

The concerted effort on the part of all railroads to reach the safety goal gave a tremendous impetus to safety activities. Then began the publication of great quantities of statistical information showing graphically the standing of the respective roads and many railroad executives, seeing their properties lagging on safety, revamped their safety organizations. Those that were already well organized intensified their activities. During the years following the setting of the safety goal, something happened that was unprecedented, and that was a continuous downward trend in the employee casualty rate for ten consecutive years. I do not know of a single railroad that did not make substantial gains for safety during that period.

You will remember that the rate dropped from the peak of 31.15 in 1917 to a low of 24.84 in 1921; that the rate then rose to 30.89 in 1923, and from that date on showed a continuous drop each year down to and including 1931; in which year the rate was 7.52 or 76 per cent under 1923. Nothing like this was ever accomplished for safety before.

Fatal injuries to employees of Class I roads actually dropped from 1,866 in the year 1923 to 488 in 1933. Non-fatal injuries dropped from 148,146 to 14,126. On a man-hour basis, that is, making due allowances for fluctuations in the number of employees in the service, the reduction in employees on duty killed in 1933 under 1923 was 42 per cent and the reduction in injured was 78 per cent.

We have for some time been in a period of marking time in safety, so to speak, preparing for what I believe will be a more intensive and effective campaign during the coming years. In this respect the history of the accident situation is analogous to the history of many other aspects of railroad operation. All through the years in which the railroads were so wonderfully developed there were periods when improvements in locomotives, cars, rolling stock, signalling systems, shop machinery, and methods of operation, respectively, were at a temporary standstill, but in due course and in every direction we find a revival of activity and subsequent improvement.

We therefore come to the question as to the extent of improvement in the accident record of the American railroads it is reasonable to expect. That it is possible to further improve the record is obvious. On this head, the president of the American Railway Association recently stated:

"The employee casualty rate has been reduced 77 per cent during the last ten years. A large reduction in casualties to passengers has also taken place. Notwithstanding this reduction in employee casualties, there is still quite a spread between the high and the low rates among railroads of the same class, indicating that further improvement is possible in the accident record. For example, among the larger carriers (reporting 100 million or more man-hours), the lowest rate in 1933 was 1.68 employee casualties per million man-hours, while the highest was 10.02. Among the smaller carriers (reporting less than two million man-hours), the spread is between 1.01 employee casualties per million man-hours, and 43.97."

One prominent railroad executive believes that accidents can be prevented "to the point of almost total elimination." Safety men probably have different opinions about the matter. It is a fact, however, that can be readily proved by the causes of accidents, that the bulk of all injuries being sustained by railroad employees today, as in former times, result from causes over which the officers, supervisory forces and employees, individually or collectively, do have control; that is, from man failure.

What are the general preventives of man failure? The first preventive is to select the right men for the job. In times past, this was not always possible because the supply of applicants was frequently inadequate. This, however, is not likely to be the case in the near future, so our troubles in this direction should be at an end for a long time at least.

The second preventive is right thinking and right acting. A man must first think how he should act to be safe and then he must act as he thinks. The difficulty comes in getting people to think and act as they should. Now, the way to get people to think and act as they should is as old as civilization: it is by training. A thought we have come to express in the phrase, "training, supervision and discipline," although supervision and discipline are merely two of many phrases of training.

Now, what is the first requisite to training? Knowledge of the subject on

which one is to train another. In safety, it is knowledge of safe practices. These are shown by the causes of accidents and by job analysis. When safe practices are reduced to writing they are usually called rules, or at least they are equivalent to rules. Therefore, if all safe practices in any occupation were reduced to rules and if complete obedience to such rules were secured, it would insure complete immunity from accidents from man failure. This means that the first step in safety is to provide adequate rules; the second step is for local officers and supervisors (the teachers) to know and understand the rules; and the third step is to see that the employees know, understand and obey the rules. In consonance with these observations, the following items are presented for the consideration of the Safety Section as some of the essential elements in an effective safety program:

1. A comprehensive set of safety rules outlining the safe ways of working.
2. A practical, working understanding of the rules or safe practices by all local officers, supervisors and employees, to be assured by suitable examinations.
3. Invariable obedience to all rules, violations not resulting in accidents representing the same degree of culpability as when accidents do result from such violations.
4. Definite and not perfunctory observations by local officers and supervisors to detect violations of safety rules and formal report of violations detected as a requirement of management.
5. Formal disciplinary action on proven violations, with entry on discipline record covering every case.
6. A monthly and cumulative record of the violations of rules or unsafe practices detected by each local officer and supervisor, and a monthly summary by departments for divisions and system.
7. All accidents, regardless of how trivial, shall be reported and investigated promptly to determine cause, responsibility and disciplinary action to be taken where responsibility is shown.
8. Investigation should invariably develop an answer to these two questions: (a) Was accident due to the violations of a rule? (b) If not, should a rule be provided?

TUESDAY AFTERNOON SESSION

October 2, 1934

The "Green Book"

By LEW R. PALMER

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The speaker said in part: The year 1933 ended the ten year period of the Railroad Employees' National Safety Contest as set up by the National Safety Council and recorded in the respective issues of the "Green Book."

A constant study of railroad safety contest records during a period of ten years has established what I believe to be a fundamental fact: that it is necessary to break down our entire Class I railroad exposure into a sufficient number of competing groups so that there will not be too wide a variation between the man-hour exposure of the largest group contender as compared with the man-hours of the smaller contenders in the same group; otherwise, the larger unit, with its more uniform casualty rate, will be handicapped by the more widely fluctuating rates of the smaller contenders; for it is generally recognized that under normal conditions the greater the man-hour exposure the more uniform the casualty rates are year by year.

For that reason, the revised plan suggested for the 1934 Railroad Employees' National Safety Contest includes six groups for standard Class I railroads and two groups for switching and terminal roads, it being a matter of record in connection with switching and terminal roads that a great deal more interest has been developed in our annual contest since these roads were given what was considered a fighting chance for competitive honors.