of accidents above referred to:

RAILROAD	EMPLOYES								OTHER PERSONS						Total		TOTAL All Persons	
	Trainmen		Switchmen Flagmen and Watchmen		Other Employes		Total Employes		Pass- engers		Tres- passing		Not Tres- passing					
	Killed	Inj' red	Killed	Inj' red	Killed	Inj' red	Killed	Inj' red	Killed	Inj' red	Killed	Inj' red	Killed	Inj' red	Killed	Inj' red	Killed	Inj' red
A. T. & S. F.					2		2		1		5				6		8	
C., R. I. & P.	1	3				1		4									1	4
C. & S.					1		1			4	3	6			3	10	4	10
C. & S. E.		2						2										2
Colo. Midland.	1						1										1	
Colo. & Wyo.		1	2			1	2	2									2	2
C., B. & Q.					1		1				1	2			1	2	2	2
C. S. & C. C. Dist. . .	1			1	2	2	3	3	1						1		4	3
D. & R. G.	8		1		16	13	25	13	35	71	18	6	1		54	77	79	90
D., N.-W. & P.											1	2			1	2	1	2
Flo. & C. C.										1	1				1	1	1	1
Mid. Terminal.									1						1		1	
Union Pacific.	1				1		2		1		4				5		7	
Uintah Ry.	1				1		2										2	
TOTAL.	13	6	3	1	24	17	40	24	39	76	33	16	1		73	92	113	116

COLLISIONS AND THE BLOCK SYSTEM.

The most prominent fact in the record for the year 1909 is the appalling loss of life and property in collisions. As to whether the showing can be called materially worse or materially better than what it has been in previous years, we have not the data upon which to base an opinion—but the record for the past year is so painful and alarming as to excite the indignation of the people of the whole state. That 113 people, comprising passengers, employes and what is termed “other persons,” should be killed on the railroads in this State of Colorado in a single year, and 116 injured within the same time, indicates a condition which should not pass without serious attention. Some of these accidents were due to causes which have never been satisfactorily explained; therefore there is urgent need for careful consideration of railroad accidents, their causes and their results.

While these are matters which have been considered in judicial decisions and in deliberations and verdicts of coroners and coroners’ juries, and to some extent by the State Railroad Commission, none of these as yet has been able to deal with the subject in such manner as to bring about improvements or reformatory measures in railroad service. That railroad collisions and accidents inflict the most pitiable sufferings on the passengers and trainmen who are the victims, and the most heartrending experiences on those who escape, is too well known to comment on. That the distress in many cases is no worse than that produced by other accidents, such as bridge failures, mine explosions, shipwrecks and fires, is true; and that the railroad companies make financial reparation to those who are injured is also admitted, and that the railroad officers deplore the existing situation is well known.

That many railroads have equipped some of their lines with block signals, which in a measure greatly reduces the danger of collisions, is to be commended. But the fact remains that collisions do too frequently occur; that some of our most important railroads have not, as yet, adopted any system of block signals—some use it on parts of their lines, but not on others; some use it part of the time or for a part of their trains; some adopt the principle, but have insufficient regulations for its operation in order to reach its highest efficiency.

Nevertheless, the problem of reducing the annual collision record by a large percentage is comparatively simple. It may be dealt with successfully within a reasonably short time without inconvenience to the public and without causing serious financial burdens to the roads. So far as we can see, basing our opinion upon the records and statistics before us, the numerous railroad companies that have introduced the block system have

adopted the proper remedy, and their action should be imitated by other companies.

England uses some form of block system universally, and the immunity from collisions on English railroads is so nearly perfect and the casualty record so low as to be a powerful argument in favor of its adoption in this state, as well as in all other states.

We therefore earnestly recommend the consideration of a law requiring the adoption and use of the block system in the State of Colorado. In view of the startling frequency of railroad disasters that have been laid before the public by the press within the last year or more, to say nothing of the records herein, there can be no need of argument in favor of the proposition to take legislative action looking to the prevention of these dreadful casualties. If any argument is needed in favor of such action on the part of the legislature, it can be found in the fact that action has already been taken by the majority of the principal railroads of the country. They have used the block system on their chief lines for years, and some are spending many thousands of dollars annually in improving and in extending their signal appliances.

There is no question but that the larger railroads recognize the correctness and efficiency of the block signal principle and the practical adequacy of the systems now in operation, and yet these very companies on parts of their lines continue the use of the old methods, while other important lines in the state adhere wholly to the old system, which has practically become obsolete. This course is hard to explain, except on the theory that the expense of the block system is too great for lines of moderate density of traffic, but that theory would seem to be discredited by the fact that other companies operating many hundreds of miles of road do use the system on lines of moderate, and even light, traffic, and, judging from the experience of English roads where the block system has been in use for the past fifteen or twenty years, tends to refute the claim that the expense is excessive. The question of expense should not be given too great weight, for the lives of passengers and trainmen are as valuable on one line as on another and are entitled to the same protection. However, it should be understood that the efficiency of the block system depends largely on adequate care and discipline, and that defects in administration or inspection, or in the apparatus itself, or negligence of enginemen or signalmen, not infrequently lead to collision where the block system is used. It should be carefully noted that the use of the block system does not impose upon any railroad the necessity of buying or using any particular mechanical device or appliance. The essential instruments are telegraph or telephone lines, or other electric communication, with the necessary batteries, keys, relays, sounders, telephones and bells, and a signal for day and night indications. All of these things can be had, as they are

made by different establishments throughout the country—some railroads making these articles in their own shops. It is true that many patented articles are in use, especially those designed for automatic signaling, and it is not our intention or purpose to advocate a law requiring the use of automatic signals. A law requiring the use of the block system does, however, permit the use of automatic signals, as they are so operated as to constitute a block system.

One of the defects in the ordinary methods of handling trains can be looked upon as incurable. This conclusion is reached and supported by a careful study of the records pertaining to accidents which are being reported and made public through the press; some of the most serious accidents occurring in this state have been directly attributable to ineradicable mental infirmities in men or from the employment of men more or less incompetent. It is somewhat strange, but collisions, due to blunders and forgetfulness of two or more men simultaneously, follow one another in rapid succession. Those horrible mishaps occur on what are known as the best railroads, as well as on roads of all other classes. And many of the railroads have taken action indicating that the block system is unquestionably the only safe and satisfactory method of managing trains. But the fact remains, that of the railroad mileage of the entire country only about one-fifth is worked by the block system. The strong arm of the law is needed to stimulate those companies which have not taken action or which have made progress so slowly that they are chargeable with neglect of duty in this regard.

And a legislative measure requiring the installation of block signals on the various roads in this state should certainly receive the careful attention of the legislature at the earliest possible moment.

The Commission, therefore, recommends to the legislature the consideration of a law patterned somewhat after that in force in Great Britain and Ireland, requiring the adoption and use of the block system in this state, and a draft of a measure for the purpose of aiding discussion is herewith subjoined.

This proposed bill has been drawn on the theory that the expense necessary for the construction of new signals, or for electrical wires, or apparatus necessitated by the use of the block system, as well as the increased expense for wages of signalmen, should be distributed over a term of years, and it is suggested, therefore, that each railroad company be required to adopt the block system on one-fourth of its passenger lines by January, 19...; on another one-fourth by January, 19...; on another one-fourth a year later, and on the whole by January, 19...

Under this plan many of the principal lines would be required to make no important additions to their expense accounts

for the first two years, and some would feel no burden for the first three years.

For the purpose of dealing with separate parts of an extension system of railroads, a section has been included enabling the Commission to deal with one part of a company's lines independently of the other parts. It is well known that some companies use the block system on certain portions of their lines, while on other portions over which a large passenger traffic is done the old methods are still retained. Sections 4 and 5 of the proposed bill provide for the introduction of the block system on the more important lines in two years less than the term before mentioned. This requirement seems reasonable, because of the fact that some railroads already use on a portion of their lines block signals which substantially comply with the requirements of the suggested statute.

Section 5 provides for roads on which the passenger traffic is very light, but on which the number of freight trains is comparatively large. This is necessary, because passenger trains suffer not only from collisions with other passenger trains, but from collisions with freight trains. A statute requiring the use of the block system should be so drawn as not to apply to railroads or parts of railroads over which the traffic is wholly freight, and the draft proposed is thus drawn.

The proposed statute also exempts roads or sections on which only one locomotive is at work and roads on which passenger trains are run one way only every day.

DRAFT OF A BILL TO REQUIRE THE USE OF THE BLOCK SYSTEM.

Be it enacted, etc.

Section 1. That the Colorado State Railroad Commission, hereinafter referred to as "the Commission," may order any common carrier engaged in intrastate commerce by railroad, or owning or operating a railroad within the State of Colorado, to adopt the block system on one-fourth part (in length) of its passenger lines within a time specified, the order to be issued and published months at least before the date specified for its fulfillment.

Sec. 2. That the Commission, as aforesaid, may order such carrier to adopt the block system on one-half part of its passenger lines within a time specified, the date for fulfillment to be at least months later than the date for fulfillment of the order to the same carrier authorized by the preceding section, and the order to be issued at least months before the date specified for its fulfillment.

Sec. 3. That the Commission, as aforesaid, may order such carrier to adopt the block system on three-fourths part of its passenger lines, and subsequently on the whole of such lines, within reasonable time, the intent of this section being: (1) to require the gradual adoption of the block system, and (2) to require its adoption throughout all passenger lines by the first day of January, 19...

Sec. 4. That in respect to any passenger line, whether it be the whole or a part of a company's line or lines, on which the receipts from carriage of passengers, express traffic and United States mails shall for two years have aggregated \$1,500 per mile per annum, or more, as shown by the records of the carrier, the Commission as aforesaid may order and require the adoption and use of the block system throughout the line by January, 1st, 19..., due regard being had to the principle of gradual introduction as embodied in sections 1, 2 and 3.

Sec. 5. That in respect to passenger lines on which the receipts from all traffic—passenger, express, United States mails and freight—shall for two years have aggregated \$3,000 per mile per annum, or more, as aforesaid, the Commission may order and require the adoption and use of the block system as in the preceding section.

Sec. 6. That for the purposes of sections 4 and 5, the Commission may require from any carrier a report, annually, of its receipts from the carriage of passengers, from express traffic, from United States mails and from freight, in which the sums pertaining to the different divisions of the railroad as defined by the Commission shall be shown separately; such report, or reports, to be made and filed in accordance with the rules and requirements governing the making and filing of carriers' annual reports. The Commission shall not make arbitrary and unreasonable divisions of a railroad, and may require, accept and use approximate statements of receipts for any period previous to July, 19...

Sec. 7. That for the purposes of this act, the Commission may require every common carrier affected by the act, to seasonably file at the office of the Commission in Denver, Colorado, a plan, or plans, sketch, or sketches, showing all of its main tracks, and the situation of all side-tracks connected directly to main tracks, cross-overs, switches in main tracks, crossings, draw-bridges, derailing switches, fixed signals, signal towers or cabins, station buildings, highway crossings, bridges (supporting tracks) over bridges, water stations and coaling stations; such plans or sketches to be drawn to as small a scale as is practicable, consistent with their purpose, and to have the aforesaid features suitably and clearly indicated and described by words or abbreviations; and to have memoranda showing what, if any, main tracks are used for freight traffic only; and to be accompanied by a statement showing the length of each division,

branch and separate line, with the names of its termini; and showing also what lines, or parts of lines, are worked by the block system, specifying the kind, whether manual, controlled manual or automatic.

Sec. 8. That every carrier to which an order requiring the adoption or use of the block system shall be issued under this act, shall, within ninety (90) days after the receipt of such order, file with the Commission a plan or sketch of the line, or lines, affected by such order, with a statement of the means and methods intended to be used in carrying out the order; such statement of means and methods shall include the rules under which the carrier intends to order and regulate the movement of all trains on such line under the block system; and said rules, when approved by the Commission, shall be the lawful regulations for the movement of trains on the line, or lines, affected by such order; and it shall be unlawful to move any car or engine on such line, except in accordance with such rules. An order may be issued specifying one-fourth, or one-half, or three-fourths of a line, in accordance with this act; and in such case it shall be the duty of the railroad company to decide what part, or parts, of its line, or lines, shall be taken to make up such fraction, and to embody such decision in its plan and statement to be sent to the Commission. In default of such decision and statement, it shall be the duty of the Commission to decide what line, or lines, or parts thereof, shall be subject to its order; and an order specifying lines, approximating in length the fractions named in this act, shall be lawful. An order may allow exceptions and modifications, and may be revised and re-issued.

Sec. 9. That whenever and wherever there shall exist on a railroad line, where the block system is in use or is to be adopted in accordance with this act, any switch, draw-bridge, railroad crossing, or street railroad crossing, which is not provided with an adequate interlocked signal suitably fixed and maintained and regularly attended, the Commission may require the carrier to submit for approval a rule, or code of rules, limiting and regulating the speed of all trains passing or approaching such draw-bridge, switch or crossing; and it shall be unlawful, after a date fixed by the Commission, to move a train, car or engine on or across such draw-bridge, switch or crossing, except in conformity with such rule, or rules, approved by the Commission.

Sec. 10. For the purposes of this act, a passenger line shall be deemed to be a railroad, or part of a railroad, on which one or more trains for the conveyance of passengers are regularly run in each direction each week day. Provided, that this act shall not apply to any railroad or section of a railroad on which, by a suitable regulation approved by the Commission, only one engine under steam, or one electric engine or motor car, or two or more such engines or motor cars coupled together, are or will be permitted to be at any given time. And, provided further,

that for the purposes of this act, an engine or a car running by itself, shall be deemed a train.

Sec. 11. That the Commission, before issuing any order under either of the first five (5) sections of this act, shall give full and due hearing *to all persons and carriers interested*.

Sec. 12. That the Commission be and hereby is empowered and directed to enforce this act; and said Commission, by suitable agents and inspectors, shall keep itself informed concerning the action of carriers in the matters to which this act applies. Any district court of the State of Colorado shall have jurisdiction to issue writ, or writs, of mandamus against any carrier subject to this act, commanding obedience by such carrier to any lawful order made by the Commission under this act; and the Commission may apply to any such court for such writ against any carrier which shall wilfully neglect or refuse to obey any such order. It shall be the duty of the district attorney, under the direction of the attorney general of the State of Colorado, to prosecute all necessary proceedings for the enforcement of this act, and the cost and expenses of such prosecution shall be paid out of the appropriation for the courts of the state.

Sec. 13. That every carrier subject to this act shall file with the Commission twice each year, in January and in July, beginning in July, 19.., a report, in the form to be prescribed by the Commission, setting forth the number of miles of its railroad on which the block system was in use on the last days of December and June, respectively, preceding the filing of the report, specifying the kind of block system in use on each division or section. The first report made by any carrier under this section shall be accompanied by a copy of the regulations which are followed in the management of the block system, and each subsequent report shall be accompanied by a statement of changes (if any) which have been made in such regulations since the last preceding report was made.

Sec. 14. That for the purposes of this act, the term "block system" shall be taken to mean the methods and rules by means of which the movement of railroad trains (cars and engines) may be regulated in such manner that an interval of space, of absolute length, may at all times be maintained between the rear end of a train and the forward end of the train next following. The term shall be taken to include automatic block signalling, so-called, but no order shall specify the kind of block system, or make or cause any discrimination between automatic, so-called, and non-automatic.

NOTE.—In order that section 14 may be more fully understood it is further explained as follows:

The term "block system" is used to designate the method whereby the use of the telegraph, telephone or other electric devices, or by automatic apparatus, each train is prevented from leaving a certain point until the last preceding train has passed beyond a certain point further on. Many roads introduce it primarily for the purpose of preventing rear end collisions, though where trains must follow one another very frequently, the block system becomes a means of increasing the capacity of a railroad, as without it there must be an interval of time between each two trains of from five to ten minutes. With the block system this interval may be reduced one-half or more. On single-track railroads, the system is also a preventive of collisions between trains moving in opposite directions towards each other, as men or apparatus at each end of each block section, whose duty it is to protect following trains, are equally available for the protection of opposing trains.

Without the block system, protection from rear collisions depends on elaborate instructions for red flags (or lanterns), torpedoes and fuses, which instructions are difficult to define and often hard to enforce. Protection from butting collisions depends on the exercise on the part of enginemen and conductors of the most intelligent and unceasing vigilance, and on the exercise of the utmost care by the train dispatcher, who, by the use of the telegraph or telephone, regulates the movements of those trains—a large proportion of the whole—for which the time table does not prescribe meeting points.

We have no statistics by which to make an accurate estimate of the relative safety of the block system as compared with the old or time-interval system, and no intelligent comparison is possible without data concerning density of traffic and concerning the personnel of the operating department, which has never been gathered. Such comparisons have been made, however, by railroad managers from limited data, and the increasing use of the block system during the past few years, which is a result of these investigations, gives irrefutable evidence of the superiority of that system.

THE COLORADO STATE RAILROAD COMMISSION.

By A. P. ANDERSON,
President.

WORTH L. SEELY,
Secretary.

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