NEW YORK REPORT ON CORNING COLLISION.

Discusses Duty of Maintaining Discipline; and the Responsibility of Employees' Unions; Also Use of Steel Cars.

The facts of the rear collision at Corning, N. Y., July 4, last, when 40 persons were killed, are already well known; but the report concerning it issued by the Public Service Commission of the state of New York, Second district, which has just come out, is of special interest by reason of the high qualifications of the men who made it, the impartial character of the recommendations and the broad scope of the investigation; and we reprint extended extracts, substantially verbatim, from a summary given out by the secretary of the commission.

The report discusses the use of steel cars and automatic stops and urges their further study. The commission, however, considers it to be unwise to devote so much attention to the possible protection which might be afforded by steel cars and by automatic appliances that the main lessons of this collision should be lost sight of; and these are, first, that no permanent safety can be expected except through the appreciation by employees, of the importance of their duties and the need of careful attention to every detail of their work; and second, by the railway managers of the necessity of strict discipline and removal of men from the service who fail to meet a reasonable standard of performance of duty in matters involving safety.

The shielding by the faithful majority, or by any part of it, of the careless and inefficient minority from the results of its shortcomings is much to be condemned. It arises from a mistaken sense of loyalty to a fellow workman, and in the end its most disastrous consequences are visited upon the very people whose generosity and good nature are invoked to set it in motion. The reckless engineman is much more likely to kill or maim a fellow employee than he is to harm a passenger. To secure a radical improvement in the absolute prevention of railroad accidents it is the clear duty of organizations of employees, for the protection of themselves as well as the public, to co-operate vigorously and efficiently with the management in the strict enforcement of all rules affecting safety, in the proper punishment of whoever may be guilty of violating those rules, and in the removal from service of all who do not show themselves imbued with a constant desire to place safety above every other consideration. . . . Managers and superintendents should enforce discipline in such matters at any cost, and should never permit any reasonable ground for the charge that their desire for speed is more powerful than their desire for safety.

There should be greater care in the selection of the roundhouse foremen, traveling engineers, and trainmasters. These positions should be made attractive enough to secure good men who are not only competent in the technical side of their work, but who are capable of dealing justly and fearlessly in matters of discipline. The authority of these men should be sustained by the officers above them unless they are proved to be in the wrong, and as long as they do faithful work they should be secure in their positions and be as well protected against arbitrary removal as locomotive enginemen are now protected through the organization of their brotherhood. A high degree of efficiency in these elements appears to have been reached by the railways of England, and it is to be hoped that there is no prohibitive reason why such a condition should not be attained by the railways of this country. There is no doubt that the large majority of railway men perform their duties with great care and efficiency, and have a record to be proud of. The work of enginemen in particular is performed under conditions of stress, of which the general public seems to have a most inadequate appreciation. The mere observation of signals upon high speed trains under varying conditions of light, storm, and fog is a severe strain. The slightest inattention while running at the rate of a mile a minute may result in the missing of a signal. A single error in observation may result in a disastrous accident. The insistent demand of the public for high speed under all circumstances is a keen spur to railroad managers to wink at if not demand high speed under all conditions.

Enginemen are prone to believe that a strict observance of the universal rule that in cases of doubt the course of safety must be adopted imperils their positions and livelihood. Only words of praise should be applied to the general average performance of duty by enginemen. There are, however, in every class of men those who do not average up to the recognized standard of efficiency and faithfulness. . . . More train wrecks are occasioned by such men than by all other causes combined.

The investigation of the Corning accident shows clearly that the primary cause was the entire failure of Engineer William H. Schroeder of the second train to observe signals. The train into which he ran was protected by a full stop signal 250 ft. east of the rear of the train, by a flagman 2,550 ft. east, and by a caution signal nearly 4,500 ft. east. All three signals were disregarded, and Engineer Schroeder appears to have run at full speed into the rear of the train ahead without making any effort to stop.

Schroeder's contention was that the fog was so dense as to make it impossible for him to see signals clearly. The evidence produced shows that the fog had lifted sufficiently to allow the signals to be seen with reasonable clearness, and had it been as dense as Schroeder stated, no excuse has been developed for his running at the rate of 65 miles per hour. No evidence was given to indicate that any pressure was brought to bear upon him to make time with his train under dangerous conditions, or in any way to exceed the limits of safety. Since the accident the railroad company has prohibited the use of intoxicants by its employees, or the use of their time while off duty in a manner that will unfit them for efficient performance of duties. The commission approves of this order, and in securing its enforcement believes that the company is entitled to the full co-operation of the Brotherhood of Locomotive Engineers and associations of trainmen. The actions of Engineer Schroeder should be considered as much an offense against the Brotherhood of Locomotive Engineers, of which he is a member, as they are against the railway and the public.

Flagman Lane had gone back a sufficient distance to give a reasonable warning under the circumstances of this case. He violated the rules by failing to take torpedoes with him, but the testimony indicates that the weather was sufficiently clear to justify him in refraining from the use of torpedoes under the company's rule that they shall not be used in block signal territory except in foggy or stormy weather. The commission remarks that the operating rules should be so amended that the flagman may feel distinctly at liberty to use torpedoes under circumstances appearing to create special danger, but adds: It should be remembered that safety from collision of modern high speed trains is rendered possible only by complete signal systems and by the observance of such signals by engineers. It is certainly well in many situations to use flagmen to supplement the protection given by signals. . . . Trains are, however, frequently run in present high speed railroad practice so closely together and at such high speeds as to make it impossible for a flagman to afford any protection of value under certain limiting conditions. The main reliance must be placed upon the signals and upon their observance by the engineers, and it is possible that the practice in this country may eventually follow that of some of the railroads in England, on which flagging has been abandoned under all ordinary conditions of train service.

The delays to the preceding freight trains and other elements which contributed to this accident, have been considered. These

conditions, however, are such as must occur frequently in the operation of any great railroad, and the signals and their observance by employees should be such as to afford reasonable safety under these conditions.

The commission has given much thought to the possible improvement of signal systems, especially the overlap and the automatic stop. The full block overlap has received especial attention in connection with preceding accidents; but in this accident the flagman constituted an additional signal, and although the distances were shorter than would be afforded by the full block overlap, there is no reason to believe that such an arrangement would have prevented the accident. The signals were sufficient if ordinary care had been used to observe them.

. . . Unless some satisfactory method can be found to diminish accidents due to carelessness of employees it appears evident that the use of automatic stops must be given much greater consideration than in the past. The perfection of an automatic stop device and experimentation by railroads as to its workings in practical use under the most unfavorable conditions cannot be too strongly urged. . . . But the use of an automatic stop will unavoidably create new dangers against which additional precautions must be devised. Its presence will have a marked tendency to cause a percentage of enginemen to rely upon the stop rather than the observation of signals. No device involving the intricacy and delicate adjustment of an automatic stop will at all times be in perfect working order under the weather conditions prevailing in this country, and an occasional failure is inevitable. If reliance is placed solely upon it, disaster at times must be expected. The problem, when considered in all its bearings, is a most serious one. Collisions are possible on almost every mile of railroad in the United States. If it should prove to be necessary to install automatic stops at each point of possible danger, the expense of installation and maintenance would be enormous, and we believe that the railroad development of the country generally is far from the point at which such a complete installation can be considered. The difficulty of maintaining present safety devices is very great, and the fear of railroad men that the increase of such devices may only change the location of the danger point has a solid foundation. There is an unusual element of danger in a so called safety device which fails to operate. If an air brake fails to work, or a signal shows a false "clear" indication, imminent danger is created from the fact that employees have learned to trust implicitly in these devices, and the speeds of trains and the intervals between them are regulated on the supposition that the automatic devices will work satisfactorily, or that when they fail it will be on the side of safety. There is danger, therefore, that the use of automatic stops may only shift the burden of responsibility from the experienced and skilful engineer, with his many years of training as a fireman, to the signal maintainer, and that much chance for accident may still remain. It should also be considered that the records of this commission show a large number of accidents caused by the defective operation of the emergency brake, especially on long trains. In many cases a lack of uniformity in the action of valves appears to have caused a collision within the train itself, which buckles weak cars and has frequently blocked adjacent tracks with the wreckage thus produced. It is certain that the widespread installation of types of automatic stops which involve the emergency application of the brakes would produce some accidents of this class. We also have in mind the fact that the remarkable record of safety from collisions in English railroad operation is made under the protection of signal systems operated manually and without any automatic checks, such as are afforded by the electric track circuit or the automatic stop.

This collision is the only one involving death of passengers which has occurred in over twelve years on the main line of the Lackawanna railroad under the daily operation of heavy traffic. Other railroads have also attained a high degree of safety. For instance, the Long Island Railroad, whose reports to this commission show a yearly movement of 34,000 passenger trains, has not had an accident involving the death of a passenger in nineteen years.

The report of Supervisor of Equipment Buchanan makes certain recommendations in reference to steel cars, and these recommendations are submitted by the commission for discussion and criticism, with the statement: "We think that they deserve consideration because of the careful personal examination which Mr. Buchanan has made of this and other wrecks."

Steel cars certainly appear to afford additional protection to life in accidents of this character, but there is room for discussion of their value as compared with wooden cars having steel underframes, and an exhaustive examination of this matter is imperatively demanded. The construction of American wooden cars appears to be far superior in safety to the passenger cars used in England or in Europe generally, and the efforts to afford safety and comfort in the car construction of this country as compared with foreign practice is indicated by the great weight of American equipment in proportion to passengers carried. It is shown that in January of this year the passenger cars under construction were about 77 per cent. steel, 16 per cent. wood with steel underframes, and 7 per cent. wood.

The indications are, we think, that the use of steel cars will increase rapidly in this state through the ordinary processes of addition and replacement, and through the necessities of electric operation in tunnels such as those at New York.

The enormous cost which would be required to replace the present equipment of wooden cars in advance of the natural movement in that direction, coupled as it would be more or less with a diversion of funds needed for the prevention of accidents to a purpose that only minimizes the effect of accidents which ought not to have occurred, is an important consideration.

Though an all steel car train may be desirable, and all steel car trains on some roads are run, doubtless for the purpose of adding safety, it is quite another thing to require that a carrier shall not use its steel cars except where all other cars in its train are of that description. Mr. Buchanan's recommendation in that respect is therefore not accepted. We think two, or perhaps three, steel cars at the rear of a train might afford much protection; or even one such car, depending upon the severity of impact in a collision. A single steel car at the head of the train at Westport would probably have prevented the fire which destroyed the wooden cars.

An enormous amount of money has been expended by the railways to diminish the fire risk through the equipment of practically all cars with steam heating appliances, and the use of safe methods of lighting. The separation of the fire in the locomotive from the nearest car by the steel tender, which is at least partly filled with water, is ordinarily a fire protection of great value. The whole subject is one which requires much more careful investigation than has yet been given to it, before any governmental action would be warranted. Our study of the present accident renews the conviction that the question of supreme importance now is how to prevent accidents of this character rather than merely to minimize the effect of such accidents by replacing equipment which is already much heavier, stronger, and more costly than that used in other countries.

TRANSVAAL RAILWAYS.—The commencement of railway construction in the Transvaal dates from the year 1890, when, under the authority of the republican government, a short line was laid at the Rand. On the amalgamation of all the South African government railways, on May 30, 1910, which necessarily followed the political union, the mileage amounted to 7,039, of which 380 miles were on the 2 ft. gage. Since then over 500 miles have been added and about 900 miles are under construction, mostly near completion. On nearly all the South African railways great improvements have been effected, such as easy grades and curves, and in increasing the strength of the permanent way. The total mileage last year amounted to 7,548 miles.