

Commercial Vehicle Section

Officers 1937-1938

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T. B. JOHNSON, Manager, Delivery Division, Marshall Field & Company, 601 W. Polk St., Chicago, Ill.

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H. H. KELLY, Section of Safety, Bureau of Motor Carriers, Interstate Commerce Commission, Washington, D. C.

A. E. LUNDSTEADT, Claim Adjuster, Bowman Dairy Company, 140-158 West Ontario Street, Chicago, Ill.

A. W. MEINKE, Engineer, Travelers Insurance Company, Insurance Exchange Bldg., 175 W. Jackson Blvd., Chicago, Ill.

CHARLES G. MORGAN, JR., Manager, Safety Division, American Trucking Associations, Inc., Investment Building, Washington, D. C.

H. D. SCHEFFER, Safety Director, Automobile Owners Insurance Company, Lansing, Mich.

H. B. VAUGHAN, JR., Major, Corps of Engineers, Munitions Bldg., Washington, D. C.

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Membership Committee Chairman—A. W. MEINKE, Engineer, Marsh & McLennan, New York City.

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H. B. VAUGHAN, JR., Major, Corps of Engineers, Washington, D. C.

H. S. COLE, Ass't Superintendent, The Evening Star, Washington, D. C.

BRYANT C. SKEEN, Director of Safety & Personnel, Pacific Freight Lines, Los Angeles.

HILLIS A. KINDT, Freight Operations Manager, Consolidated Freight Lines, Portland, Ore.

W. F. BROWN, Safety Engineer, Consolidated Edison of New York, New York City.

D. F. McMURCHY, Director of Safety, Tennessee Valley Authority, Chattanooga, Tenn.

TUESDAY MORNING SESSION

October 11, 1938

Vehicle Safety Fundamentals

Presiding, R. C. HAVEN, General Chairman, Commercial Vehicle Section.

How to Organize for the Handling of Vehicle Accidents

By WM. F. BROWN

Automobile Safety Engineer, Consolidated Edison Company of New York, Inc.

It is a well known fact that considerably more progress has been made in commercial vehicle safety than in the private owner class. We can point to the truck driver today as the "gentleman of the highway" when only a few years ago he was considered almost a public enemy. There are two reasons why this has been accomplished: (1), the profit motive on the part of insurance companies and fleet owners has been a powerful stimulus; and, (2), industrial and commercial leaders have organized to coordinate and cooperate to a degree that has not been approached by groups of private individuals.

Organizations such as the Commercial Vehicle Section of the National Safety Council, the Greater New York Safety Council and many others with identical purposes have done a fine job. Backing up these safety councils are thousands of commercial

fleet owners and operators who have learned that safety pays dividends. An alert executive can readily see the connection between accident costs and red ink.

Some concerns are still not convinced of the value of safety. They are having a temporary respite from accidents, which results from the increased safety mindedness of all the other fleet operators. This is a serious problem, for as long as their drivers are on the highways our drivers will be exposed to them.

Safety Starts at the Top

In every business organization there is some one who decides the policies of the concern. He has the responsibility for setting up the safety program. This man is responsible when the program succeeds and he is responsible if it fails. Show me a concern where executive interest in safety is

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keen and active and I will show you a successful safety record. Therefore, the first and most important step in organizing for the handling of vehicle accidents is to get a clear definition of your company's policy with regard to accident prevention. Almost every person is against accidents, but unless there is a definite policy we cannot hope to prevent them. My company's safety policy is simple. We provide a continuous program of accident reduction—through engineering, education of employees, and enforcement of safe operating rules. It provides the necessary men, materials and money to do the job effectively and gives executive moral support and encouragement to the safety program.

Ask your executive officer if he will devote some part of his time to the safety program. If he is willing, we can be sure that he is sincerely interested in accident reduction and is not giving it merely "lip service." We humans are natural imitators. If the executive sets a good example his subordinates will follow and so it goes, right down the line to the foreman and to the individual driver. They will not take safety instructions seriously if they detect a single note of insincerity on the part of their supervisors.

Some concerns insist upon strict observance of safety rules when business is slack, but the minute there appears to be a little rush—there's a tendency to overlook little intersection fender "smacks"—broken bumpers and headlights, and the like, on the grounds that they are a natural by-product of an active organization and "after all that's what insurance is for."

Another important thing to be done is to make sure your executives are willing to provide adequate financial support. This is to be based upon a fair analysis of the cost of accidents including the hidden or non-insurable costs. The old bromide, "you can't get something for nothing" is certainly true in a commercial vehicle safety program.

Personnel

After you have decided the questions of the safety policy, what about the personnel to carry it out? What kind of man should be assigned to handle the job? In the past there have been many instances of assigning the work to a man who has failed once or more in some other occupation. This is

a serious mistake. The safety engineer must have the respect and confidence of the employee and executive alike. Therefore the safety department is neither a resting place on the road to retirement nor a sinecure for dependent relatives. He should have unquestioned ability as a speaker and a teacher, and, while it is not essential that he be a mechanic it is highly important that he be a good driver. The fleet man who sits in his swivel chair on an icy wintry day simply cannot effectively deal with rough weather drivers.

The safety department functions best when it is operated in full cooperation with the insurance department. Certainly the safety department should be in a position to get things done. The safety engineer occupies a position in the industrial field similar to that of a staff officer in the military field. How can he carry out the company policy?

We have divided our vehicular accident control program into three separate and distinct phases: (1.) Educational; (2.) Field Supervision; (3.) Accident investigation and discipline.

We believe all three are necessary to a well balanced fleet program, and while education is probably the most effective means of control over the majority of drivers, there are some drivers who need constant supervision, also some who need to be disciplined.

One of the first steps to be taken is to set up an adequate and accurate system of keeping accident records. You cannot put over a safety program by guesswork—you must have facts and there is no better method of obtaining the facts than by a careful analysis of each accident immediately after it happens.

To set up a statistical division it will first be necessary to review your present report forms. If you are using an insurance company form you probably will find that claims and related subjects will be outstanding items. The state and city police forms are based on law or traffic codes. It may be necessary to use these forms but it may be advisable to provide your own form based strictly on accident causation. We use the Findex system which provides 64 different classifications, giving pertinent facts concerning the driver, the car and the street or highway involved in the accident. In

addition the responsibility and specific cause of the accident are shown.

There are three general types of automobile accidents:

1. One automobile running into another automobile.
2. An automobile running into an object other than a motor vehicle or upsetting.
3. An automobile running into a person.

These facts are of no value whatever to safety engineers. Our job is to find the basic or fundamental cause and throw the spotlight of education directly on that cause until the trouble is corrected.

Defining the Accident

Some may ask what is a vehicle accident? What degree of contact with another vehicle or person or thing constitutes a reportable accident? That is something that will have to be settled once and for all. If it is not settled there will be plenty of headaches for everybody but particularly the safety man. We define a vehicular accident as follows:

(1.) Any physical contact between: (a). A company owned or hired vehicle, or part or contents thereof; and (b). Any other vehicle or type of property, company owned or otherwise; or (c). Any person.

(2.) Any circumstance not amounting to physical contact but which the primary or initial cause was the operation or maintenance of company-owned or hired vehicles.

That definition covers about everything that could happen—and results in many trivial accidents being reported. For example, 40 per cent of the accidents last year occurred while the vehicle was standing still. We prefer that definition. As a large public utility we are natural targets for ambulance chasers and accident racketeers, and therefore we simply cannot afford to ignore potential claims.

Accident Responsibility

Our records show that four people are responsible for 93 per cent of all vehicular accidents: company driver, other driver, third driver and the pedestrian. The other 7 per cent is spread over a miscellaneous group, such as maliciousness, weather conditions and other circumstances not readily controlled.

Approximately 90 per cent of all our vehicular accidents are caused by nine faults

of operation: (1.) Passing moving vehicle too closely; (2.) Passing stationary vehicle too closely; (3.) Following too closely; (4.) Traveling too fast for conditions; (5.) Careless backing; (6.) Failure to grant right of way; (7.) Cutting in, sudden turning out; (8.) Inattentive driving; (9.) Traffic regulations violated.

The other 10 per cent is caused by defective equipment, improper loading, pedestrian and miscellaneous.

Road Test

Every driver is given a road test by the transportation department before he is allowed to drive. This test may limit the driver to operate a specific type of vehicle or all vehicles depending upon the inspector's rating. These tests rule out the possibility of accidents caused by lack of familiarity with the manipulation of mechanical controls.

Medical Examination

Our medical department examines all drivers on a three, two and one year basis: In the three year class are all normal drivers under 40 years of age. In the two year class are all normal drivers between 40 and 50 years of age. In the one year class are drivers over 50 and those with previous physical defects.

This is an important part of any successful fleet safety program. A sick driver cannot be a safe driver. In 1937 approximately 2,500 drivers were examined and more than 300 received visual correction. If the defect can be corrected, well and good. If not, he is given another job where driving is not required.

Field Inspection

Field inspections form an important part of our program. As a matter of fact last year we made over 2,000 observations of which 1,800 were complimentary to the driver. We have found that almost invariably the unsafe observation matches with an unfavorable record. The superintendent or department head attaches almost as much importance to a violation report as to an accident report. He knows that a violation such as "passing blind intersections without due caution" will mean a serious intersection accident sooner or later (In my company intersection accidents are inexcusable). We realize that many of you

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do not use field observation or road supervision. However, we believe this is the most effective means of learning which drivers are responding to our safety educational program and, what is more important, which drivers are not.

Of course, the matter of trailing is secondary to education and since the safe drivers have nothing to fear, I see no good reason why we should not continue to throw the spotlight on the unsafe drivers. We do not attempt to observe every vehicle or driver. Naturally we concentrate on those divisions that are causing the most trouble. The company has an investment of from one to five thousand dollars in the vehicle and we are taking no chances on the driver using it as a means of expressing an inferiority complex. Some day perhaps, we may find a better way of learning what our drivers are doing with our vehicles, before the accident. In the meantime prevention is preferable to post-mortems.

Accident Investigation

Every vehicle accident is carefully investigated by the safety engineer who is also chairman of the Vehicular Accident Investigating Committee. This is not a kangaroo court, but an official investigating board composed of officials of the transportation, claim, safety and various operating departments involved in accidents which are being investigated.

It is primarily a fact finding body organized for the purposes of expediting the handling of accident cases. The matter of settlements and claims is not allowed to be discussed. Witnesses are sometimes heard if the driver's story seems to require substantiation or corroboration.

At least two people are responsible for more than 8 per cent of the accidents; the company driver and the other driver, and since we cannot possibly control the actions of the other driver we attempt to re-enact the part our driver had in the accident. After a careful study of all the facts the driver is told immediately the decision of the committee. If he has committed one of the nine faults of operation he is instructed in the matter. If his previous accident record and field observation record indicate he is a chronic repeater he may be sent to the transportation department for a road test. If his accident indicates some physical defect he may be sent to the med-

ical department for a re-examination.

If all of these steps prove ineffective the committee may recommend that he be assigned to duty where driving is not required. We do not order the department head to relieve him from driving. We merely inform the supervisor that the driver in question has a poor record, that he does not respond to education and that due to his anti-social attitude it might be well if he were given other employment. This method usually gets results, although we seldom have occasion to go to such extremes. Most drivers respond to kind treatment. By the same token everybody resents the "big stick." We believe our drivers are, on the whole, better than the average citizen driver and consequently we expect them to meet and overcome all accident producing situations. They are safer drivers because they have learned to be courteous. Courtesy costs nothing but pays enormous dividends in safety and consumer good will.

We have set a high standard for drivers by making the job of driving attractive. Some years ago it was considered good policy to penalize an unsatisfactory employee, but all that has been changed. If a vote could be taken today among our 4,200 drivers, I doubt if a single one would request a transfer to other duty.

Educational Program

Our educational program includes a semi-annual series of instruction classes which all authorized drivers must attend. The classes are held at convenient times in our service buildings throughout New York City and Westchester County. The classes are limited to between 20 and 25 drivers as smaller groups seem to be more conducive to free and open discussion. The discussion phase is important and should be included in every educational program, because it affords an excellent opportunity for the drivers to get things off their chests. This also gives us a fine opportunity to get to the bottom of the problem and at the same time win the driver's cooperation. We try to teach him how important safety is to him and how important he is to safety.

In the teaching process we have confined ourselves to practical subjects, fundamental to the business of driving a motor vehicle. For example, nothing is more important to the driver than a thorough knowledge of the state and city traffic codes. Therefore

we have drilled them in the salient features of both. We have taught them how to stop on slippery surfaces without skidding. Every driver in our system understands perfectly that, while the brakes stop the wheels the tires stop the truck.

They are cautioned about certain streets and conditions which are considered hazardous. They are instructed in stopping distances, turning radius, angles of vision, judgment of time and distance as well as speed of other vehicles and their own reaction time.

We make them pedestrian conscious by showing them pictures of careless men, women and children. We try to make them liability conscious as well as safety conscious by explaining the apparent and hidden costs of accidents.

We make our own film strips for lecture purposes and we have found this method to be more effective than the combination projector and record or canned speech method. We use an inexpensive camera and projection machine which fits into a briefcase. This equipment, including a light meter and the necessary lighting fixtures, costs less than \$100 per set. A film strip

of 40 frames costs less than three dollars. We use miniature traffic sets whenever possible in making pictures for reasons of economy.

We promote competition between departments and with their own previous year's experience. We keep them posted as to their progress and give recognition when merited in our own "Safety News & Comments" publication and in our company magazine "Around The System."

We confer with each and every department head monthly. This is a very important part of our educational program. We are fortunate in having an arrangement whereby we keep him posted regarding settlements and reserves set up by the insurance company. Any superintendent will sit up and take notice when you tell him that one of his accidents will be settled for \$10,000.

The transportation department carries on an excellent program of preventive maintenance wherein every vehicle is safety tested periodically. We sincerely believe that this has contributed materially to our accident prevention program.

What Good Are Accident Records?

By DWIGHT D. GARDNER

Personnel Director, Commercial Motor Freight, Inc., Columbus, Ohio

First, let us see how the State Industrial Commission looks at our personnel and how it classes them for risk. This will tell us how many kinds of accidents to consider. In our company we group employees as follows: clerical office, traveling salesmen and motor salesmen.

Office employees and salesmen are in such generally recognized and accepted groups as to present a negligible problem. However, the third class, including garage men, dock men and drivers, carries a comparatively high rate for insurance. Decreasing this rate is our problem and we must work it out by eliminating accidents.

Garage and dock workers come under ordinary industrial practice where conditions may be closely regulated. Drivers, however, form a more specialized group operating under varying conditions.

We believe that good accident records and the intelligent use of those records will result in definitely lower industrial insurance rates, particularly if the industry will go after this problem as a group.

As an illustration of the use that can be made of dock accident records let me quote from our accident summary for the year 1937:

"Thirty-six per cent of our accidents are traceable directly to handling material. Such accidents consist of back strains, cuts, bruises and fractures of the hands, legs and feet. Fourteen per cent of our accidents were due to people falling down and 22 per cent to material, either improperly piled or improperly handled which fell upon various workers. All of these causes can readily be eliminated by better housekeeping on our docks and by realization among our

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men that safety has a definite part in their job. Only 17 per cent of our accidents involved industrial compensation. Foot injuries have been cut from nearly 40 per cent in 1936, to less than 10 per cent in 1937. This has been accomplished to a large degree by the use of safety shoes."

Here are the results of our analysis, all based on accident records. These are all on freight handling accidents.

Highway Accidents

The other important group is the highway accidents, those involving the motor vehicle. Let us consider the necessary steps in the handling of a highway accident.

The plan followed by our company in the handling of a highway accident is as follows:

(a) The Driver:

1. Obtains medical aid for injured persons.
2. Properly marks the scene with torches and flags.
3. Sends word of accident and conditions to his dispatching terminal.
4. Clears highway and protects equipment and cargo.
5. Makes accident reports.

(b) The Dispatching Terminal:

1. Sends aid.
2. Notifies safety inspector.

(c) The Safety Inspector:

1. Notifies safety department.
2. Visits scene of accident at once.
3. Checks accident report.
4. Checks police report.
5. Checks hospital report.
6. Makes observation report.
7. Classifies accident into one of three groups: (a) Driver not responsible, (b) Driver partly responsible, (c) Driver entirely responsible.

(d) The Safety Department:

1. Notifies state regulatory commission by telegram.
2. Notifies Interstate Commerce Commission.
3. Receives accident reports and observation report.
4. Notifies insurance company.

5. Enters accident on individual driver's record.

6. Follows up this particular accident until the case is closed (Uses the report in court where necessary).

(e) At the end of the month the safety department makes a summary to show totals and from this summary the following analysis: number of accidents by transportation district, number by type (a, b or c), number for road and for city work.

In some instances it may be desirable to set-up a personal driver's record on which will be entered the cause of accident, out-right damage and additional costs to include the loss of use of equipment and driver's time if personal injury is sustained.

Also, a vehicle charge record may be set-up for each vehicle involved to indicate the cause of it can be traced to any failure on the part of such vehicle, the damage that might indicate a future weakness in the vehicle and comments on the type and construction of the vehicle to determine if it was suited to the operation in which it was being used.

To summarize, we have our accident report grouping highway accidents into 4 classes for cause: driver, vehicle, management (loading and other conditions known to management but beyond the driver's control) and other causes (those in which the first three classes are not involved).

There are four steps in handling the accident report: a survey of existing conditions, the analysis of these existing conditions, the plan for betterment and the installation of the plan.

Four steps, all equally important. However, the truth in the last three depends upon the accuracy of the first. In the case of highway accidents the survey of existing conditions depends upon the accident record.

Selection of Workers

Based on accident records we have evolved our present accident prevention program which functions as follows. We carefully investigate all applicants for dock work before employment. All drivers are selected from the dock men in our employ. This selection is made on the man's past record. However, this prospective driver is required to complete a definite training

course before transfer is made. The first item in this training course is a special and thorough medical examination. In the past we have examined drivers for reaction time and glare vision response. We are now investigating the advisability of instituting a more thorough glare vision examination through the use of the bio-photometer with a possibility of treatment where necessary with pro-vitamin A.

Drivers are required to learn and carry on their persons our company book of rules. Our safety inspector continually checks drivers on the highway and their familiarity with these rules is one of the things we emphasize. We also check speed, loading, condition of emergency equipment, etc.

All of our drivers are entered in the National Safety Council Safe Driver Contest. We believe in this contest and have received in return a magnificent response from the men who drive. In 1937 (the first year of participation) 27 men qualified for awards. In 1938, we had 53 men qualify. We believe that safety is a state of mind and continually encourage our men to do their work the safe way.

The safety inspector continually checks on men, equipment and road conditions and the company requires immediate recording of hazards and demands quick action toward the elimination of hazards.

The safety inspector analyzes each accident for cause in the following classes: driver, equipment and road conditions. We are quick to correct faults found in men or

equipment and we are proud of the fact that in some cases our company recommendations have resulted in the correction of road hazards.

Now let us consider accident reports in their value to the industry.

The purpose of the I.C.C. 10-hour regulation is to promote safety. We in this industry largely feel that the order as now drawn will not promote safety but instead will speed schedules beyond the present safe practice. If we are to prove our point we must have facts. The only place we can get those facts is from the accident records.

In various states at various times, legislators will often introduce bills, hastily and incorrectly drawn that vitally affect our industry. We must be prepared to uphold our rights with facts.

Industrial Insurance at the present time imposes high charges upon the carriers. As we improve our accident record we must establish the fact and prove our case for a lower rate.

We believe that insurance companies pay too often where payment is not justified. They settle too many cases on their nuisance value. Accidents are based on facts. When recovery is justified, payment should be made. However, where recovery is not justified, we should stand squarely behind the driver and if necessary take the case to court. A few cases won in court is the best way to educate the public that the basis of settlement is facts as supplied by the accident record.

TUESDAY AFTERNOON SESSION

October 11, 1938

Presiding, H. D. SCHEFFER, Safety Director, Auto-Owners Insurance Co., Lansing, Mich.

What to Do With the Repeater

By BRYANT C. SKEEN

Personnel Director and Safety Engineer, Pacific Freight Lines, Los Angeles, Calif.

Before this subject can be discussed intelligently we must reach a common understanding about the working conditions surrounding the repeater. Therefore, let us assume the existence of the following conditions:

1. All employees are required to pass a rigid medical examination.

2. Applicants' past employment records are investigated to determine their ability, veracity, sobriety, honesty and accident history and they are required to qualify in all these respects.

3. The motor equipment is maintained in a safe and satisfactory state of repair.

4. The employer is thoroughly sold on

the value of accident prevention and earnestly supports such activities.

5. All employees are fully advised regarding company policies and safety rules.

6. Reports of all accidents, road calls for break-downs, job deficiencies of any nature, garnishments, etc., are carefully recorded and made a part of each employee's file.

We may turn now to a discussion of ways and means of dealing with the repeater who may be defined as a driver who has been involved in more than one accident, regardless of similarity.

If we are to have a good garden we must pull the weeds, keeping in mind that too often unhealthy plants are pulled along with the weeds when the application of a little nourishment at the right time and place might cure an ailing condition.

The severity of an accident is not a fair basis for determining the penalty although it is frequently used as such. The controlling factor in deciding the penalty should be based upon the degree of negligence. Using the same deciding factor, a careful check of the frequency of minor accidents will often bring to light some surprising facts.

When an employee is involved in two or more accidents where little property damage and no personal injury result, but where the degree of negligence indicates that much more serious consequences might have resulted, the employee should be disciplined accordingly. Let us take a hypothetical case.

Suppose an employee has been involved in an intersectional accident and the cause has been determined as either excessive speed, hogging the road, or failure to give the right of way. There is indication here of complete disregard of the rights of others even though the actual property damage is small. Giving consideration to this driver's past good record and length of service he is returned to work with only a reprimand. Then, at a later date he is observed going through a red light and only through the grace of his Guardian Angel is he able to avoid other vehicles and emerge without an accident.

Such disregard for the safety of others, violation of city ordinances, and also company safety rules, make this driver a dangerous repeater. He should be weeded out

with no more hesitation than would be exercised in removing one who has been found guilty of drinking on duty.

There are cases where employees have been involved in multiple minor property damage accidents, all from the same contributing cause, where the degree of negligence is slight and where there is no evidence of willful violation of safety rules.

Backing trucks into congested docks results in many scratched fenders and the damage of overhead doors. This is a case of an unhealthy plant that needs nourishment. Drivers of this type are possibly lacking in skill more than in caution.

There are other types of accidents where the contributing causes are the same and where the penalty is necessarily increased accordingly. An employee involved in two or more accidents resulting from following too closely behind the vehicle ahead signifies by his actions that he is not profiting by his previous mistakes. This is a case of an unhealthy plant that is apparently too weak to take nourishment and unless immediate improvement is evident it should be "pulled" along with the weeds.

In our organization we use three methods in preventing accidents and handling repeaters:

1. Observation reports of traffic violations are posted on a bulletin board without any identification of the offender under the heading "Was it YOU?" A typical report reads like this:

"At or about 4:15 p.m. on August 15 at 26th and Main Streets driver was observed making a left hand turn without giving the proper signal" or "At or about 9:00 a.m. on August 16 on Washington Blvd. near Hill Street driver was observed parking double with sufficient space open at the curb for proper parking."

The offending employee realizes that his truck number was secured by the observer and that the violation has been properly recorded on his record. These reports are usually a week old before being posted. Therefore, each driver operating in that district at that time wonders if it were he or someone else. The only way he can be sure of not being observed violating these rules is to form the habit of complying with them.

2. Another method used to create interest and to minimize exaggerated reports is

the posting of statements made by drivers as to how an accident occurred. For example:

Charles Jones says: "My foot slipped off the brake and before I could stop I had crashed into the car ahead."

Such statements are posted on the bulletin board under the heading, "What do YOU think?" No doubt, accidents can and do occur under such circumstances, but who believes it? No one believes the story about a black eye being the result of running into a door in the dark.

3. The most effective method used in our organization in stopping repeaters is the writing of personal letters to the offending employees, mailing them direct to their homes. These letters clearly set forth each accident in which the employee has been involved. The cost of property damage, payments by the company for personal injuries, loss of the use of equipment and subjects of a like nature are discussed. The degree of negligence on the part of the employee is emphasized along with the type of warning justified by the accidents under discussion. These letters usually arrive at the driver's home when he is away. Any letter from the company for which he works is invariably opened at once. By the time the driver reaches home the letter will have been read and thoroughly digested and he will be confronted with its contents. It is a very rare occasion where wives and mothers do not labor under the delusion that their husbands and sons are marvels of efficiency when it comes to getting around in a big truck or truck and trailer. The few accidents that they have heard about have been highly garbled stories in which the other fellow has always been at fault. The realization that he is not as safe or efficient a driver as he has always claimed comes as quite a shock.

A closer cooperation on the part of the driver in accident prevention will result if he is made to feel that he is an important factor in the operation of the business and is invited to discuss either personal or business problems with the personnel director and safety engineer.

The reduction of accidents by creating a better relationship between employer and employee together with some incentive for the employee to achieve a no-accident record is far better than by fear of the consequences of an accident.

One of the many advantages of membership in the Commercial Vehicle Section of the National Safety Council is the awarding of no-accident driver pins to member drivers who have driven for one or more years without an accident. These awards are nationally known and are accepted generally by personnel directors and safety engineers as the highest type of recognition.

Last year we had 106 drivers who qualified for these awards and the presentation was made at a luncheon in the banquet room of one of the finest hotels in Los Angeles. The participation of city, county and state officials at a function of this kind lends to its importance and their interest and remarks of praise and appreciation are always very impressive.

Insurance actuaries are able to predict the number of accidents that will happen and their cost with amazing accuracy. The proof of this statement is an indication of the tendency for accidents to be repeated over and over again in almost rhythmic sequence. Medical science has proven that while the mortality table figures are practically infallible they are only inevitable where conditions remain the same. By controlling conditions in our company we have been able to fool the actuaries to such an extent that we can hardly credit the figures.

Court of Inquiry on Vehicle Accidents—a Demonstration

By T. B. JOHNSON

Manager Delivery Service Division, Marshall Field & Company, Chicago

The Court of Inquiry on Vehicle Accidents which we are about to present is composed of drivers of the Delivery Service Division of Marshall Field and Company.

This method of investigation was inaugurated about two years ago and as each man is tried for responsibility of an accident, a new group of seven men is chosen

for the hearing. Our reason for choosing different men each time is so that all of our drivers may eventually participate in the proceedings as the cases arise.

We feel that by doing this, questions brought out relative to the accidents will impress upon the minds of our men more firmly the various things they may do to avoid future accidents.

In the year of 1934 we had a total of 288 accidents; in 1935 we had 199; in 1936 this figure was reduced to 105; and in 1937 we had only 60, or a decrease of 79.1 per cent over 1934.

Miles travelled per accident increased from 8,600 in 1934 to 29,221 in 1937, an increase of 240 per cent. Also, for the first nine months of 1937 we had a total of 33 accidents as against 18 for the same period of 1938, or a reduction of 45.4 per cent. In miles travelled per accident we established a figure of 36,680 for the first nine months of 1937, while this year during that same period we have averaged 61,083 miles per accident, or an increase of 57.9 per cent.

We have not had an accident since the 25th of June, 1938 and up until October 8th we had covered a total of 402,371 miles. This is, we believe, a new record for large department store fleets for continuous accident free miles. The previous record, we have been told, was 322,000 miles.

We feel that by constant plugging, holding these courts of inquiry, using the various posters and services furnished us by the National Safety Council and the insurance company, and by showing our drivers how much Marshall Field & Company appreciates the job they are doing by holding a banquet for them each year, and presenting them with gifts and cash awards amounting in some cases to \$100 each, that we have found a most effective way to reduce accidents to a minimum.

As a matter of fact our insurance premium in 1937 was approximately \$1000 lower than in 1934. We also know that we have reduced the cost of repairs to our trucks due to accidents by more than 75 per cent.

Our Court of Inquiry is composed of seven men: three jurymen, one defense attorney, one prosecuting attorney, the defendant and a witness who is usually the helper on the truck at the time of the accident.

The Court of Inquiry

The following questions were asked the Defendant by the Prosecutor. The answers are those of the Defendant.

Q. Will you please state your full name and address? A. Clarence Wilson, Chicago, Illinois.

Q. What is your age? A. 38.

Q. Are you married or single? A. Married.

Q. What is your length of service with Marshall Field & Company as a driver? A. 4½ years.

Q. Were you involved in an accident on December 1? A. I was.

Q. Will you please give us a description of the type of truck you were driving at the time of this accident? A. Two-ton Furniture truck.

Q. Kindly tell us in your own words just how this accident occurred. A. I was going Southeast on Milwaukee Avenue as it was dinner time and I was looking for a place to park to have my lunch. I came to the intersection of Irving Park Boulevard and I saw a parking space on the north side of the Boulevard west of Milwaukee Avenue. I made a sweeping right hand turn to get into this space. When I got there I noticed my truck was on an angle so in order to get parallel with the curb I informed my helper to get out and back me up. He went across in front of the truck and when he was in position to see the rear of the truck and me, he gave me the signal not to move. He came over and said that apparently a car had run into the rear of my truck. We both went back and I talked to the driver of the other car and examined his car to find the extent of the damage.

Q. How fast were you travelling southeast on Milwaukee Avenue? A. About 3 M.P.H.

Q. Why did you stop on Irving Park Boulevard? A. Because the red light was against me.

Q. After making the turn into Irving Park Boulevard how were you parked? A. I was parked on an angle with the right front wheel against the curb and the right rear wheel out about four feet.

Q. What was the condition of the weather at that time? A. It was snowing and the streets were slippery.

Q. What time of day did this accident occur? A. 12:00 Noon.

Q. Where was your helper riding before the accident happened? A. In the front seat.

Q. Why was he riding in the cab? A. Due to weather conditions the rear curtain was lowered.

Q. At the time of the accident was the tailgate in a lowered or closed position? A. The tailgate was down.

Q. Is this a very busy intersection? A. It is.

Q. Why did you choose this particular place to stop? A. I have already stated that we stopped to have lunch and I like the food in this cafe.

Q. After the helper got out of the cab where did he go? A. He went around the front of the truck to the left hand side to a position where he could see the rear of the truck as well as myself.

Q. What kind of signal did the helper give you? A. He gave me a signal not to move.

Q. Why did you back up at this time? A. *(Objection by Defending Attorney) (Sustained by Judge.)*

Q. What did you do after the accident occurred? A. I pulled away from this corner and parked on Cicero Avenue.

Q. Why did you pull away? A. At this particular time and in the excitement I pulled away in order to avoid another accident.

(Prosecutor then questioned the witness.)

(A second witness was called.)

Q. Will you please state your full name and address. A. Arthur Martin, Chicago, Illinois.

Q. What is your age? A. 22.

Q. What is your length of service with Marshall Field & Company? A. Five years.

Q. What is your occupation? A. Helper on furniture truck.

Q. Were you working with driver Wilson at the time the accident occurred on December 1? A. I was.

Q. Tell the court in your own words what you know of this accident. A. I got out of the cab of the truck and went around the front of it to get myself in a position where I could see Driver Wilson and see the rear of the truck. As I was going around I noticed a street car passing.

When I got myself into position I saw there was something the matter at the rear of the truck and told the driver not to move. I then went over to the front of the truck and told the driver that there was some trouble in the rear and we both went back to investigate.

Q. Were you in a position to see the driver of the truck? A. Yes.

Q. That is all.

(Remarks of Prosecutor to the Judge and Jurymen.)

Mr. Johnson and Jurymen: It is my opinion that Driver Clarence Wilson is unquestionably responsible for this accident. You will also agree that Mr. Wilson, being an experienced driver, should have known better than to choose the location he did to park, in view of the traffic situation at this intersection. This is revealed by his decision to move the truck to a safe parking place after the occurrence of the accident.

After listening to the evidence in this case and to the facts brought out, I am sure you will, in all fairness to our other drivers, and in the interest of furthering our fine accident record, find this driver, Clarence Wilson, responsible.

(The following are the questions asked by the Attorney for the Defense and answered by the Defendant.)

Q. Will you please state your full name and address? A. Clarence Wilson, Chicago, Illinois.

Q. What is your age? A. 38.

Q. Are you married or single? A. Married.

Q. What is your length of Service with Marshall Field & Company as a Driver? A. 4½ years.

Q. Were you involved in the accident in question on December 1? A. I was.

Q. Please give us a description of the type truck you were driving? A. A 2-ton furniture truck. I was going Southeast on Milwaukee Avenue and as it was lunch time I was looking for a place to park and have lunch. I came to the intersection of Irving Park Boulevard and I saw a parking place on the north side of the Boulevard, west of Milwaukee Avenue. I made a sweeping right hand turn to get into this space. When I got there I noticed my truck was on an angle, so in order to get parallel with the curb I informed my helper to get

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out and back me up. He went across in front of the truck and when he was in a position to see the rear of the truck and me he gave me the signal not to move. He came over and said that apparently a car had run into the rear of my truck. We both went back and I talked to the driver of the other car and examined his car to find out the extent of the damage done.

Q. Why did you stop at Irving Park Boulevard? A. Because the red light was against me.

Q. As I understand it you were going S. E. on Milwaukee Avenue? A. Yes sir.

Q. And you were going to turn off Milwaukee Avenue to go West on Irving Park Boulevard. Is that right? A. I was.

Q. When you got the lights to go did you give any kind of a warning signal that you were going to turn west? A. My helper extended his right hand as a signal and I turned on my right hand signal lights indicating a right turn.

Q. After you made the turn onto Irving Park Boulevard how far was the truck from the corner where you stopped and in what position was your car? A. It was on an angle with the right front wheel against the curb and the right rear wheel about 4½ feet from the curb and about 15 or 20 feet west of crosswalk.

Q. After noticing you were not parked parallel with the curb what did you do? A. I told the helper to get out of cab and go around the left side of truck to a position where he could see both the rear of the truck and myself.

Q. After the helper got out of the cab and went around the left side of your truck could you see him? A. Yes sir.

Q. What did the helper do when he got to his station? A. He motioned for me not to move my truck.

Q. Then what happened? A. The helper came back to the truck and informed me that it looked like someone had run into the rear of my truck by trying to pass between the rear of my truck and a street car which was passing.

Q. When you found this car in this position what did you do? A. I went to the car with my helper, got the gentleman's name and address and examined the damage to his car.

(Questions of Defending Attorney to the Defendant's witness and his answers.)

Q. Tell the court in your own words what you know of this accident. A. I got out of the cab of the truck and went around the front of it to get myself in a position where I could see Driver Wilson and see the rear of the truck as well. As I was going around I noticed a street car passing. When I got myself into position I saw there was something the matter at the rear of the truck and told the driver not to move. I then went over to the truck and told the driver that there was some trouble in the rear and we both went back to investigate.

Q. What was the extent of the damage done to this car? A. The right front fender was dented and the right front door handle broken.

Q. Did this man give any reason at all why he had run into your truck? A. No sir.

Q. You stated that it was snowing. A. Yes sir.

Q. What was the condition of the windshield on this man's car? A. It was completely covered with snow with the exception of the place cleaned by the windshield wiper on the left-hand side. The right side was totally covered.

Q. In your opinion why did this man run into your truck? A. Because he could not see from the right side of his windshield and because he tried to pass between our truck and the street car.

Q. Did you overhear any conversation between the man driving this car and the lady passenger? A. Yes. She said, "Why did you do it?" and he replied, "What else could I do."

(Defending Attorney's remarks to the Jury.)

Gentlemen of the Jury: I believe that we have proved our case and that Driver Wilson did everything possible to avoid this accident. From the testimony presented I feel that this accident would not have occurred if the windshield wiper on the other car had been in working condition so that the windshield on the right side would have been clean. As was proved, the wiper on the left side of the windshield was working and the one on the right side was not. Therefore, he could not see through that part of the windshield and it was the

right side of his car which struck the rear of the truck of Driver Wilson.

Driver Wilson's car was standing perfectly still and there is every indication that if this other man had not tried to pass between our truck and the street car the accident would not have happened. I therefore request that you find Driver Wilson not responsible for this accident.

(Verdict—Read by one of the Jurymen.)

We feel that the defendant, Driver Wilson, is not responsible for this accident for the reason that even though his car was parked at an angle, if the driver of the other car had clear vision through the right side of his windshield he would have been able to avoid running into the rear of our truck.

(Mr. Johnson's final remarks to the Court.)

Inasmuch as the jury has not unanimously agreed that the defendant was not responsible for this accident I should like to point out that the one fact, that of the position in which the truck was parked, and the nearness to such a busy corner, should be carefully considered in determining the responsibility for this accident. I believe it would have been avoided if the driver had chosen a place farther away from the corner to park. The truck was not properly parked at the curb which is still further evidence that our driver is responsible. Therefore, I am of the opinion that it is necessary to judge this a chargeable accident, both to our record and to the record of the driver, Clarence Wilson.

WEDNESDAY MORNING SESSION

October 12, 1938

Vehicle Personnel Problems

Presiding, H. J. JONES, Director, Safety & Personnel, Automobile Shippers, Inc., Detroit.

Control of Drivers Away from Home Terminals

By M. B. SPEIR, JR.

Director of Safety & Personnel, Horton Motor Lines, Inc., Charlotte, N. C.

At a terminal, drivers are subject to the direction of the supervisory personnel, but having left the terminal personal contact ceases and the drivers demonstrate their individual characteristics and ability, as well as the attitude of management not only toward their employees but toward the public. This means also that there must be an interest in the leisure activities of the men, for their use of it determines whether they return to work rested, fit and able to perform their duties safely. In their leisure activities the men can also reflect the nature of the management, and indiscretions by management are interpreted as sanction for indiscretions by the men.

The safeguarding and supervision of drivers has as its purpose the conservation of life and property, the efficient and economical movement of freight and passengers and the building of public goodwill to per-

mit the continuation and growth of motor transportation through the adoption of such reasonable regulations and practices as will foster favorable public relations, and thus prevent such prejudicial legislation as will ultimately result in its strangulation. This must inevitably result from the public, inflamed at the tremendous accident toll on our highways, unless motor carriers realize that such a program must become an integral part of their operating policy. The time is not far distant when motor carriers will realize that a program which conserves life and property must be an integral part of their operating policy and one which is necessary for their very existence.

There are certain basic fundamentals in an effective accident prevention program. Definite policies must be maintained and modified only to bring about an improved

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condition. These fundamentals are: interest and responsibility of management, uniform policy applicable to all, understanding of the problems of the drivers, cooperative attitude toward safety regulations and appreciation of our responsibility to the public.

There is nothing especially new in these six points. They have been thoroughly discussed on numerous occasions and are here presented in order that we may again realize their importance.

Does management have an interest in an accident prevention program? The answers will be unanimously in the affirmative, but a little consideration will determine whether this is but the expression of a desire, or a sincere statement. If certain management is interested in accident prevention, why do we sometimes see vehicles loaded beyond their safe capacity? Why do we sometimes see passengers transported over the highways at excessive speeds and frequently in overcrowded vehicles? Do the drawn faces and bloodshot eyes of over-worked drivers tell a story that such management can deny? Does that management have much interest when they say "we want no unsafe vehicles on the road"; and then permit dispatchers to send them out because, "the freight has to be moved"? A sincere facing of these and other questions will see the quick response of "yes" change to "we have much room for improvement and will begin today."

Various principles of law clearly define the responsibility of management. The acts of the employees must be considered as the acts of management. These principles of law, however hard they may seem, go right to the heart of driver control. They leave no avenue of escape to those who hire by appearances and trust to luck thereafter.

In charting its course the company has inaugurated certain policies for the good of the organization. The manner of handling various matters as they arise will quickly disclose to the men any unfairness or partiality. They, in turn, will be quick to return the spirit and treatment they receive. It is not expected that management will assume the rosy attitude that "all's right with the world" and that everyone tells the truth, neither should it be that everything is wrong and everyone a falsifier. There is a middle ground of open-

mindfulness for accurate facts and what they reveal.

Handling of the individual should then take place in line with the facts and the same treatment given as was given to others under similar circumstances. Further, is an honest attempt made to determine the complete facts pertaining to every accident? Or do we feel that we should thoroughly investigate those of the less desirable drivers and pass lightly over those whom we consider as satisfactory in other ways than driving? That policy is disastrous because it soon lowers morale.

On the driver rests the final responsibility for the proper handling of motor transportation. We know, of course, that someone must move the vehicles but frequently the planning of management has been directed largely to questions of finance, equipment, maintenance, traffic, etc., thus, leaving the men to face their problems alone. There is no pride of ownership of the equipment which they handle. They must take it in the condition in which it is given to them. Driving equipment which has not had the needed repairs or that has been patched to make another trip gives them much concern when they are expected and required to operate it safely.

Upon leaving the terminal drivers immediately encounter a stream of traffic and their vehicle must be maneuvered with the greatest degree of judgment. This traffic carries a prejudiced and inconsiderate public which often operates in and around heavy equipment in a manner which shows their utter indifference to the rules of safe driving and of the rights of others, frequently endangering life. The driver's problem is to protect the public. The driver must face the problem of satisfactorily coping with the various conditions which affect visibility, surface traction and performance. Coupled with the problems of his work is also the personal problem of providing the necessities of life for his family and the managing of his affairs to bring about some measure of financial security on a rather limited income. Management should realize the responsibilities and problems which confront the driver and encourage his confidence in order to assist him in their solution.

Motor transportation is yet in a formative stage. With the Motor Carrier Act of

1935 out of chaos has come a semblance of order. While much has been done there is yet much more to be done in strengthening the industry. Management has been constantly confronted, since the effective date of the Motor Carrier Act, with increasing problems of traffic, rates, routes, tariffs, finance reports, hearings and many others with which we are all familiar. We should feel that we have an opportunity to cooperate with the regulatory bodies to develop those regulations which are based upon good business, progress and the conservation of life and property. We have seen the safety rules and regulations of the Interstate Commerce Commission made law. While some of them are general in their terms we should feel that this body has shown much consideration in permitting us to have the opportunity of making our own interpretations bring about better conditions.

A case at point are five words from Part I of these Safety Regulations, "Good physical and mental health." Have we attempted to interpret these five words in a cooperative spirit, in an effort to arrive at a reasonable standard of physical qualifications, or, have we just allowed our employees to make a statement that they are physically fit with no verification by examination? When conferences are held on safety regulations are we making a sincere effort to see that reasonable and proper rules are formulated for our protection and the protection of the public or do we indifferently allow the full burden to fall on others who have not our intimate knowledge of the requirements of our business? There must come from this industry a more cooperative attitude toward regulation and an earnest endeavor to secure that which is reasonable and proper.

We should realize that we use the highways by the grace of the people of the various states. It is true that we pay enormous taxes for their use, but this does not grant us immunity from the necessity for adopting those safeguards and operating practices and that helpful attitude which a reasonable public can expect. The power of public sentiment is so strong that were it to turn against us there is grave doubt that we would continue our present existence on the plea that we serve a need. We have had a large share in helping to build the fine highways of this country.

By virtue of the taxes we pay and our share in building the roads we should be leaders in highway safety and feel that our position is that of safety supervisors in their common use. Our business is conducted on the highways and what we have helped create we must protect.

With a clear picture of our responsibility and an agreement on the soundness of the fundamentals outlined, our first step in the Control of Drivers Away From Home Terminals is to establish them as operating policies, understood and practiced by all. They are the foundation of all other work which are but detailed applications of them.

The control of drivers away from home terminals can be accomplished through selection, education, and enforcement. These must be so coordinated that a maximum benefit will be derived and that the results achieved through one phase will not be nullified by lack of attention to the others.

Selection

The selection of the proper employee may be likened to the laying of the foundation of a building. It is here that the utmost care must be exercised and the program of selection so arranged that the most suitable man is chosen for the work to be done.

Part I of the I.C.C. Safety Regulations deals with the Qualifications of Drivers and here, for the first time, do we find a national standard to be used by those carriers subject to its jurisdiction. Many states have adopted these and while they are general in their terms, give the employer a great opportunity for constructive work and a guide to use in handling his personnel. Although simple in language, they are fundamentally sound and can be easily adapted to any operation. Our responsibility is to see that we derive the most benefit from them.

The applicant approaches a Motor Carrier with the idea of securing employment. He brings with him his previous training, environment, habits, ability and mental outlook. He must be tested and tried to determine his points of weakness and strength, so that we can have knowledge of his weaknesses and correct them and encourage those characteristics which will make a desirable employee. Without knowledge there can be no understanding.

After the application comes the investigation. This can be conducted by means of

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personally communicating with former employers or references or writing to them. A further way is to secure a report from one of the investigating agencies which will provide additional information. This report will indicate that the man would make a satisfactory employee.

The question of finger-printing of employees is becoming a more and more discussed and important subject. This can be a decided protection to the man and a decided protection to the employer. It serves as a means of placing the employer in a position of knowing that this man has no record of a criminal nature on file in Washington and it also gives the employee the added protection that identification is possible should it be required.

Physical condition plays a tremendous part where strength and stamina are required. This examination should be as thorough as possible and the services of competent physicians secured to conduct the examination. The examining procedure should be directed by the company and a report submitted to the company.

The term "good eye-sight in both eyes" is one of much discussion but in considering this we might approach the question from the standpoint of how a standard can be set and used in our own operation. It is not expected that the Safety Supervisor will in any way attempt to take any work away from those men whose legitimate business it is to examine eyes and prescribe glasses for their correction. It is not expected that the examiner will make any diagnosis.

Can the man operate heavy equipment? He has made certain representations as to his ability and these should be verified regardless of his statement. This can be done under the supervision of an employee whose work it is to test applicants and who also has the knowledge of motive equipment.

While it may seem far distant from the word "Control" nevertheless, personal record files should be maintained on employees and contained in those should be all pertinent information as will enable the employer to judge the employee constantly.

Education

After the employee has been selected, tested and examined and has passed satisfactorily, he is then ready for employment or for permanent employment in the event

that he has been placed on the payroll under probation. His education then begins and is to be directed toward doing his work safely and correctly, and with a great deal of courtesy.

An analysis of each individual operation will show its varied problems which must be recognized by management and its program so arranged that it is comprehensive and covers an entire operation.

Each company has its own methods but likewise there is placed upon the motor carrier such Safety Rules and Regulations which it must see that its employees know. Instruction books are numerous and while it is fine to have knowledge we should be on the alert to see that the employee uses that knowledge of the company rules and regulations and those prescribed by regulatory bodies.

Does the employee check his equipment? Does the employee know how to check his equipment? It is the responsibility of management to see that he knows how and does it so that safe equipment will be assured on the highway. Further, management should give the right to a driver to refuse to operate any piece of equipment that he feels is unsafe.

How is an accident handled at the scene? The training given a driver on what to do at the scene of an accident will have a direct bearing, quite often, on the outcome of the case. Much talking, much argument can produce a very great deal of trouble. The use of a courtesy card, often called a witness card, at the scene of an accident will very often enable the employer to secure information that will enable more correct handling of the employee at a later date. This practice should be encouraged and the driver trained in the method of approach to people in order to get them to sign this card.

Can the driver properly use the fire-fighting equipment to get the maximum benefit? The amount of training in that respect often decides whether there will be small loss or total loss.

Does the driver actually know how his equipment works internally? While an experienced driver has a great deal of knowledge of equipment, further training should be given him to produce safety and efficiency. We should see that they know all about their job.

Enforcement

Enforcement is necessary in order that all the personnel of a company may move forward in an orderly and efficient manner. It should apply to all employees alike and all made to abide by those rules which are reasonable and proper. Enforcement can be accomplished through checking stations; mechanical devices; road checking; discipline, and inspirational activity, and it is our work to see that these factors are nicely balanced.

The subject of checking stations is much discussed, some feeling that they are highly important and others ignoring them completely. Care should be exercised in selecting the checking stations and simply to ride by during the day, looking the place over and make arrangements with the manager of the place is no positive indication that at 3 o'clock in the morning the conditions will be equally as quiet.

How much time is being lost on the road? How often does management ask that question? The use of a recorder will give a very clear indication as to when the vehicle is in motion or idle. It can be used constantly as part of the regular equipment of the vehicle or it can be spotted as a check on drivers. Obviously, if it is to be spotted to check on the driver he should not know that it is on the vehicle.

Another way of determining what goes on on the highways is to receive reports from insurance company checkers whose business it is to observe the operation of the equipment on the highway and report conditions as they find them. These reports are submitted with the view of having action taken to prevent the recurrence of unsafe driving practices. The employer may also decide to establish its own road control. That is a question for management. It can be made to pay a dividend and having more intimate knowledge of the drivers, their habits and actions can probably secure more information about what is going on on the roads than from reports of one not on the payroll of the motor carrier.

Discipline

The question of discipline is one which presents many problems. Let us bear in mind, however, that discipline means to train, to drill, and to punish. If we wish to

discipline a man let us ask ourselves just what we have in mind. Do we wish to train him in a particular operation; or to drill him in the handling of the equipment or a certain condition; or have his actions been such as to justify punishment by a lay-off, fine, demotion, or relieving him from service? The subject of discipline is quite broad and it should be handled so that we have trained the man, schooled him in those points that we want and resort only to punishment as a last resort. After all, are we not admitting failure when we are forced to relieve a man from service?

An accident hearing will develop many interesting facts. These should be conducted whenever possible and testimony taken as if the transaction were in a court. The driver can be taught a lesson actually in the hearing which he can take with him on the road for future use.

Are we rewarding our men for their splendid work? There are many types of pins, such as the National Safety Council No-Accident Driver Award, many operators secure their own, and many insurance companies give them out as a reward. They are highly prized by the men and serve as a mark of distinction. This is, of course, only one type of inspirational activity. There can be meetings, banquets, prizes, contests, and other work designed to induce the men and inspire them toward higher standards.

The dash slogan card in the vehicle can be a constant reminder for safe operation at all times when the man is behind the wheel and that he is to protect lives and property.

It is not expected that the points presented here will be all that can be done in driver control. You will have noticed that no mention has been made of any type of training school which can be used to equip the men with the proper knowledge of safe operation. These points have, however, been presented as the cross-section of ways and means of safeguarding and supervising drivers. We have spent much time on control through selection, education and enforcement. However, we will find that underlying these is the attitude of the man behind the wheel and his will to prevent accidents. Physical examinations and tests give the condition at periodic intervals, education increases his knowledge and en-

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forcement sees that he does it. From the beginning of his employment, his mental faculties are in the hands of his employer to shape as he will either by sowing seeds

of distrust and indifference or in the planting of seeds of interest, enthusiasm, courage and loyalty which will develop a *Will to Drive Safely*.

Is This Safety?

By C. G. MORGAN

Hayes Freight Lines, Inc., Mattoon, Illinois

I am going to talk about the ICC hours of safety regulations. My reasons for bringing up the subject at this session are: It is certainly a timely subject; it is of direct interest to a large number present; and it is of indirect interest to everyone here present, as before going further I want to discuss briefly motor truck transportation. It is still comparatively new and its ultimate scope and importance to the national economic life is as yet undetermined.

It has grown with rapidity because, first, it is a flexible service which can meet the needs of those who have property or persons to transport. As private carriers you have improved your organizations through improved delivery services. As shippers you have taken advantage of the facilities offered by that portion of the trucking industry commonly called "for hire." Merchandising has been revolutionized by the development of truck transportation.

The majority of the motor trucks move over a limited territory and on eight hours. However, it is the minority of this operation which makes it flexible and valuable to industry and commerce. As private carriers, you frequently need services extending beyond eight hours, to 10 and 12, and often more.

You also probably adjust such situations by giving drivers called to make long trips more time off between times.

When you get away from city service no rule can be followed in regard to hours and trips, if elasticity and flexibility of service are to be maintained. The trucks are valuable because they can move when, as and if needed, to any point.

A majority of the operation subject to Interstate Commerce Commission jurisdiction is irregular in its type of operation and its frequency of service over regular routes. Carriers having regular routes, also have

rights to service many points in their territory a majority of which are not on regular routes or schedules, but are served when the demand arises.

While most of those in the "for hire" end of the industry believe it is reasonable to regulate this transportation medium in the public interest, they still believe such regulation must be reasonable and not destroy the fundamental flexibility of truck transportation.

The ICC is conducting hearings on proposed regulations for the safe transportation of explosives and other dangerous articles. One of the first proposals makes binding on all carriers subject thereto all of the safety regulations of the Bureau of Motor Carriers, ICC. This means safe driving rules, equipment requirements, lights, etc., reporting of accidents and it means hours of service when they are effective. And one of the types of carriers to which the rules will be applicable is private carriers.

Therefore, the hours of service rules undoubtedly apply to private carriers of flammables, poisons, explosives, compressed gases, acids and corrosive liquids, many chemicals, paints, varnishes, in fact some four or five hundred ordinary commodities.

So far regulations have been imposed only on common and contract carriers, but private carriers may be brought in.

You know the many runs of motor trucks now scheduled to 11 and 12 hours, to allow a safe margin of time, but which can be made in 10 hours if necessary. But you also know, or I hope you do, that such a speeding up can have but one result—increasing not only the frequency but also the severity of accidents.

You all admonish drivers to take their time. What will happen when these drivers have to run on the clock, produce miles on

a fast schedule? A speed-up can be but disastrous to safety.

In some instances it is possible to split runs, but other objections from a safety standpoint crop up. Which drivers are best, those who get home at night, or those who stay away from home every other night? I believe that a driver away from home over night is very apt to be feeling low when he goes on the job the next day.

Speaking of the 20 minute stops which cannot be deducted from driving time, many

intercity operations have regular check-in stations maintained in the interest of safety. The stops for check-ins would seldom exceed 20 minutes. Are carriers going to continue such stops when they count as driving time?

Do not forget that the present rule would permit a man to spend almost unlimited time loading and handling freight before being assigned to driving, just so long as he did not drive more than 10 hours consecutively without the statutory rest period.

WEDNESDAY LUNCHEON SESSION

October 12, 1938

Business Meeting

Presiding, R. C. HAVEN, General Chairman.

Truck Safety—at Home and Abroad

By H. H. KELLY

Chief, Section of Safety, Bureau of Motor Carriers, Interstate Commerce Commission, Washington, D. C.

(Editorial Note: Since Mr. Kelley spoke extemporaneously and no manuscript of his remarks is available, the following is a summary of the talk he delivered.)

Mr. Kelley said that he had come to Chicago from Indianapolis by highway, riding through the night with the driver of a large tractor-semi-trailer combination. This would not have been possible in Switzerland, he explained, since in that country all truck traffic is prohibited from about 10 p.m. to 5 a.m.

This drastic rule was adopted a couple of years ago, not for reasons of safety, but because of complaints of Swiss citizens of the noise made by trucks at night. Switzerland has only about 90,000 motor vehicles, but over 1,000,000 bicycles, and about 40 per cent of those killed in highway traffic accidents last year were cyclists. A bus driver in Switzerland must have held a heavy-truck driver's license for at least one year before he can be qualified to drive a bus.

The Government policy has, apparently, not been favorable toward expansion of road transport, as evidenced by the fact that there were only 21 more trucks over

one-ton capacity registered in 1937 than in 1934 (total number of such trucks, about 13,000); but the country now apparently realizes the necessity for increased motor transport facilities for use in time of emergency.

In Great Britain, some of the heaviest road vehicles in the world are in operation. Legally permissible on the highways is a steam or diesel truck (called "heavy locomotive") drawing a full trailer, with a gross weight up to 140,000 pounds, but limited in speed to 5 miles per hour. Most trucks in Great Britain are limited to 20 miles per hour top speed, but efforts are being made to increase this limit in view of improved vehicles and highways. Hours of driving of truck drivers are restricted to 11 in 24, but without any limit to on-duty time and without any weekly limit.

Large fleets of both busses and trucks have strict driver control methods; the apprentice system in England, with boys spending considerable time in minor jobs in a company's employ before attaining the age and experience requisite for drivers, and the tradition of sons following fathers in their chosen vocations, appear to contribute

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to the responsibility and dependability of British drivers.

In France, truck registrations were 2 per cent less in 1937 than in 1934 and this decrease is blamed largely upon high taxes, a 3½-ton truck paying about \$400 in taxes each year. Here again, however, military needs will require the building up of larger motor transport fleets.

Among other qualifications, every bus driver must have a certificate of good character from the mayor of his commune before he can drive a bus. After January 1, 1939, all head lamps must project a yellow light, the French evidently feeling that this will promote safety. A universal 40-hour week law enacted in 1937 applies to motor transport, as to other industries.

In Germany, there is every evidence of material progress. Truck registrations increased 20 per cent in the year 1937 alone, and improvement of highways—particularly the "autobahnen," or superhighways—is proceeding rapidly. There is a National Truck Operators Association which all operators are required to join and which has quasi-governmental functions, including the enforcement of rates.

Big vehicles are in use in Germany—combinations 72 feet long, composed of a 3-axle truck and two 2-axle trailers with a gross weight up to 96,000 pounds being legally permissible. Hours of service of truck drivers are limited to 72 per week or 132 in two weeks; only 10 hours of driving at a stretch is permitted for one driver, although this is increased to 19 hours for two drivers.

Safety propaganda is much like that in

the United States, including public demonstrations and parades, leaflets and illustrated booklets, and the like. As an evidence of German thoroughness, every policeman carries a 547-page book of traffic laws and regulations.

An accurate comparison between the United States and European countries in regard to highway accidents is hardly possible, but the best figures Mr. Kelley was able to obtain indicate that the American record, expressed in terms of fatalities per 1,000 motor vehicles registered, is considerably better than that of any of the countries he visited. It was his impression that much more effort is being put forth here to reduce highway accidents than in Europe.

While we cannot learn a great deal perhaps from European highway safety practices, this does not affect the serious character of the job confronting us at home. Mr. Kelley cited the National Safety Council Fleet Contest records which show truck accident frequencies as 2.55 per 100,000 miles, bus 2.4, and passenger car fleets 1.80, and said that the steady improvement of these frequencies should be the objective of all fleet operators.

He said that in one middle western State he had found recently more truck drivers had been killed in accidents so far this year than during the corresponding period of 1937, despite a 26 per cent decrease in general highway accidents. Declaring this to be an alarming situation, he emphasized the need of having these figures analyzed to determine what was responsible for this increase and how to correct it.

WEDNESDAY AFTERNOON SESSION

October 12, 1938

Presiding, GENERAL CHAIRMAN R. C. HAVEN

What About Tires?

By B. J. LEMON

U. S. Rubber Products, Inc., New York

Certain estimates concerning the number of motor vehicle accidents have become definite facts by the persistent collection and study of information. For example, the

1938 edition of "Accident Facts" says that in 1937 there were 35,400 passenger cars, 8,000 trucks and 470 buses involved in fatal accidents. It also gives reasonably

exact information about the types of accidents, fatal, and non-fatal, in which these vehicles were involved; but when one looks for similarly helpful information on tires, there is a surprising dearth of detail.

Tires, as such, are not indexed in "Accident Facts." Punctures, and blow-outs are listed and against them are charged an average of two per cent of the vehicles involved in fatal accidents. These average figures for fatal accidents resulting from tires come from 30 states—with the highest state percentage of 16 and the lowest of less than one-half. An average of 1 per cent of vehicles involved in non-fatal accidents attributed to tires is shown for 19 states, with the highest state percentage of four and the lowest zero.

It is hard to believe that the percentage-wise variation of vehicles involved in fatal accidents in one state will be so much higher than in another state as the result of punctures and blow-outs, unless, as "Accident Facts" concedes, there is extreme under-reporting or faulty classification methods.

Skidding in "Accident Facts" is covered by a paragraph of eight lines in a space of 16 pages of Motor Vehicle Statistics. Twenty-four states show that four per cent of vehicles in fatal accidents were skidding; 17 states report that three per cent of the vehicles skidded in non-fatal accidents.

We grant that collecting general information about accidents is difficult under favorable circumstances. Speed, exactness and skilled investigation are needed in accident reports on tires, brakes and other similarly vital motor vehicle equipment. Yet in an industry that yearly spends millions for tire development and tests, that, for safety's sake, advocates but cannot enforce the maintenance of standards of tire size, load and inflation, is it asking too much of safety enforcement groups that field investigations and summaries of tire accidents contain more accurate technical details? The tire industry will willingly cooperate to help work out a more acceptable method of tire accident analysis.

Separate Tire Reports Needed for Passenger Cars and Commercial Vehicles

When vehicle owners, fleet superintendents or automotive engineers informally discuss tire accidents, it has been my observa-

tion that about 80 per cent of the accidents cited are on passenger cars. This may be because there are approximately five times as many passenger cars running in this country as trucks, buses and trailers combined, and because about four times as many passenger cars as trucks and buses are reported as involved in fatal accidents. To simplify our problem further we should have a statistical segregation of passenger cars, and half-ton trucks from heavier trucks, trailers and buses, respecting accidents resulting from tire punctures, blow-outs and skids.

Punctures

That the failure of tires through punctures has materially decreased during the past decade is, I believe, general experience. I know of no comparable year to year tire puncture statistics. Balloon or low pressure tires, more and better hard surface roads, and fewer nails and other puncturing objects on highways appear to be the reasons for reduction of this tire hazard. However, this infrequency of punctures and in fact, of tire trouble in general, has made vehicle owners and operators more careless about stopping to inspect tires even after car handling indicates that tire pressure may be below normal.

Blow-outs

In spite of the many meritorious improvements made in tire design and construction there is no such thing as a blow-out proof tire.

By blow-outs, I mean quick failures that cause the tire to go flat so suddenly that the driver's reaction time for handling the situation is closely limited. An extreme example would be a car traveling 70 miles an hour, where an approximately two inch hole in the casing will result in a completely deflated tire in about one second or 100 feet. I have never seen such a blow-out on the highway, except in tests. Very old tires, weakened by long wear or abuses, or even new tires impaired by accident can, of course, fail with abruptness, but even this is unusual.

In 1932 I assisted in a series of 18 blow-out tests to compare driving control of 7.50-15 four ply tires, with 6.00-17 four ply tires mounted on drop center rims, standard for each tire. Holes were blown in the tire and tube sidewalls. The speed

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of the car, which weighed 3,800 pounds, was 70 m.p.h. when the blow-out occurred. The tires went flat in approximately one second. The experience of the driver was that the larger tire when blown on a front wheel, produced a harder pull on the steering wheel toward the side of the blow-out than when the smaller tire let go. However, after the steering had been righted, car control down to a stop was easier with the larger tire. No appreciable difference was noted in car handling when blow-outs of the two sizes of tires occurred on rear wheels. Contrary to opinion, control in general of a rear blow-out was more difficult than one on the front. It was also observed that even the more flexible 7.50 deflated casing, above the speed of 35 m.p.h., did not flop sidewise, but, due to centrifugal force, folded rather evenly on the rim at road contact, and offered a comparatively smooth cushion between the rim and the highway.

Driving Technique

In my opinion, it is not the sudden high speed blow-outs, nor even the slow leak failures reported as tire origin accidents, that directly cause accidents. Both, along with other factors, may be contributory causes. More important is the lack of thoughtfulness on the part of the driver, of his ability to size up the situation, to understand soon enough what is happening and then to handle the car with the greatest practical intelligence in stopping.

For example, any passenger car driver who does not investigate at once the reason his car handles or sways in an unusual manner is not driving sensibly or safely. If such danger warnings go unheeded and a crisis develops, the usual driver reaction is to apply the brake with all his leg strength, and sometimes to disengage the clutch, reactions that are both wrong and dangerous. The clutch should not be disconnected, nor should the brakes be applied if no obstacle immediately impends until the car loses speed and is under steering control. Racing drivers can and do apply the brake lightly, intermittently on and off, to help reduce momentum when a fore-shortened stop is required. But for the average driver, the best practice is to concentrate on steering to control the direction of the path of the car, leave the clutch in and let the motor take care of deceleration until speed is reduced.

Advice on Emergency Driving

We need to teach a few simple rules for emergency handling of motor vehicles. A committee of say five expert, experienced automobile drivers and five more for commercial vehicles could formulate in simple language how to handle a vehicle most safely for the most common emergencies. A knowledge of these rules could be required officially of all new and old drivers when licenses are granted.

The safety of highway transport depends not alone on how safe are the highways, the vehicles and the tires, but also upon the drivers. Motor vehicles are much less responsible for accidents than the individuals who use them. The human problem in accidents, is now, and always will be paramount. In my opinion, familiarization of drivers with emergency handling of motor vehicles is one of the best insurances against accidents to which tires particularly, may be contributory, because feel of the vehicle is through the tire.

Skidding

The same stopping technique applies to handling a side or forward skidding car. In general the brakes should not be used, or only lightly applied. Skidding occurs normally, when the road surface is slippery. On hard surfaced road, wet or dry, a rolling tire offers greater continuous resistance to skid than a locked tire that slides along on the one tread section. Often the difference in tractive ability between a rolling and a locked tire is enough to meet the frictional requirements of averting trouble. Serious also, is the loss of steering control of locked front wheels. We can hope to avoid such sliding of tires only by a large amount of practice and experience in brake application.

Different road surfaces have different skidding characteristics. Since the car makes road contact only through the tires, skidding generally has been blamed on the tires. When two different surfaces are in contact the frictional force which prevents slipping depends on the characteristics of both surfaces. More recently, needed study has been directed to the part that road surfaces play in motor vehicle skids.

A marked decrease occurs in the coefficient of friction between tires and wet hard surfaced roads as speed increases. To a lesser extent this occurs on dry surfaced

roads. Friction is very low between rubber and ice. On slippery roads, tires with flexible tread surfaces are less likely to start a side skid than tires with more rugged types of tread. The holding properties of chains against skidding, appear to have similar characteristics; equipment with reasonably close cross chains is better. Heavy vehicles with chains may break through smooth ice by sheer weight concentration. Chains are not a cure-all and side skids are sometimes worse with chains than without.

The frequency of forward and side slip of tires on heavier commercial vehicles is nowhere near as great as for lighter type vehicles. Three axle vehicles rarely side skid. Dual tires, more experienced drivers and slower speeds are skid preventives with heavy vehicles. I have noted that loaded trucks travel quite securely over icy hills and that are treacherous for passenger cars.

Driving technique has a great deal to do with whether or not a car skids. A precise driver regulates his acceleration, speed and braking to the conditions of the highway and tires.

Skidding accidents are multiplied by temporary highway obstructions such as vehicles parked on, or partially on highways, for repairs, in locations where lack of visibility prevents gradual instead of sudden application of brakes. A more rigid enforcement of laws forbidding the stopping or parking of vehicles on highways is a partial solution to skidding of this sort.

Smooth Tires

Many fleet operators insist that smooth tread tires on commercial vehicles rarely skid and are therefore not accident hazards, and that forced regrooving and otherwise restricting the use of such tires from the skidding standpoint is uneconomical and not based upon facts or experience. In spite of this belief, tests indicate that smooth tires, especially on lighter vehicles are not as skid resistant as tires with tread configurations, and more care in driving must be exercised with the smooth tire for equality of safety operation. There appears to be no question that from the traction standpoint a non-skid design on truck tires is better than smooth tires for winter driving. A fleet operator of 80 large milk trucks in southeastern New York

makes it a practice and believes it economical to take off smooth tread tires in the fall and hold them for the next summer's operation. Smooth tires on this operation give them no skidding problem in summer.

From the economy standpoint, upwards of 30 per cent of the total tread rubber depth remains and is usable after the non-skid pattern is just worn smooth and before the breaker or cushion rubber is exposed. If no regrooving is done, the rate of tread wear of this 30 per cent portion is lower than for the non-skid portion due to the greater area of rubber on the road, so that better than 30 per cent of the tread mileage remains after the non-skid is just worn smooth. This mileage is a very important item of tire economy.

From the blow-out standpoint, if the heavy duty carcass appears otherwise sound, I believe a smooth tread tire is reasonably safe from blow-outs down to the breaker when used on heavy duty commercial vehicles under conditions of load and inflation agreed upon by the tire industry; i.e., Tire and Rim Association Standards. In expressing this belief, I recognize that while the non-skid has been wearing away, the flexing, tension and compression stresses in the tire body have somewhat reduced carcass strength. On the other hand, the thicker tread of a new tire dissipates flexing heat more slowly than when the tread is worn down. Extreme age is another deteriorating factor. A tire that has been in service say five years is weaker than one in the same service for two years.

When the breaker or carcass fabric at the tread portion of a truck tire is exposed by wear that tire in my opinion has served its usefulness for high speed, long distance, extreme hot weather service. It may be retreaded, recapped and otherwise repaired and still supply many safe miles of useful transportation, but under somewhat less than the most severe service conditions.

The same recommendations apply to first line four and six ply passenger car tires. When used on older cars, making medium speed runs, a sound carcass tire worn at the tread to the breaker or fabric, and retreaded or recapped is an economical asset in our present motor vehicle transportation system. But, we must not assume that such a renovated tire has the strength of a new tire and can perform as safely under the

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most severe highway operating conditions of high sustained speed and temperatures.

Visual Signs of Weakness

Several years ago, tire makers were asked by the S.A.E. Highway Research Committee, to suggest how tires might be given a quick visual inspection for signs of weakness. The recommendations were:

1. Vehicles with smooth tread tires require more careful handling on slippery surfaces.
2. Tires worn at the tread or sidewall to the first ply of body fabric are unsafe at higher speeds.
3. Tires cut or snagged into the body fabric become hazards unless quickly repaired.
4. Tires showing bulges and tubes that leak rapidly indicate internal weakness and call for prompt investigation of causes and permanent repairs.
5. Tires repaired temporarily by emergency blow-out patches or boots are hazards until permanently repaired.

Some Tire Factors Related to Safety and Economy

Proper size tires and loads and correct inflation for the load are major factors of tire safety and economy. It is sound practice in truck and bus operation to mount new tires on front wheels, and if the tire size permits, rotate tires from fronts to outside rears then to inside rears on six tire units. On tractor, semi-trailer and full trailer vehicles logical practice is to keep tires on the trailer rear; with more worn tires on the rear of tractor. From the economy and safety standpoint, dual tires should be matched up for height; repaired tires on the outside. Spares as such should not be carried too long; keep all tires working. Correct wheel alignment makes driving easier and safer from the driver fatigue standpoint, as well as saving tire costs. Tires should not be stored near heating pipes nor in sunlit rooms. Tubes require most careful inspection. It is not good practice to mount old, stretched, lifeless tubes in new casings.

The safety factors of the retreaded and recapped tires depend upon: age, history and care of selection of the tire, quality of workmanship and materials and efficiency and range of mechanical vulcanizing equipment.

Heat

The complete pneumatic tire assembly is not supplied by the tire maker. He provides only a casing and tube which are incapable of carrying the load, cushioning the car, transmitting engine power, and withstanding road wear until the internal volume of compressed air is provided by the user.

The objective of the tire maker is to provide an otherwise practical balanced casing and tube that will interfere as little as possible with the efficiency of the compressed air. Both casing and tube must withstand extreme heat which because of excessive flexing at high speed and transference of heat from brake drums located too close to the rims of commercial vehicles, often mounts above the boiling point of water, and occasionally above the temperature at which rubber is vulcanized. Subject to such conditions rubber suffers serious loss of strength. Under-inflation, overload, poor air circulation, all adversely affect thermic conditions in a tire. Much has been done in compounding rubber to make it more and more resistant to high heat, but in the struggle to combat extreme heat, effective measures for control are also the avoidance of overload, of under-inflation, or overspeeding and of provision for proper ventilation, between the tire rim and brake drum on commercial vehicles.

Cotton and Rayon

Cotton, like rubber, loses strength in the tire at high temperatures. Persistent and constantly accelerated research from the beginning of the pneumatic tire has been carried on to determine the safest kind of fabric from which to build the tire carcass. Every natural fiber which promised the barest chance of success received consideration. Until now cotton was never seriously challenged. And then, along came the development of a man-made fiber in the form of a special rayon to replace cotton for our most severe tire operating conditions. This special rayon, unlike cotton, which grows weaker under heat, gets stronger, and at 200° F. is 50 per cent stronger than cotton.

The use of rayon in tires has not developed overnight. Experiments have been going on over a long period to devise improved rayon cord, with better twists, and the strongest bonding to rubber until today after nearly a decade of effort, passenger

car and truck-bus tires of rayon are ready to shoulder the heavier heat burdens now becoming unbearable by cotton. The advent of the rayon tire demonstrates once more that the rubber and textile chemist and the tire engineer are leaving no pathway unexplored and no technique undeveloped which may contribute to the safety of the tire and the advancement of transportation.

Safety Engineering Needed

The public and our legislative officials have been quite ready to accept the gifts of science and engineering embodied in the motor vehicle, of which the tire is an important part. Yet they have been slow and sometimes reluctant to allow engineering advice concerning the use and control of that vehicle in service. The results have been some absurd regulation by officials, and flagrant abuses by the public. Safety demands a more solid determination that

engineers shall have a greater say in the control of our motor transportation system, and that legislative and economic leaders lend a more sympathetic ear to technical advice in applying this control.

Reduction in tire accidents must be engineered, just as the automobile and the tire have been engineered in the past, by basing policies upon facts, by utilizing knowledge to achieve results, by thinking through the goal before starting on the way. The engineer has the key position in protecting the public against the hazards of its own man-made improvements in the highway, the motor vehicle and the tire.

The surest solution of the tire safety problem is a closer exchange of real facts, an understanding that amounts to an informal effort among all concerned to promote a dissemination of the best knowledge we have of the tire's virtues and shortcomings as it is designed and used at the present time.

A Central Bureau for Creating and Maintaining Records of Commercial Vehicle Drivers

By R. H. MACKINNON

Manager, Transport Service Bureau, Detroit, Mich.

The bureau is a central office where the physical, historical, statistical, and employment records of men engaged to drive motor vehicles are created and maintained. Since October 1936 we have been engaged in registering drivers and compiling statistics solely for the benefit of the motor carrier industry.

All motor carriers throughout the United States, engaged in interstate or intrastate commerce are eligible. The companies now using the services of the bureau represent about every type of carrier. We have registered approximately 5,000 drivers, which has enabled us to obtain a good cross-section experience.

Through the bureau the drivers' records are permanently established as a definite factor in the conduct and expansion of the motor carrier industry. The industry has expanded and enlarged to such an extent that no longer can the motor carrier operator safely depend upon personal contacts and assumed knowledge of his drivers. This is quite impractical, if not impossible. In-

dividual driver's records have, therefore, developed into a science. While still in its infancy, it will nevertheless, become of increasing importance as the records and statistics are compiled.

Bureau an Asset to Qualified Drivers

The bureau has won the approbation of the qualified drivers who have learned that the creation and maintenance of a good employment and physical record is an asset when seeking employment. It naturally follows that the drivers will use every safeguard to protect their records. Sincere and conscientious application to duty on the part of the drivers lessens their employment turn-over which is usually costly to both the drivers and the companies.

The records of the drivers are obtained on the forms furnished by the bureau, through the cooperation of the drivers, the employers, and the examining physicians. These forms are designated as the "Personal History," "Applicant's or Employee's Statements" and the "Medical Examiner's Report."

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The personal history form is completed in duplicate by the driver. One copy is retained by the employer and the other mailed to the bureau for registration purposes, thereby enabling the driver to create a permanent employment record for ready reference. Simultaneously, he is giving his employer certain information respecting his person, obligations, responsibilities, and employment record for the previous five years.

The applicant's or employee's statements form is completed by the driver in the examining physician's office and is supplemental to the medical examiner's report. In this form the driver is asked about his mental and physical condition. He is requested to state whether he has ever consulted or been treated for epilepsy, insanity, dizziness and many other ailments which may not be in evidence at the time of the medical examination. Further, he is asked to state whether he has had any medical or surgical advice or treatment or any departures from good health during the past five years.

In constructing the medical examiner's report form we received the assistance of physicians engaged in general practice and industrial work, in addition to the assistance of an eye, ear, nose and throat specialist. The purpose of this form is to tell the drivers and the employers of any ailments, defects, deformities or impairments with which the drivers may be afflicted, including visual and hearing acuity and isolation and combination color-blind tests. This form is completed in triplicate by the medical examiner, two copies for the employer and one for the bureau.

When the services of a driver are discontinued, the employer is requested to file a discontinuance of employment form, one copy to be retained by him, one to be mailed to the bureau. This form is completed on the day the driver's services are discontinued thereby enabling the bureau to complete its records for the mutual benefit of the driver and any other motor carrier operator who might desire his services.

Subsequent Registration of Drivers

Our records disclose that 17 per cent of the drivers have been re-registered since the original registration, most of which represent the drivers seeking employment with some other motor carriers. Frequently when checking re-registration we

find discrepancies and omissions. This is promptly called to the attention of the driver and his employer. This gives the driver an opportunity to rectify any errors or omissions and makes it possible for his employer and the bureau to maintain an accurate record.

Upon receipt of the completed forms from the driver and examining physician, the name and identification of the driver are checked with the bureau files to see whether there is a previous record. If not, he is assigned a case number and properly registered. If previously registered, the forms are filed under the original case number and recorded as a re-examination.

One of the most important functions of the bureau is the tabulation of statistics, especially in respect to physical impairments. All questions in the forms used by the bureau and completed by the drivers and examiners bear a symbol which is used for tabulation purposes, and we hope through these statistics to obtain definite, important information for the drivers and carriers.

Medical impairments are divided into two classes: temporary and permanent. For statistical purposes we consider 50 per cent or more impaired vision without glasses, color-blindness, 50 per cent or more impaired hearing, heart disease, deformities, ankylosis and similar chronic infirmities as permanent impairments. Infected teeth or pyorrhea, infected or diseased tonsils, hernia, varicose veins, hemorrhoids, and similar ailments are considered temporary.

At the end of the first year of operation we found 15.4 per cent of the drivers examined had some form of permanent impairment, 55 per cent were afflicted with some form of temporary impairment, and 29.6 per cent did not have evidence of any impairment. Our latest tabulation shows: 15.1 per cent permanent, 53.6 per cent temporary, 31.3 per cent unimpaired.

You will note there is a very slight change in these figures at this time as compared with one year ago. This, we believe, is because a number of the carriers have come into the bureau during the past year and we are getting the experience of first year examinations. In other words, neither the driver nor the employer in a great many cases, were aware of any impairments until they received the report of the

examining physician. However, when they learn of these ailments, it is our opinion that, in most instances, the drivers interested themselves in proper medical care. When such action is not taken we usually find the ailment has advanced to a more serious stage. We confidently look forward to improvement in the physical condition of the drivers as the number of re-registrations increase as compared to the number of new registrations.

Specific Impairments

For the purpose of ascertaining the prevalence of certain specific ailments and defects we keep a record of the aggregate number of impairments as compared to the number of examinations. On a percentage basis we find:

Visual Acuity. 7.4% with 50% or less vision in the right eye without glasses, including .8% blind, 8.0% with 50% or less vision in the left eye without glasses, including 1.9% blind.

Color-Blind. 5.6% were color-blind on "combination of color" test, including .9% color-blind on "isolation" test.

Hearing. 1.0% with 50% or less hearing in the right ear. 1.0% with 50% or less hearing in the left ear.

Maimed or Deformed. 3.4% were maimed or deformed.

Ankylosis. 1.7% were afflicted with ankylosis of one or more joints.

Teeth and Gums. 46.0% in need of dental care, as follows: 17.5% pyorrhea, 11.7% infected teeth, 16.6% caries or decayed teeth.

Skin. 1.4% with some form of skin disease.

Blood Pressure. 4.1% with high blood pressure (basis systolic 160 or more, diastolic 90 or more). 6.2% with low blood pressure (basis systolic 100 or less, diastolic 60 or less).

Heart Disease. 1.0% with dyspnea or other evidence of heart failure.

Urinalysis. 1.8% with albumin or sugar.

Tonsils. 8.1% with diseased tonsils.

Hernia. 8.2% with hernia.

Hemorrhoids. 8.5% with hemorrhoids.

Varicose Veins. 3.5% with varicose veins or varicocele.

We should bear in mind that these findings are the ailments and defects of per-

sons in middle-life who appear to be able-bodied and in good health. Therefore, it is reasonable to presume that these drivers represent the minimum in physical impairments as compared with other persons permitted to operate private passenger automobiles. You will note from these findings that most of the impairments are those which could be corrected by proper treatment. To what extent, if any, do one or more of these defects create an accident hazard and affect the efficiency of a driver? In my contact with carriers I find they are seeking the answer to this question and solicit advice for the mutual benefit and protection of the drivers, the public, and the industry. We hope, eventually, with the cooperation of the carriers and the examining physicians, to obtain some definite information of value to the industry in respect to the relationship between certain impairments and accidents.

Motor Carrier Experience Average Miles per Accident

In August of this year we received information from an operator in connection with the accident frequency experience of his company. He reports that during the four months prior to January 1, 1938, and before using the bureau's services and the drivers' medical examination, their records show 4,379,121 miles traveled, 101 accidents, or 43,357 average miles traveled per accident.

During the first seven months of 1938 and since the medical examination of the drivers, their records show 5,001,238 miles traveled, 53 accidents or 94,363 average miles traveled per accident.

The difference between the average miles traveled per accident during the last four months of 1937 as compared with the first seven months of 1938 is 51,006 miles.

Safety Factors

What were the factors which so vitally contributed to the reduction in accidents per miles traveled? The operator who gave us these figures, gives credit to the medical examinations. In my opinion there were several factors. First, the management became more safety minded. If this were not a fact he would not have subscribed for the services of the bureau and arranged for driver medical examinations. Second, the factor of safety was, in all probability, applied more rigidly to the operation and

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maintenance of the equipment. Third, through the medical examinations the drivers became impressed with the importance of keeping themselves in good physical condition. Credit for all of these safety factors is due the management and they are to be commended on the favorable showing. Physical impairments may have a decided effect on the attitude of a person. A person may or may not know such impairments exist.

When a driver is suffering from afflictions which sap his vitality he naturally is more apt to be indifferent or careless, disobedient in following instructions, and intemperate or over-indulgent in the things he does. If the affliction causing the mental attitude was corrected the accident hazard would be removed. In the past, considerable attention has been given to such impairments as poor eyesight, including color-blindness, heart disease, loss of limbs, etc., with little attention, if any, paid to minor afflictions. It is not my intention to minimize the importance of major impairments which are self-evident accident hazards, but rather to impress upon you the importance of certain impairments which, unless given due thought and consideration, may be the cause of a preventable accident. It does not follow that an employee who has a minor affliction is not

able to perform the duties of his occupation, but, by the same token, it is my opinion that the employee would be a more efficient worker if the minor affliction were corrected. Skin disease, hemorrhoids, varicocele, hernia and any number of like ailments will distract the employee's attention from his work.

What the Bureau Will Accomplish

In conclusion it is my opinion a central bureau will accomplish the following results: Enable drivers to correct temporary physical impairments and thereby make themselves more valuable employees, encourage improvement in the physical condition of the driver, establish employment records of drivers for the mutual benefit of themselves and the motor carrier operators, create greater coordination of thought and action between drivers and employers, lessen employment turn-over and thereby aid in stabilizing employment, cause the personnel of the various carriers to become more accident conscious and safety minded, promote good-will and better understanding between carriers, lend assistance in determining the relationship between certain impairments and accidents, assist in the safety program of the motor carrier industry and aid in promoting safety for the protection of the drivers, the industry and the public.

Presentation of Trophies to Winners of the 1937-1938 Fleet Contest

Presented by JOHN B. GIBSON

Publicity Director, Hawthorne Works, Western Electric Co., and Member Executive Committee, National Safety Council

(Editorial Note: Trophies were presented to contestants shown in first place in the following list; Certificates of Merit to others.)

Bakeries Division—Large Fleets

1st.—Schulze Baking Company, Peoria, Ill. Miles, 830,000—Accidents, 1—Rate, .12.

2nd.—National Biscuit Company, Buffalo, N. Y. Bread Bakery. Miles, 1,207,000—Accidents, 6—Rate, .50.

3rd.—Continental Baking Company, Inc., Shreveport, La. Miles, 635,000—Accidents, 4—Rate, .63.

Bakeries Division—Small Fleets

1st.—National Biscuit Company, Charleston, S. C. Bread Bakery. Miles, 177,000—No Accidents—Perfect Record.

2nd.—Continental Baking Company, Inc., New London, Conn. Miles, 175,000—No Accidents—Perfect Record.

3rd.—Braun Baking Company, Butler, Pa. Miles, 270,000—Accidents, 1—Rate, .37.

Beverages & Ice Cream Division

1st.—Castles Ice Cream Company, Garfield, N. J. Miles, 412,000—Accidents, 5—Rate, 1.21.

Coal & Ice Division—Large Fleets

1st.—The Union Ice Company, San Fernando Valley, Calif. Miles, 240,000—Accidents, 3—Rate, 1.25.

2nd.—The Union Ice Company, San Pedro and Wilmington, Calif. Miles, 235,000—Accidents, 3—Rate, 1.28.

Coal & Ice Division—Small Fleets

1st.—The Union Ice Company, Ventura County, Calif. Miles, 228,000—No Accidents—Perfect Record.

2nd.—Central California Ice Company, Bakersfield, California Division. Miles, 177,000—No Accidents—Perfect Record.

Honorable Mention—Central California Ice Company, Selma-Reedley and Dinuba, Calif. Divisions. Miles, 127,000—No Accidents—Perfect Record.

Dairies Division—Large Fleets

1st.—Ebling Creamery Company, Detroit, Mich. Miles, 1,518,000—Accidents, 20—Rate, 1.32.

2nd.—Jersey Creamery Company, Detroit, Mich. Miles, 2,576,000—40 Accidents—Rate, 1.55.

Dairies Division—Small Fleets

1st.—Sugar Creek Creamery Company, Indianapolis, Ind. Miles, 235,000—No Accidents—Perfect Record.

2nd.—Midwest Dairies, Roswell, N. M. Division. Miles, 177,000—No Accidents—Perfect Record.

Honorable Mention—Sugar Creek Creamery Company, St. Louis, Mo. Division. Miles, 146,000—No Accidents—Perfect Record.

Honorable Mention—The Akron Pure Milk Company, Barberton, Ohio. Miles, 72,000—No Accidents—Perfect Record.

Department Stores Division—Large Fleets

1st.—Boston Store of Chicago, Inc., Chicago. Miles, 971,000—Accidents, 12—Rate, 1.24.

2nd.—United Parcel Service, Hempstead, N. Y. Miles, 487,000—Accidents, 10—Rate, 2.06.

3rd.—Best & Co., Inc., New York City, N. Y. Miles, 904,000—Accidents, 21—Rate, 2.32.

Department Stores Division—Small Fleets

1st.—United Parcel Service, San Mateo, Calif. Miles, 188,000—Accidents, 1—Rate, .53.

2nd.—United Parcel Service, Ventura & San Bernardino, Calif. Miles, 155,000—Accidents, 2—Rate, 1.29.

3rd.—United Parcel Service, San Diego, Calif. Miles, 202,000—Accidents, 4—Rate, 1.98.

Laundries Division—Large Fleets

1st.—Oregon Dye House, New Bedford, Mass. Miles, 372,000—Accidents, 2—Rate, .54.

Laundries Division—Small Fleets

1st.—Van Doren Laundry Service, Inc., Westfield, N. J. Miles, 128,000—Accidents, 2—Rate, 1.56.

Manufacturing Plants Division—Large Fleets

1st.—Trexler Farms, Springwood Division, Allentown, Pa. Miles, 96,000—No Accidents—Perfect Record.

Manufacturing Plants Division—Small Fleets

1st.—American Bemberg Corporation, North American Rayon Corporation, Elizabethton, Tenn. Miles, 87,000—No Accidents—Perfect Record.

Honorable Mention—Thilmany Pulp & Paper Company, Kaukauna, Wis. Miles, 68,000—No Accidents—Perfect Record.

Honorable Mention—Westvaco Chlorine Products Corporation, South Charleston, W. Va. Miles, 50,000—No Accidents—Perfect Record.

Honorable Mention—Libby-Owens-Ford Glass Company, Rossford, Ohio. Miles, 32,000—No Accidents—Perfect Record.

Newspapers Division

1st.—Philadelphia Record, Philadelphia, Pa. Miles, 1,356,000—Accidents, 14—Rate, 1.03.

Petroleum Division—Large Fleets

1st.—Panhandle Refining Company, Central Texas Division. Miles, 2,062,000—Accidents, 1—Rate, .0484.

2nd.—Panhandle Refining Company, West Texas Division. Miles, 1,912,000—Accidents, 1—Rate, .0523.

3rd.—Cities Service Oil Company, Miscellaneous Truck Operations. Miles, 718,000—Accidents, 3—Rate, .42.

Petroleum Division—Small Fleets

1st.—Cities Service Oil Company, Grand Forks, N. D. Miles, 709,000—No Accidents—Perfect Record.

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2nd.—Panhandle Refining Company, New Mexico Division. Miles, 518,000—No Accidents—Perfect Record.

3rd.—Hugh Breeding Transport, Inc., Oklahoma City, Okla. Miles, 255,000—No Accidents—Perfect Record.

Honorable Mention—E. H. Moore, Inc., Ada, Okla. Miles, 144,000—No Accidents—Perfect Record.

Honorable Mention—L. D. Fox, Grants Pass, Ore. Miles, 141,000—No Accidents—Perfect Record.

Honorable Mention—Panhandle Refining Company, Oklahoma Division. Miles, 116,000—No Accidents—Perfect Record.

Honorable Mention—Cities Service Oil Company, Refining Department. Miles, 34,000—No Accidents—Perfect Record.

Public Utilities Division—Large Fleets

1st.—American Utilities Service Corporation, Savanna, Ill. Miles, 986,000—Accidents, 1—Rate, .10.

2nd.—Shell Pipe Line Corporation, Telephone and Telegraph Division. Miles, 747,000—Accidents, 1—Rate, .13.

3rd.—Central States Power & Light Corporation, Tulsa, Okla. Miles, 885,000—Accidents, 2—Rate, .23.

Public Utilities Division—Small Fleets

1st.—City & County Electric Light Department, Honolulu, T. H. Miles, 131,000—No Accidents—Perfect Record.

2nd.—Virginia East Coast Utilities, Inc., Kilmarnock Division. Miles, 104,000—No Accidents—Perfect Record.

3rd.—Mississippi River Power Company, Keokuk, Iowa. Miles, 96,000—No Accidents—Perfect Record.

Honorable Mention—City of Hastings Water & Light Department, Hastings, Neb. Miles, 95,000—No Accidents—Perfect Record.

Honorable Mention—Fremont Department of Utilities, Fremont, Neb. Miles, 68,000—No Accidents—Perfect Record.

Honorable Mention—Municipal Electric Lighting & Power Plant, Richmond, Ind. Miles, 48,000—No Accidents—Perfect Record.

Honorable Mention—The Key West Electric Company, Key West, Fla. Miles, 35,000—No Accidents—Perfect Record.

Inter-City Trucking Division—Large Fleets

1st.—Southwestern Transportation Company, Division No. 2, Texarkana, Tex. Miles, 972,000—Accidents, 1—Rate, .10.

2nd.—Morgan Packing Company, Austin, Ind. Miles, 6,642,000—Accidents, 12—Rate, .1807.

3rd.—Dealers Transport Company, Kansas City, Mo. Miles, 1,656,000—Accidents, 3—Rate, .1811.

Inter-City Trucking Division—Small Fleets

1st.—Wheeling Steubenville Truck Service, Wheeling, W. Va. Miles, 217,000—No Accidents—Perfect Record.

2nd.—Buckingham Transportation Company of Colorado, Inc., Rapid City, S. D. Miles, 170,000—No Accidents—Perfect Record.

3rd.—Trexler Farms, Trexlertown Division, Allentown, Pa. Miles, 66,000—No Accidents—Perfect Record.

Honorable Mention—Sloss Sheffield Steel & Iron Company, Birmingham, Ala. Miles, 48,000—No Accidents—Perfect Record.

City Trucking Division—Large Fleets

1st.—U. S. Navy Department, Mare Island, Calif. Miles, 302,000—Accidents, 1—Rate, .33.

2nd.—U. S. Navy Department, Puget Sound, Wash. Miles, 275,000—Accidents, 1—Rate, .36.

3rd.—U. S. Engineer Department, South Atlantic Division. Miles, 1,358,000—Accidents, 5—Rate, .37.

City Trucking Division—Small Fleets

1st.—U. S. Navy Department, Boston, Mass. Miles, 136,000—No Accidents—Perfect Record.

2nd.—U. S. Engineer Department, Great Lakes Division. Miles, 132,000—Accidents, 1—Rate, .76.

3rd.—American Factors, Honolulu, T. H. Miles, 121,000—Accidents, 2—Rate, 1.65.

Inter-City Bus Division—Large Fleets

1st.—Atlantic Greyhound Corporation, Central Division. Miles, 2,969,000—Accidents, 18—Rate, .61.

2nd.—Pacific Greyhound Lines, Division No. 3, Los Angeles, Calif. Miles, 9,066,000—Accidents, 67—Rate, .739.

3rd.—Greyhound Lines, Detroit Division. Miles, 4,190,000—Accidents, 31—Rate, .740.

Inter-City Bus Division—Small Fleets

1st.—Missouri Transit Co., Inc., Macon, Mo. Miles, 775,000—No Accidents—Perfect Record.

2nd.—Interstate Transportation Co., Inc., Bismarck, N. D. Miles, 685,000—No Accidents—Perfect Record.

City Bus & Taxicab Division—Large Fleets

1st.—Reading Street Railway Company, Reading, Pa. Miles, 2,087,000—Accidents, 23—Rate, 1.10.

2nd.—Triple Cities Traction Company, Binghamton, N. Y. Miles, 3,353,000—Accidents, 51—Rate, 1.52.

City Bus & Taxicab Division—Small Fleets

1st.—Wilson Transportation Company, Sioux Falls, S. D. Miles, 411,000—Accidents, 1—Rate, .24.

2nd.—Huntington Coach Corporation, Halesite, Long Island, N. Y. Miles, 245,000—Accidents, 1—Rate, .41.

Passenger Car Division—Group I

1st.—Magnolia Petroleum Company, Dallas, Tex. Miles, 15,058,000—Accidents, 30—Rate, .20.

2nd.—Cities Service Oil Company, Miscellaneous Passenger Car Operations. Miles, 2,758,000—Accidents, 9—Rate, .33.

3rd.—Gulf Oil Corporation, Fort Worth, Tex. Miles, 4,085,000—Accidents, 15—Rate, .37.

Passenger Car Division—Group II

1st.—Gulf Oil Corporation, Shreveport, La. Miles, 1,395,000—Accidents, 4—Rate, .29.

2nd.—Texas Pacific Coal & Oil Company, Fort Worth, Tex. Miles, 1,346,000—Accidents, 4—Rate, .30.

3rd.—Shell Pipe Line Corporation, Houston, Tex. Miles, 761,000—Accidents, 3—Rate, .39.

Passenger Car Division—Group III

1st.—Panhandle Refining Company, Central Texas Division. Miles, 892,000—Accidents, 1—Rate, .11.

2nd.—Shell Union Oil Corporation, Southern Division. Miles, 815,000—Accidents, 3—Rate, .37.

3rd.—Nebraska Power Company, Omaha, Neb. Miles, 870,000—Accidents, 4—Rate, .46.

Passenger Car Division—Group IV

1st.—Commander-Larabee Milling Company. Miles, 352,000—No Accidents—Perfect Record.

2nd.—Central States Power & Light Corporation, Tulsa, Okla. Miles, 347,000—No Accidents—Perfect Record.

3rd.—Shell Pipe Line Corporation, Colorado, Tex. Miles, 675,000—Accidents, 1—Rate, .15.

Passenger Car Division—Group V

1st.—The Atlantic Refining Company, Charlotte, N. C. Miles, 312,000—No Accidents—Perfect Record.

2nd.—Cities Service Oil Company, Grand Forks, N. D. Miles, 270,000—No Accidents—Perfect Record.

3rd.—Atlanta Gas Light Company, Atlanta, Ga. Miles, 202,000—No Accidents—Perfect Record.

Honorable Mention—Metropolitan Utilities District, Omaha, Neb. Miles, 181,000—No Accidents—Perfect Record.

Honorable Mention—Seaboard Group, Columbia Gas & Electric Corporation. Miles, 163,000—No Accidents—Perfect Record.

Passenger Car Division—Group VI

1st.—Honolulu Rapid Transit Company, Honolulu, T. H. Miles, 148,000—No Accidents—Perfect Record.

2nd Place—City of Hastings Water & Light Department, Hastings, Neb. Miles, 141,000—No Accidents—Perfect Record.

3rd.—Keystone Public Service Company, Oil City, Pa. Miles, 118,000—No Accidents—Perfect Record.

Honorable Mention—Honolulu Iron Works, Honolulu, T. H. Miles, 107,000—No Accidents—Perfect Record.

Honorable Mention—Shell Petroleum Corporation, Norco, La. Refinery. Miles, 95,000—No Accidents—Perfect Record.

Honorable Mention—Nashville Pure Milk Company, Nashville, Tenn. Miles, 89,000—No Accidents—Perfect Record.

Honorable Mention—Charleston Oil Company, Charleston, S. C. Miles, 78,000—No Accidents—Perfect Record.

Honorable Mention—Peoples Light Company, Charleston, S. C. Miles, 78,000—No Accidents—Perfect Record.

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Honorable Mention—Cities Service Oil Company, Refining Department. Miles, 70,000—No Accidents—Perfect Record.

Honorable Mention—U. S. Navy Department, Washington, D. C. Miles, 67,000—No Accidents—Perfect Record.

Honorable Mention—City and County Bureau of Plans, Honolulu, T. H. Miles, 65,000—No Accidents—Perfect Record.

Honorable Mention—The Community Traction Company, Toledo, Ohio. Miles, 63,000—No Accidents—Perfect Record.

Honorable Mention—Superior Water Light & Power Company, Superior, Wis. Miles, 62,000—No Accidents—Perfect Record.

Honorable Mention—U. S. Navy Department, Philadelphia, Pa. Miles, 60,000—No Accidents—Perfect Record.

Honorable Mention—U. S. Navy Department, Boston, Mass. Miles, 45,000—No Accidents—Perfect Record.

Honorable Mention—Premier Pabst Corporation, Milwaukee, Wis. Miles, 45,000—No Accidents—Perfect Record.

Honorable Mention—U. S. Navy Department, Puget Sound, Wash. Miles, 39,000—No Accidents—Perfect Record.

Honorable Mention—Municipal Electric Lighting & Power Plant, Richmond, Ind. Miles, 29,000—No Accidents—Perfect Record.

THURSDAY MORNING SESSION

October 13, 1938

Needed Improvements in Vehicle Design and Construction, and Worth While Accessories for Safety

The Vehicle-Panel Discussion

Presiding, J. G. HAYDEN, Fleet Engineer, National Safety Council, Chicago, Ill.

F. B. LAUTZENHISER, Transportation Engineer, International Harvester Co., Chicago.

W. S. LAWRENCE, Director, Division of Safety and Public Relations, U. S. Truck Lines, Cleveland, Ohio.

J. W. LORD, Safety Engineer, Atlantic Refining Co., Philadelphia, Pa.

A. W. MEINKE, Engineer, Marsh and McLennan, New York City.

E. G. QUESNEL, Director of Safety, Borden Company, New York City.

E. W. TURLEY, Director of Maintenance, Olson Transportation Co., Green Bay, Wisc.

MR. HAYDEN—The selection of our panel subject arose out of a discussion at the last Executive Committee meeting in Pittsburgh. The statement was made that some good might be derived from a session devoted to this subject in view of the fact that many operators have to make substantial changes in the design of vehicular equipment before it can be adapted to their particular operations. Such preliminary cor-

respondence as has been carried on to date would indicate that possibly the practice is not as common as was first estimated. I am wondering what comment there might be among the members of the panel?

MR. LORD—The manufacturers design their equipment to meet carrying requirements. The Atlantic Refining Company buys their vehicles from this market and makes very few changes in the standard unit.

MR. LAUTZENHISER—In my opinion, reconstruction so far as the standard vehicle is concerned, is probably unnecessary in more than 1 per cent of the cases. Even this figure may be high, as most of the reputable truck manufacturers build the basic unit to meet the requirements of given operations rather than to meet a set of paper specifications. We have observed in the past in special cases that certain specifications have been set up by the purchaser, or rather by his fleet superintendent, based on certain makes of generators, special axles, engines or other units merely because that person was personally inclined to favor that particular product. In practically

every instance, the manufacturer's standard parts would have served the purpose just as well, and generally better, because of having been coordinated into the unit in keeping with results determined through extensive experimental research and testing.

The manufacturers appreciate that quite often the buyer has good reason for specifying the substitute unit. Most manufacturers who are on volume production, decline to upset their assembly line by accepting orders requiring changes in the standard unit. It then becomes necessary for the fleet operator to have the alterations made in his own shop or local garage.

This latter is decidedly true as it applies to some types of third axle attachments. In many cases such axles are put on the unit merely for the purpose of evading the law. Certain states permit additional gross weight credit for the extra axles, whether they carry any of the load or not. Some installations are, of course, most meritorious. However, others are definitely only a subterfuge and amount to nothing more or less than a dummy axle which carries no load whatsoever. An enforcement officer can do little to penalize such operators. The operator not only has created a hazard which may cause his own driver trouble, but the traveling public as well. No four wheel unit can be converted into a six wheel unit simply by the addition of a third axle which will compare with the standard unit in safety, economy and efficiency.

MR. MEINKE—I wonder if the brakes on tractor-trailer units should be operated from the foot pedal, hand lever, or as on some equipment, by a combination of both? Should trailers be equipped with brakes all around, or on rear wheels only?

MR. TURLEY—Our trucks cover thousands of miles each month, carrying gross loads of 40,000 pounds each. We require brakes all around, operated both by foot pedal and by hand. Boosters are provided in every instance. I believe that the manufacturers should definitely survey the needs of the trucker as regarding brakes. Commercial vehicle operators could do a good educational job in selling the manufacturers on the need for providing trucks with adequate safety devices in keeping with the requirements of the industry.

MR. LORD—The carrier must keep a record of operating costs to insure economy

in brake control. I understand that some new braking systems are controlled by small pushbuttons to be operated by the foot in place of the conventional pedal. I am somewhat concerned in that I believe there should be some relation between the force as applied by the driver and the braking results. In other words, that the pedal pressure should reflect the amount of braking pressure. I can think of instances where it is not desirable to lock the wheels and it would seem to me that it would be particularly hard to prevent locking with the button type of control. I am convinced that truck users must demand better brakes, and be willing to pay for them.

MR. HAYDEN—I think you will all agree that much of the present commercial vehicle equipment is underbraked—at least, for the purpose to which it is put. We hear complaints on every side from operators to the effect that they are having difficulty meeting the stopping distance requirement set forth in the Interstate Commerce Commission regulations. This is indeed a serious situation. The Uniform Code requires vehicles to stop in at least 30 feet at 20 miles per hour. The I.C.C. regulations are even less demanding. Nevertheless, it is evident that the trucker is going to run into trouble when following a vehicle which can stop quicker and in a shorter distance. We can say that our drivers must follow at greater distances but I am sure you will all agree that it would be impossible to carry this out in practice, especially in urban areas.

It is my personal opinion that the problem lies with the trucker, as has been suggested by Mr. Lord, and that he must demand better braking. The manufacturer should work on the premise that overloading is to occur. In other words, a 1½ ton truck must be provided with better brakes than are needed for stopping the vehicle with a load of 3,000 lbs.

Of course, there is a point beyond which the best brakes in the world will not reduce the stopping distance. The coefficient of friction is somewhat reduced when skidding takes place. However, it is now impossible on many commercial vehicles to lock the wheels when loaded. There is a limit to what the tires will stand, although great improvements have been made in tire construction during the past few years. I suppose competition between manufacturers tends to keep down the amount of money

which can be put into brakes on any one particular class of equipment. The manufacturers should get together in the interest of safety and take steps to put larger drums and shoes on their trucks.

MR. LAUTZENHISER—I agree with Mr. Lord and Mr. Turley on the matter of brakes. While we are on the subject of tractor-trailers we should discuss the location of the fifth wheel. Its mounting must be coordinated between tractor and trailer to give proper load distribution. The tractor should not be seriously altered to fit the needs of a specific trailer. Theoretically, the center of the fifth wheel should be located one inch ahead of the tractor rear axle for each ten inches of tractor wheelbase. In other words for a 160 inch wheelbase tractor, the fifth wheel could ordinarily go 16 inches ahead of the rear axle.

MR. TURLEY—The design of the fifth wheel and its location has a decided effect on the steering of the unit. As it is moved forward it becomes more difficult to keep the unit in the road. On one of our jobs where the fifth wheel was so located, it wobbled so badly on the highway that the table had to be moved back just ahead of the axle.

MR. LAUTZENHISER—Naturally the formula cannot be followed in every instance. Tractor and trailer design enter into the problem. We appreciate the necessity for ease of steering.

MR. TURLEY—We find that we get best results when the fifth wheel is located about eight or ten inches ahead of the rear axle.

MR. HAYDEN—We have not yet answered Mr. Meinke's question on brakes. I have seen some units where the job of driving was made decidedly complex due to numerous hand valves which had to be operated in bringing the vehicle to a stop. It is desirable to simplify the operation as much as we can, using one pedal if at all possible. I would gather that it seems to be the consensus of opinion that all trailer wheels should be equipped with brakes. There is some similarity in our present problem with that of the railroad years ago when long trains were braked from the front end to the back. The solution was solved by putting in the two-line system which applies the brakes from the rear forward. Some authorities are of the opinion that there

should be a lag between the tractor and trailer brake application, with the trailer brakes taking effect in advance of those on the tractor. At most, this lag should only be a fraction of a second. I mention this for your consideration, pointing out at the same time that some persons take an opposite viewpoint, stating that lag is not of primary importance.

MR. LAUTZENHISER—Three major causes of brake failure are: (1) improper equipment, (2) lack of proper maintenance, and (3) abuse by the operator.

MR. HAYDEN—Many fleet operators are prone to ask too much of their equipment. Certainly we would not expect a polo pony to do the work of a plow horse. I was pleased to learn from a truck manufacturer the other day that they were attempting to better educate the buying public in proper selection of vehicles by recommending a thorough analysis of the job to be done by the unit before actual purchase of the vehicle. For instance, let's take the case of the petroleum hauler. Before buying equipment a study should be made of the route, driving conditions and load which could and would have to be carried to bring about a profitable operation. The tank should then be selected to carry that load, in keeping with regulations on the gauge of metal and other features in the interest of safety. Knowing the size of the tank and weight when loaded, consideration should then be given to the selection of a unit of adequate size, power and braking to handle the job efficiently. If such a plan could be universally sold to persons who buy trucks today, many of the problems facing the industry would automatically be cleared up. We must all appreciate that the manufacturer often has little opportunity to assist in the proper selection of equipment. The truckers could well take up such problems directly with the manufacturer rather than to deal with salesmen who usually do not have a thorough knowledge of the engineering and operating problems concerned. Salesmen are often tempted to sell polo pony vehicles where plow horse trucks are needed, in order to make a deal and get the jump on their competitors.

MR. HAYDEN—I think it is desirable at this time to open up the meeting and permit questions from the floor.

MEMBER—Trucking activities in the Texas oil fields have shown that maintenance is of

great importance. Oil field hauling is of such a character that the standard vehicle is not usually adaptable. The development of special equipment involves added expense but I appreciate that we cannot ask the manufacturers to disrupt their production to provide vehicles adapted to our specific operations, yet unnecessary in other parts of the industry.

MR. MEINKE—We must admit that handbrakes on commercial vehicles are an important item. In the past few years I have come across many instances where handbrake pawls and ratchets have failed, resulting in accidents. I would like to call your attention to a new handbrake which operates on an entirely new basis. The ratchet is entirely eliminated, the lever being locked in position by a cam arrangement. We have found these handbrakes entirely satisfactory.

I would like to mention that for the most part we operate from a cost basis. We have found that in our preventive approach it is better to concentrate on the type of accidents which result in the greatest losses. For instance, backing accidents are comparatively cheap while those involving pedestrians often run into five figures. Tire cost is one definite problem.

MEMBER—In the Texas oil field we need brakes that can be sealed and at the same time remain cool while the vehicle is in use on the highway. It is difficult to find a chassis heavy enough to prevent buckling when used in our rough fields. Much of our equipment is governed, yet we find that most governors cut down the engine power just when most needed during heavy going. For all specific purposes, durability of equipment is the primary factor, price range being secondary.

MR. HAYDEN—In purchasing governors, be sure to ask for a speed-power curve for the product under consideration. You will find that in some instances there is a definite loss of power in advance of the cut-off point. I understand it is possible to build governors which control speed rather than power but that such products are expensive and difficult to maintain in working condition at all times because of the involved mechanisms.

MR. LAWRENCE—A Bureau of Standards should be established to give particular consideration to motor vehicle construction. Such a bureau would be most helpful in

answering many of the questions confronting the industry and act as a clearing house for information.

MEMBER—The Society of Automotive Engineers is interested in this problem and has been active in providing this very assistance. For many years the society has had committees on equipment. The motor truck of today is nothing but an off-shoot of the passenger car. Nevertheless, the automobile industry is giving more value per dollar today than ever before. A safety committee should be appointed to work in cooperation with the American Standards Committee. Braking may not be as bad as has been indicated in the discussion today. The buyer should survey the market and vehicles available, in order to get proper braking. The truck users must be willing to pay for what they want. The present standard of all braking is the proportion between braking area and gross weight.

MR. HAYDEN—Is there anyone present who has experienced hydraulic brake failure because of vapor locking? (No discussion.)

MEMBER—A study should be made on the relationship between accidents involving cab-over-engine type of vehicles and the older conventional types.

MR. HAYDEN—Every operator should watch his accident experience for such facts as can be gathered on relative safety and efficiency of type and make of equipment. Although I am unable to state the results obtained, a study of the relative safety involved in conventional and cab-over-engine equipment was made in Detroit some time ago. In making such a study, however, you must not forget that accidents are liable to happen while drivers are becoming accustomed to new equipment.

MEMBER—The most important question today in vehicle design is visibility. The cab-over-engine type in most cases make for better seeing but we wonder as to the possible danger in placing the driver over a carbon monoxide generator. Wouldn't the rear end type engine be more desirable?

MR. LAWRENCE—We have experienced no difficulty with carbon monoxide in cab-over-engine vehicles. The truth of the matter is that carbon monoxide is driven away by air circulation to the rear. I believe it is safer to place the driver over the engine than to have him sit behind, where the gases may seep through a leaky floor board. One

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of the most important questions is whether a heater in the cab is desirable. We have experienced difficulty in that heaters tend to make drivers drowsy, especially on long trips. I might state further, that in our operations the better drivers have had no difficulty in adjusting themselves to the change from previous equipment to the cab-over-engine type. After making the change, the drivers in practically every instance have expressed themselves as being in favor of the stub-nosed jobs because of the greater visibility.

MR. LORD—In the matter of providing greater visibility, we must not lose sight of the fact that it is the driver's responsibility to operate without accidents regardless of the equipment he is using.

MEMBER—In bringing up the subject of night driving, I predict radical changes in vehicle headlights during the next couple of years.

MR. TURLEY—It is my opinion that the I.C.C. regulations do not require sufficient lights. I personally would like to have my trucks looking like Christmas trees.

MEMBER—What legislation has been adopted or is contemplated as pertaining to separate brakes for tractors and trailers?

MR. LAWRENCE—State legislatures are inclined to favor requirements that trailer brakes should work in conjunction with those of the tractor. The I.C.C. and some of the states require trailers in excess of 3,000 pounds gross to be equipped with brakes of such a character as to be automatically applied upon break-away from the towing vehicle; this application of brakes to remain fixed for at least 15 minutes. This is a good feature.

MEMBER—Many instances have come to our attention where advertising signs with their bright colors have tended to offset the value of marker, identification, stop and clearance lights on trucks. Some efforts should be made to improve this hazardous condition.

MR. HAYDEN—The National Safety Council has been definitely behind a program to improve conditions where there is conflict between signs and stop-and-go signals. We have run into this problem in many cities, it being difficult at times to see the signal faces.

MR. LAWRENCE—The Petroleum Industry

in many of their gasoline stations have installed floodlights shining on the road and creating dead spots at the edge of the lighted areas. I feel that some action should be taken by the National Safety Council, supported by the Commercial Vehicle Section, to inform the petroleum group of this hazard and asking for their aid in combating it.

MEMBER—The independent filling stations will follow the example set by the larger companies at their stations.

MEMBER—I wonder if we need to increase the number of lights on trucks, or to demand lights of greater power and visibility? I have the feeling that the latter will answer the problem. It is conceivable that the shifting of drivers from conventional equipment to the stub-nose jobs may cause an increase in accident experience until those drivers get acquainted with the handling of the new vehicles.

MR. QUESNEL—I believe that all trucks should be equipped with working lights to aid in safe loading and unloading at night. Emergency lights are often necessary. In the problem of hand signals vs. directional signals, I wonder if the time element isn't longer with the latter? Certainly the directional signals are more positive and more easily recognized, especially by approaching vehicles. All trucks should use the directional signals. It is difficult to signal from the cab in most of our present commercial vehicles. Signals should be located on both the front and rear of the truck.

MR. HAYDEN—The turn indicator problem is somewhat of a controversial one at present. As you know, it was originally proposed that such a requirement be included in the I.C.C. Safety Rules and Regulations. I understand that such testimony as was presented at the hearings prior to issuance of the regulations, brought out that (1) mechanical indicators might conceivably be discriminatory against the trucker, and (2) that there was a lack of statistical evidence proving they would greatly reduce the number of accidents. Evidently insofar as No. 1 is concerned, there was the feeling that they should not be required on commercial vehicles until demanded also on private vehicles. In a few fleets where statistics were available—that is, where part of the equipment was provided with turn indicators and part not—it was difficult to make

any distinction in experience in one group or the other. One of the problems found in the use of mechanical indicators is the failure of some drivers to turn off the lights once having completed the turning movement. Semi-automatic switches would possibly clear up this latter situation.

We must admit that it is often impossible to give hand signals, both because of the inadequacy of the signal and because of inclement weather. I know any number of operators who ask their drivers to give signals wherever possible but by all means to have both hands on the wheel during execution of the turn. It is of primary importance to get into the proper lane well in advance of the turn. Certainly there can be no question as to what is contemplated when this is done. I think it is quite indicative that more truckers are placing the signals on their trucks, regardless of whether they are required by law. More than thirty states now require turn indicators on commercial vehicles when the width of the vehicle is such as to make hand signals inadequate.

MR. MEINKE—I am of the opinion that flasher bulbs are an improvement.

MR. HAYDEN—The main criticism against the use of flasher bulbs is the objection by the railroads. They have attempted to establish the flasher as a standard used at railroad crossings, and have the fear that general use may minimize the significance of their own warning signals.

MEMBER—If directional signals are to be used, I am of the opinion they should be considerably larger than at present, possibly at least a foot in diameter.

MR. LAWRENCE—The courts hold that a driver must operate his vehicle within the safe, clear distance ahead, being responsible for proper handling in any emergency which may arise. The question is whether legislation should be adopted which makes that driver responsible for the operator behind. Before passing directional signal legislation it should be definitely proved that there is a decided safety value involved. We cannot expect to regulate safety through minority groups, such as the commercial vehicle operators.

MEMBER—I am under the impression that turn indicators might considerably complicate the present situation, putting even more of a load upon the insurance companies in the settlement of claims.

MR. HAYDEN—I want to take this opportunity to express the appreciation of the National Safety Council to the members of the panel and audience for the fine discussions which have taken place here today. I think we should have more of this type of meeting. Certainly we are pointing to more open discussion in safety meetings. It is now 12:15 p.m. and we must bring the meeting to a close. It has been a pleasure to take part in the session and I want to thank you all for participating.

ADJOURNMENT

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