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party. Is it possible that the average citizen still holds the ancient idea that an accident "is a visitation of the Lord?"

While this awful record has been climbing up on the highways of the Nation, it is impressive and encouraging to note that in the industries represented by the delegates here present, there has been, through an adoption of safety appliances and the dissemination of propaganda, a gratifying decrease in the number of deaths and injuries. This achievement is the result of intelligence, persistence and sacrifice. This is familiar to all of you and it is to your everlasting credit that you are not satisfied with the results of your pioneering, but through conventions of this character, and in every other way, are constantly seeking appliances and methods to conserve the lives of your fellow humans.

It occurs to me that you have sensed the real spirit of responsibility. You appraise responsibility not as a simple knowledge of a condition but as an obligation for the conclusion of a task. I do not believe that your determination in this regard was materially advanced by the enactment of the so-called Employers' Liability Statutes by many of the states. In fact, unless I am incorrectly advised regarding the history of your organization, your pioneer work for the safety of your employees antedated the enactment of these laws by practically any of the states. Your executives have demonstrated a vision and courage as well as a cooperation which, particularly in these days of tribulation, should be appreciated by your workmen. It may be, however, that most of them take it for granted that your thoughtfulness for their safety is coming to them anyhow, and appreciation may consequently be lacking.

There isn't a doubt, under this financial depression through which we are attempting to struggle, that conditions have become the more perplexing. Economic conditions are very much out of joint. It takes the right spirit of humanity to continue your endeavors and keep trying to find some additional means whereby you can more fully conserve the lives of those who are in your employ. This spirit of looking after the other fellow—this really human impulse which all of you express—should be an inspiration to those who otherwise, because of lack of work, might be disheartened and discouraged.

I presume it is a practice with the various units of your organization to, at least occasionally, have "Safety First" talks with your men, in which they are reminded of your interest in them and urged to extend similar consideration to their fellows. It should mean much to these men, in these days of unemployment, to know that they are not only in a position of employment, but that every safeguard possible is placed about their work so that their employment may continue and that the members of their household need have no fear while they are at work, and may confidently look forward to their return to their domiciles at the conclusion of their day's work.

I was much edified recently in reading the speech of the head of a great industry in our country, advocating measures for the permanent employment and protection of men, not only in his industry, but in the great industries of the Nation.

His suggestions were courageous and patriotic, and I am hopeful will come into full fruition. If so, we need have no fear of the future.

Communism and its principles will not have its present more-or-less fertile fields of operation, and will be exiled as a force of influence in the community for all time to come.

This splendid program will necessitate that same degree of mutual consideration and cooperation which has distinguished the National Safety Council from its inception. This is one of your great opportunities.

It is inconceivable that Legislative enactments will build up the consideration of the average man for his neighbor. We are often reminded that you cannot legislate morality into the people.

It would be a far better and more useful program if this principle could be brought more strongly to the attention of our school children in their early youth. Something along this line is undoubtedly being accomplished in many communities, but if the

youth of the land is sternly taught to accept responsibility if injured, or at least until he can prove himself innocent, it may do much to instill a sentiment of caution and a willingness to give the other chap a break.

It is, perhaps, all right to offer this suggestion in a general way, but if we are to get anywhere it must be through intelligent unselfish leadership. The leadership must come primarily from your organization. You have pioneered the field: you have done much. Your example should prove a stimulating encouragement to those really concerned for the safety of others. In the hustle and strife of our day and age, we are prone to forget everything but self. Nothing but the everlasting keeping at it will count. Through the ramifications of this organization it is possible for you to reach members of the legislature, executives of municipalities, school boards and every other agency through, and by which, safety propaganda can be disseminated.

The Golden Rule should enjoy a renaissance and be made the great stimulating force to bring back to all men the "Spirit of brotherhood of man and the Fatherhood of God."

CHAIRMAN HENSEL: We owe Mr. Sweitzer a vote of thanks for bringing this wonderful inspirational talk to us and the Metals Section can assure him that we realize our responsibility and that we are going to take renewed interest and go ahead with greater effort than ever to prevent accidents.

We continue with the subject, "Metals Section Statistics for 1930" and a friend of mine and of this Section has agreed to give us a brief report.

T. A. Schendel, safety director for the Caterpillar Tractor Co., Peoria, Ill., will address us.

Metals Section Statistics for 1930

By T. A. SCHENDEL

Safety Director, Caterpillar Tractor Company, Peoria, Ill.

I know you will all be glad to hear that the Metals Section had, during 1930, one of the safest years in its history. Excellent records were made by many members, with the steel industry low with 11.99 lost-time injuries per 1,000,000 hours of work. They thus rank fifth in frequency among 28 major industries, included in the Council's annual report.

The foundry industry shows the other side of the picture—high frequency of 32.11. Smelting, refining, fabricating and non-ferrous metals had a more favorable experience. Their average frequency was 17.14. Combining the experience of these three groups shows 15.86 lost-time injuries per one million hours of work, or 14 per cent lower than the rate for all industries.

As to severity—not so good. Lost-time injuries per 1,000 hours, 2.38 for the Metals Section compared to 1.97 for all industries. Steel had the highest severity rate, 2.47, with foundry crowding them at 2.23, and the non-ferrous metals coming in with 2.03. Of course, our high severity in contrast to low frequency, shows a high ratio of serious injuries to temporary disabilities. Fatalities alone are responsible for 1.37 days per 1000 hours work, or 58 per cent of our total severity rate, and that should give us all reason to pause and consider that figure. It is serious, gentlemen.

The elimination of serious injuries is one of the major problems which confront industry. The records of over 1500 establishments that have reported in each of the last three years show that, while frequency decreased 28 per cent in comparison with 1928, severity was down only 8 per cent. The reason for the comparatively small decrease in severity is found in the decline of only 10 per cent in the frequency of fatalities, and a slight increase in the frequency of permanent partial disabilities. The records of plants reporting for five years also indicate a pronounced decrease in the frequency and severity of temporary disabilities but much less success in

eliminating serious injuries. Notable exceptions to this general situation are found in the public utility industry which has reduced fatalities 25 per cent and permanent partial disabilities 20 per cent during the last two years, and in the paper and pulp industry.

It is well known that periods of rising employment necessitate the training of new men, shifting of employees from one job to another, and other actions which are apt to be unfavorable from the standpoint of safety, whereas, during periods of reduced employment, many of these adverse conditions disappear. Industry has demonstrated, however, that all injuries, excepting permanent partial disabilities, can be reduced regardless of changes in industrial activity.

From 1928 to 1929, working time in 1500 industrial plants increased 11 per cent but the average fatality rate decreased almost 5 per cent and the frequency of temporary disabilities about 4 per cent. A decrease in working time of 17 per cent from 1929 to 1930 was then followed by a drop of 24 per cent in the frequency of temporary disabilities and a 5 per cent drop in fatalities.

The experience of our section has, in many respects, been similar to this. The records of 162 plants in our section that have reported in each of the last three years show a drop in frequency of 35 per cent from 1928 to 1930; most of which was made during the last year. Severity in these plants, however, rose about 21 per cent from 1928 to 1929 and decreased about an equal amount from 1929 to 1930. Variations in the frequency of fatalities largely account for the fluctuations in our severity. While the frequency of permanent partial disabilities has been up and down during this period, the severity of these injuries has steadily decreased, particularly during 1930.

The most consistent improvement in the section during the last two years is in the steel industry. Among 71 foundries the total frequency rate increased from 1928 to 1929, but was down sharply during 1930. The frequency of fatalities and permanent partial disabilities has increased steadily since 1928. Consequently, severity has risen from 1.51 to 1.88, and, in 1930, to 2.28. Although injury rates for similar establishments in the non-ferrous metallurgical industry were very high during 1929, 1930 rates compared quite favorably with 1928.

Seventy-three plants in the steel industry, on the other hand, decreased frequency 39 per cent and severity 15 per cent in comparison with 1928. Severity was higher in 1929 than in either 1928 or 1930 but frequency declined in each year of the period. The industry's fatality rate was highest in 1929 and lowest in 1928 but the frequency of permanent partial disabilities declined in each year of the period, the total decrease being 20 per cent.

This improvement was general throughout the various departments of the steel industry. Departmental records, available from 1929 and 1930, only, show that, out of 22 departments, frequency dropped in twenty and severity in eleven. The reductions in frequency and severity by structural and rail mills, seamless tube mills, plate mills, tin plate mills, and general mechanical departments were particularly outstanding because improvement was shown in both rates for each type of injury. On the other hand, departments that have particularly high fatality rates for 1929 and 1930 such as blast furnaces, general labor and coke plants showed no appreciable improvement in this type of injury.

Only seven departments in the steel industry with frequency rates higher than average, and of these, sheet and tin plate mills, open hearth, and seamless tube mills are most important because of their large exposure. These departments also have higher than average permanent partial disability rates, but, with the exception of the open hearth, low fatality rates. Fatalities, on the other hand, occur most frequently in open hearth, coke plants, blast furnaces, general labor, and general mechanical departments. In fact, these five departments account for over 50 per cent of all fatalities that occurred in the industry during 1929 and 1930, although their combined exposure is only slightly more than one-third of the total for all departments.

Permanent partial disabilities, however, are widely distributed. In proportion to man-hours worked, structural and rail mills, merchant mills, rod and wire mills, blooming and billet mills, transportation, open hearth, and seamless tube mills, have had the largest number of injuries of this type. Furthermore, those with the highest frequency rates for these injuries also have the highest severity rates.

You have noticed that the open hearth appears frequently in the high rate group, yet, some of our members have demonstrated quite conclusively that open hearth operations can be made as safe as any others in the industry. Sixteen of these departments, in 1930, had frequency rates below 10.0 and of these, all but four had severity rates below 1.0. In other words, the plants with the high frequency rates for this department are having the serious injuries.

You have no doubt noticed that a great deal of this report is given over to the steel industry, and in this connection, it may be in order to mention that the next year will no doubt see a system of departmental reports carried on into the machine industry, where I believe it will be a big help to all of us who are connected with that phase of the Metals Section. No doubt, most of us have a system of our own in our individual plant, but are not able to bring it out into a more detailed report.

It is a matter of general belief that accident experience in the Metals Section during 1931 will be even better than the past year. Operations, on the whole, have been low, but one of these days business will pick up, production schedules will be increased, then again will come the possibility of higher injury rates. Therefore, now is the time for plants and departments with records that are below par to look around, find their difficulties and correct them.

CHAIRMAN HENSEL: We are all very grateful to Mr. Schendel for reading this report and for giving us some sidelights on it. Have any of you noticed how the various departments of the steel plants have been split up in the annual report published by the Council? Have you any questions or any suggestions on the way the entire report has been handled?

G. G. GRIEVE (The National Safety Council, Chicago): The National Safety Council wishes all members of the Council to send in their 1931 accident reports. The number has grown each year and the increase should be continued in spite of the depression and hard times. Information on accidents in many industries is becoming more reliable. This is partly due to the increase in the number of reports.

MR. SCHENDEL: What is being done about getting accident records in the machinery industry by departments?

MR. GRIEVE: We are working on that. The idea is to enable members to compare the records of their entire plant and also records in the individual departments. For example, those with forge departments can check their records by comparing with other forge shops. The idea as applied to the machinery division seems a good one.

The first year the method was used in the steel industry we received departmental reports from about ninety-five percent of those reporting, which was exceptionally good. Last year the idea was followed out in the electric railway industry; we had a large increase in the number of reports and approximately seventy-five per cent covered experience by departments.

CHAIRMAN HENSEL: During the past year I showed various department heads where they stood as compared with some fifteen or twenty similar departments of other companies. Some of those fellows were surprised to find that they stood near the top and others that they stood near the bottom.

D. E. SHANNON (Fort Pitt Malleable Iron Company, Pittsburgh, Pa.): I suggest the report be given in chart form to give us a chance to take notes.

CHAIRMAN HENSEL: I think that is a good suggestion. It will be taken up with the program committee of another year.

The next paper will be delivered by C. P. Waite, assistant supervising engineer, the Travelers Insurance Company, Chicago.