

1932

TRANSACTIONS

National Safety Council

Incorporated

TWENTY-FIRST ANNUAL
SAFETY CONGRESS



Washington, D. C.

October 3 to October 7, 1932

The Wardman Park and
Shoreham Hotels

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NSC-72

PLAINTIFF'S EXHIBIT

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Although the National Safety Council endeavors to eliminate from discussion at its conventions matters which are not pertinent to its purposes or which are contrary to its policies, the Council accepts no responsibility for the views expressed either in the papers presented or in the discussions thereon.

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NOTE: The General Sessions and the sessions of all the Industrial Sections of the National Safety Council, including the Delivery, Taxicab and Bus Section, are published in a separate large volume of these Transactions.

TWENTY-FIRST ANNUAL SAFETY CONGRESS NATIONAL SAFETY COUNCIL.



Clifford Davis N 217

Street and Highway Traffic Section

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Rural Highway Hazards Committee—CLARENCE P. TAYLOR, Mass. State Dept. of Public Works, Boston, Mass.

MONDAY AFTERNOON SESSION

October 3, 1932

The first session of the Street and Highway Traffic Section was a joint meeting with the N. S. C. Committee on the Driver and the Delivery, Taxicab and Bus Section. The general subject under discussion was "Treating Accident Proneness." The session convened in the Wardman Park Hotel, with General Chairman Clifford Davis, Vice-Mayor and Commissioner of Fire and Police of Memphis, Tenn., presiding. Chairman Davis requested William C. Knoelk, Milwaukee Safety Commission, to act as temporary Chairman, and the latter assumed the gavel, introducing the first speaker.

Reduction of Traffic Accidents by Engineering Methods

By LEWIS W. McINTYRE

Chief Engineer, Bureau of Traffic Planning, Pittsburgh, Pa.

The speaker said in part: In practically every field of accident prevention work, it has been demonstrated that progress could only be made by determining the actual causes of the accidents, analyzing these causes in accordance with engineering principles, and applying the remedies which these engineering studies have revealed as most likely to produce results. This method is now being applied to traffic accidents.

Traffic accident records originate in reports made by motorists or by police bureaus. Their usefulness varies widely, depending upon the degree to which traffic accidents are reported, the detail of the report, and the degree to which the analysis of the report is carried out. Just how accident reports can be used in preventing future accidents can be shown by tracing, step by step, the elements of accident analysis as practiced by the Bureau of Traffic Planning of the City of Pittsburgh. These steps are as follows:

(1) Accidents are spotted on a spot map of the city with colored and numbered pins, indicating the location of the various types of fatal and non-fatal accidents.

(2) Each month this map is carefully studied and locations where accidents are occurring frequently are selected for special study.

(3) Accident records having been filed by location, the reports for points which are to be studied are withdrawn from the files, and by means of a collision diagram an attempt is made to reconstruct the various accidents reported.

(4) Field study is made at the locations including in many cases a count of the traffic volumes.

(5) Recommendations are made aiming to prevent the recurrence of the types of accidents that have already taken place.

(6) Sometime after the recommendation has been put into effect, the location is again studied to determine the effectiveness of the recommendation.

The steps in this process are made upon the theory that accidents are preventable. No accident just happens. All are caused by something or other. An accident is the result of a driving fault, a street defect or some other ascertainable element which can be determined from proper study.

(The speaker then presented a number of lantern slides illustrating engineering methods of analyzing accidents and pointing out the various steps taken in a number of typical cases in the City of Pittsburgh.)

Psychological Factors in Highway Accidents

By MORRIS S. VITELES

Assistant Professor of Psychology, University of Pennsylvania, and Director of Personnel Research, Philadelphia Electric Company.

The speaker said in part: Perhaps the outstanding development in safety during the last ten years is the finding that accidents do not distribute themselves by chance, but that they happen frequently to some men and infrequently to others as the logical results of a combination of circumstances. Some individuals become more frequently involved in accidents than others and such susceptibility is referred to as accident-proneness.

A total of 1,871 accident reports covering 1,294 drivers employed by a group of companies were analyzed with respect to the accident frequency per man. This study showed that the 10 per cent of employees with the worst accident records had been responsible for 31.85 per cent of all the accidents sustained by these 1,294 taxi-

cab drivers. One-third of the taxicab drivers were responsible for 69.3 per cent of all the accidents. Fifty per cent of the drivers had been responsible for 82.84 per cent of the accidents; whereas the remaining 50 per cent accounted for only 17.16 per cent of all the accidents. A further analysis of the figures showed that 25.2 per cent of the employees have been entirely free from accidents in the period covered by this report.

In addition to demonstrating that accident proneness exists, considerable work has been done in investigating the factors which underlie differences in susceptibility to accidents, both in the manufacturing industries and on the highway. For example, in industrial groups where adequate accident records were available, it was found that the lowest 25 per cent in a combined and weighted battery of intelligence and aestheto-kinetic tests had an accident rate 2.5 as great as the remaining 75 per cent.

Susceptibility to accident may be the end result of a combination of forces reflecting a generally lower physiological effectiveness of the kind that causes or appears in frequent illness. All substation operators and senior operators employed by Philadelphia Electric Co., 135 in number, were reexamined by the medical department in the months of October and November, 1929. Of these, 106 operators, hired prior to January 1st, 1926, were included in this study. Of the 106 operators and senior operators, 57 were without physical defects; 31 had physical defects of some kind; 18 were found to be not fitted for their present positions. Moreover, the average lost-time accidents per man among those suffering from physical defects was found to be three times as high as that of men not suffering from physical defects.

The diagnosis of accident-proneness is being followed by specialized treatment based on the factors which are responsible for the accident record in the case of the particular individual. Treatment takes the form, not of mass education, or dismissal, but most frequently that of systematic instruction designed to efface such faulty habits of operation as may be responsible for the accident record. In other cases, medical treatment, discipline, encouragement, and supervisory follow-ups may be employed in rehabilitating the accident-prone employee. This treatment recognizes that there are many different causes of accidents and that they may be combined in different patterns in different individuals.

Street railway companies in Milwaukee, Cleveland, Boston, and taxicab companies in Philadelphia and New York, have made use of clinical studies of accident-prone drivers as an aid in the reduction of accidents. For the Cleveland Railway Company, an analysis of causes of accidents showed that physical difficulties were of primary importance in only 12 per cent of the cases, classified under "defective vision," "organic diseases," "high blood pressure," and "senility." In 22 per cent an improper mental attitude, or "personality maladjustment" was found to be the primary factor in accidents. The largest group of accident-prone men included those whose accidents were due primarily to operating defects, 66 per cent of the men exhibiting failure to recognize potential hazards, faulty judgment of speed and distance, or improper distribution of attention, etc.

The procedure adopted in each case for preventing further accidents depended upon the analysis of the driver's particular defect. In certain cases, medical treatment was undertaken. In others, with the cooperation of the supervisory force of the operating department, a program was outlined to overcome the personality defects. Where faulty habits of operation were the basis of the bad accident record, reinstruction was undertaken. A special instructor rode periodically with the subject while on duty and tactfully and carefully induced the substitution of proper habits of operation for faulty operating habits.

As a result of the application of psychological methods in the study and treatment of accident-prone drivers on the Cleveland system, the combined rate of accidents on the part of motormen involved in this study dropped from 1.31 per 1,000 miles in 1928 to 0.75 in 1929, equivalent to a reduction of 42.7 per cent. All but three individuals showed a reduction in accident rates, and in two of these cases treatment

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was suspended indefinitely because of company policy. When it is recognized that those studied are men with the worst accident records who under ordinary circumstances are simply discharged or held on without treatment because of length of service, these results are even more significant.

In the case of the Milwaukee Railway and Light Co., during a period of one year, 1929, the reduction of accidents on the entire system was approximately 25 per cent. Over the same period a reduction for a special group studied by psychological methods was 81.5 per cent. In addition, the average accidents per man in this group was reduced from 2.8 to .51.

On the Boston Elevated Railway, as a result of the application of these procedures, the actual net saving in the cost of injuries and damages in 1929 as compared with 1928 amounted to \$300,670.73. Collision accidents on bus lines and street railways have been reduced more than 33 per cent since this work was started in 1927. In January, 1930, all previous records were broken, collision accident records being reduced to 1.16 per 10,000 car miles which is less than one-half of those for the same months in 1927. The figure for 1931, as compared with 1926, shows a 58 per cent reduction in collision of service cars with trolleys, 54.5 per cent with pedestrians, 71.3 per cent with other surface cars, 36.8 per cent in boarding and alighting accidents, and 23.6 per cent in all other accidents.

Discussion: In substance, the discussion developed that: Age is a more important factor in accidents than is experience. Youthfulness is a definite factor in accident proneness. There is an increasing susceptibility to accidents between 40 and 50 years of age. The best way to eliminate an accident prone driver is not to drive him off the road, but to cure him. If you can cure 10 per cent of the accident-prone drivers you have prevented 30 per cent of the accidents. Encourage them to do the kind of driving a well trained driver does. An accident-prone driver may not have had an accident but you observe him doing unsafe things.

TUESDAY MORNING SESSION

October 4, 1932

The session was opened by W. A. Van Deuzer, Director of Traffic, Washington, D. C., who presided. The general subject under consideration was "Accident Studies and Records." Chairman Van Deuzer at once introduced the first speaker.

High-Accident Location Clinic

By ARNOLD H. VEY

Traffic Engineer, State Department of Motor Vehicles, Trenton, N. J.

The speaker said in part: Mr. Hawley S. Simpson, who conducted last year's accident clinic, presented an investigation which was made in four municipalities in New Jersey of more than 7,000 accidents in a period of three years. This analysis determined that intersections which have more than five accidents per year comprised about 14 per cent of the total intersections studied. While this percentage is rather small, a further analysis showed that a larger percentage of the total accidents took place at intersections within this group and indicated that from 3 to 10 per cent of the intersections had 35 to 60 per cent of all the accidents.

Therefore, by determining the location of high accident intersections, by means of sufficient accident reports properly recorded, it is possible to reduce intersection accidents materially by concentrating upon this small group of intersections.

Having thus selected the high accident intersections, detailed information must be obtained to study properly the accident experience and to determine a proper remedy. This information should include the following data:

(1) Physical characteristics such as intersection design, pavement type and width, curb radii, street grades and location of obstructions.

(2) General characteristics such as type of districts, existing traffic regulations and street car and bus stops.

(3) Traffic characteristics such as average and maximum daily volume of traffic by hours, turning movements and approach speeds.

(4) Accident characteristics such as type of accidents, time of occurrence, direction of travel, degree of seriousness, weather conditions and other data determining the cause of the accident.

The collision diagram is one of the best means of indicating the accident experience at street intersections or along a roadway in order to study their types and causes and to enable the best possible solution.

The speaker then invited the presentation of traffic problems in collision diagram form by the delegates. Many were submitted, and discussion by the delegates developed the proper methods to pursue in accident prevention measures.

What Information Should the Accident Report Give?

By PETER J. STUPKA

Accident Analysis Engineer, Philadelphia Department of Public Safety

Some months ago, said the speaker, in Philadelphia they had occasion to change the accident report forms. A study was first made of the various state forms, keeping the good features and throwing out the bad ones. Finally a form was drafted and adopted which seemed to give good results. At first they had a little trouble with the police officers not filling the forms out completely but after they had sent out instruction sheets the forms were filled out with fair accuracy.

There is some difference of opinion as to the nature and form of a good accident report. Some officials contend that many of the forms now in use are too complicated, while others seem to think the forms do not provide all the information necessary in traffic work. Some feel that certain items in the form leave too much to the judgment of the reporting person, or are not easily obtained. Others hold that the form looks too difficult to the average person who may be required to fill out the form, and therefore discourages him from filling out the spaces.

The following is an outline of what the simplest report should provide for:

- (a) Identification of drivers.
 - (b) Identification of vehicles.
 - (c) Identification of injured persons.
 - (d) Identification of witnesses.
 - (e) Location of the accident.
 - (f) Date and time of occurrence.
 - (g) Direction of travel: (1) Vehicles; (2) Pedestrians.
 - (h) What the driver wanted to do.
 - (i) What the drivers were doing (violations).
 - (j) What the pedestrian was doing.
 - (k) How the accident occurred: (1) description; (2) diagram; (3) manner of collision.
 - (l) Identification of reporting person.
 - (m) Weather conditions.
 - (n) Light conditions: (daylight, darkness, dusk).
 - (o) Street surface conditions.
- Other items that may be included in the report form are the following:
- (a) Condition of driver.
 - (b) Condition of pedestrian.
 - (c) Condition of vehicle.

- (d) What visible parts of vehicle were damaged.
 - (e) What court disposition was made of the case: (for police only).
 - (f) Traffic control in operation.
 - (g) Road conditions.
 - (h) Street highway: (good, poor, no lights).
- The following are some factors which affect accurate and complete reporting:
- (a) Arrangement of material on the card: (diagrams, descriptions).
 - (b) A simple terminology.
 - (c) Ample writing space (especially for police).
 - (d) A minimum of writing: (generous use of check marks).
 - (e) Size of the form.
 - (f) Education in the proper method of filling out the forms, and a follow-up with special education in the respects in which the reports are not filled out completely and accurately.

Report of the Committee on Traffic Engineering

By HAWLEY S. SIMPSON

Secretary-Treasurer, Institute of Traffic Engineers, New York City

The speaker reported in part: At least eighteen cities including more than 12,000,000 population now have officials whose major responsibilities are traffic engineering. Several city engineers and other officials are devoting some time to technical traffic problems. At least three cities have appointed traffic engineers since January 1, 1932. Seventeen or more cities without traffic engineers have had traffic surveys by outside consultants, and some of the existing traffic engineering departments have been started as a result of these surveys. Questionnaires were sent to 35 city traffic engineers, city engineers, and members of the committee for information and opinions. Returns were received from 25, and the conclusions and recommendations presented here are based upon these returns and the experience of the committee members.

The returns reveal the following traffic engineering responsibilities with the number of cities reporting each: Traffic accident studies, 20; traffic counts and checks, 19; parking checks and plans, 18; traffic equipment planning, 17; inspecting and approving equipment installations, 17; installing traffic equipment, 13; maintaining traffic equipment, 10; administering special regulations, 6.

The manner of providing the needed traffic engineering service depends on local conditions. The employment of outside consultants is recognized as a supplement to a local traffic engineering set-up, particularly in the making of original traffic surveys. The size of a city is one of the main factors in determining whether traffic planning shall be conducted by a full-time staff or part-time by an existing city department. In establishing new traffic engineering facilities, cities of more than 250,000 population should provide for full-time service, while smaller cities may be adequately served part time by a member of the city engineer's or city planning department's staff.

In the larger cities traffic engineering organizations are most commonly parts of public safety or public works departments. In a smaller city the location in relation to other cities is important in determining how part-time traffic engineering service shall be provided. Outside of a metropolitan area, the most logical source is one of the city's engineering departments. The designation of a local resident or professional engineer who can devote sufficient time to conduct a continuous and aggressive program, is sometimes possible. For large urban areas of several municipalities, a county traffic engineering department or a special district may be established. Again, two or more cities may employ the same traffic engineer simultaneously without setting up any governmental machinery in common.

A successful traffic engineering program must be continuous and aggressive. Whether part or full-time, the engineer should be in position to conduct a continuous program of identifying problems, assembling information, analyzing data, preparing recommendations, detailing specifications, and checking installations and maintenance.

The traffic engineer should maintain constant cooperation with the police, because of the inter-dependence of traffic engineering and traffic law enforcement. An official traffic commission is often desirable for obtaining the cooperation of legislative and administrative departments. In such a case the traffic engineer is essentially the engineer for the commission. His contacts with other departments are through the Commission, to which he reports his recommendations to be taken up in turn with legislative or administrative departments. Without such a commission, his contacts are directly with the various departments.

This Committee warns against designating as traffic engineers men who are not qualified by training or experience to make observations and analyses and to conduct engineering investigations. Engineering colleges should provide opportunities for greater specialization in traffic by students interested in this important phase of municipal engineering.

Agitation for city traffic engineering facilities may originate in any group that is interested in the improvement of traffic administration. But the plan must be established through the usual legislative or administrative procedure. Generally this can be accomplished only by showing how the plan will aid city officials in carrying out their traffic responsibilities.

The routine of setting up a traffic engineering department or bureau is practically the same whether the traffic engineer will be part or full-time. Adequate accident records should be installed for identifying hazardous locations. A traffic flow map should be built up, either by a general traffic count as soon as the important points can be identified, or by a series of related counts made at different times with one or more key points counted each time. The policy of having all traffic matters referred to the traffic engineer for study before action is taken should be established.

Checks should be made before and after application of corrective measures to determine the effect upon traffic movement and accident experience. This establishes a continuing program, such as has often substituted immediate and relatively inexpensive measures for expensive control devices, street widening, and other so-called traffic improvements.

The coordination of traffic programs among cities is essential for uniformity. Several states have provided traffic engineering departments to aid in accomplishing this. Massachusetts and New Jersey have gone the farthest. The state traffic engineer must approve installations of traffic control equipment before they can be made. Other states, through state highway departments, are rendering such service on a somewhat more limited scale.

State traffic engineering departments are most useful in securing uniformity of traffic regulations. They cannot, however, be expected to conduct the continued and detailed study of local problems that is necessary and is possible through local traffic engineering departments. The following are the logical city functions for state traffic engineering officers to undertake:

- (a) Traffic engineering on highways in cities, built or controlled by the state, in cooperation with city traffic engineers.
- (b) Approval of plans for proposed equipment installations as required to insure uniformity and conformance with state law.
- (c) Advisory service on traffic engineering to municipalities and counties in line with the purpose stated in "b."
- (d) Publishing such pamphlets on traffic engineering as will be useful to municipal officials, and are in the interest of uniformity.

LUNCHEON BUSINESS MEETING

October 4, 1932

The meeting convened with General Chairman Clifford Davis presiding. The reports of various standing committees were received.

In the absence of Chairman Frank C. Berry, Vice-Chairman E. P. Curran, of the Committee on Public Education, summarized a report advocating the following activities for conducting community education for traffic safety: (1) A Speakers' Bureau on Traffic Safety; (2) School Boy Patrols and Courses of Study in Safety Education in Schools; (3) Committee for Reporting Traffic Violations; (4) Traffic Schools to Train Vehicle Operators; (5) Inter-Fleet Safety Contests to Encourage Greater Fleet Activities; (6) Publicity Through Newspapers and Radio; (7) Display of Posters at Oil Stations, Street Corner Locations, etc.; (8) Activities of Boy Scouts and Other Similar Organizations; (9) Special Safety Week; (10) Safety Lanes and Other Vehicle Inspections.

Election of Officers

In the absence of Burton W. Marsh, chairman of the Nominating Committee, E. J. O'Meara recommended By-Law Amendments providing for additional standing committees on accident records, police activities, national traffic safety contest, and pedestrian problems. These were approved and on recommendation of the committee the following officers of the section were elected for the year 1932-33:

General Chairman—Clifford Davis, Vice-Mayor and Commissioner of Fire & Police, Memphis, Tenn.

Vice-Chairman of the Section and Chairman of the Committee on Annual Congress Program—Harold G. Hoffman, Commissioner of Motor Vehicles, Trenton, N. J. *Vice-Chairman of Committee*—Frank C. Berry, Minneapolis Automobile Club, Minneapolis, Minn.

Vice-Chairman of Section and Chairman Committee on Traffic Engineering—Lewis W. McIntyre, City Traffic Engineer, Pittsburgh, Pa. *Vice-Chairman of Committee*—William S. Canning, Keystone Automobile Club, Philadelphia, Pa.

Vice-Chairman of Section—C. C. Jones, Ohio State Automobile Association, Columbus, Ohio.

Chairman Committee on Police Activities—Inspector Ernest W. Brown, Metropolitan Police Department, Washington, D. C. *Vice-Chairman of Committee*—Inspector Charles Greenwood, Police Department, Toronto, Canada.

Chairman Committee on Uniformity—E. B. Lefferts, Automobile Club of Southern California, Los Angeles. *Vice-Chairman of Committee*—Capt. Laurence A. Lyon, State Department of Public Safety, Lansing, Mich.

Chairman Committee on Enforcement—Franklin M. Kreml, Police Department, Evanston, Ill. *Vice-Chairman of Committee*—Judge William C. Larson, Minneapolis, Minn.

Chairman Committee on Rural Highway Hazards—Clarence P. Taylor, State Department of Public Works, Boston, Mass. *Vice-Chairman of Committee*—C. W. Roberts, Carolina Motor Club, Greensboro, N. C.

Chairman Committee on Accident Records—O. W. Wilson, Chief of Police, Wichita, Kansas. *Vice-Chairman of Committee*—W. W. Matthews, Bureau of State Highway Patrol and Safety, Harrisburg, Pa.

Chairman Committee on Membership—William C. Knoelk, Milwaukee Safety Commission, Milwaukee, Wis. *Vice-Chairman of Committee*—J. K. Johnson, Chamber of Commerce, Binghamton, N. Y.

Chairman Committee on Public Education—F. C. Lynch, Kansas City Safety Council, Kansas City, Mo. *Vice-Chairman of Committee*—Lewis E. MacBrayne, Massachusetts Safety Council, Boston, Mass.

Chairman Committee on National Traffic Safety Contest—John N. Edy, City

Manager, Dallas, Texas. *Vice-Chairman of Committee*—Frank E. Ballentyne, Automobile Club of Philadelphia, Philadelphia, Pa.

Chairman, Committee on Pedestrian Problems—Maxwell N. Halsey, National Bureau of Casualty and Surety Underwriters, New York City. *Vice-Chairman of Committee*—J. W. A. Bollong, Traffic Engineer, Seattle, Washington.

WEDNESDAY MORNING SESSION

October 5, 1932

This session was a joint meeting with the Eastern Conference of Motor Vehicle Administrators. The meeting was called to order by Benjamin G. Eynon, Harrisburg, Pa., who presided. Chairman Eynon immediately introduced the first speaker.

Report of Committee on Rural Highway Hazards

By CLARENCE P. TAYLOR

Traffic Engineer, Massachusetts Department of Public Works, and *Chairman, Committee on Rural Highway Hazards*.

The speaker said in part: Taking the country at large, 50 per cent more fatal accidents occur on rural highways than on city streets. Among the different states, this relation varies from approximately 70 per cent less to 1,800 per cent more than the urban fatalities. States which are densely populated have more fatalities in the urban areas than in the rural areas. The following data will be illuminating:

Type of Accident	Rural	Cities
Collisions with pedestrians.....	30 per cent of total	64 per cent of total
Non-collision accidents.....	26 per cent of total	4 per cent of total
With other motor vehicles.....	22 per cent of total	19 per cent of total
With fixed objects.....	11 per cent of total	8 per cent of total
With railroad trains or street cars.....	8 per cent of total	6 per cent of total
All others.....	3 per cent of total	2 per cent of total

The motor car driver is still the leading source of the primary causes of highway accidents. Many drivers have slack or wild driving habits or dangerous traffic complexes and little or nothing is done about them. Some drivers involved in smash-ups have no sense of personal responsibility and are almost devoid of driving morals. When some drivers get out upon the open highway they evidently exercise complete freedom of movement and speed which constant police supervision and traffic congestion in cities have suppressed. That such drivers express themselves by wild or inattentive driving seems to be borne out by the fact that 37 per cent of the mishaps on rural highways involve only one driver who either drives off the road, turns over, or runs into fixed objects. In urban areas, this type of casualty amounts to only 9 per cent of the total, one-quarter as great a proportion.

Too many drivers have an inadequate knowledge of driving rules and many lack ordinary driving skill. In most states the majority of drivers learn driving rules and develop driving proficiency through experience. Their experiences with the police, with other operators, in accidents and near-accidents, is the present stupid way of training them to become good operators. Unfortunately, however, there is a class of individuals who are so constituted that they do not learn from experience. As yet almost nothing constructive, beyond enforcement of laws, is being done either to salvage this group or remove them from the highway.

Certain drivers who are unfit to be trusted with a car because of physical, mental or nervous disorders, or because of addiction to alcohol, drugs or dangerous habits, are likewise given too little or no attention. In a few states this group has difficulty in obtaining a new driving license, but seldom in any state is any special effort

devoted toward weeding out the persons who have become unfit to operate after having received their license.

Drivers who are generally considered competent are involved in the greatest bulk of the accidents. All human beings when operating a motor car gauge time, speed and distances for stopping, passing and clearing imperfectly. Certain inherent limitations on human eyesight, responses and ability to recognize, assimilate and decide, prevent even the most capable driver from ever being absolutely sure of himself. It is this failure of normal drivers to appreciate their natural limitations, that has led them into so many of the accidents which occur under perfect driving conditions.

Fatigue and failure to be alert and attentive are common causes of accidents on highways. Owners of commercial vehicles often require their drivers to remain at the wheel too long. Drivers of private cars attempt long trips alone or without relief. All drivers are apt to become drowsy and fall asleep while driving after a hearty meal, especially if the day or the car is warm. Drivers sometimes have their attention diverted from the highway by advertising signs at the most dangerous points. Highway signs are often too small, say too much, or are not of a design suitable for quick reading and swift interpretation.

With respect to the vehicle, rural traffic hazards are a continuously shifting set of problems; no one can predict what next year's cars will be like. Coupled with the high speeds which the modern car can attain, new features such as free-wheeling, automatic clutch and air-wheels have been added. These features may be safe, yet they do add some confusion to the operation of the vehicle, more especially in mountainous countries.

The increased use of buses and trucks has changed highway traffic conditions. The new models are heavier, larger in size, longer in length, higher in power and in most cases faster. The drivers try to keep up with or pass the general traffic. Down hills and on level ground they are often able to do so, but uphill they form the usual obstruction when other drivers try to pass them. When several trucks or buses follow each other in close succession, this condition is intensified. Accidents involving these huge vehicles, when being operated at high speeds, are becoming more common.

Improvements in brakes seem to be accepted as a license to drive faster. Free-wheeling, as well as the increased weight of the newer cars, has increased the defective brake hazard. Some of the large truck companies operate trains of two or three vehicles with only one set of brakes on the rear two wheels of the tractor. Other more modern vehicles are equipped with air brakes on each unit.

Glaring and dim headlights create a greater hazard on rural highways than on city streets because of the general lack of artificial highway illumination. On the highways the lack of a tail-light is a more serious condition than it is on urban roads because of the greater speed with which traffic moves.

The size, weight and number of vehicles coupled together present a highway hazard problem difficult of solution. Obviously there is more risk in passing a train of three vehicles than there is in passing a single vehicle. There is less risk in some cases when one long trailer is used instead of two short ones. The use of several trailers also makes driving and parking difficult. Whipping trailers are dangerous. Added safety measures, such as marker lights, sidelights, brakes on each unit and auxiliary couplers are needed to prevent accidents. The weight of loads has been offset on rural accidents as a truck heavily loaded may move more slowly, yet requires a better type of brakes than one lightly loaded.

The greatest single class of accidents on rural highways is that in which pedestrians are struck by vehicles. Few sidewalks being provided, pedestrians are forced to walk in the roadway. Not many highways are illuminated at night. After dark, therefore, it is difficult or impossible for an operator to see pedestrians, especially if he is faced with glaring headlights, or if the pedestrian is wearing dark clothing. Then, too, the majority of pedestrians walk on the right side of the highway and they are unable to judge whether the driver approaching from behind sees them.

Persons attempting to board or leave moving vehicles, persons working on disabled cars parked in or near the roadway, children playing in the roadway and pedestrians stepping out into the highway from behind obstructions to view, constitute a large portion of the accidents to pedestrians. Many pedestrians fail to appreciate the need for looking before crossing.

Certain physical features of highway design contribute to the hazards of rural driving. These are, curves, and hill-tops with inadequate sight distance, curves with insufficient super-elevation, compound curves, combined horizontal and vertical curves, short radius curves, intersections or obstructions just beyond a hill-top or curve, long steep grades, blind corners, roads and bridges less than 20 feet wide, high crowns, no shoulders, dips, bumps, drainage ditches, car tracks, railroad grade crossings, trunk line highway grade crossings, improper or inadequate intersection designs, misleading layouts, slippery surfaces, long stretches of road without turn-outs, long stretches of winding road without tangents, improper curve designs, and obstructions.

Features of roadway and roadside maintenance that contribute to the hazards of rural driving are, dark "pockets" at night; obstructions to view caused by trees, shrubbery, fences and advertising signs; unsanded patches of ice; unsanded wet or slippery places on curves and grades; unfenced and unguarded danger spots; hazards without advance warnings; and unprotected defects or obstructions in the roadway.

The tendency of the majority of motorists when operating under any given set of driving conditions is to drive within five miles per hour of the average speed. The few who drive slower and those who drive faster than this general pace are the ones who cause passing and overtaking accidents. The large number of cars moving at normal speed are forced to overtake the slow driver. The fast driver must overtake at high speed that traffic which moves at a more moderate pace. This means that he is out of line for a distance of from 600 to 1,500 feet, depending on the difference in speed between his car and the one he is overtaking.

Congestion around roadside stands, places of entertainment, points where a beautiful view is obtainable and places where accidents have occurred, is the source of some collisions. Stopping and parking on the highway contributes a large share of the collision type of accidents. Head-on collisions, due to overtaking, skidding, passing an obstruction in the roadway, and driving on the wrong side of the roadway, form another large group. Cutting in and driving off the roadway comprise practically the balance. At intersections the accidents are about in the following order—left turns, cross movement, and rear-end collisions.

The study of what constitutes the rural highway hazard problem leads the committee to believe that the rural traffic problem is great enough and sufficiently different in character and required treatment to justify:

- (1) More complete reporting of rural highways accidents.
- (2) The separate compilation of rural highway accident statistics.
- (3) The development of a systematic attack on the entire situation.
- (4) The development of sound treatments for specific conditions.

Discussion of Rural Highway Hazards Committee Reports

By E. K. SMITH

Portland Cement Association, Chicago

The speaker said in part: The Committee's investigation shows, in particular, that reports from state highway systems alone are not sufficient. They must also be secured from secondary and county roads not now included on the state systems. Very few states secure this information, even though their reports may be quite complete for the state highways.

A few examples illustrate the necessity of more detailed information for a proper study of the accident problem and its solution. A study based on accident reports was needed to show officials the fallacy of placing stop signs instead of warning signs indiscriminately at points where their value was not evident and they could not be enforced.

The work of the American Society of Municipal Engineers during the past three years in collecting statistics of pedestrian accidents has assisted greatly in calling attention to the great importance of pedestrian accidents in rural areas. It undoubtedly surprised many persons to have the National Safety Council report that 30 per cent of the 1931 fatalities in rural areas were pedestrians—the highest single item reported.

I attempted to secure information a few weeks ago about the prevalence of accidents on narrow or "single track" pavement on the secondary roads. In most cases such construction is not on the state highway system but is on roads carrying purely local or rural traffic, and no attempt has previously been made to collect data to show their relative safety, even though there are over 3,000 miles of such pavements in use in rural communities.

Information has so far been received from counties in six states, with four to eighteen years of use and including 15 per cent of the total mileage. Replies from county officials report almost entire freedom from even minor accidents. The accident map of the entire state of Delaware for 1931 shows concentration along the main highways and not a single accident on the twenty-six strips of single track pavement carrying local traffic. These figures show the importance of studying the character of traffic and the location of the roads in connection with their design from a safety standpoint.

What the Public Wants to Know About Accidents

By G. D. NEWTON

Supervisor, News Bureau, The Travelers Insurance Co., Hartford, Conn.

The speaker said in part: I have come to the conclusion that the public doesn't want to know anything about automobile accidents. Before you have a chance to misunderstand me, however, let me hasten to add that there are thousands of responsible persons, members of clubs, national groups, business and other organizations, and many others belonging to no particular group, who are deeply interested in this problem. But they cannot be classed as comprising the American public.

For one, I am inclined to hope, just as many of you do, that automobile accident prevention work is in part responsible for the reduction in deaths for the current year. Yet it must be remembered that an accessory before the fact has been this period of business and social readjustment, which most certainly has had a sobering effect upon many persons who had lost sight of their personal responsibilities for their own safe conduct through life.

Suppose that we consider this problem of automobile accident prevention in a business-like way. What do we have?

First, we have ample stock on hand. Secondly, we have the product of safety. Thirdly, we have a market. And the weakest link in this setup involves the problem of distribution.

Let us take a look at this product. Intangible? Yes. In that respect unlike most products, yet not unlike some, such as insurance, for example. Since this product of ours, safety, which we desire to sell (and I use that word advisedly) to the public is so unlike most things which the public is asked to buy, a problem of large proportions is put upon salesmanship.

Where there is an intangible product, something that has neither shape, size nor weight, the need for a high type of intelligent salesmanship becomes apparent, and

in such cases the product, whether it be insurance, safety, or any other similar thing, has to be sold. That is a problem which faces those of us engaged in the business of automobile accident prevention.

If this is a true statement of the public's general attitude, I am not sure that we can place the blame upon the public. The product that we have to offer has not been made attractive enough to win some of the public's attention. Our selling program must be changed as well as greatly expanded if we are to obtain more of the market.

To illustrate my thoughts, let me call your attention to a fact so often mentioned which is to the effect that courtesy on the part of drivers and pedestrians in their use of the streets and highways would bring about a great improvement in the traffic accident situation. But the word courtesy doesn't mean anything particularly to a great many individuals as they drive about in automobiles.

Then we have as another illustration the fact that too much speed for time and place tends to produce accidents that are more serious. But speed doesn't mean particularly anything to individuals as they drive cars, unless it is to go faster.

Just as the desire for speed has been stimulated by intelligent use of words and illustrations so must the hazards of speed be presented in a newer and better way than we have usually employed.

Let us take the matter of laws regulating the movement of vehicles. Who can say that any statute upon the subject has any semblance of clarity of thought or expression? Is it so surprising then that not a man in a million knows even the slightest thing about the regulations designed for his protection? Our regulations, it seems to me, are in the same category as developments of research in the field of science that lie buried in technical brochures.

The same thing can be said with entire justice about many other announcements on the traffic problem. We have reams of figures, charts, and illustrations that even cause untold mental anguish to those that gave them birth. Is it surprising, therefore, that the public fails to show interest, fails to get any meaning out of the figures and other material?

Does the public understand much of anything about the destructive capabilities of cars in motion and why the destructive capabilities increase either as the weight increases, or as the speed increases, or as the result of both? Does the public understand much of anything about the facts as to why a car cannot be stopped as quickly when the road surface is covered with ice as when dry? Does the public regard in any personal light a mass of figures on the number of people killed and injured when the figures remain nothing but masses of numbers? Does the public understand much of anything about the distance traveled per second by a car at 40 miles per hour, or how rapidly distance is annihilated by cars approaching each other at such a speed?

We have a good product. But at present it lacks sufficient appeal. If it had appeal, the reduction in the loss of life would not be dependent upon a depression. And if any are doubtful of the possibility of changing human nature in the use of the streets and highways, I, for one, want to say the attempt has not been made to any considerable extent. We have seen the public virtually come out doors to sleep. We have seen the public take to a more frequent bath, like fish to water. We have seen the coming of bobbed hair, knee skirts, long skirts, Princess Eugenie hats, and the acceptance of most any mode which is "the thing." It can become "the thing" to use the streets and highways with care.

By none of these remarks do I wish anyone to infer that I do not believe there is further room for engineering improvement; because I do. Cars can be made safer. So can roads. But I am more interested in making people safer for themselves. And what's more, I doubt if it can be done by means of a few laws, by the police, or by more rigid enforcement, although such means and agencies can help. The only way to make people safer for themselves is to sell them on safety.

I venture to say there are not more than a mere handful of people, relatively speaking, who are spending all their working hours attempting to sell street and highway safety. The commissioners of motor vehicles and their assistants should not be expected to accomplish such a task without aid, for how can they alone market a commodity, if safety can be called that, when the customers number 120,000,000 people? Hence, there must be some part-time salesmen whose aid must be used as best it can. And let me add, in this connection, that the headaches in making use of part-time advocates of our product are bound to exist for a while. It will take time to acquaint this new sales force with their commodity. But there is not a traffic expert, not a law enforcement officer, not a commissioner of motor vehicles who will not say that today he knows more about his job and how to do it than he did last year, or five years ago. The difficulties that will be encountered in recruiting a large sales force, so that safety may be properly presented everywhere in our nation, will work themselves out, just as they always do as experience and knowledge accumulate.

Salesmanship during the war induced men to leave the relative safety of their homes for the dangers of the battle front. It induced men and women at home to buy government securities to the amount of billions. It induced people to save on essentials that were more urgently required by the soldiers and sailors. It induced business men to forget their animosities. It instilled in nations the will to do or die. Salesmanship in the world war was in many respects high pressure; hence it was without a basis in truth in many instances. But this—a battle to save lives on our streets and highways—does not need to twist the truth; the plain truth is awful enough and startling enough. The plain truth if humanized will compel men's minds to control their actions—and if there are any who refuse to do this—a militant public will know how to get rid of them as a menace.

Today we have more and better ways of spreading truth and ideas than the world has ever before possessed, but all of these are of no avail if we forget the injunction given by a great leader 1900 years ago: "Go ye therefore, and teach all nations . . . teaching them to observe all things whatsoever I have commanded you."

That is the type of salesmanship we are in need of in this problem. Teach all people to observe the things commanded of us. Let us make safety in the use of streets and highways "the light of the world, as a city that is set on a hill cannot be hid." Likewise, to paraphrase, let me hope that it shall not be said of any of us engaged in this understanding, that we were so busy mending our nets that we fished not.

Horse Power and Horse Sense Education of the Adult Motorist

By HAROLD G. HOFFMAN

State Commissioner of Motor Vehicles, Trenton, N. J.

Mr. Hoffman, with several assistants, presented a series of proposed billboard designs which are to be used in selling safety to the public on highway billboards to be erected on New Jersey highways. In introducing this display, he cited the case of a 14-year-old boy on his way to a private school in New Jersey, who had been given a high-powered automobile by his parents and who was checked doing 72 miles an hour on a New Jersey highway. Mr. Hoffman also cited the case of a man who purchased a car for \$15 which could not be stopped from 20 miles an hour, within 175 feet, and who killed a boy.

The speaker then said in part: If we want to get very far with child safety education, we must make the adult feel responsible for the child. We must engender the respect of law by enacting sane, sensible laws. Motor vehicle commissioners in America must realize that they cannot enforce laws which are not sane.

sensible and justifiable to all citizens. They must be enforced equitably. In a paper recently prepared by one of my officers he said that the motorist probably has just as much right to elect the laws he wishes to obey as the official has to elect the laws which he will enforce.

There is a very great need to "sell" safety. There has been great development of highways and high speed automobiles, but when we look back at the toll of 34,000 persons killed last year and 1,000,000 injured, is it worthwhile?

Each state has its problems. New Jersey, which is 45th in size, has unusual traffic problems. It is the gateway for New York and Pennsylvania travel. It has a million owners, but this is small compared to the millions of motorists from Pennsylvania and New York who use Jersey highways. We are faced with a tragic loss of life—1,302 lives lost last year. How can we present this fact to the public?

In engineering, we are doing everything possible to construct our roads to be safe. However, small results are possible here alone because a negligible number of accidents are caused by faulty construction. We have tried to justify the large number of accidents by the fact that there are more cars and more operators, but we must also consider an offsetting factor, that roads and cars are being built safer.

In showing the design "Drive Carefully—This is not a Speedway," the speaker cited the great number of accidents on the express highway, Routes 24 and 26, from Trenton to New York. Twenty per cent of motorists killed on this highway are from out of the state. When stopped for speeding, out-of-state motorists often say, "Isn't this a speed highway?" The construction of this highway has been advertised as a super-highway so that the average motorist feels that there is no speed limit.

Commenting on the design, "A Good Friend and Protector—Keep Him That Way," Mr. Hoffman said that he desired adequate enforcement by judges and police officers, but that it is the police officer's job to go out and personally meet violators. He tells his men to use every courtesy, and that since motorists are paying \$32,000,000 a year in New Jersey in taxes, they should not be looked upon as criminals but should be dealt with courteously.

Newspapers have helped greatly in disseminating safety information and no other agency has given as much help. A weekly article is now used by 157 papers in the state. This is a non-technical explanation of laws and general information about safe driving, the Golden Rule, and keeping the car in condition. Foreign language newspapers are also used.

A question-and-answer booklet to help applicants for operators' licenses is used to great advantage. A large number of rejections on operators' license examinations led the Department to use this book, which includes 120 questions on motor vehicle laws. Twenty questions are used as a written test. The applicants are also tested on color blindness.

Other educational material used by Mr. Hoffman's department includes bulletins educating the public to the use of the Uniform Accident Reporting System, reduction of child accidents, and distribution of National Safety Council bulletins to police judges. It is hoped to enlist national advertisers in safety posters on billboards also.

WEDNESDAY AFTERNOON SESSION

October 5, 1932

This second Joint Session of the Street and Highway Traffic Section with Eastern Conference of Motor Vehicle Administrators was called to order by George R. Wellington, president, Eastern Conference of Motor Vehicle Administrators, Providence, R. I. The session was devoted to a consideration of "Drivers' License Administration." Chairman Wellington introduced the first speaker.

Drivers' License Examinations, Present and Future

By ROBBINS B. STOECKEL

State Commissioner of Motor Vehicles, Hartford, Conn.

The speaker said in part: At the end of 1931, eighteen states had operator's license laws including some form of examination as to fitness. Eleven states have had, in these ten years, experience with the administration of the law, including California, Connecticut, District of Columbia, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont. Seven others have adopted qualification requirements since 1929, including Delaware, Iowa, Kansas, Michigan, Oregon, South Carolina, and West Virginia. In addition to these there are some other states which have a form of licensing law without examination, apparently intended to produce revenue.

In the light of the experience in these eleven states, it seems proved that there is no better safeguard against road accidents caused by motor vehicle operators than is provided by an examination into qualifications, together with subsequent supervision of conduct, and such discipline as may be necessary for corrective purposes.

Whether the result can be claimed to be entirely traceable to the license law, it remains a fact that the automobile fatality rate in these eleven states is 31 per cent lower than the trend in the non-license states. Had it not been for some force or other, presumably the operators' licensing system, the deaths from this cause in these states would have been 45 per cent higher than it has been, as shown by comparison with the statistics in those states which do not have a licensing system.

All operators' systems are adopted and founded on the constructive legal theory that to operate a car on the highways and streets is not a right, but a privilege granted by a state. It must be apparent that the whole success of a licensing system depends upon its administration, upon the correctness of the tests under which the examination shall be given, and upon securing as perfect a selection as can be had; further subsequent supervision which will follow through every single authorized operator concerning his operating conduct, with administration of discipline where it is called for, and with education and teaching where these particular activities seem to be needed.

The licensed operator who is accepted on such a selective plan will then by himself establish a standard of performance which can possibly be raised higher by better education which must be attained. Unless it be attained, every departure therefrom will call for exercise of the authority of a state to disclose to the operator that his conduct has not been all that it was thought to be, and accordingly he must be deprived of the privilege.

What, then, is a fair and efficient examination for selection?

An applicant must be of an age where enough discretion and judgment for the proposed performance may fairly be expected of him. The age groups under 30 seem invariably to be those in which the causation of mischance originates. In most states the age of reasonable discretion has been determined upon as 16, it being apparently considered that if the expressed consent of the parent or guardian can be secured, this is old enough for young men and women to commence to gain experience in this important feature of modern transportation.

Physical ability to operate must always be found present. There are, in many instances, young men and women who at 16 have not grown up sufficiently to be able to handle the modern car. There are boys of 16 not tall enough to see through the windshield; there are girls who haven't sufficient strength to apply the brakes. But any state can determine by an inspector whether these two factors are present or absent. Physical ability to drive a car also involves use of the senses, especially eyesight. The whole physical performance should be found to be sufficient for purposes of operation.

As a general criterion, it seems that when an applicant has 20-70 of normal vision, which in common language means the ability to distinguish a child from a hydrant at 200 feet, he will see well enough to operate a car, and that is the test on which most examination systems have proceeded. The state administrator giving this test, should he find that it cannot be passed without glasses but can be passed with glasses, must limit the operator's license granted to operate with glasses. In the experience of many years in the eyesight test, all sorts of conditions have been found. Applicants have presented themselves who have no sight at all in one eye, but who see well with the other. Color blindness is commonly found to exist in about two out of every 100 persons. It does not, apparently, have any effect on safety. It usually consists of an inability to distinguish green from red, but the ordinary intelligence compensates for the omission of this particular ability by adjustment. A person who is color blind invariably learns to distinguish traffic signals from one of two manifestations: he either learns to watch the other participants and do as they do, or else he learns the position of the lights.

If an applicant is to operate under the rules and laws of a state, he must have a fairly general knowledge of them. Nowadays they are so commonly alike all through the United States that a good working knowledge of the requirements of one state usually is sufficient to take one safely anywhere. The law test should therefore cover only the essential rules of driving, such as the right-of-way, the driving on the right side of the road, passing other cars on curves, and all such general directive laws as need to be absolutely known and understood not only as to language but as to the intent and purpose which they serve. Every examination on law ought particularly to cover the direct decisions which have to do with the operation itself, and not go into too many details and catch-questions.

It is necessary for an operator to be able to read English. That doesn't mean proficiency, but a working knowledge of the appearance of lettering and of the general meaning of the words and symbols, so that he can invariably understand highway direction signs, safety markings, and all of the literature which is prepared for him as a guide in his actual operations. If he is so ignorant that he says a "stop" signal means "go" he is naturally not to be passed on this section of the test.

The road test, the most important part of every examination, includes two features which need to be discussed separately. One is the operation of the car; the test of skill. In the modern examination, the test of skill starts from the moment the man seats himself in the car. He must know how to start the engine, how to put the car into gear, how to get the car going, how to feed the gas, and how to run it and stop it. All of these things go quite naturally as a part of the skill test, and if activities are kept separate and he is marked as to proficiency in the performance of each, any weakness in his skill will at once stand out.

The other feature is the determination of how the applicant comports himself relative to the problems of others. This is a test as to his consideration or courtesy, whether in traffic he knows and appreciates that while he may be as good as other drivers, they may not be as good as he, and, accordingly, whether he drives his car with that in mind, keeping it under such control that he is able to meet any emergencies which may arise through the conduct of others.

Many accidents and difficulties are caused by the assumption on the part of an operator that another operator will follow some special course, whereas that other operator may have in his mind some other equally proper course. A common example is where the operator of a car which is following another assumes that the other car is going straight ahead, and instead of that it turns into his path without a signal. This is an excuse, but if he is a good operator he will know that caution on his part can be exercised so that the operation of the car ahead will not affect him at all.

Finally, there is a far more deep-rooted and difficult determination involved in every examination, and that is to find out how the emotions and general human

characteristics of an applicant affect his performance. As an illustration, if there should exist great fear of certain happenings, that in itself constitutes a danger, because the exaggeration that results from attempting to avoid the feared happening often makes other complications and accidents.

When the examination is complete and the final marking or grade is put down, as is now the case in some of the states, there is in the motor vehicle office a complete record which states operative performance of every applicant in that state. Defects and faults, if any, are shown up and discussed at the time of examination, and the operator's record begins with the examiner's findings. It is hardly a psychological test, except so far as psychology is common sense, but consists of the application of the same rules and the same lines of thought by which the employer of labor has long selected his employees. It is for a special purpose, but in principle is the same process.

This particular form of examination as conducted in Connecticut for something over a year, apparently demonstrates that a competent inspector can select operators who are apt to occasion difficulty on account of personal characteristics, such as timidity or over-confidence, and to warn them about such cases. In the statistical studies made following the installation of this examination, it seems already demonstrated that those persons who have been passed and who later get into accidents or are disciplined, are almost invariably found to be in the class groups to which they were allocated by the inspector.

One final subject remains to be discussed. That is the "defective" who applies for a license: the man who is deaf and dumb, whose hearing or eyesight is impaired, who has lost the use of a limb, the one-armed man, the one-eyed man, the person who has partial paralysis, etc. Experiment and study of all such cases have developed a method which now shows more clearly than ever before that these people must not be forthwith eliminated and refused on account of a defect. Even if it were constitutional to say that a license cannot be granted because a man is deaf, that would not be the proper course to take, because there seems always to exist a compensation for the loss of any sense by the sharpening effect on the intelligence of the person, caused by the knowledge of his loss.

Physical defectives who are operators do not have accidents, are not disciplined, and appear infrequently in the records of a motor vehicle office. But the utmost care must be exercised before they are licensed, for many of them are physically unfit for the essential mechanics. Every possible opportunity to prove the worthiness of the applicant must be granted, and when the decision is finally made, if affirmative, it must be made on the basis of a positive determination of intelligence of sufficiently high degree; and intelligence in this sense doesn't mean book learning, but adaptability for this purpose. If this intelligence is found, the applicant must be licensed, always providing he has sufficient physical ability to perform normally.

Examination by Local Officials

By CAPTAIN LAURENCE A. LYON

Deputy Supervisor, Uniform Division, State Department of Public Safety,
Lansing, Mich.

The speaker said in part: Michigan passed her first operators' licensing law in 1919. This law permitted but did not require the examination of applicants by the local officers. It was necessary for the local sheriff or chief of police to approve the application for operators' licenses. This law was impractical for there were no teeth in it; no practical means for the revocation or suspension of the license. Finally, the 1931 Michigan Legislature passed an Operators' Licensing Law that follows the general lines of the Hoover code.

There are three essentials in the administration of such a law, without which

we can get no results. First, we must require that new drivers—that is, young people becoming of age, or anyone driving a car for the first time—must have a rigid examination. Second, the driver having a license and abusing the privilege granted under it must have his license suspended or revoked. Third, the law must be administered by an organization with a large amount of discretionary power.

The Michigan Law requires the examination of new drivers and permits the examination of any driver. Any person desiring either an operator's or chauffeur's license must apply to the examining officer in the community in which he resides. These examining officers are appointed by the chiefs of police in the several cities, and the sheriffs in the several counties, and are taken from the ranks of the peace officers of the community. The application is either approved or disapproved by the local examining officer and forwarded to the state commissioner of public safety. The commissioner must then approve the application before a license can be issued and no license can be issued unless he does approve it. The thought of the legislature seems to have been that the local officer would know the people in his community, would know who was physically or mentally unfit to drive, and would know the past driving records of many of those who made application. Thus, he would be able to eliminate readily the unfit in his community. By having the approval of the state commissioner of public safety, a check might be made of the misbehavior of a man in a community other than that in which he lives, for the records of such misbehaviors are in the files of the State Department at Lansing.

The law was enacted for the purpose of reducing untimely and costly injuries, maimings and deaths to our citizens, and damage to their property, (1) by the selection of those alone who were fully qualified to operate motor vehicles, as recipients of licenses, and (2) by the elimination of all those not so qualified. The machinery for the selection of the fit and the elimination of the unfit centers in the authorized examining officers. These examiners are named from the various police and sheriffs' departments, and it is upon them that the success or failure of the law primarily rests. In the less thickly populated sections of the state, the examiner may know personally nearly every applicant. This works to the advantage of the driving public if such an examiner is fully qualified to function and is sincere and honest in the use of his discretion and authority.

Most of the examiners are sincere and many are well qualified. The examiners in our larger cities are doing an excellent job. They have had the training which fits them to pass judgment on the applicant. Police departments have cooperated with the commissioner and the results of their examinations have been very gratifying. I cannot say as much for the sheriffs as a class. Many of them are sincere and careful in their examination, but the vast majority will approve applications without any examination. This is rather to be expected, since our sheriffs are dependent upon the good will of the people in their community to hold office. They must be elected every two years, and consequently will not antagonize any voter in their community unnecessarily. Many of the unfit examiners that have been found are of the mercenary type, who obtain notary public powers and make a charge for notarizing the applications. They turn down no one who may apply, no matter how decrepit, feeble-minded or blind he may be. They have done harm, but due to other provisions in the law, not irreparable harm. The great majority of the examining officers have been efficient, interested and sincere, and have impartially carried on their examinations.

As population increases in the areas under the jurisdiction of an examiner, his routine of examining must be more strict. He knows a smaller number of the applicants, and the possibility of a dangerous driver slipping by is augmented by the pressure of numbers. For this reason, the examiners are named from the police of that community—men who have for years functioned in their traffic divisions, and know the quirks of human nature that go to make up an undesirable operator. They have followed in most cases the progressive routine of oral, visual and mental quiz that is remarkable in its ability to weed out the unfit.

If the undesirable driver gets a license, he may be removed from the highways through the revocation or suspension of his license. Any person held unfit to operate a car safely and efficiently, following an examination by an officer and an examination before a representative of the commissioner, may have his license either suspended or revoked. This action may be predicated upon a showing of mental instability, physical disability, a driving history which shows little respect for an adherence to safety rules, or a single instance of reckless or inattentive driving which results in an accident.

If a license is suspended or revoked, the penalty may be extremely severe and seem to be an irreparable injustice. However, the adequate and impartial administration of this power has appeared to be the most important duty under the act. The enormous power for good through proper administration is being constantly demonstrated by the operators who appear at our hearings.

Some results have already been obtained. During the sixteen months this law has been in effect, 1,100,000 applications for operators' and chauffeurs' licenses have been received. Less than 2,000 applicants have been finally denied the right to drive, and these because of physical or mental incompetency and occasionally because of a bad driving record. During this same period, over 6,000 licenses have been either suspended or revoked, mostly because of flagrant violations of the law, or carelessness or inattention, resulting in collisions. We believe that as a result of the administration of this law the accident rate has been reduced.

Demonstration of a Typical Oral Examination and Driving Test

By C. deGARMENDIA

Chief Examiner, State Department of Motor Vehicles, Baltimore, Md.

The speaker gave a demonstration of a typical examination for operators' licenses, and then followed this with a driving test which took place outside on the driveway of the hotel.

In explaining the issuance of Maryland operator's license, he said that the department had its own examiners in twenty-three counties of the state. In 1918 a law was enacted providing for the payment of fees and the issuance of licenses regardless of ability to drive, but this law has since been amended and many tests are now required. The operator must be 16 years of age, physically fit, and with good eyesight.

However, under certain conditions, restricted licenses are issued to those physically defective. A deaf person may receive a limited license for a period of three months, but he must be accompanied by a person able to hear. A second license then is issued to him but he may not drive in any other state where there are restrictions. A person with an arm off above the elbow may receive a license, but must wear an artificial limb, and is restricted to a particular car. If he wishes to drive another car, he must be re-examined. Color blind persons are given licenses for daytime driving only. Persons with bad vision are given licenses for daytime driving only.

Persons 16 years old may obtain for \$1 a license good for 30 days when accompanied by a licensed operator. A person 16 years old may also obtain for \$1 a motorcycle license good for an unlimited time. A person 14 years old may obtain a license for operation of a motor-bicycle.

Applicants for operator's license in Baltimore are taken for a seven-eighths of a mile trip through a crowded part of the city where they must park, stop, make right or left-hand turns, signal, etc. A large cardboard disk is placed over the radiator to show that the operator is taking an examination.

In answer to a question as to what the fees are for operator's license. Mr. deGarmendia said that instruction cards are \$1, operator's license \$2 for perpetual use, and chauffeur's license good for one year is \$3. Duplicate cards are issued for 50 cents, but no examination is made of the operator when he asks for a duplicate card.

THURSDAY MORNING SESSION

October 6, 1932

This session was the first of two devoted to the problems of police officials. The meeting was opened by Clifford Davis, Vice-Mayor of Memphis, Tenn., who presided. Chairman Davis introduced the first speaker.

What Can Police Do About Traffic?

By COURTLANDT K. PARKER

Deputy Chief Inspector, New Jersey Motor Vehicle Dept., Trenton, N. J.

The speaker said in part: There are many things that can be done but the all-important thing, as I see it, is better and more equitable enforcement. The Motor Vehicle Department of New Jersey is deeply interested in the enforcement problem.

From my observation, I am of the opinion that only 10 per cent of the possible enforcement is being done and that while 70 per cent of the general motoring public are of the law-abiding type, and obey the laws without being continually watched, the other 30 per cent must be forced to obey. Education has no effect upon this latter type. It is to this type that the majority of accidents can be traced.

Traffic laws are nothing more than enforced safety rules. Safety rules in large corporations, railroads, large interstate bus companies, mines, and other industrial enterprises are strictly enforced and bring fine results. Accident records are being reduced continually and it is not uncommon for one of these concerns to go long periods without a single mishap. If an employee of one of these concerns violates one of these safety rules, either willfully or through neglect, he is penalized. I recall a case of a bus driver of one of the large interstate bus companies who was arrested and fined for driving 60 miles per hour on a straight concrete highway. When his company learned of this, the driver was instantly discharged. Now, if private companies are so very strict with the enforcement of their safety rules and regulations, why cannot the same basic principle be applied to the motoring public by the police, by enforcement officers and the judiciary?

I have talked to many police officials throughout our state as to why motor vehicle laws are not given more attention, and I realize that the entire police department would like to see traffic laws enforced to the letter. There are many reasons, however, why we cannot wield the iron hand of strict enforcement to our liking. Of the many excuses that I have heard, perhaps the first is political pressure.

In small towns the popular excuse is that it would give the town a bad name if many motorists are arrested. Others say, "It is up to the state to enforce the motor vehicle laws." There is nothing more discouraging to an officer than to make an important arrest for a major violation of the traffic laws, and upon his appearance in court, find that the case has been "fixed."

In some cities and towns an average of 50 per cent to 90 per cent of those summoned to appear in court for traffic violations never appear. While parking overtime and like violations do not constitute a direct menace to public safety, summons for major offenses are withdrawn in wholesale proportions. This gives the habitual violator, the dangerous driver who may have the proper connections to have his summons withdrawn, the feeling that regardless of how he drives he can get away with it.

There are, however, several towns and cities throughout the country that have adopted the policy that once a summons is issued it cannot be withdrawn, no matter to whom it was issued. I visited one of these towns which had recently put this rule into effect, and talked to the commissioner of public safety, and the chief of police, on the subject. They told me that over 1,000 summonses had been issued prior to my visit and every one had stood trial and that there were very few suspended sentences. It was claimed that the reason this system had shown such wonderful results was because it had been put into effect by the leaders of the community and so the reaction that might naturally have been expected from such stern measures failed to materialize.

Another undermining influence is special privilege in the form of courtesy cards, which are usually considered by the recipients as nothing more or less than a license to break the law. Special officers' badges, police department signs, and privileges of like character should be done away with as much as possible. We are besieged by thousands of citizens for some form of special privilege that will enable them to get the "breaks," as they say, and this desire of the average motorist to secure some form of special privilege seems to be a national disease.

While a large number of our magistrates are of a very high type and conduct their courts with efficiency and justice, there are some who, either through ignorance of law or some personal complex, do much injustice to motorists, both the guilty and the innocent. Usually the magistrate is elected or appointed to office and some of these magistrates have no training or experience in the law. I am of the opinion that if newly elected or appointed magistrates were required by law either to possess certain qualifications or pass an examination, more justice and respect for law as it is administered in the lower courts would result.

In all fairness it must be remembered that motorists have probably as much right to elect just what laws they intend to obey as officials to elect what laws they intend to enforce. There is a crying need today for motor laws that are tempered with humanity and sanity, and which will be respected and may be enforced equitably.

Again, there does not seem to be enough uniformity in the penalties that are imposed by magistrates. In our experience, the fines assessed for similar violations throughout the state may run from \$2 to \$100, according to the magistrate. The fact that the magistrate is given a wide range of discretion in the imposition of penalties is one reason for this wide variation. The average fine imposed upon a reckless driver by thousands of magistrates who hear the cases is very low, considering the terrible menace this type of driver is to public safety.

I think it would be a very good thing for the police to conduct equipment inspection campaigns within their various communities, because many very serious accidents are traceable to the mechanical condition of vehicles. Brakes, lights, horns, mirrors, etc. can be inspected by them at intervals. The moral effect of these inspections would produce repairs to vehicles which, without such a reminder, would be left unnoticed. State authorities conduct these inspections in many states, but the territory covered by them is so vast that they cannot cover a given city or town as thoroughly or as frequently as they might like to do.

The final feature of this session was a demonstration of a training school session, by representatives of the Metropolitan Police Department of Washington, to illustrate the "Organization and Training of a Traffic Force." Inspector Ernest W. Brown first announced that all the men of the Metropolitan Police Department are requested to attend this course of training for a period of three months, and that the school is conducted by Captain B. A. Lamb.

Captain Lamb then described the various subjects taught in the school, giving special emphasis to Signals, Traffic Laws, Geography, Code of Laws on Crime, Investigations, Nature of Crimes, Crime Identifications, Taking of Confessions, Extracts of Crimes, Homicides, Pistol Care and Practice, Court Procedure, Fire Prevention, Enforcement of the Narcotic Act, etc.

THURSDAY AFTERNOON SESSION

October 6, 1932

The second session for the consideration of problems of police officials convened with General Charles D. Gaither, Commissioner of Police, Baltimore, presiding.

Problems of Public Relations

By DR. F. R. GOMILA

Commissioner of Public Safety, New Orleans

The speaker said in part: The problem of keeping public support is one of the most delicate and perplexing problems associated with traffic control today. The desired support can be secured best by a continued and diplomatically sustained process of education. The press, almost without exception, may be relied upon to advocate the general policies of safety. It is unfortunate, however, that some few papers fall into the error of launching criticism against some particular phase of safety regulations without taking pains to learn the whys and wherefores which have justified the measure. In a few instances, responsible editors have been led into taking sides with critics who agitate against such regulations because of their own selfish business interests. It should, however, at all times be borne in mind that properly devised safety regulations are intended for protection of the general public even though, in some limited instances, these regulations may appear to bear down upon the privilege, real or imaginary, of the few.

It is equally vital that, before regulations are put into effect, various civic organizations which are concerned with the business and social progress of the community should be consulted, so that no unfair regulations may be imposed upon any large part of the citizenry without opportunity for discussion. Having prepared the minds of the public for regulations covering safety, it is necessary to constantly appeal to the public by persuasive explanation so that each citizen may be aroused to a keen degree of safety consciousness. This can best be accomplished by discussing safety matters before groups of citizens in all walks of life, and in this program the radio can be very important. No educational campaign of this kind can be successful without a high degree of cooperation between all civic organizations, the press and a thoroughly trained and efficient police traffic department. In this cooperation, a most important part can be taken by the local safety council.

Another serious problem is found in meeting public demands. These demands today, as you know, are numerous; however, the general trend is toward a safe and expeditious movement of traffic, reasonable parking limitations and a courteous well trained police traffic department, capable of following a course of instruction rather than the customary raw tactics of enforcement. With this in mind, the motorized public should be induced by allowing a higher rate of speed to use boulevards and thoroughfares which have a right of way over all intersecting streets. Special efforts should also be made to handle the parking problem and provide, if necessary, adequate spaces where vehicles may be left for lengthy periods, if the parking rules require that they be kept off of main thoroughfares.

The streets of the city of New Orleans are unusually narrow and while we fully realize it is necessary to the proper operation of business that parking be permitted, we have carefully studied the facilities available and recently changed our parking regulations. We now permit 30-minute parking in the more congested areas, one hour in the less congested, and two hours in the territory bordering the entire commercial district. In addition, during morning and evening peak hours, parking is prohibited from both sides of the narrow streets and on one side of those with even greater widths.

Another important public demand is that of courtesy and efficiency on the part of traffic officers. The police assigned to the regulation of street traffic should be of a high caliber and thoroughly trained for their special work with the public. Recently we have installed in New Orleans a special course for those officers attached to traffic, and it is hoped that through this medium we will better meet the demands of the public by a more efficient handling of the problems that daily confront the police department.

The problem of handling the traffic law violator is still a peculiar one. In former years and before the introduction of motor vehicles in our everyday life, the great proportion of the public rarely, if ever, came in contact with the enforcement agencies of the Government; those who did were usually habitual offenders and of an undesirable type. Today there are few that can say they have never violated some traffic regulation and are not subject to arrest and to some form of punishment. With the great mass of offenders against our traffic laws, therefore, it is most important that a campaign of education be carried on to secure their ultimate aid and cooperation in law enforcement.

On the other hand, where serious violations of the law seem to have been intentional, where motorists have flagrantly committed major violations, such as excessive speeding, reckless driving, disregarding automatic traffic signals and through stop signs, endangering the passengers from stationary street cars, or driving while intoxicated, these should be sternly dealt with by arrest and trial before a competent court where fitting punishment may be inflicted. However, in all our dealings with the violator, regardless of the character of his offense, a spirit of education in traffic rules should have an important place in the enforcing department's methods. The modern motorist must be taught a deeper sense of responsibility for the welfare of others on the streets and highways and we must all help him to come to a fuller realization that regulations are primarily intended to promote the safety of himself and everyone else in the community.

Discussion: The belief was strongly expressed that courtesy by the police department is being overworked in some cities and some minor offenses are causing as serious accidents as the drunken driver. The use of courtesy cards for visitors should be discouraged, as they come into the cities and often do as they please, feeling they will not be penalized.

Enforcement and Accidents

By FRANKLIN M. KREML

Director, Accident Prevention Bureau, Evanston Police Department,
Evanston, Illinois.

Mr. Kreml reported on the results of the National Traffic Law Enforcement Demonstration. He said that his report was preliminary because there had not yet been time for compiling and studying completely the results of the demonstration.

The participating cities were asked to engage in a program of "selective and vigorous" traffic law enforcement, with emphasis on the violations that were most commonly involved in accidents and the locations where these most commonly occurred. At the end of September, these cities were asked to report the number of arrests and convictions by important violations, and to report personal injury and property damage accidents by months for the first nine months of 1931 and 1932. The anticipated number of arrests, convictions, and accidents for September 1932 was computed for each of the cities and the actual experience during the month in each case was compared with these anticipated figures which had been based upon the experience for the first nine months of 1931 and the first eight months of 1932.

Of the 56 cities enrolled in the demonstration, 30 reported in a manner that permitted them to be tabulated and studied. Some of the others were unable to report certain parts of the information required, and still others were unable to report at all on a basis that would permit of tabulation with the group of cities that had been able actually to engage in the demonstration.

THURSDAY AFTERNOON SESSION

October 6, 1932

This session was a joint meeting with the Institute of Traffic Engineers. Burton W. Marsh, Traffic Engineer of the city of Philadelphia, acted as chairman, introducing the first speaker.

Traffic Accident Indexes

By CHESTER C. FISK

Assistant City Engineer, Berkeley, California

The speaker said in part: One of the basic factors in any study of accident conditions is a quantitative determination of the hazards which exist at any given point, or within any given area. Hence, before a comprehensive study of the accident hazard to automobile traffic can be conducted, there must be available certain basic units to serve as measuring sticks for the amount of hazard in each given case. Such a unit may be termed the "accident hazard index" for that point or area. Some of the uses of a definite and dependable accident hazard index are as follows:

- (1) It will replace guesswork by an analysis of conditions.
- (2) It will indicate the degree of hazard existing within any given area.
- (3) It will facilitate the comparison of conditions affecting accident hazards at various points.
- (4) It will serve as a valuable guide in installation or removal of traffic signals.
- (5) It will furnish the essential data for public information and for a public safety campaign.

A joint study is now being conducted by the city of Berkeley and the University of California to determine the various accident hazard indexes now in use. Data were obtained by means of questionnaires mailed to each member of the Institute of Traffic Engineers, and the police chiefs of two or more of the principal cities of each state inquiring as to methods of accident hazard measurements which have proved desirable and practicable.

Some plan of grouping the various types of accident indexes is essential. A classification may be made on the basis of the area within which the hazard is to be measured. For example, the index may apply to (1) a street intersection, (2) a street or portion thereof, (3) a city or district within a city, (4) a state or other political subdivision larger than a city.

Unfortunately, an accident hazard index which properly applies to one of the above classes does not usually apply with equal accuracy to others. This is due largely to the many variable factors which contribute to accident hazards, and to the shifting of the importance of these factors between areas of different sizes. It is also true that certain types of information are available for an area of one size, and not for those of other sizes.

The first group of accident indexes has to do with accident hazard measurement at street intersections. Six such units will be discussed briefly in the following paragraphs.

- (1) *Spot Map or Pin Map.* A spot map which indicates the location of traffic

accidents by dots or pins is usually maintained by the police department of each city. The different types of accidents are often designated by the use of different colored pins or spots and the number of pins or spots which appear on the map at any given intersection is a measure of the hazards existing at that point. This measure does not consider any of the factors which influence accidents but it indicates at a glance the number and type of accidents which have occurred at any point within the city.

(2) *Card Index of Accidents.* A card index system of accident records is maintained by most cities. The card ordinarily contains all available information concerning each individual accident and is an integral part of an accident record system.

(3) *Intersection Accounting by Insurance Claims Evaluated.* It has been suggested that a method of intersection accident accounting be used to measure the actual hazards at any given street intersection. Under this plan, insurance claims would be evaluated and the amount of loss would indicate the amount of hazards. Some arbitrary system would have to be established for fatal accidents. A record card would be kept for each intersection and colored tabs showing the amount of damage would reveal at a glance those street intersections at which the heaviest losses were occurring.

(4) *Accidents per Thousand Vehicles Intersecting the Line of 1,000 Pedestrians.* The amount of accident hazard at any street intersection cannot be measured in its entirety unless consideration is given to the volumes of both vehicular and pedestrian traffic. Accordingly, an index has been developed which expresses the accident hazard in terms of accidents per thousand vehicles intersecting a stream of 1,000 pedestrians.

(5) *Approach Speeds.* The greater the speed at which a vehicle approaches an intersection, the greater will be the potential accident hazard, particularly when the visibility is limited. Under this method, the safe approach speed for any given intersection is determined after consideration of its various physical characteristics. Signs indicating the safe approach speed are posted at various intersection approaches and an educational campaign is conducted to inform the public and encourage obedience to the signs.

(6) *Accidents per Million Vehicles per Year.* The volume of traffic must be considered in determining the accident hazard at any given point. At intersection "A" 1,000 vehicles pass per day, whereas, at intersection "B" 10,000 vehicles pass. A spot map indicates that during the past year 10 accidents have occurred at each intersection and the inference is that both intersections are equally hazardous. However, intersection "A" has an accident rate of 1 per 100, while intersection "B" has a rate of 1 per 1,000. These figures indicate that the hazard at intersection "A" is at times as great as that at intersection "B." An index figure has been developed which relates the number of accidents at any intersection to vehicular traffic volume, expressed as the number of accidents per million vehicles per year.

The above indexes measure the amount of hazard which actually exists at any given street intersection, but they do not indicate the amount of exposure to hazards which may exist. An index which will consider the volume of both vehicular and pedestrian traffic, the width of streets, conflicting traffic movements within intersection, and the composite speed of the vehicular traffic, is being developed by the city of Berkeley.

The second group of accident indexes measures the accident hazard along streets or portions of streets. The unit of this type that has been found measures the number of accidents which occur per million vehicles per mile of street per year. The traffic volume is determined by averaging the traffic flow on the street as measured by traffic counts made at intervals along the street.

The next group of accident index units consists of those which are applicable to a city as a whole.

(1) *Deaths per 100,000 Population.* This unit establishes a ratio between auto-

cides and the population of the city. Only those accidents involving fatalities are considered. It is used by the U. S. Census Bureau, insurance companies, the National Safety Council, and others.

(2) *Deaths per 100,000 Registered Vehicles.* This method relates accident fatalities to the automobile registration. It has been used frequently for special studies and investigations in localities where the information was available. Both this unit and unit number 1 above are influenced in some cases by residential suburbs adjacent to the city under consideration.

(3) *Accidents per 100,000 Population.* This unit relates total accidents to population. One advantage of this unit lies in the consideration given to all accidents rather than to the limited number involving fatalities. This index will have a somewhat limited scope, as many cities record only accidents involving injuries.

(4) *Accidents per 100,000 Registered Vehicles.* This index relates total accidents to registered vehicles. In comparison with Number 2 above, it possesses the advantage of considering all accidents, but would be applicable only where records of all accidents are kept.

(5) *Accidents per Million Population per Registered Vehicle.* This index relates the number of accidents between the population and registered vehicles.

(6) *Location of Accidents by Zones.* Under this system, the total number of accidents in each zone serves as the index figure. This method of measurement may be applied to a portion of the city as well as to the whole.

(7) *The Community Coefficient.* This coefficient is developed by weighting a series of factors which may contribute to accidents, such as general climatic conditions, traffic control facilities, the character, maintenance, and width of streets, and the illumination of streets at night. This plan permits consideration of most of the pertinent factors, such as a difference of opinion as to what the pertinent factors are, the method of evaluating them, and the complicated procedure necessary to develop such a unit properly in each community.

(8) *Ratio of Accidents to Registered Vehicles, Street Use and Population.* This index establishes by arithmetical means the ratio between the above mentioned factors. An advantage is the consideration of several of the prime factors contributing to accidents.

(9) *Insurance Claims Evaluated.* In this method the amount of damage claims paid by insurance companies for personal injury and property damage is determined for each accident. The total claims paid in any city are added and the cost per capita of this accident loss serves as a measure of the existing hazards. It is necessary to place an arbitrary figure on the value of human life in fatalities.

(10) *Population Density.* The accident rate commonly is proportional to the population density. This type of measurement is of value in comparing one city with another. City planning and motor vehicle legislation have destroyed the balance between accident rates and population density.

(11) *Accidents per 1,000 Population, per 1,000 Automobiles, per Mile of Street.* An index number may be computed by giving a weight of 33 1/3 per cent to each of these factors: (a) accidents per 1,000 population; (b) per 1,000 automobiles; and (c) per mile of streets. The index number for the "standard city," representing average conditions, is taken as 100.

The fourth group of accident hazard indexes consists of those which are applicable to states and large political subdivisions made up of the following:

(1) *Deaths per 100,000 Population.* This index is the same as Number 1 discussed above for cities. It seems particularly adapted to comparison of large political areas.

(2) *Deaths per 10,000 Registered Vehicles.* This unit is the same as Number 2 for cities. It is equally valuable for measuring accident hazards in states or other large political subdivisions.

(3) *Accidents per 10,000,000 Gallons of Gasoline Consumed.* Relating the accidents to the gasoline consumption gives some measure of the actual use of streets

and highways by motor vehicles. There is some variation in the gasoline consumption of various types and ages of automobiles and trucks, but it is believed that these variations will be practically the same for different large political subdivisions. This would not be true, however, in comparing figures year by year.

(4) In addition, indexes numbered 3, 4, 5, and 9 mentioned under Group 3, "Accident Hazard Indexes for City or Districts Within a City," can be applied to state and other large political areas.

A Suggested Method of Comparing Accident Statistics

By T. T. McCROSKEY

Planning Director, Yonkers, N. Y.

The speaker said in part: It has been customary to compare the traffic accident hazards of different municipalities or states by the number of accidents per 1,000 population, per 1,000 cars, per mile of public streets, or per square mile of area. As local conditions vary greatly, no one of these methods is entirely satisfactory if used alone, and the use of several indexes independently is apt to be confusing.

The writer believes that the traffic engineering profession and the general public need a more satisfactory yardstick for comparing accident records. To meet this need, a composite index is proposed based on accidents per thousand population, per 1,000 cars, and per mile of streets, giving all these factors equal weight. Accidents per square mile of area have not been included because it is seldom a reliable index.

The proposed index is obtained in the following manner. Assume a "standard city" having the following accident record: Accidents per thousand population, 10; accidents per thousand cars, 100; accidents per mile of streets, 10. Each of these three factors is given a weight of 33.3 per cent. The composite index number for the "standard city" is, then, 100, obtained by the summation of

$$\left(10 \times \frac{33.3}{10}\right) + \left(100 \times \frac{33.3}{100}\right) + \left(10 \times \frac{33.3}{10}\right) = 100$$

In general terms, the composite index may be expressed as shown in the table given below:

$$\begin{aligned} T &= \text{Number of traffic accidents} \\ P &= \text{Population} \\ R &= \text{Motor Vehicle Registration} \\ S &= \text{Miles of street} \\ p &= \frac{1000T}{P} \text{ (Accidents per 1000 population)} \\ r &= \frac{1000T}{R} \text{ (Accidents per 1000 registration)} \\ d &= \frac{T}{S} \text{ (Accidents per mile of street)} \\ p_s &= \text{Value of } p \text{ for standard city} \\ r_s &= \text{Value of } r \text{ for standard city} \\ s_s &= \text{Value of } s \text{ for standard city} \\ I &= \text{Composite Index} \\ I &= \left(\frac{p \times 33.3}{p_s}\right) + \left(\frac{r \times 33.3}{r_s}\right) + \left(\frac{s \times 33.3}{s_s}\right) \end{aligned}$$

The "standard city" values for accidents per 1,000 population, accidents per 1,000 registrations, and accidents per mile of streets were selected as representative of typical conditions better than the prevailing average of a few years ago. Several tests showed that these constants may be altered within reasonable limits, without

substantially affecting the ratios of the resulting index numbers for two or more normal cities.

For fatal accidents, the "standard city" has been given the following record: fatal accidents per 100,000 population—10; fatal accidents per 100,000 registrations—100; fatal accidents per 100 miles of streets—10. Each term is one one-hundredth of the corresponding term assumed for analyzing the record of all accidents.

Reliable figures for street and highway mileage are not always readily obtainable, particularly in the case of large areas. The composite index method may still be applied by reducing it to a two-fold basis, index numbers being calculated from $\frac{\text{Accidents}}{\text{Population}}$ and $\frac{\text{Accidents}}{\text{Registration}}$ only, giving each factor the weight of 50 per cent, instead of 33.3 per cent.

Comparison of large areas with small areas and dense areas with sparse areas is always apt to lead to erroneous conclusions. In the composite index, the attempt has been made to eliminate this error as far as possible, by including the principal variables that produce it.

Discussion

The chairman requested discussion of the last two papers by Messrs. Maxwell N. Halsey, Traffic Engineer, National Bureau of Casualty & Surety Underwriters, New York City and Earl J. Reeder, Traffic Engineer, National Safety Council, Chicago.

Maxwell N. Halsey spoke in part as follows: It is my feeling that this subject will have to be finally confined to states and counties; first, because in many cities it will be next to impossible to get the number of registered automobiles, and secondly, there is no division between the number of people who live in cities and those who live just outside in the suburbs.

The whole subject of traffic accident indexes and costs is most important and should be pushed, but it is my feeling that insurance company costs are a poor measure of actual hazards. We should also consider the serviceability of the methods, because if the index is too complicated it will discourage the collection of facts.

Earl J. Reeder said in part: I cannot quite share the enthusiasm and optimism that the author has shown for the success of this type of system for rating accidents in different cities. Consider primarily the sources of the data which he intends to use. Information gathered by the Committee on Enforcement of the Street and Highway Section of the National Safety Council from 30 cities shows a great variety of reporting, which would seem to have a bearing on this discussion.

Mr. McCroskey's process depends upon the reporting of all kinds of accidents upon a similar basis; upon cities reporting to a similar degree the personal injury, property damage and fatal accidents, if all are to be used. Schenectady, New York, and Berkeley have laws making the reporting of personal injury accidents compulsory, while no property damage reports are required for these two cities. Grand Rapids on the other hand, reports all accidents, showing seven property damage accidents to one personal injury; Evanston shows four to one; and Baltimore two to one. In Elizabeth, reports of accidents with a loss above \$25 are required while in Erie, the limit is \$50; yet they have almost exactly the same ratio between property damage and personal injury accidents.

There is not now, and never has been, any uniformity in reporting accidents. It was said that the suggested plan would encourage the reporting of accidents uniformly in all parts of the country. Grand Rapids, for example, would then show a lower ratio. I cannot see how, if we were to attempt to use the total number of accidents in the formulation of a rating system for cities, we could encourage Grand Rapids to do any better reporting, particularly if it were to be discovered that some other cities were reporting fewer property damage accidents. This method seems to penalize good reporting, rather than stimulate it.

One difficulty in the application of this rating system is the getting together of

information on the number of motor vehicles in any community. Relatively few cities can tell the actual registrations of motor vehicles within the city. Few states divide their registrations among cities. Perhaps it could be obtained if we could get the assistance of state departments.

What We May Expect As the Future of Traffic Accidents

By SIDNEY J. WILLIAMS

Director, Public Safety Division, National Safety Council

The speaker said in part: The future of traffic accidents, will depend entirely on how hard we try to prevent them. If the present indifference of millions of drivers and the present inertia of thousands of public officials are to continue, our annual death toll will reach 50,000 within a few years. If, on the other hand, we are able to achieve even moderate progress in adopting remedies of proven value, we can make the 33,000 mark of 1931 an all time "high."

The motor vehicle death rate per 100,000 population has steadily increased with the increasing number and use of motor vehicles, up to this year. The same death rate in terms of vehicle registration showed a steady decrease to 1926 and an increase since then. There is a remarkable coincidence between this recent rise in the vehicle death rate and the constant increase during the same period in the speeds and power of these vehicles, especially private passenger cars.

These figures indicate that with normal business activity and especially with any further increase in number and use of motor vehicles, the number of deaths will continue to increase indefinitely, if something is not done about it.

But these national totals give us no clear picture of what is going on in all the various states and cities of the country. Outside of two or three states, there were no data for any real analysis of traffic accidents before 1927 when the National Safety Council began to receive a sufficient volume of state and city reports based on its standard system. Since then, however, a growing volume of such reports enables us to compute the distribution of different types of accidents, and the year to year trends for identical areas.

In these four years there has been only a 5 per cent increase in the pedestrian deaths, and no increase in collisions with steam or electric trains or cars. There was, however, a 59 per cent increase in collisions with other motor vehicles, or with fixed objects, and non-collision accidents such as running off the road and overturning. The conclusion is plain, that pedestrians are learning to keep out of the way; that the campaign against grade crossing accidents has impressed upon drivers the futility of arguing with a locomotive; but that the same drivers have not learned to avoid collisions on the highway. Again, it is significant that this latter type of accidents is often associated with high speed. At lower speeds many of these accidents might have taken place but would not have resulted fatally.

If these conditions continue, we may expect a relative and possibly an absolute decline in the pedestrian and grade crossing deaths, and a further increase in vehicle collisions and non-collision accidents.

The same data may be broken down as to the age of the victim. The pre-school children, under five years, showed a small decrease; the school children, five to fourteen, showed a 20 per cent decrease; the group above fifteen showed a 34 per cent increase. It is clear that the children have learned their safety lesson much better than the rest of us have. If this condition continues, we may expect a further divergence between the child and adult death rates.

Another striking contrast is found in comparing commercial and private drivers. In four years there was actually a decrease of 12 per cent in the number of trucks, bus and taxicab drivers involved in fatal accidents, against an increase of 50 per cent in the number of private drivers so involved. The best of the commercial fleets must

have done a great deal better than this average, in order to balance the increase that undoubtedly occurred among the smaller fleets where there was no particular effort. Again, we may expect this trend to continue under the same conditions.

These figures show clearly that the upward trend in traffic deaths has not been homogeneous but that it consists of several conflicting parts. The parts represented by child pedestrians and by commercial drivers has shown an actual decrease in recent years, but these reductions have been overshadowed by a tremendous increase—at least 50 per cent in four years—of private drivers running into other private drivers, or into adult pedestrians, or running off the roadway. These divergent trends may be expected to continue as long as present conditions continue, by which I mean a continuance of the present serious effort to reduce and control children and commercial drivers, compared with the weaker and very limited efforts to educate and control adult drivers and pedestrians.

Let us look a little further at the adult driver who seems to be the chief offender. Does he represent a homogeneous group with a uniform record? By no means.

First, consider the drivers involved in injury accidents in one year in California, Massachusetts, and Connecticut. The drivers under 20 had twice the accident frequency of those over 40, and the drivers between 20 and 30 were nearly as bad. To complete this general picture, I will mention three other distinct trends. The states with standard drivers' license laws are making a much better showing than the others; the latest revision of our analysis, including the 1930 and 1931 figures, shows a differential of 31 per cent.

Next, the cities generally have shown a smaller increase than have the rural sections; it is difficult to say whether this is due to increased travel in the country, increased speed on rural highways, or better traffic engineering in the cities. Finally, we find better records in those cities that are conducting an organized safety program, including those places that have a well organized local safety council, those entered in the National Traffic Safety Contest, and those where safety is definitely recognized as an essential activity of the city administration.

The motor vehicle fatality list of 1935 or 1940 will depend, then, on many factors; but most of all it will depend upon what we do to educate, supervise and control the driver, especially the young driver, the incompetent driver, and the driver with a bad accident record. The non-fatal injury and property damage accidents will follow about the same course as the fatals.

Improvement will come not through any one panacea but through a combination of all the remedies outlined in the Council's "Balanced Program For Reducing Traffic Accidents." Among the first in importance will be teaching the art of driving to every high school student and every beginning driver; universal adoption of drivers' license laws and constant improvement of their administration; investigation of all accidents and prosecution of violators; and a proper traffic set-up in every state, county and city to insure the intelligent use of traffic control equipment, the engineering study of each hazardous location and the application of the proper physical and other remedies. Even the gradual adoption of such a program may easily bring a reduction of 1,000 deaths per year.

The Legal Rights of Pedestrians

By ARTHUR H. BLANCHARD

Highway Traffic Control Consultant, Providence, R. I.

The speaker said in part: Outside of definite statutory laws, the motorist and pedestrian should give maximum attention to what is commonly designated in court procedure as contributory negligence. A decided factor in some cases is what is termed "last clear chance," which renders a defendant liable even though contributory negligence is proved against the plaintiff. As, for instance: "Where automobilist, in

exercise of proper care, could have seen pedestrian negligently attempting to cross highway from behind bus after alighting therefrom, last clear chance doctrine was applicable, rendering automobilist liable, notwithstanding pedestrian's contributory negligence." The British House of Lords in 1931 re-stated the law on this point as follows: "If, although the plaintiff was negligent, the defendant could have avoided the collision by the exercise of reasonable care, then it is the defendant's failure to take that reasonable care through which the resulting damage was due, and the plaintiff is entitled to recover."

During 1931, 200 persons were killed and 10,320 were injured while crossing at intersections with the "go" signal; while 820 were killed and 38,530 were injured in crossing contrary to the "stop" signal. The following sentences are taken from the records of various accident cases:

"The accident happened at a crossing where pedestrians had a right to be. The semaphore was up to stop traffic and in obedience a number of cars did stop. It was the duty of the driver of the automobile to stop, but it was also the duty of the man crossing to observe, use his eyesight, and if he could see that the defendant was not going to stop, he was not warranted in stepping in front of the moving car. The jury must determine whether or not it was negligence in him to assume the automobile would stop, if it did not stop."

The circumstance often arises where a pedestrian starts to cross a street on the "go" signal and continues to cross on the "stop" signal. In such a case—"A pedestrian has right of way over vehicles at intersection, where, after he has started to cross, traffic signal is turned against him." "A motorist proceeding according to traffic signal is not justified in continuing without permitting pedestrians already on roadway to complete crossing." "At controlled crossings, pedestrians have the right of way along with other traffic moving in observance with the traffic signals. Plaintiffs entered the crossing while the green signal light was displayed, and having committed themselves to the crossing, they had the right of way until they could reach the opposite curb."

On the other hand, sometimes the pedestrian starts to cross against the "stop" signal. "Where a motorist enters an intersection on a proper signal, such as a green or go signal, he has a right to assume that the signals are understood and will be observed, and he is not required to anticipate that pedestrians will violate the traffic rules and enter the crossing on the wrong signal."

During 1931, 1,810 persons were killed and 47,260 were injured while crossing at uncontrolled intersections. "The rights of pedestrians and vehicles at public crossings are equal; each must exercise care according to the circumstances. True, more care is required of pedestrians between crossings, and of automobiles at crossings; yet each must observe ordinary care at all times. Where, however, a pedestrian without negligence on his part, has committed himself to the crossing, he has the superior right of way as against a vehicle thereafter approaching. While a chauffeur at public crossings must have his car under such control as to be able to stop on the shortest possible notice, he is not required to drive so he can stop instantly." "Mere failure of a pedestrian to look and listen for approaching vehicles as he passes over a cross walk at the junction of two streets, is not necessarily negligence on his part, if he is run over."

In 1931, 3,920 persons were killed and 7,260 were injured while crossing roadways of streets between the intersections. "The Pennsylvania Court holds a pedestrian starting to cross the street has no duty to stop but he must look and listen to ascertain if vehicles are coming. He must further be on his guard after he starts across the street and must continue on the alert while crossing the entire roadway." "The plaintiff is negligent in stepping into the street looking straight ahead, but he may recover if the defendant had an opportunity in the exercise of due care to avoid him and did not do so."

During 1931, 1,630 persons were killed and 35,330 were injured while coming from behind parked vehicles. "One of the terrors of the careful driver is the optimistic

wayfarer who suddenly bobs out in the middle of the travelled way from behind some other vehicle. However, the decisions are almost uniform that such a thoughtless person has the right to go to the jury, but the jury is more apt to find for the defendant in this than in most cases of accidents to pedestrians, and the more recent cases in the Appellate Court have showed a disposition to recognize the difficulty of the automobilist in this class of cases. A pedestrian who goes between two vehicles and emerges in the line of traffic where his presence could not be seen or anticipated is negligent."

"One alighting from a street car and walking rapidly across in front of it is not necessarily careless in not looking to the left as he is not bound to anticipate a vehicle coming up on the left side of the street."

During 1931, 1,550 children under the age of five years were killed and 27,970 were injured in traffic accidents. "Children of very tender years, such as in law are considered *non-rui juris*, (not in his own right) are not chargeable with contributory negligence by reason of their own conduct." "While children of tender years are incapable of contributory negligence, the negligence of their parents or other legal custodians in permitting them to go at large unattended may be imputed to them, and so defeat an action for their injury or death." "However, the mere fact that a six year old child was playing in the street is not *per se* negligence on the part of his parents, but a question for the jury is presented." "Negligence has been charged against a parent permitting a child of tender years to cross the street unaccompanied."

During 1931, 1,710 children were killed and 49,140 were injured while playing on roadways. "It is a well known fact that children often use the streets, to a certain extent, for purposes of play. A motorist who approaches them thus engaged must exercise care commensurate with the danger involved. He must be on the alert to keep his car under control. It will not do to drive on the assumption that a child will exercise the care to be expected of a person of mature judgment and experience. It is better to proceed on the theory that you can never tell which way a boy will jump."

"It has been held that a pedestrian injured by an automobile which is being driven on the left or wrong side of the public highway is entitled to recover damages."

"Where the undisputed facts were that in clear daylight and with nothing to obstruct his view, the defendant collided with an elderly woman in the middle of a prominent highway, carried her body for 40 feet, ran over her and then proceeded 25 feet farther before stopping his car, the case was for the jury and judgment for plaintiff was sustained."

"A motorist who, in the night-time, overtakes and runs down a pedestrian, traveling, so far as the evidence showed, in the regular course on the right side of the road, without veering to one side or the other, may be found to be negligent." "Where there is no sidewalk, pedestrian's rights upon the paved roadway are equal to those of vehicles."

The question of proper lights on vehicles is an important one. "A regulation relative to lights may be deemed to be for the protection of pedestrians as well as for vehicles, so that a pedestrian injured by an automobile may ground his action on the failure of the driver to have the machine properly equipped with lights." "It appearing that defendant's automobile had in front two dash-lights, enabling the driver to see 10 or 15 feet ahead of the car, and a spot light enabling him to see 23 feet ahead on the right side only, a finding of negligence on account of inadequate lights was held to be justified."

"A public street intersection differs materially from a private crossing such as the passageway over a sidewalk to private premises. A pedestrian is not required to anticipate that a vehicle will attempt to pass over such a crossing without some warning of the attempt, and the failure of the motorist to take precautions for the pedestrian's safety may constitute negligence."

"When it is shown that one traveling upon the portion of the street set apart for

use of vehicles, suddenly and without warning diverts his course and comes upon the sidewalk upon which people are standing, he violates that duty which he owes to those rightfully on the sidewalk, and thus, *prima facie*, becomes involved in negligence. It is not going too far to say that such an act not only involves negligence, but it would have a tendency to show a reckless and wanton disregard to the rights of those upon the sidewalk, and a violation of a palpable duty, which the law enjoins upon every man to so exercise his own rights that he may not, unreasonably or unnecessarily, imperil the safety of others in the exercise of their rights."

Closely analogous to the legal rights of pedestrians are their justifiable rights. In fact, they are almost always interrelated. A recognition of the justifiable rights of pedestrians in highway engineering practice, in the drafting of state motor vehicle laws and municipal traffic ordinances, and in highway traffic control factors, will have numerous beneficial effects, the most important of which is the reduction of the annual toll of pedestrian fatalities and injuries due to traffic accidents.

Although traffic control signal practice has developed rapidly during the past five years, it is found, in retrospect, that the pedestrian has been given scant consideration. He has been confronted in many instances with long intervals of waiting, right and left turns by motorists, and practically instantaneous changes from green to red with the waiting vehicular traffic starting immediately across his path. However, the sun is breaking through the pedestrian's clouds of despair. The cities of Philadelphia and Pittsburgh are now operating "pedestrian clearance intervals" which have been described as follows:

"Pedestrians should be given a definite and adequate clearance interval of appropriate length following the last second at which a pedestrian should start to cross the roadway, so that the pedestrian will be able, by walking at a reasonable rate, to reach—or to come within three or four feet of reaching—the opposite curb before cross traffic starts. The method now in use in Pittsburgh and Philadelphia provides that, at the instant after which a pedestrian should not start to cross the roadway, there appears with the green light an amber light, so that a combination of green and amber shows (during the pedestrian clearance interval)."

Another worthwhile development in the field of signal operation is the "pedestrian actuated" signal, which permits a pedestrian to stop vehicular traffic when he wishes to cross the roadway, by pressing a button, thus bringing into action in a brief interval the red light against all vehicular traffic. It is evident that, in view of the justifiable and legal rights of pedestrians and because of the current attitude of the average motorist toward the pedestrian, signals of this type should be installed at many locations in both urban and rural districts."

Attention is also called to the just claims of pedestrians and of the intelligentsia among motorists that sidewalks should be constructed on sections of rural highways where pedestrians utilize the road and walking on the roadway is hazardous. The opinion is expressed advisedly that legislators and traffic and highway officials and engineers, should adopt and have in mind the justifiable rights of pedestrians on rural highways as well as the demands of the motoring public. Do pedestrian accidents happen on rural highways, and how? It has been estimated that, while walking on and along rural highways throughout the United States, 2,330 persons were killed and 11,800 injured by motorists during 1931. It is interesting, from the point of view of the pedestrian, to note the record in this respect, for example, of the state of Rhode Island. In 1929 three fatalities and 72 injuries occurred; in 1930 four fatalities and 58 injuries occurred; and in 1931 ten fatalities and 29 injuries occurred. But in not a single one of the year's accidents was the pedestrian held to be legally negligent.

To the traffic analyst, who is endeavoring to promote highway safety, the present relationship between the motorist and the pedestrian is chaotic, uncivil and unquestionably unreasonable. When will the grave results of this controversy be mitigated? It is a problem of many angles. Whereas its ideal solution may be found only in Utopia, human endeavor can and has performed miracles.

Education, through respected channels of influence, usually results in marked improvement among the intelligentsia. The achievements of the National Safety Council, through its public safety division, are especially noteworthy. Many American agencies accomplishing notable results might be listed if space allowed. As a further illustration may be cited the admirable advice disseminated by the British Ministry of Transport in 1931 through the medium of its Highway Code issued in accordance with the provisions of the Road Traffic Act, 1930.

"To the drivers of motor vehicles: respect the rights of pedestrians; take special care not to endanger children; remember that you must be prepared to meet pedestrians on your side of the road; when passing or overtaking pedestrians give them plenty of room. And to pedestrians: Before crossing the road look right and left and satisfy yourself that it is safe to cross; look out for approaching traffic and take its speed into account; take special care if you have to step out from behind or in front of vehicles or other obstructions which prevent a clear view of traffic; the use of subways, islands and special crossing places will help you to avoid danger and assist in easy flow of traffic."

The Place of the Street Car in Traffic

By K. M. HOOVER

Superintendent of Traffic, Brooklyn & Queens Transit Corp. and
Brooklyn Bus Corp., Brooklyn

The speaker said in part: The street car, as a factor in traffic, frequently offers some very vexing problems to the traffic planner. The very nature of the vehicle makes its movement diametrically opposed to that of the private automobile. While the motor car is designed for flexible, fast, and continuous movement, the street car operates at relatively low speeds, makes frequent stops to serve patrons and is confined to a fixed path.

Naturally, the greatest traffic problems occur in areas where the congestion is greatest. The real problem in such areas is that of obtaining the most efficient use of street space. The place of the street car in such areas may be illustrated by the following picture of traffic conditions along Livingston Street in Brooklyn:

During an 18-hour period in a section of street approximately 0.6 miles in length, 2,136 trolley cars served 37,000 passengers, 25,000 of whom boarded or alighted within the area; 2,476 taxicabs carried 314 passengers, and 821 automobiles which parked or unloaded at the curb served 1,117 persons, including the drivers. In other words, measured by passengers served per vehicle, the efficiency of the trolley car was approximately 135 times that of the taxicab and 13 times that of the parked automobiles.

Perhaps the greatest loss of time in street car operation is due to synchronous signal systems and to frequent long cycle isolated signals. The retarding effect of these signals, because of their inability to compensate for changing conditions at different intersections, the enormous time lost to cross traffic, their tendency to encourage speeding, and other detrimental effects, are well known to traffic engineers. Their effect upon street car operation is particularly serious. Street car lines operating on close headways, across a series of streets so controlled, cannot possibly maintain proper spacing. In many cases where synchronous signal systems have been installed, scheduled speeds have been reduced from 15 to 20 per cent and have actually become less than the speeds maintained by the horse cars on the same street 40 or 50 years ago.

Short cycle progressive systems carefully timed, together with the installation of traffic by-passes at the heavier loading points, result in the elimination of unnecessary delays, a reduction in accident hazards, continuous movement of free wheel traffic, and a far better average speed for street cars. In congested areas progressive signals

have been found to result in a 30 per cent decrease in the time consumed by cars during peak periods. The progressive system, moreover, due to its valving effect, acts as a spacing control for street cars.

The most aggravating delays and the greatest irregularity to car service are caused by parking and taxi cruising in congested shopping areas. These delays not only interfere with regularity of car operation but are reflected in delays to other traffic. The Fulton street situation in Brooklyn is illustrative of what may be accomplished through proper control of parking and cruising. Prior to the establishment of the present regulations in 1930, this street was literally jammed throughout the day with a maze of street cars, cruising taxicabs, automobiles and trucks, all attempting to thread their way through parked or parking cars. The new regulations, restricting all parking from 7 a. m. to 6 p. m. and prohibiting all taxicab cruising, have been firmly enforced. Street car loading areas protected by markers are located at street intersections at distances of approximately 600 feet. All congestion has disappeared from the street and the time necessary for street cars to travel through the section has been reduced from 10 minutes to 6 minutes. Other traffic moves with no delay other than that caused by the synchronous traffic light system and pedestrian safety has been improved.

The importance of the street car entitles it to consideration only to the extent of its unavoidable limitations. Its importance does not justify unavoidable irregular movements which cause interference with other streams of traffic. Such movements have been rife in street car operation and have not only unnecessarily increased the accident hazards and reduced the efficiency of roadway use for other traffic, but have caused delays to trolley service itself. The use of cross-overs in heavy traffic streets, operation through the center of traffic circles and on the wrong side of the street, are practices which should be discontinued at the earliest opportunity.

In the congested sections of large cities, the demands for street space often exceed the supply during certain periods of the day. It may be said that in such areas the number of street cars per hour passing a given point is determined by the passenger carrying requirements of the different lines. Ordinarily, the substitution of the largest type of single deck bus will require the addition of 20 per cent more transportation units. It is doubtful, in the average case, that 20 per cent more units as large as the present type of large bus, could be maneuvered through a heavily congested street in the same period of time. The street car, in its distinct lane, will negotiate turns with close clearness at intersections, which would not be attempted with a free wheel traffic of comparable size.

The Selection of Pavement Types for Highway Surfaces

By LEROY E. PEABODY

Member, Institute of Traffic Engineers, Alexandria, Va.

The speaker said in part: There are two clearly defined points of view to be considered in connection with the problem of selecting pavement types; first, the point of view of the user of the highway, who realizes as savings (1) the differential in operating costs between high type pavements and those of lower type, plus (2) the differential in highway construction and maintenance costs when a type has been selected which will produce least total cost (of amortized construction and maintenance) over a series of years. Second, one point of view of the administrator faced with almost universal demand for high type pavement and with funds insufficient to meet such demands, who realizes that with limited funds the greater extension of the budget may be made by considering the second factor alone.

With the restriction to this second point of view, the problem may be succinctly stated as follows: What are the traffic limits within which each type of service can be built with the least total expense—annual maintenance plus construction costs amortized over the life of the surface?

Costs of maintaining a highway which vary with the volume of traffic are nearly all confined to the surface. Age and weather have a part in wearing out the surface but, except under unusual conditions, much of the expense of maintenance and replacement of the surface results from the pounding of traffic. Other costs given the accounting classification of maintenance, such as tree planting, sodding, signs, guardrail and other structures, do not vary appreciably with the amount of traffic upon the highway and have little relation to it. In the following discussion, designed to set up a method for answering the questions stated above, surface maintenance costs only have been considered.

An exhaustive study covering 118 projects, and more than 400 miles of highway over a period of from four to ten years, was distributed among surface types as shown in the tabulation below.

Bituminous macadam, 180 miles, 49 samples.

Portland cement concrete, 119 miles, 34 samples.

Reinforced concrete, 115 miles, 35 samples.

All samples were taken from highways 16 feet in width, and in every instance accurate traffic data upon an annual basis was available.

The first comparison of costs between types was made by securing average maintenance expenditures per mile for sections with traffic above 1,000 motor vehicles per day and for sections with traffic of less than 1,000 motor vehicles per day with the following results:

Traffic Under 1,000 Motor Vehicles

Type	Miles	Average surface maintenance per mile per year	Average traffic per mile per day
Bituminous macadam	86	\$282.00	554
Portland cement concrete.....	46	112.00	600
Reinforced concrete	67	97.00	322

Traffic Over 1,000 Motor Vehicles

Bituminous macadam	94	\$564.00	1,684
Portland cement concrete.....	73	147.00	1,637
Reinforced concrete	48	112.00	1,918

There are certain general conclusions of significance which may be drawn from this tabulation:

(1) Bituminous macadam costs are considerably higher than concrete costs in both traffic groups.

(2) The differential between bituminous macadam and concrete increases very sharply in the higher traffic groups.

(3) Costs per mile for all three types are higher in the higher traffic groups.

The distribution of mileage between types in each of the traffic groups is good—about equal for bituminous macadam; greater mileage in the higher traffic group for plain concrete; greater mileage in the lower traffic group for reinforced concrete.

FRIDAY MORNING SESSION

October 7, 1932

This session was a joint meeting held in cooperation with the Executive Committee of the National Conference on Street and Highway Safety. Colonel A. B. Barber, Director, National Conference on Street and Highway Safety, presided as chairman. The general subject under discussion was "Uniform Traffic Laws." Chairman Barber discussed briefly the progress made to date in the adoption of uniform vehicle codes.

He stated that as a means of visualizing the progress he had considered the adoption of any one of the four acts of the Uniform Vehicle Code, or the revision of existing laws into substantial harmony with such acts, as a unit of progress. In view of the fact that when the Uniform Vehicle Code was first developed nine states and the District of Columbia already had in effect a drivers' license law with examination, and fifteen states had a certificate of title law, he assumed as a starting point 25 units in a possible total of 196. Beginning in 1926, when the state of Virginia virtually adopted the rough draft of Act IV—the Uniform Act Regulating Traffic on Highways—before it was completed, the records show one unit of progress in 1926, 21 in 1927, 4 in 1928, 15 in 1929, 2 in 1930, 13 in 1931, and 2 in 1932, making a total of 58 since the adoption of the Uniform Code and 83 now in effect. "Thus," stated Colonel Barber, "it is seen that the country is 42 per cent on the way toward complete uniformity as to state motor vehicle laws."

"There are two particularly pleasing characteristics of the action in 1931," he continued, "the last year in which most of the legislatures met. One of these is that the drivers' license with examination has broken into several states in the middle west, Iowa, Kansas, Nebraska and Colorado, where heretofore all such proposed legislation had failed. The other is that the laws based on the Code passed during the past two years have followed the language of the Code much more closely than the earlier years. We look upon this as an indication that the Code is standing the test of experience and that the groups sponsoring it in the various states are coming to realize this fact."

"One other noteworthy development is the shift of predominant interest. Prior to 1930, Act IV, the Uniform Act Regulating Traffic on Highways, figured most prominently in the bills before the legislatures. During the past three years, however, the drivers' license law has come more prominently to the front. At the same time, the accident records are rolling up more and more convincing proof that a standard drivers' license law with mandatory examination of new drivers materially improves the accident situation as compared with that of the country as a whole."

Colonel Barber then directed attention to the explanatory pamphlet recently developed at the headquarters of the Conference to meet the frequent demand for such a pamphlet for the use of those sponsoring uniform legislation. He called particular attention to the maps showing the progress to date in the adoption of the various acts. He also stressed the importance of the fact that the Code had been approved by the National Conference of Commissioners on Uniform State Laws and the American Bar Association.

Discussion

A. R. McConnell, Manager, Auto Club, and Secretary of the Public Safety Council, Canton, Ohio, stated that the situation in Ohio had been difficult during several legislative sessions. The automobile clubs had sponsored various bills, but they were defeated by the rural districts. The 16-year age limit had proved a particular obstacle. Labor had also objected to the highway patrol provisions. Mr. McConnell expressed a belief that there was a better chance, however, for the passage of the license law at the next session of the legislature.

Colonel M. J. McCombs, Manager, Engineering Department, Employers' Casualty Company, Dallas, Texas, stated that continuous effort had been made to secure a Drivers' License Law in Texas during the past eight years. One of the chief obstacles was the objection in rural districts to the age limit, the farmers insisting that their children should be permitted to drive motor vehicles on errands while the adults were looking after the more arduous farm work. Whenever bills were introduced in the legislature based on the uniform code, they had been so modified by riders and amendments as to destroy their effectiveness. Colonel McCombs asked Commissioner Frazier whether, in his judgment, a compulsory insurance or financial responsibility bill was preferable.

Commissioner Frazier explained that Virginia has a safety responsibility law under which the licenses and vehicle registrations of persons against whom judgments for accidents have been obtained, are suspended for 12 months, after which they may be restored if the offender satisfies the vehicle commissioner that he has made every reasonable effort to pay the judgment and if he takes out insurance or files a bond.

With reference to the obstacle of the age limit, Chairman Barber invited attention to the second paragraph on page 26 of the explanatory pamphlet previously referred to. This paragraph reads as follows:

"From rural sections has come the objection that the minimum age limit of 16 years in the standard law would impose a hardship on children in those sections by depriving them of the right to drive to and from the local school or village. This objection is met by lower age limits or day-time junior licenses good only in limited areas. Applicants for these junior licenses would be required to pass the examination provided for all new drivers and the Standard Act requires further that such application must be signed by the parent, guardian or employer."

Sidney J. Williams, Director, Public Safety Division, National Safety Council, Chicago, expressed a belief that the age limit adopted in any state is relatively unimportant. He pointed out that it is always possible to raise the limit if the accident record indicates it to be desirable.

Colonel McCombs thought the chief difficulty was not in determining the safe age at which minors might be licensed to operate motor vehicles, but in apprehending juvenile offenders. He pointed out that such offenders are not ordinarily taken into the regular courts but are taken to the juvenile courts where much lighter penalties are imposed. The same difficulty is noted in Michigan where the age limit is 14; the juvenile courts do not accomplish the desired results in keeping these dangerous youngsters from the wheels of automobiles.

Commissioner Frazier pointed out that as a further precaution the Virginia law, with an age limit of 14, went into effect and adult drivers of sufficient experience, no physical defects and no bad accident records, were automatically granted licenses. The law provided that all candidates under sixteen must be examined whatever their previous history.

Chairman Barber and Mr. Williams both expressed a belief that a strong centralized motor vehicle administration and proper enforcement machinery will go a long way in protecting the public against these difficulties.

Report of the Committee on Uniformity

By HAROLD G. HOFFMAN

Commissioner of Motor Vehicles of New Jersey, Trenton

The status of state motor vehicle laws, as of May 25, 1932, may best be comprised by a listing of the states under various general classification heads.

First, under states whose motor vehicle laws are substantially in harmony with the Uniform Vehicle Code, the following may be listed:

(a) Uniform registration acts: Arizona, 1927; Colorado, 1931; Delaware, 1929; Idaho, 1927; Louisiana, 1928; New Mexico, 1929; North Carolina, 1927; North Dakota, 1927; Pennsylvania, 1927; Virginia, 1926.

(b) Uniform certificate of title and anti-theft act: Arizona, 1927; Delaware, 1929; District of Columbia, 1932; Idaho, 1927; Nevada, 1929; New Mexico, 1929; North Dakota, 1927; Pennsylvania, 1927; Virginia, 1928.

(c) Uniform operators and chauffeurs license act: Arizona, 1927; Colorado, 1931; Delaware, 1929; Iowa, 1931; Kansas, 1931; Michigan, 1931; Nebraska, 1929;

Oregon, 1931; Pennsylvania, 1927; South Carolina, 1930; Virginia, 1932; West Virginia, 1930.

(d) Uniform act regulating operation of vehicles on highways: Arizona, 1927; California, 1931; Colorado, 1931; Delaware, 1929; Idaho, 1927; Louisiana, 1928; Michigan, 1927; Minnesota, 1927; Nebraska, 1931; New Mexico, 1929; North Carolina, 1927; North Dakota, 1927; Oregon, 1931; Pennsylvania, 1927; South Dakota, 1929; Utah, 1931; Virginia, 1926; Wisconsin, 1929.

(e) Model ordinance rules included in state laws: New Jersey, 1928; Wisconsin, 1929.

Second, states which have made some changes in their laws toward conformity with the uniform vehicle code are as follows:

(a) Uniform registration act: Nevada, 1931; Oregon, 1929.

(b) Uniform certificates of title and anti-theft act: Oregon, 1929.

(c) Uniform operators and chauffeurs license act: Indiana, 1929; Nevada, 1931; Wisconsin, 1927.

(d) Uniform act regulating operations of vehicles on highways: Maine, 1929; New Hampshire, 1927; New Jersey, 1928; Washington, 1927.

(e) Model ordinance rules included in state laws: Connecticut, 1929; New York, 1929.

Third, states which previously had laws providing for certificate of title or ownership and or operator's license with mandatory explanation, are as follows:

(a) All states have some form of registration laws.

(b) Uniform certificates of title and anti-theft act: Colorado, California, Florida, Georgia, Indiana, Maryland, Michigan, Missouri, Montana, North Carolina, Oklahoma, South Dakota, Utah, West Virginia, Wisconsin.

(c) Uniform operators and chauffeurs license act: California, Connecticut, District of Columbia, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, Vermont.

(d) All states have some form of rules of the road and equipment requirement laws.

How the Model Traffic Ordinance Has Stood the Test

By GEORGE VRUGGINK

Secretary, American Commonwealth Power Corporation, Grand Rapids, Mich.

The speaker said in part: The model traffic ordinance promulgated by the National Conference on Street and Highway Safety had its inception in 1928. It was adopted by the city of Grand Rapids, Michigan, in August, 1928, passing the city commission without a dissenting vote. In order to remove the ordinance as a political football, a commission was formed to be known as the Traffic Commission of the city of Grand Rapids, the personnel of this committee being the chief of police, city manager, one city commissioner, and three citizens who served without compensation. This commission has the power to call upon all departments, such as the city attorney's office to pass upon legislative matters, and the engineering department to pass on engineering problems. Through this commission, traffic matters are judged on their merit and are free from political interference.

The model traffic ordinance has now been in force more than four years. It has stood the test. It has received the cooperation of the law enforcing bodies which have carried out their part in relation to law enforcement to the fullest extent. It has also received the cooperation of the newspapers, which, from time to time, have given the ordinance publicity by comparing it with ordinances in effect in other cities which have not adopted the model ordinance. The general public has made an effort to obey the ordinance, through the educational program carried on by the Grand Rapids Safety Council.

One major and a few minor changes have been made in the ordinance to adapt it to my city: for example, the right-of-way at intersections rule, as specified in the model ordinance, that an operator of a vehicle approaching an intersection shall yield the right-of-way to a vehicle which has entered the intersection, and when two vehicles enter an intersection at the same time the operator of the vehicle on the left shall yield the right-of-way to the vehicle on the right. This particular section had caused considerable controversy in our traffic investigation department, as it was difficult to place the responsibility on the erring driver. We, therefore, went a step farther and defined the right-of-way rule in order to place the blame in case of an accident on the guilty party which is as follows:

"The driver of a vehicle approaching the intersection shall have his car under control and shall keep a lookout for other vehicles which may be then and there proceeding on the intersecting highway. When two or more vehicles approach an intersection, as defined in this ordinance, other than at a stop corner, neither vehicle shall be presumed to have the right-of-way, except as follows: If, when the vehicle on the left reaches the intersection the vehicle on the right is at or less than an equal distance from a point within the intersection where the normal paths of the two vehicles intersect, the vehicle on the right shall be given the right to proceed across the intersection ahead of the vehicle on the left; provided, however, that nothing herein contained shall relieve the driver of the vehicle on the right from using due care and caution to avoid striking another vehicle which may have proceeded into the intersection from his left hand, and provided further that the driver of the vehicle on the right shall forfeit the privilege granted him by this ordinance if he is exceeding the speed limit, or is driving on the left side of the street, or is violating any other ordinance of this committee or any law of the state of Michigan."

There are two reasons why we have adopted this model traffic ordinance. One is to provide greater safety and the other is to make possible business-like use of the streets in my city.

The Work of the Joint Committee on Traffic Sign and Signal Codes

By E. W. JAMES

U. S. Bureau of Public Roads, and Chairman, The Joint Committee on Signs

The report in part was as follows: A joint committee consisting of eight members representing the National Conference on Street and Highway Safety and seven members representing the American Association of State Highway Officials, was created and the first meeting was held in Washington on March 24, 1932.

The joint committee was authorized to (1) make such revisions as may seem necessary to harmonize the two codes; (2) make such additions as will produce a single and complete code for both rural and municipal use and to complete in cooperation with the Bureau of Public Roads and the United States Bureau of Standards the investigation recently inaugurated covering the use of reflecting elements; and (3) introduce into the series of standard signs such other signals as may be indicated by the results of the investigation. Five sub-committees were appointed, namely, signs, signals, marking, safety zones, and form and arrangements.

There are but three items in either code which appear to have been seriously questioned, viz., the color code, night signs, and the use of reduced sizes of signs in municipalities. This report deals with the first of these items.

At a conference at the U. S. Bureau of Standards on March 4, 1932, arrangements were made for cooperative investigation by which it was hoped to develop some interesting data by which we could definitely establish the merits and demerits of background and design colors from an observer's point of view.

It first became necessary to design an apparatus by which the time intervals could be accurately and definitely controlled. A tachistoscope, apparently meeting all requirements, was finally designed at the Bureau of Standards. It consists of two major units: (a) a screened eye-piece with two shutters moving in parallel vertical planes; and (b) an "A" frame or easel supporting a pendulum by which the time interval is regulated and controlled. The screened eye-piece or observer's window is set on an ordinary tripod with adjustable legs and carries the two shutters in front of an eye shade. The shutters are held in place by magnets.

In choosing the field for the operation, great care was taken in selecting a section of roadway which would present the average background encountered on the average highway. The main driveway at the Bureau of Standards in a large measure met this consideration. The roadway was of concrete in the far distance and near the sign, and of asphalt in the observer's immediate foreground. Observations were taken at 200, 300, 350, 400 and 500 feet.

In selecting the observers, an attempt was made to obtain a complete cross section of actual and potential drivers. The majority of them held drivers permits but care was taken to select a due proportion of non-drivers. Approximately 28 per cent were female and 72 per cent male. Ages ranged from 17 to 70 years. Three observers claimed to be color blind but were not excluded on that account.

The signs used were of three shapes with standard dimensions 24-inch diameters: octagon, square, and square with diagonals vertical (diamond). The ground colors were standard federal yellow, black and white. Black letters were used on yellow and white backgrounds and white letters on the black backgrounds. All letters were standard height and stroke. Except for border lines called for in standard designs, the signs were blank. In making up the various legends, separate letters were pointed on heavy bristol board and attached to the signs as needed. This permitted the use of different size letters on the same sign or the transposition of the same letters to check the accuracy of the previous reading.

The observer, seated comfortably behind the observing apparatus which in turn was enclosed in a large folded screen shutting off all surrounding view, operated a push button which released the pendulum. Before actual observations began, the shutters were moved up and down several times so that the element of surprise or any distraction due to the noise of operation would be minimized. The recorder would then indicate to the observer that the sign was in place and the observer then pressed the push button which released the shutters. The observer was then required to inform the recorder whether or not a sign had been observed during the interval of free sight, and if so, its shape, color and legend. The sign or its legend was then changed. The change might consist of a display of an entirely different sign or transposition of letters on the previous sign. This transposition of letters and legends was particularly interesting in that it is apparent that if an observer could not read a 6-inch letter at a 0.50 second interval at a distance of 300 feet, it might be possible and frequently was so, to read an 8-inch letter in the same interval and at the same distance.

The tests so far made cover daylight visibility only but the data are so conclusive and the results so encouraging that we feel further investigation involving night values of the unilluminated as well as reflecting signs should be undertaken.

We used in all 70 observers who made a total of 4,563 observations at the various distances of from 200 to 500 feet. The time intervals for legibility of the legend ranged from 1.0 to 0.6 second. This apparently was the shortest interval in which the legends could be distinctly read, the readability diminishing of course, with the distance.

Readings of the black on white combination were 57 per cent correct; of the black on yellow combination, 66 per cent correct, and of the white on black combination 59 per cent correct. Breaking this down for the various distances but still including the complete range of time intervals, the averages are as follows:

At 200 feet: black on white, 85 per cent correct; black on yellow, 91 per cent correct; white on black, 93 per cent correct.

At 300 feet: black on white, 62 per cent correct; black on yellow, 71 per cent correct; white on black, 60 per cent correct.

At 350 feet: black on white, 62 per cent correct; black on yellow, 72 per cent correct; white on black, 67 per cent correct.

At 400 feet: black on white, 38 per cent correct; black on yellow, 48 per cent correct; white on black, 38 per cent correct.

At 500 feet: black on white, 35 per cent correct; black on yellow, 48 per cent correct; white on black, 36 per cent correct.

In analyzing this tabulation, it is interesting to note that at 200 feet, white on black (white letters on black background) was a distinct advantage over black on white, and slight superiority over black on yellow. At 300 feet the superiority is to a small extent reversed with respect to the black and white combinations, being 2 per cent in favor of the black on white, but at 350 feet it is again 5 per cent the other way.

The contention of sign manufacturers that the backgrounds should all be made of the darker color when two colors are used is in this incident not a conclusive explanation for the superiority of white on black, because when we consider black on yellow we find that the superiority of a dark background obtains only at 200 feet. My explanation of the apparent difficulty in reading black on white is that sun glare on the high gloss of the white background obscures the black letters and this is apparently verified when we note that the percentages of differences decrease as the distance is increased. At 400 feet both black and white combinations are equal, and at 500 feet there is but one per cent in favor of the white on black. At all distances, except 200 feet, however, black on yellow had the advantage of from 5 per cent to 12 per cent over either of the other combinations.

Investigations have referred to the high perceptibility of women. Let us see what they saw through the tachistoscope and compare it with male observers. The six females made 297 observations at the 300-foot station with the following results: black on white, 47 per cent correct; black on yellow, 64 per cent correct, and white on black, 52 per cent correct. Compare this with 480 observations made by eleven males which give us: black on white, 76 per cent correct; black on yellow, 79 per cent correct; and white on black, 77 per cent correct. Apparently the relatively low female average can be attributed to the fact that of the six observers, three were non-drivers and, therefore, unfamiliar with the signs. On the contrary, all of the eleven men held driving permits.

So much for legibility. Now let us see what can be deduced from data having to do with the recognition of the sign by its shape, color and legends at intervals of 0.50, 0.40, and 0.30 seconds, and at distances of from 200 to 500 feet. As in the previous data, the observer was required to state whether or not a sign was seen, if so, to state the color and legend. But two signs were used at these intervals, the "slow" sign with an 8-inch letter and the "stop" sign with a 6-inch letter.

At these short time intervals, 600 observations were made in all by 50 observers with the following general averages. As to shape, black on white 59 per cent; black on yellow, 64 per cent; and white on black, 49 per cent correct. Here the significant fact is that black on white is superior to white on black, possibly because the element of glare did not affect the recognition of the shape, but as in previous instances black on yellow maintained its superiority. As to color the percentages in the same order were 64, 79 and 61, respectively. The superiority of black on white over white on black is again indicated. As to legends, we have black on white, 35 per cent; black on yellow, 43 per cent; and white on black, 41 per cent.

So much for the general average. Now let us look at the mid-distance record of 300 feet on these short intervals. As to shape, black on white, 51 per cent; black on yellow, 55 per cent; and white on black, 42 per cent. Here, as in the

general average, we again demonstrated the superiority of the white over the black background but the lead of the yellow is maintained. As to color, black on white, 56 per cent; black on yellow, 73 per cent; and white on black, 64 per cent. This reverses the black and white order as shown by the previous percentages. As to legend, we have black on white, 37 per cent; black on yellow, 50 per cent; and white on black, 42 per cent; again confirming the general averages.

At the minimum distance and for the same time intervals we have at 200 feet for shape, black on white, 55 per cent; black on yellow, 81 per cent; and white on black, 85 per cent. As to color, black on white, 65 per cent; black on yellow, 89 per cent; and white on black, 85 per cent. As to legend, we have black on white, 58 per cent; black on yellow, 77 per cent; and white on black, 87 per cent. At this short range I cannot hazard even a guess as to why the white on black sign should be so distinctly superior to the black on white, ranging as it does from 20 to 30 per cent, it is also superior to the black on yellow by 10 per cent for legend and 4 per cent for shape. For color, however, the black on yellow is still superior.

At the maximum distance of 500 feet we have quite a reversal of conditions from those obtained at the minimum distance of 200 feet, as between the black and white combination as the following will show. For shape, black on white, 65 per cent; black on yellow, 65 per cent; and white on black, 23 per cent. For color, black on white, 65 per cent; black on yellow, 81 per cent; and white on black, 43 per cent. For legend, black on white 17 per cent; black on yellow, 14 per cent; and white on black, 10 per cent. For all three characteristics, black on white is superior to white on black by from 7 per cent for legend to 42 per cent for shape. Yellow still leads. Especially significant is the high percentage of correct color reading. Here we had 81 per cent for black on yellow as against 65 per cent and 43 per cent for the black and white combination. With the varied background of foliage and artificial culture, it was not difficult to recognize the yellow even though the time interval was reduced to 0.30 seconds, a mere flash. You will observe also that the white sign contrasted distinctly with the natural background.

I feel that these investigations have been sufficiently exhaustive to definitely determine the superiority of the black legend on the yellow background and that this combination is fundamentally correct. The yellow color used conforms to the colorimetric requirement of Rule 53 of Sub-Committee on Color Code of the American Engineering Standards Committee.

MISCELLANEOUS EVENTS

A bus tour for traffic delegates was conducted on Tuesday afternoon. Lecturers on the buses called attention to interesting traffic features and items of general interest. Three stops were made for demonstration of unusual traffic conditions and remedies. The tour lasted two and a half hours.

On Monday and Thursday afternoons demonstrations for the traffic delegates were given in the Exhibition Hall. On Monday H. H. Allen demonstrated the effect of the distribution of braking effort on motor vehicle skidding with the use of toy vehicles. On Thursday the Washington police department and the American Red Cross demonstrated first-aid methods for police.

On Wednesday afternoon two outside demonstrations were given, the first by the department of motor vehicles of Maryland, showing how a driving test in a drivers' license examination is given, and the second by the Washington police department demonstrating the investigation of an accident, which was staged by two vehicles colliding during the demonstration.

On Tuesday evening the complimentary dinner for police delegates was given by the police department of Washington. On Thursday a complimentary luncheon was given to police delegates by the department. Special programs of speakers were presented.

ADJOURNMENT

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TWENTY-FIRST ANNUAL SAFETY CONGRESS NATIONAL SAFETY COUNCIL



Child Education Section

Officers 1931-1932

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Secretary—IDAELLE STEVENSON, National Safety Council, New York City.
Chairman—DR. THOS. W. GOSLING, Superintendent of Schools, Akron, Ohio.
Secretary—MISS ISABELLE STEVENSON, Education Div., N. S. C., New York City.
Secondary School Committee—DR. HERBERT J. STACK, National Bureau of Casualty & Surety Underwriters, New York City.
Vocational School Committee—GORDON GRAHAM, Detroit Board of Education, Detroit, Mich.
Elementary School Committee—MISS EMMA A. SCHAD, Baltimore Public Schools, Baltimore, Md.
Program Committee—MISS MARY O. POTTINGER, Elementary Education, Springfield, Mass.
Membership Committee—R. M. SIERKARD, Associate Supt. of Schools, Pittsburgh, Pa.

WEDNESDAY AFTERNOON SESSION

October 5, 1932

The first session of the Child Education Section was called to order in the Shoreham Hotel by the Chairman, Dr. Thomas W. Gosling, Superintendent of Schools, Akron, Ohio. The session was devoted to the reports of the several working committees.

Report of the Committee on Elementary Education

By EMMA A. SCHAD, Chairman

Principal, Mordecai Gist School, Baltimore, Md.

The speaker said in part: Our committee devoted its first year's work to the collection of lesson plans from various educational systems in the country. Outlines or lesson plans are generally conceded to help a teacher in judging the relative value of her units of activity. Some examples of these plans may be given to illustrate the outcome of the good safety teaching represented.

In Plan 1, the learning takes place in the nature period where oxygen as a fire maker is studied in its relation to safety. The technique is experimental. This laboratory method is indispensable in giving reality and meaning to the pupil's contact with terms and relationships. The attitude developed here was one of real responsibility for extinguishing a blaze rather than screaming and running away.

The second plan takes place in the reading period. The teacher prepares her children for work with the index and dictionary by teaching them how to find in the

telephone book the names of the fire department, police department, and others needed in emergency cases. This is quite an ingenious example of how closely safety can be stressed in the three capital "R" branches of school work. To know what agency to call for help in the event of an emergency was a definite attitude developed.

The learning situation in the third plan takes place both in the discussion period, the reading lesson, and finally in the art class. The children are helped to acquire skill in handling sharp tools. The desire to use tools safely was the definite attitude developed.

Most of the real learning reported in the fourth plan takes place in an extra-mural situation. The foreign born children living in the business district are confronted with problems of city life that are made more complex by inability to speak English. English is taught by the direct method. The children are also started in the habit of observing traffic rules, etc. Habits of safe conduct on the street and playgrounds and habits of watching out for the safety of others were also started.

Lessons on home safety are included in the fifth plan. Learning took place during English periods devoted exclusively to talking and writing on home safety. The series of lessons was initiated by having the children find out for themselves in what particular place a large percentage of accidents was occurring. The problem set up for study was, "What must be known in order to prevent home accidents?"

A plan which I might suggest for your consideration is one that I have already started in my school, in which every grade can participate. The sixth grade children may be asked to watch the newspapers for accounts of accidents that have occurred in the homes. The clippings should be brought to class. A record of any home accident that occurred to one of its own school children should also be reported to the class for study. This record is to be obtained from the student accident reporting card. During the first five minutes of the daily English period there should be a discussion of the reported accident, as to how it occurred, what might have prevented it, and what precaution can be taken to prevent a similar occurrence. A complete record should be kept of these discussions.

In the grades below the sixth, records can be kept of just the accidents occurring to the pupils of each grade, and an account of what they have done to improve the conditions in their homes. For example, such information could easily be reported daily on two charts that would be continually in front of the class. The first would show the type of home accident that occurred, what caused the accident, what precaution was taken by family or child to prevent a similar accident. The second chart might be devoted entirely to the positive side of safety education. Such a chart would show what individual pupils had done in their respective homes toward improving the conditions for safer living. The value of these genuine life situations is obvious. Caution should be exercised, however, that the precautionary and preventive measures are stressed and not the gruesome details of the accident.

Report of the Committee on Secondary Education

By HERBERT J. STACK

Supervisor Child Safety Activities, Conservation Division, National Bureau of Casualty & Surety Underwriters, New York City

The speaker said in part: It has been difficult to interest the high schools in safety activities, although the elementary schools have taken to the subject very readily. We recognize that many of the things with which we have been successful in the elementary schools could not be adapted to the high schools. The School Boy Patrol, for example, while it has been very successful in the elementary schools and in Junior High Schools, has made little headway in senior high schools.

One reason for the slowness with which high schools have taken up safety is because high school teachers as a group follow the text books rather closely. Unfor-

tunately, while there are many opportunities for stressing safety in high school subjects, such as physics, chemistry, biology, general science and physics, much of the subject matter in the text books is old and inadequate. The committee believes, therefore, that one subject of approach is through providing materials and subject matter for authors who are building text books, and for a force of study committees who are revising curricula.

The Education Division, a year ago, prepared a pamphlet "A Program for Organizing a High School Motor Traffic Club." This was distributed generally in high schools; although progress in establishing the work in high schools has been slow, some progress has been made. Providence, Rhode Island, with the co-operation of the State Board of Public Roads, has had noteworthy success in promoting clubs in junior high schools. Traffic discussion groups have been organized in Delaware and Pennsylvania; digests of the Safety Code have been made and are used for subject matter. The work in the High School at Evanston, Illinois, was very successful last year, enrolling several hundred students. Louisville, Kentucky has been doing some good work in its girl's high schools in the State Driver's Club. Grand Rapids, Michigan, and Kansas City, Missouri have also been doing some interesting work. At least 35 of these clubs have actually been organized in Kansas City, Pittsburgh, Altoona, Providence, and other cities. Also, many auto-mechanics classes in high schools have introduced safety instructions.

Report of the Committee on Membership

By R. M. SHERRARD

Associate Superintendent of Schools, Pittsburgh, Pa.

The National Safety Council has three types of membership designed to meet the varying needs in school fields. The \$10 School Executive Membership is for the school administrator or executive who has charge of planning and executing the school safety program. This membership was offered first in August, 1931. A result of a mail solicitation has netted 23 additional members during the year.

The \$5.00 school membership was developed in 1926 in order to meet adequately the apparent need for materials with which to carry out the safety program in the school itself. The materials are selected with the principal and teacher in mind and are supplied in sufficient quantity to care for the teachers.

The \$2.00 classroom membership was offered in the spring of 1930, partly because there had been some objection to the cost of the school membership and partly because it was thought worth while to affiliate the children as a class group—the smallest social unit in the school—with the safety movement.

THURSDAY MORNING SESSION

October 6, 1932

Progress in Safety Education

By HON. WM. JOHN COOPER

United States Commissioner of Education, Washington, D. C.

The speaker said in part: Among the new responsibilities which the public schools are assuming is that of training pupils in accident prevention. The assumption that safety education is a function of the public schools is a result of our changing conceptions of our responsibilities; it is in line with the modern theory of a curriculum centered in children's needs and interests.

There always have been activities in life which involve hazards for the individual's safety but the nature of these hazards has changed from age to age in accordance with changes occurring in organized society and in environmental conditions. There

always has been some kind of formal or informal training provided, either in connection with the performance of hazardous life occupations or as a separate function, for the purpose of protecting the individual against such hazards. However, with the increase in the number of life activities in which an element of danger is involved, more definite plans for safeguarding the life and person of the individual need to be formulated. With the development of a popular system of education, more or less universal, it is perfectly natural to look to the public schools as an agency of organized society that should be utilized for preparing the members of the social group against the common dangers met in everyday life.

Education for safety in the performance of these very common everyday activities can no longer be left wholly to chance or to opportunities for informally learning how to act safely. Neither an informal training agency, such as the home, nor training gained from experience is a sufficient guarantee for the safety of the child; sufficient opportunities for training do not exist in the home and experience, though a good teacher, may come too late. It has become necessary for the public schools to assume a responsibility, either separately or co-ordinately with other agencies, for providing some formal educational training in safety as it relates to transportation. The task is too big for any one agency alone.

In order, therefore, to provide for children, training through controlled experiences which will be most efficacious for their safety in connection with street and transportation hazards, the schools are organizing boy patrols, formulating curriculum units and materials for instruction, and co-operating with the home and the police forces. More and more the schools are including opportunities for pupils to acquire necessary information and behavior habits that will serve for their protection in traffic.

What has been said of hazards connected with transportation activities is just as true for many of the other life activities. An analysis of the hazards found in home activities, leisure-time and play activities, fire hazards, occupational hazards, and hazards connected with such specific activities as the use of sharp and pointed tools and instruments, will show the same safety conditions over a period of years, a similar increase in the number of accidents, and the same need for the schools to provide some form of training for their prevention.

There are, therefore, as inferences from the foregoing, two very specific and convincing reasons why training for personal safety is at least a practical and co-operative responsibility of the public schools, coming under the generally accepted educational aims and objectives.

(1) The increasing number of hazards in many life situations, constituting a major problem in modern life and one for which special training is necessary in order that accidents may not result from it.

(2) Changing conditions in social and institutional life, especially in the homes to make it impossible for any single agency to provide in an effective and economical way all the training that should be given the pupil in order to equip him with knowledge and behavior habits that will protect him, so far as possible, from personal physical hazards in life activities.

Recent statistical reports indicate that the appeal to the schools to provide home safety education in their program of training has not been in vain, as there has lately been a substantial decrease in child fatalities due to accidents, in face of the fact that for population as a whole fatalities from accidental causes have increased. In 1922, 29 per cent of those killed by automobiles were children under 15 years of age. In 1928, less than 20 per cent of automobile victims were children. As Mr. Whitney says: "Behind this decreasing rate lies an interesting story of the adjustment of education to life as it must be lived by modern children. This decrease in automobile accidents did not just happen. It may be traced directly to intelligent and constructive programs in safety education which have been conducted in our schools with the co-operation of police departments, Chambers of Commerce, Automobile Clubs, and insurance and industrial groups."

Effectiveness of Visual Instruction in Teaching Safety

By RITA HOCHHEIMER

Assistant Director of Visual Instruction, New York City Schools

The speaker said in part: Through the Bureau of Visual Instruction of the Board of Education of the City of New York, visual aids in safety education were circulated last year in 63 schools, reaching approximately 31,275 children. The visual aids consisted of a motion picture, lantern slides, and posters. With the film we distributed lantern slides accompanied by "story descriptions." These were specially prepared slides showing typical New York experiences, which fitted definitely into our safety instruction. In addition to the film and lantern slides, the posters of the National Child Welfare Association, "The Simple Family," were distributed and a copy of the current number of *Safety Education* magazine with its enclosed chart.

Accompanying the materials in the visual instruction unit on safety, we found it necessary and helpful to prepare definite aids for the teachers' use. These suggested points to be stressed in the film and a check list of questions both on the film and on the slides. In addition, the principals were given mimeographed sheets describing approved pedagogical methods in the use of lantern slides and films in teaching. The technique of method was discussed with them in some detail. We find in general in our work that this is the crux of the success of visual instruction. It is important that the school people not only have material but that they utilize it as a teaching device, not merely as a show.

In addition to the material itself, our plan of organization has proved in general to be sound and of benefit to our school system in the matter of visual instruction. Schools which did not previously come in close contact with the Bureau of Visual Instruction became acquainted with our work and the use of other visual aids in these schools was carried on more intensively. Difficulties were encountered and were not entirely overcome; first and foremost, we lack the proper darkening facilities in some of our schools and lack of projection equipment. Also, it is true that the schools have complained in some instances that material is not left with them long enough.

The results in general have been most gratifying. This is due in large measure to the wholehearted interest in safety education which had already been aroused. It is also due to the readiness with which our school people of all types—district superintendents, principals, teachers—cooperated with the bureau. The real underlying purpose was to inculcate habits of safety. As with all means to habit formation, we cannot really tell how far we have accomplished what we set out to do. We believe that the teachers have been led to think more about safety problems. It seems fairly certain that they have acquired certain knowledge with regard to safety. How far any of this carries over into action on the part of the children—how much more it does so because of the visual presentation—we have no really scientific means of evaluating. On the other hand, the consensus of opinion of the teachers and principals is that there has been a carry over.

An Evaluation of Techniques Used in Teaching Safety

By DR. FLORENCE BAMBERGER

Johns Hopkins University, Baltimore, Md.

The speaker said in part: It is obvious that safety education belongs in the social science group, and to suppose further that the techniques used in that group are also of value in safety education. The great problem of safety education is more or less identical, therefore, with other branches of the social science group—namely to discover and to apply adequate scientific methods to the social sciences. A brief survey

of some of the outstanding methods used in social science research will, therefore, be applicable.

The first is the case method. Since the case method implies a comprehensive and intensive study of the subject, one of the first requisites is thoroughness. Facts must be ascertained and interpreted. Case study also presumes a well defined plan. Any adequate case study of a family would include case studies of each member of the family in his relation to every other member of the family, and the entire picture would be the case study of that family. Again, a case study of a community might include the case study of a number of prominent men and women—leaders in that community—as well as case studies of some of its prominent institutions. But in every problem the unit must be carefully defined and selected, and the study should be more than a cross-section picture.

We find the case study method quite prominent in safety. Too often, however, it is carelessly, rather than scientifically, carried on. The home accident report card of the school is an illustration of this technique. However, this technique, to be really scientific, needs to furnish us with more adequate information than has been attempted up to the present; for example, we should know such things as the following about these cases:

What is their attitude toward safety? Obviously, if they are indifferent or antagonistic to it, no amount of knowledge or even habitual practice of safety rules will be of avail. Objective tests to discover these attitudes are still virgin fields for the safety research worker.

The second widely used technique in social research is the survey. As the survey is the first step in scientific procedure, it must be able to stand the test of scientific methods, for if the foundation is not laid properly then the entire structure will fail. It is an inductive method, that is, it builds up from the particular to the general.

The survey should have certain definite aims. It should take into consideration the community as a whole, various groupings that have social significance—neighborhoods, racial, cultural, fraternal, occupational—institutions and agencies present in the community, certain topical elements with particular significance such as health, education, religion, schools, recreation, industry and trade; and finally, the individual. Or, it may include all aspects of community life, or it may be limited to one or more divisions of the life of the community. Even though only a partial survey of a community is made, it should at least cover all phases of the activity which is being investigated, and the details should be properly grouped and made to fit into the general scheme of a comprehensive survey.

Much of the safety research employs the survey technique and it probably needs no more emphasis here, and yet I have the temerity to suggest that you study a few survey studies that should prove of value if they were made with scientific precision. (1) Accidents in the kindergarten—kind—mental—informed on safety needs versus non-informed children—foreign versus native born, and the like. (2) What apparatus or tools yields greatest per cent of accidents and to what age child. (3) Does apartment life cut down the accident rate? (4) What is the lowest I. Q. safe for automobile drivers?

The third method employed by the social sciences is the direct experimental method. The direct method involves setting up parallel groups, subjecting each group to the identical procedure with the exception of the experimental factor to which only the experimental group is exposed, and by the deft use of the correct statistical tools evaluating the effect of this experimental factor. In this direct experimental attack the burden of the proof for all deductions, interpretations, and valid conclusions to be drawn rests upon the investigator.

Safety education offers a wide field for the direct method of experimentation. Many assumptions are made as to the effect of certain class room procedures in developing safety mindfulness which might well be put to the acid test of experimentation, as for example: Does a period of a day over a period of 10 months given to the reading

and discussion of stories emphasizing safety cut down accidents more than when safety aspects are emphasized whenever the subject matter lends itself to such treatment assigning any stated period of the day?

The fourth method which is available for research in the social sciences is the personal interview. This necessarily must vary with the nature of the individual and of the knowledge desired. This procedure clearly parallels the case method technique.

THURSDAY AFTERNOON SESSION

October 6, 1932

Preceding this afternoon session, a demonstration of the work of the Washington School Boy Patrol was given at the street intersection near the Shoreham Hotel. This was under the direction of Selden M. Ely, District Superintendent in charge of Safety, Washington, D. C. Following the demonstration the patrols, the police officers who are responsible for patrol work in the Washington Schools, and the delegates assembled in the Shoreham Hotel for the session. Doctor Frank M. Ballou, Superintendent of Schools, Washington, D. C. presided.

Parents and Teachers Cooperate for Child Safety

By MRS. HUGH BRADFORD

President, National Congress of Parents and Teachers, Sacramento, California

The speaker said in part: There is a growing conviction that all agencies and individuals who are responsible for the education and protection of children must make greater efforts to integrate their possible service for childhood.

To bring a conviction of the fundamental need of such a co-operative plan in safety, it is only necessary that the appalling facts concerning accident and mortality records of recent times as they affect children in the home, school and community be known. A large percentage of the people are entirely unaware of these conditions. Our problem in this field would then seem to be to so present these facts to both groups that their significance may be borne in upon these adults who are directly responsible for safety education. For this purpose parents and teachers alike are now looking to safety councils, National and local, for data concerning the common types of accidents in the homes, playgrounds, schools and on the highways; and for advice as to preventive measures. In many instances these facts have been presented by lay people through leaflet service from specialists and by bulletin service, with attendant good results; at assemblies of parents and teachers local and state traffic laws have been presented by traffic officers, parents have asked numerous questions and later conferences have been held.

In order to have the individual partners realize their contribution toward this co-operative plan, data and advice must be given for each in this particular field. Whatever court decisions may seem to indicate, there is a feeling that parents and teachers are both responsible for the child on his way to and from school. Too frequently the parent may be forgotten while school programs are being set up. This is most unfortunate; for example, the parents may nullify the school program by not encouraging the child in obedience to traffic regulations, or by themselves treating them with disdain and defiance. The patrol leader of the school crossing has been almost run down by the parents driving children to school. Recent developments in school boy patrols have shown that in general parents are cooperating and not only appreciative of this service, but are growing dependent upon it. Again, schools have at times had an opportunity to reinforce home instructions as to firearms, matches, and fireworks. Schools also have sought to demonstrate that patriotism may not need to be accompanied by loud and dangerous reports from fireworks. Together the

parents and teachers have served as public officials back of the fire chief's efforts to prevent the sale of them.

We then come to some of the fundamentals of a co-operative program. As one sees it, it would seem that there must, first, be a realization of the need to teach safety attitudes. As a work of the home, the beginning should be in pre-school years and serve as a preparation for school. The school must continue trying to secure proper attitudes on the part of the children toward safety in homes, school and also in the community. Since the attitudes and hazards vary at different ages, the process must be continuous as well as co-operative.

The time is not far distant when parents will cease to wonder why Johnny is "always getting hurt," why Bill is constantly wrecking the car, why mother's hands and arms are always displaying burns. Already teachers are studying the attitude of boys toward safety and their ability to assume responsibility, when selections of leaders for boy patrols are being made. The parents, if observing, should also see more clearly that some children, irresponsible and careless, should be restrained from using the family automobile until the attitude is corrected. This proneness to accident is a challenging study and we will soon be able to treat it as we should treat a susceptibility to colds; the preventive measures developed will then become part of home and school training.

As another fundamental in co-operation we must recognize that the adult attitude toward safety is one of the major factors in influencing children. It will require the good example and wise advice of parents and teachers, individually and collectively, to establish firmly in young minds procedures and reasons for them.

A third phase of a joint program would be that of creating a community feeling which would result in devices for safety, in laws for pedestrians, in traffic regulations, with personal pride in their observance. A joint program would assist in creating a community spirit of civic pride in the saving of life and injuries to its people, and in the need for a permanency of a safety program.

The following safety program has been evolved as part of the program of the National Congress of Parents and Teachers and is, we believe, a good demonstration of this type of co-operation. It has for its objectives, (1) to teach parents how to avoid accidents; (2) to aid parents in giving the maximum protection to children at home and on the streets; (3) to aid teachers in giving the maximum protection to children while on school property; (4) to aid both parents and teachers in the development of safety skills and attitude among children that will make possible active and adventuresome lives; (5) to develop in the community a sense of responsibility for child and adult safety. As some of its activities and projects, it recommends the study of home hazards, it sponsors school boy patrols and to assist in securing their equipment, to sponsor safety activities in high schools, to secure safety legislation both state and local as it relates to traffic, school buses, firearms, etc.; to encourage the teaching of swimming; and co-operate with community safety organizations.

How to Follow Through on Recommendations of the White House Conference on Child Health and Protection

By GEORGE A. HASTINGS

Extension Director, White House Conference on Child Health and Protection, Washington, D. C.

The speaker said in part: Local application is the keynote of putting the White House Conference facts and findings to work. The recommendations have been widely disseminated, and now states, cities, counties and smaller communities are studying and applying them.

One of the most useful reports of the Conference dealt with "safety education in

schools." It was a report of a sub-committee on safety education in schools, of which Albert W. Whitney, Vice-President in Charge of Education, National Safety Council, was chairman. The report found that "education in safety proves to be in practice what all education should be, a process of helping children to educate themselves." It stressed as the aim of the safety movement among children to prevent accidents to themselves and others, and also indicated that the attitude and practices of safety are excellent discipline for all children.

We are confronted with the challenge not only of doing everything possible to prevent children being needlessly handicapped by accidents or otherwise, but are making sure that everything possible is done to prevent those who already are crippled from being thrown on the scrap heap. In the interests of your co-operation in attaining the aims of the White House Conference, let me mention some of the specific objectives of the follow-up conferences in the various states.

(1) To make known to the people of the state the concrete findings of the National White House Conference.

(2) To determine the specific point at which the child welfare work in the state falls below standards set up by the White House Conference.

(3) To meet the needs of children in the state, so far as may be justified under local conditions, according to the recommendations of the White House Conference, by a well co-ordinated program in which all groups interested in child protection, health and training may take part.

(4) To organize the available resources of the state in order to raise the general level of child health and protection to the minimum standards agreed upon by the White House Conference.

To date, 25 state conferences have been held, seven city and regional meetings, and more than 50 county conferences. Plans are under way for conferences in other states. Many states have initiated or planned legislative and administrative changes, increased the appropriations for children's work, or opposed indiscriminate economy in public budgets for child caring services. Yet it is not wholly understood throughout the country that the White House Conference was something more than a meeting held two years ago.

May I offer the following suggestions as to how clubs and organizations interested may help to follow through on the recommendations of the Conference?

(1) The most important essential is that they become familiar with the White House Conference publications dealing with the aspects of child care and protection in which they are especially interested. Many organizations are obtaining loan libraries of these books from the publishers. The books are available also in many public libraries.

(2) It is desirable that interested groups may contact with the officials of State White House Conferences, which have already held follow-up conferences, and with the individuals and groups who are planning conferences in other states. Some of the continuation committees set up after the state conferences are developing very definite plans of legislation, improved administrations and educational campaigns. They need and welcome the help of groups like yours. Often by co-operating with them you can best achieve your own particular objective. In case no White House Conference has been held in your state and none is in immediate prospect, the Washington headquarters of the White House Conference will be glad to be of assistance.

(3) The Conference has available for distribution to key people a limited number of "White House Conference 1930," the key volume to the other books, and a mimeographed report on follow-up conferences in the various states. It issues a monthly publication, White House Conference Happenings, which is sent to persons interested.

(4) Co-operate with the agencies, local and national, which have undertaken practical measures to protect children.

Every parent and citizen in these difficult days should help to safeguard children

by supporting their local relief, safety, health, and character building agencies. So great is the indicated need during the coming winter that a national organization has been formed to aid local community chests and councils and other social agencies to help interpret the need and raise the funds to care for the victims of unemployment. The organization is the National Citizens Committee, which will carry on a nation-wide welfare and relief mobilization. The protection, nutrition, shelter, health and education of thousands of children are at stake in the emergency. We consider support of the national and local mobilization as a primary giving to the children.

A State-Wide Safety Program

By DR. ALLEN G. IRELAND

Director of Health and Physical Education, State Department, Trenton, N. J.

The speaker said in part: In New Jersey the public schools are obligated by law to place safety education in the common curriculum and to discharge certain duties relative to safety in the school organization. The responsibility for general promotion and supervision and for the preparation of programs, standards, and courses of study is vested in the state department of public instruction. For two years the usual promotional routine was carried out by means of propaganda, meetings, visitation of schools, and administrative conferences. But the job was too large for routine procedures, the need too urgent, and the requests for help too numerous. Obviously, a larger vision and a larger program were needed. Thus this plan had its inception.

The first major move was to list all factors involved. This took time but it seemed to be the logical starting point. We felt the necessity of becoming familiar with all the possible facts before attempting to build. We kept a special folder for the purpose and as each one came to light a note was entered therein. Although the survey will probably never end, it revealed in time a long list of items from which a beginning could be made. In effect, these factors present a picture of the total situation.

Having this itemized picture of the factors in the situation, it is possible to do three things: (1) Set about finding the answers to the questions; (2) To initiate projects belonging wholly within the scope of the department; (3) To commence laying the basis of a program.

These three activities are now under way. The first is going forward by means of interviews, analysis of the law, school visitation and observation, study of school reports, questionnaires, personal reports and surveys.

The second activity—"initiating projects"—means that anything for which this department is directly responsible that does not involve expense, expensive investigation, or outside agencies, could be started at once. In other words, while developing the major co-ordinating program, we undertook to launch those parts which seemed to be immediately possible of accomplishment. They were as follows:

(1) The enactment of new laws: One on safety education in the schools, thereby repealing three poorly worded statutes of years standing; the second permitting the schools to organize and conduct safety patrols.

(2) The establishment of standards governing school bus equipment, maintenance, operation, inspection, selection of drivers, and conduct of pupil passengers. This was accomplished through a committee of county superintendents.

(3) The perfecting of a cooperating working plan with the department of state police which was and is making an outstanding contribution in organizing and supervising school safety patrols.

(4) The publication of standards governing school safety organizations such as councils, committees, clubs, courts and patrols.

(5) The publication of standards concerning the development of local programs and courses of study in safety education. These have been combined for economy with standards for health education.

(6) The expansion of teacher training program in safety education. An effective start was made through the service of a curriculum-revision committee. In addition we began giving safety education a more prominent place on the program of our institute, teachers' meetings, and administrative conferences. Our state education bulletin and all our regular news letters have regularly carried articles and brief items on safety.

(7) We gave endorsement to the lesson plans and posters issued by the American Automobile Association through the several automobile clubs in the state. More recently we have approved the course of study for high schools distributed by the Pennsylvania Indemnity Corporation.

(8) In addition to this work in the regular public schools, the division of vocational education is carrying on an intensive safety program in the state and county vocational schools under its supervision.

These projects are under way, and the list of factors is being investigated. This investigation, however, is a slow and exacting process; so, rather than wait upon the accumulation of data, we decided to proceed with plans for laying the basis of a state program. The underlying principle of this program is coordination. The promotion of safety is our common purpose, the thing we're all doing, but to get together for mutual interest appears to be our great need. The first move was made at an invitation conference called by the State Department of Public Instruction. The meeting was attended by representatives of a dozen interested organizations, and the principle purpose of the conference, namely, to initiate a plan of coordination, brought a most encouraging response. The request of the speaker for an advisory council to work with the state department was granted. Plans for this year's work are nearly completed and a meeting of the Council will be called at an early date.

Obviously, since this plan is only just born, it is impossible to predict ultimate success. But it does seem that we should seek to accomplish the following:

- (1) To agree on objectives.
- (2) To formulate a basic plan program for child safety education.
- (3) Beyond that basic program, to evaluate first and to then allocate activities to the several agencies participating.
- (4) To forestall duplication of efforts.
- (5) To reciprocate in the exchange of materials, programs, ideas, etc.
- (6) To cooperate in formulating and promoting a suitable program on publicity and propaganda.
- (7) To unite in seeking new legislation, or, should it ever be necessary, to join forces in demanding reform.
- (8) To advise in the preparation of standards, programs, and courses of study for the schools.
- (9) To assist each member group in determining the work of any new activity or project.

The School Boy Patrol

By SELDEN M. ELY

District Superintendent in Charge of Safety, Public Schools, District of Columbia, Washington, D. C.

The speaker said in part: Washington is concerned with safety problems similar to every other city. With an enrollment of 82,000 pupils in the public and many thousands more in the private schools and with an average of two motor vehicles to every child, there is a safety problem that must be solved. The safety program entered on an important phase in the fall of 1926 when the American Automobile Association approached the District of Columbia school authorities and offered to finance and aid the organization of school boy safety patrols in cooperation with the school and police authorities.

In September 1929 undoubtedly the most outstanding forward movement in connection with the patrols was the order of Major Henry G. Pratt, then superintendent of police, to the captain of each police precinct to select the officer best adapted to coordinate the work of the patrols with the police, the motorists and the schools. The order of Major Pratt was issued with the cooperation of the officials of the A. A. A. This forward movement of the association and the police department found the representatives of the schools, traffic department and the motorists in bonds of mutual interest. The policemen assigned to coordinate the patrols soon realized that instead of reporting accidents happening to children they were now preventing injuries.

Since 1926, when the patrols were organized, no child has been killed or seriously injured within the patrolled areas around any of our public or private schools. Last year for the first time there were three minor accidents to children near schools and two patrol boys slightly injured. The patrol boys, however, with the consent and desire of their parents, soon returned to duty. These facts of safety around our schools are very significant for we know that during the calendar year of 1931, in areas away from the school buildings and outside of school hours, 13 children under the age of 15 years were killed and 872 under 15 years were injured. Nine of the child deaths and 695 of the injuries occurred because of contacts with motor vehicles and pedestrian children. Only 6 of the 872 accidents resulted from street car injuries. The freedom from accidents around schools can be accounted for in no other way than by the effectiveness of the patrols and other safety instruction afforded.

The patrol boys are on duty four times a day. However, they are afforded several types of reward for their loss of time from play. The parent teacher associations quite generally give them special luncheons and sometimes souvenirs, such as useful pencils and pens. It is no secret that the police coordinators also enjoy these luncheons. If a patrol boy renders satisfactory service for a stated period he is presented a merit award certificate. A boy from each patrol voted the most consistently efficient for a school semester or year is given a merit award medal. Further, a boy may be specially cited for quick thinking and quick action in preventing an accident. Such a boy is also given a merit award or medal. The teacher supervising at the school is presented with a merit award certificate also. These certificates are treasured by the teacher and may affect in some degree later promotions. Each fall the patrol boys accompanied by their teachers and police officers are given the privilege of viewing a selected picture at a downtown theatre.

THURSDAY AFTERNOON SESSION

October 6, 1932

This session was devoted to the special problems of vocational schools. The session was opened by J. C. Wright, Director, Federal Board of Vocational Education, Washington, D. C., who presided as chairman.

Reducing Auto Accidents Through the School Shop

By LEVI GILBERT

Principal, Altoona Senior High School, Altoona, Penna.

The speaker said in part: The Altoona High School is located in the heart of the city and the main outlet highways skirt the building on the west side. Many of our students drive to school; many members of our faculty have cars at school; and we have an auto shop keeping busy about 108 boys per day. For several years we had already had a small traffic club, so when the idea arose to organize a Motor Safety

Club, the object of which was to reduce accidents, the appeal was made to this group of boys and to their sponsors. The objectives have been pretty well worked out by the boys themselves. The National Safety Council has offered suggestions and in addition, local speakers including the mayor, leading traffic officers, members of our faculty, have presented suggestions.

We consider that it is the job of the Motor Safety Club to sell the idea of safety to all the students and especially to those who drive cars. The club gets the idea of safety before the school and the community through utilizing the home room; the general assembly; the school bulletin boards; the school publications, including the school paper, the handbook, and the school annual; the local newspapers; meetings of the club; the use of questionnaires; letters to all homes; the work of the traffic squad which directs traffic and supervises parking; and the instruction squad. The boys go at this work with so much enthusiasm that a worthwhile task is accomplished every week. Committees are appointed for each type of work and the selection of these individuals is a very essential task.

In our school, the home room is our unit of organization, our little democracy, where we have weekly programs. The theme of the program is usually some timely school problem. Naturally, "safety in use of motor vehicles" is a popular subject. Information that will induce thinking along the lines of better driving is presented, as well as salient facts on auto accidents and bits of advice for motorists and pedestrians. The room bulletin boards offer a good place for posters and clippings. About three times each year an assembly program is put on with the subject of auto safety predominant. We have tried different types of programs. We have had several outside speakers including representatives of casualty companies. This year we are planning a little one act play with safety as the theme. The best results are obtained where the boys do the work themselves.

Throughout the building there are a dozen or more large bulletin boards. On these bulletin boards are put safety posters, clippings and data, emphasizing the importance of care in the use of motor vehicles. The posters are sometimes made by students, some are sent to us from casualty companies, Safety Councils and railroad companies. We have encouraged the boys to obtain pictures of local wrecks and post them. Newspaper clippings portray the cause and suggest the wisdom of care in many cases.

The editors of the school publications are always eager to obtain short snappy articles. This has offered our club a source of expression. Not much room is given to each organization, but slogans and facts do not require much space. A committee has been appointed to meet with the local reporter and obtain space for a good article at regular intervals. In order to learn how much the students know and what they have done, questionnaires have been used. Once each year a letter is sent to each home represented in the club, to encourage the interest of parents and to improve their driving and walking.

The traffic squad of the club protects our students from the commercial and pleasure driver. This work gives the club members an opportunity to teach traffic ethics. Last year we had no accidents or violations of the law where high school boys were in charge of traffic. The squad also takes charge of the parking at school.

The last function, and by no means the least, is the instruction given to the students and teachers who want to know more about the auto. They are taught such things as the principle of the motor or how to adjust the carburetor by the best mechanics in the club, six in number, who meet in the shop during the activity period two or three times each week. Students who want to learn to drive come to the club to study problems of law and of automobile operation. Accident repeaters in the school are brought in and an effort made to iron out the kinks in their driving.

Some of the factors essential in the success of a motor safety club are as follows: (1) the principal must be interested and work with the boys; (2) the sponsors must be on their toes, success or failure depending on the sponsors; (3) some good leaders

must be at the head of the club; (4) a good room must be obtained for a meeting place; (5) organization must be the keynote of the club; (6) definite objectives must be set up and procedures outlined.

Social and Economic Significance of Vocational Rehabilitation as a Service of Government

By JOHN A. KRATZ

Chief, Vocational Rehabilitation, Federal Board of Vocational Education,
Washington, D. C.

The speaker said in part: The world of people is divided into three groups, those who carry forward, those who carry on, and those who must be carried. Even in normal times our welfare agencies are overwhelmed with the problem of meeting the needs of those who are unable to carry their own social and economic weight. Among the fraternalistic activities that have been put into effect by local and central governments all over the world during the last twenty years, are old age pension laws, workmen's compensation, mother's relief, public health, and vocational rehabilitation for the physically handicapped. These enterprises have developed out of the recognition of the fact that want and misery among a considerable group of society's members create a pathological social condition which is inimical to the welfare of the whole group. Society cannot long afford to permit the existence of large groups which not only do not produce but which consume the productive efforts of others. Society must either work for its social and economic misfits or make it possible for these misfits to work for society. It is a matter of social efficiency and individual welfare that every person must carry his own social and economic weight to the extent to which he is capable. To achieve this ideal, the government must take the initiative.

Vocational rehabilitation is one of these programs. It is a program of helping those individuals who, through accident, disease, or congenital causes, become physically handicapped to the extent that they are unable to adjust themselves to employment. It is a human engineering service. The object is to assist these persons, through vocational guidance, physical restoration, courses of vocational training, and finally through placement in employment, to be self-supporting, self-respecting citizens.

The social and economic significance of the service can best be comprehended by a study of accidents, health, and birth statistics and by an analysis of what happens to the individual, the family, and the community when physical disability overtakes an individual. Each year more than 30,000 persons are injured in industry to the extent that they are unable to adjust or readjust themselves to employment. Public accidents account for another 20,000. Disease and congenital causes add another 20,000. Thus we see each year an army of 70,000 persons added to the list. They cease to produce and they must be given medical care, fed, clothed, and sheltered. Since the cost of maintaining 70,000 disabled persons is approximately \$3,000,000 a year, accumulative figures over a period of years is an astounding amount. Moreover, there is an average of 1.2 persons dependent upon the physically handicapped person applying for aid. Thus the cost is more than \$6,000,000 annually.

The social consequence of disability is even greater than the economic. Disability frequently results in the necessity of the wife and mother leaving her home to find employment. Children are taken from school and put to work or left unattended in the community to be exposed to hazards of life and limb and of becoming wards of the juvenile court. Anti-social attitudes develop and often the whole family becomes a problem to the welfare agency.

The devastating effects of physical disability are even more important in the case of young persons. Realizing their plight and the tremendous struggle necessary to prepare themselves to work in a world created for normal people, they withdraw into themselves and become social as well as economic problems. There are in this

country between 500,000 and 700,000 physically handicapped children. The vocational adjustment of these children is not only a good investment in loyalty to the country but also an investment in insurance against poverty, misery, frustration, pauperism, for a considerable group of future citizens. Rehabilitation restores physically handicapped persons to a condition of self support and maintains their morale.

During the twelve years in which this service has been in operation, more than 50,000 disabled persons have been restored to useful employment, 27,000 are now receiving services which will enable them to become independent. The average earning capacity of a disabled person is, before rehabilitation, approximately \$15 per week; after rehabilitation it is \$25 per week. These financial returns from the money invested are not so important as the social and humanitarian returns. Vocational rehabilitation should need no justification. It is a legitimate function of the government to promote the conservation of natural resources, and we are coming to recognize the fact that the conservation of human resources may be even more important for the social solidarity of a nation.

Safety Education in Vocational Schools

By DR. CHARLES W. SYLVESTER

Director, Division of Vocational Education, Baltimore Schools

The speaker said in part: Since the purpose of vocational education is to fit an individual to pursue effectively profitable employment, one recognizes immediately that safety should be part of the training. Our school shops, whether they be industrial art, trade or home economics laboratories, should take the lead in safety, because young people entering industry must be fully acquainted with the various hazards which they will encounter. Any serious accident is a blot on the good name of the vocational school. The schools should be models in safety for industrial concerns to emulate.

Safety has a direct relation to the school plant and equipment. In the assignment of shops and in making of alterations this must be kept in mind. Rooms must be of sufficient size, with ample floor space, in accordance with the demand of the processes to be carried on. Light is most essential and buildings of the sawtooth skylight construction are superior. Artificial lighting should be according to scientific principles. Flooring should be smooth, dry, substantial, and as noiseless as possible. Machine and hand tools should be of standard quality. All machines should be guarded and the false economy of continuing unserviceable, broken, or obsolete tools should not be practiced.

Students must be taught thoroughly the necessary rules in regard to the safe use of equipment. One pupil only should be at one machine at a time. Others must remain at a safe distance and refrain from conversation with the operator. The instructor should set an example for the proper use of machinery. For him to teach the safe way of doing something and then not to follow his own precepts is no instruction at all. All equipment should be regularly inspected and all hazards of practices thoroughly explained. The following is a sample of general safety rules:

- (1) A warning label should be posted in a particular place on each of the machines, the use of which involves the slightest element of danger.
- (2) The pupil must obtain permission to use any power machines.
- (3) Never should more than one pupil operate a machine at one time.
- (4) The pupil must call the instructor immediately if a machine is out of order.
- (5) A pupil should never be permitted to operate a machine except under the direct supervision of the instructor.
- (6) All machines must be stopped before attempting to oil, adjust, or set up work.
- (7) Machines not in use should be locked or cut off the circuit.
- (8) All guards should be in position at all times.

Eyesight is most important to safety. Defective vision should be corrected. Eye strain caused by inadequate lighting should never be condoned. One study disclosed the fact that 25 per cent of school accidents are due to poor lighting. Shops need to be kept clean, dry, and free from dust, fumes, and objectionable odors. Dust collecting systems should be installed in the woodworking shop and ventilating hoods for gas stoves and chemistry laboratory tables.

The importance of proper housekeeping in the shop cannot be over emphasized. Orderliness should be the rule and horseplay never tolerated. Sleeves should be tightly rolled up or off when using power machinery. Neckties are not part of the apparel of the properly dressed shop man.

To prevent accidents in a shop is the first duty of the instructor. This subject should be considered and dealt with in every lesson and in every shop procedure. The instructor should study correct examples and teach and enforce safety regulations. He should familiarize himself with various governmental bulletins dealing with safety and the publication of leading organizations such as the National Safety Council, Industrial Accident Commission, etc. Faculty meetings, school bulletins, and conferences should be held on this subject. The teacher should make a frequent inspection of his shop. After school work, such as is carried on by clubs, should be under the supervision of a responsible person. These are dangerous hours of the day and even closer supervision is necessary than at regular classes.

Rules and regulations are not enough to develop proper attitude toward safety in the students. Tests in safety should be as important for graduates as tests in skill and knowledge of the trade. Safety education must be closely correlated with shop activities. There are many important methods used in the safety program. The poster service of the National Safety Council is worth while. Bulletins, charts, pictures, and graphs of school accidents are effective.

In our teaching we must always emphasize that the correct way is the safe way. Visits to local industries to observe how involved and sometimes inherently dangerous processes are carried on without accidents are very impressive and instructive to students. Trade advisory committees frequently can help in outlining methods of safety education in the schools. Designating one boy in each class as safety engineer to check equipment and enforce rules is an effective method of organization. Exhibits of protective equipment, tools, and also lectures and motion pictures are valuable in putting the safety message across.

First Aid Demonstration

By DR. EUGENE E. WILLISON

American Red Cross, Washington, D. C.

Accompanying the demonstration, Doctor Willison spoke in part as follows: The two chief aims of first aid training are to prevent accidents and to care for the injured person between the time of the accident and arrival of the doctor. The person who understands first aid realizes the pain to himself and to his pocketbook that an accident is liable to cost, and knows what to do in an emergency. In the vocational school the instructor is responsible for instruction in safety and for the first aid administration in case of accident. The conditions existing in many schools are fully as hazardous as in commercial plants, and in some places conditions exist that would not be tolerated by a competent safety supervisor. Having had four years of training in engineering schools and having taught woodworking for a couple of years, I feel strongly on this point.

Last summer I taught a course in first aid to men who had been teaching in vocational schools for several years. Some of the information they had about what to do or what not to do in case of accident was appalling. Much more training in

first aid practices should be given these men before they are put in charge of students.

This applies equally well to students. They are being trained for industrial work, and one of the important things that they need is instruction in safe practices. Usually the student receives no further formal schooling after he graduates. He should learn his lesson in school.

The safe habits we sow in the student will not only help him to keep free from accidents in industry, but will aid him to assume the responsibility for the safety of himself and his family on the street and at home. If he is given sound training in first aid in school, he will remember the fundamentals of it and this will be of value to him during his entire life.

Report of the Special Committee to Investigate Safety Education in Training of Teachers

By H. G. NOYES

Coordinator, Adult Education in Trades and Industry, Wisconsin Vocational Schools

At the 1931 Safety Congress held in Chicago, the vocational school session decided to make a survey of the teacher training institutions in the United States, for the purpose of ascertaining the extent to which safety instruction is included in the curricula of each. This was to be undertaken by a special subcommittee of school, shop and laboratory committees. A questionnaire was, therefore, submitted to the trade and industrial teachers trainers in the several states. Forty-nine of these questionnaires were returned; the questions asked and the information received are as follows:

Question #1. "Is safety included in your teacher training?" Yes—45; No—3.

Question #2. "If so, what methods are employed?" (a) "With what courses is safety correlated?" Answer—Woodworking, 36; machine shop, 33; auto mechanics, 25; electricity, 7; printing, 7; shop management courses, 6; first aid and hygiene, 4; sheet metal, 3; observation and practice of teaching, 3; welding, 3; home nursing, 2; stove industry, 1; pattern making, 1; battery works, 1; teaching occupational subjects, 1; foreman's training, 1; personnel management, 1; paper making, 1; textiles, 1; plumbing, 1; airplane mechanics, 1; electric arc welding, 1; building trades, 1; general metal, 1; teacher training vocational education, 1; mechanical drawing, 1; school shop equipment, 1; painting, 1; accident prevention, 1; industrial relations, 1; carpentry, 1.

Question #2. (b) "Taught as separate subjects?" Answer—Yes, 7; No, 33.

Question #2. (c) "Discussed in conference?" Answer—Yes, 40; No, 2.

Question #2. "Do you think vocational teachers ought to have clear ideas of importance of accident prevention and how to teach safety?" Answer—Yes, 49; No, 0.

It seems, therefore, that there is no concerted movement on the part of teacher training institutions for a uniform course of safety instruction. It may be within the scope of the School Shop and Laboratory Committee to make specific recommendations concerning a procedure which may be followed in order to assure such a curriculum.

Apparently there is some interest in the prevention of accidents to embryo teacher students while in the shops, but the philosophy of training them to teach others to avoid accidents through safe practices has not yet been adopted.

ADJOURNMENT.

TWENTY-FIRST ANNUAL SAFETY CONGRESS
NATIONAL SAFETY COUNCIL



Home Safety

FRIDAY MORNING SESSION

October 7, 1932

The Home Safety Session convened in the Wardman Park Hotel with Chairman Dr. R. M. Little, Director of Rehabilitation, New York Department of Education, Albany, N. Y., presiding. Dr. Little spoke briefly on the purposes of the session, and then introduced the first speaker.

What Is Home Safety?

By ALICE L. EDWARDS.

Executive Secretary, American Home Economics Association,
Washington, D. C.

The speaker said in part: There has been a tendency to confine our safety instructions about home equipment and appliances to arbitrary rules with little explanation of the reason for them. May it not be true that in the long run our home folks would be safer if they were told more about the fundamental facts to be considered in handling such service as fire, gas, electricity, steam, and water, irrespective of a particular appliance with which they are used? There is something to learn about each new appliance, but if the "why" of the rule is understood, it will be followed most intelligently and usually more faithfully.

Emphasis is frequently placed on a few specific home tasks when discussing home safety because of the number or seriousness of accidents which have occurred to persons who are engaged in them. It is well to center attention on certain of these, for those fraught with grave hazards should be made the subject of future research for safer methods, materials, or substitutes. Consider, for example, the danger accompanying dry cleaning in the home. However, past recommendations concerning dry cleaning have not come as a result of a thoughtful study of the home problem and have left the homemaker in a sad dilemma. Some have advised, "never use gasoline, use carbon tetrachloride"; and the aspirant for safety has gasped over the cost. He next hears, "don't do dry cleaning in the home; such work should be sent to the dry cleaning plant"; and lacking sufficient money to pay for such services, he wonders what he is to do. What solution shall we recommend? Perhaps we are justified in hoping for a partial answer from Pennsylvania, where the proprietor of a dry cleaning establishment, at the urgent request and cooperation of certain agencies, is trying out what we might call a "rough dry" service. He is dry cleaning garments and returning them to the homemakers to press and finish.

It is generally conceded that safety is largely an educational problem, and this is doubly true with reference to home safety. The household has a peculiar responsibility in the safety movement. It should be concerned not alone with keeping its members safe while they are within the home, but it should prepare them so that

they will be reasonably qualified to cope with the dangers they may meet when away from it, and so that they will not endanger the safety of others through carelessness, ignorance, or lack of self control.

If we accept this interpretation of home safety, our conception must be enlarged to include a consideration of more than material things. It must take into account the physical and mental welfare of the individuals making up the family group. Positive safety education in the home should recognize the importance of persons being kept physically fit, with keen eyes, steady nerves and strong muscles. These call for the understanding and observance of good habits—regular sleep, wholesome food, proper clothing, adequate fresh air and exercise. They require protection from excessive exhaustion and disease. But safety requires more than physical fitness. It requires that a person be mentally fit, that he develop good judgment, that he have poise and self control, and that he be personally well adjusted to his environment. From the standpoint of safety, the nervous, self destructive and unadjusted individual is a liability.

Safety education in the home should begin with the infant who has everything to learn. If he is given a square deal, he receives sympathetic, kindly guidance in this worthy process. He is encouraged and shown how to do things safely, instead of being shielded from everything in which there might be risk. The reaction developed by this sort of education was nicely demonstrated by a child one year old. Standing on a chair beside the kitchen table, and curious about a pail which was almost out of reach, he caught the rim of the pail and pulled himself up to peep over the edge. Chair and pail tipped and three gallons of ice cold water dashed over him as he fell to the floor. As soon as he was warm and dressed in dry clothes, he slipped from his mother's lap, toddled over to the chair, pulled it directly in front of the table and climbed up. Taking care to keep his balance in the middle of the chair and not to pull on the edge of the pail, he peered cautiously over the brim. It is perhaps fitting to report that the mother did nothing to hinder this second investigation and the incident was given no further consideration; but the child had learned a lesson in safety.

Matches, knives, and scissors are classical examples of things which children seem possessed to play with. If a child is taught how to use them in the proper place and is permitted to do so, he will be less liable to try to play surreptitiously with such dangerous appliances. If forbidden, they seem to have a fatal attraction. The wise mother, discovering her child is fascinated by such articles, plans to teach him how to use them and arranges for them to be used when she is about. A child should learn to be cautious about broken glass, hot water, electrical equipment, and innumerable other things. But he should learn how to handle them safely, just as he should learn to walk and to climb in bed and go up and downstairs. No one has an opportunity for thrills equal to that of a child with wise parents who give him a fair chance to get acquainted with the wonders in his own home.

Some children seem to be doomed to trouble and accidents. Parents of such children should not rest content until they have discovered the reason for this. Is Mary always hurting herself? Why? Does Johnny frequently hurt the children with whom he plays? Why? Do Mary and Johnny continually injure and break toys and furniture and tear their clothes? Why? Causes of these maladjustments may be easy to remove or may be difficult; but whatever they are, they should be ferreted out, whether physical or mental, and corrected. Only in this way may the child be properly related to his environment. It may be well in this connection to bear in mind that one quite as frequently finds the difficulty lodged in one's self, some other individual, or surrounding conditions as in the child himself.

Modern education of parents is urging that the over-worked "don't's" be changed to "do," which in the end will bring a generous reward in producing individuals who can care for themselves, cope safely with their surroundings, and be qualified to do their share of the world's work.

Home Safety for Children

By MISS GRACE ABBOTT

Chief, Children's Bureau, U. S. Department of Labor, Washington, D. C.

The speaker said in part: One hears much of the dangers which the mechanization of the home has brought, but I remember the dangers attending the use of the kerosene lamp and the oil stove and I realize there have been great advances in the safety of home equipment. It seems clear that the solution of the problem of home safety is in the main the responsibility of parents. An educational program for home safety must therefore begin with parents and particularly mothers. Children are in school only six hours out of the twenty-four, only five days of the week and nine months of the year. The opportunity offered the teacher for training the child in habits of safety is therefore very much less than the opportunity of the parents.

The training of children in habits of safety must be appropriate for their years. The training program must be given to the mother when the child is young. She knows how helpless the baby is and how much care he requires. Nevertheless, she often needs to be told that the physical safety of the baby is the responsibility of his parents. The baby and the very young child must be kept away from fires, from poison, and from dangerous positions. Because he is too young to be taught how to take care of himself, he cannot be allowed to use any dangerous equipment. He must be kept away from the stove and all the other hazards of the house. Toys and other things which a child is given to play with should, of course, be safe. Many of them are not. Painted toys given to children often expose them to the danger of lead poisoning if they put the toys in their mouths.

When the child becomes a little older it is safe for him to use many things that were kept out of his reach earlier. He can learn to use hammer and nails, for example. The nursery school has demonstrated that children can do many things safely which parents have been unwilling to allow them to attempt. A too efficient mother frequently does not train her child in habits of safety because she counts on protecting him. This is unfair to the child and results in his own inefficiency and inadequacy as occasions arise when he must act for himself. Children can only learn things by doing things safely.

I am enough of a heretic in regard to housekeeping to say that some homes are too orderly. The objective should be homemaking rather than housekeeping, and when there is conflict between the two the housekeeping standards must be sacrificed. Disorder frequently means only that the house is used—that people actually enjoy living there. On the other hand, for safety there must be a basic order even though it is not always apparent on the surface. For safety it is much more important that the cellar stairs have a substantial handrail and be well lighted than to have them scrubbed often. The standards by which the mother feels she is judged are the standards of her neighbors and friends. And in the past she has been judged too often by housekeeping standards only and not encouraged to put family values first. We shall have to free women from the old servitude to curtains, expensive furniture and clothes which are entirely inappropriate for young children, if they are to have time and interest to devote to their children.

The agency which has been found most useful in teaching parents how to train their young children in good health habits is the Child Health Conference. Here mother, doctor and nurse discuss what is good, general health procedure as well as the special needs of Johnnie or Susie. Instruction of parents of these young children in training children in habits of safety could also be included in the program of these centers. After the child reaches school age the school must undertake the major educational jobs, but the parent must continue to supplement the safety teaching of the school. Too many times parents unconsciously or consciously undo the work of the schools unless they understand the program of the school. School officers and

teachers realize this cooperation between home and school is fundamental for the success of the whole school program, but it requires time and patience and skill which the teacher does not always have.

The Physician-Mother Looks at Home Safety

By MARJORIE D. BATCHELOR

Palmerton, Pa.

The speaker said in part: On the basis of 100,000 population, there were in 1932, among children up to 4 years of age, 104 deaths from pneumonia, 60 from intestinal disorders, and 58 from accidents. My own feeling is that death resulting from illnesses, which might have been avoided if more intelligence or care had been shown in the home, belong under the heading of accidental deaths. This pneumonia death rate is very high. The home does not generally recognize the potential danger in the ordinary cold and does not cope with it intelligently. The high death rate from intestinal disorders also needs an educational campaign. Accidents among the very young show that burns are most common. Adults are often to blame by misplacing containers of hot liquids, leaving fires unguarded and placing matches within reach of baby fingers. Falls among the very young are also often attributable to adult negligence—the roll from the bed or table, the runaway carriage, the unguarded stairway, the abominable highchair.

For children ranging in age from 5 to 9, reckoning on the same basis of 100,000 population, accidents have killed 42, ~~displeased~~ pneumonia 39. Accidents now are due in large part to the child's own activities rather than to the indifference of adults, except in so far as these adults have failed to give proper instruction to the children. Children have an instinctive fire worship. In the light of our own race development it seems natural that it should be so, but why can't we make greater efforts to educate children to use fire more carefully? Falls also have a high accidental rate during these years. But here again, why don't we do more to teach children how to climb safely? Leather shoes are a real hindrance in climbing. Yet how many parents suggest thin rubber sneakers for their climbing sons? There might be fewer accidents from falling if children were taught a bit more about the art of climbing.

Every case of diphtheria in a community is a disgrace. No matter how low the number may be, any one case is one too many. It is an entirely preventable disease and should be wiped out. It is up to progressive individuals in each community to arouse public sentiment to the point where protection is made available for every child and every family is made willing to cooperate.

Among children between the ages of 10 to 14, accidental deaths lead in the mortality lists, but fatalities from heart disease already have a showing that is high—more than one-third as many deaths as from accidents. When a person with heart disease gets into the hands of a physician, it is a common finding that he has already had the trouble for a long time, often from childhood. Heart disease in many cases begins with an infection—often it begins after heavy colds, influenza, diphtheria, rheumatism, chorea, scarlet fever, etc. People think they are merely having a slow convalescence when in reality they are beginning a heart infection. I want to make a plea to give school children a chance to recover completely from their minor illnesses before we rush them back to the heavy schedule of school work. Too often we get them back before they are altogether fit and they drag along for days or weeks, feeling under the weather. It is out of such insignificant beginnings that many cases of heart disease develop. Between the ages of 10 to 14, many of the deaths from heart disease are due to congenital defects which make it impossible for the heart to keep up with the demands of the fast growing body; but some are also

due to infections which might have been prevented by proper control of the illnesses of childhood.

During the years between 15 and 19, ^{accident} tuberculosis heads the list of death reports. The high incidence of this disease during these years is probably influenced by several factors. First, the strenuous physical and emotional life of these years which tends to sap even a vigorous body and is often fatal to one ill with infection. Second, the disregard to convalescence shown by young people. They give themselves no chance to recover fully before they dash back into their strenuous living. Third, the poor eating hygiene shown by adolescents, especially those who are endeavoring to keep thin or to reduce. The high incidence of tuberculosis is found conspicuously among the young of families in comfortable circumstances rather than among the poorer families, so that bad economic conditions do not seem to be a factor.

Falls rank first in the list of accidents to old people. ^{Seventy-five per cent of all accidents to people over 65 is shown to be falls.} From the economic as well as the humanitarian point of view, this is appalling. The bones of old people break easily and mend slowly. It often means long hospitalization with expense and, unfortunately, often great discomfort. For old people, waxed floors should be avoided, run-down heels quickly repaired, small rugs well anchored, a sore footing at the top of the stairs assured. Hand railings for stairs well placed and good lighting given to aid their failing vision.

Protection at Home Through Safety and First Aid

By DR. OTIS MARSHALL

Field Representative First Aid, American Red Cross, Washington, D. C.

Dr. Marshall gave a practical demonstration before the delegates on the application of first aid. During this demonstration he said in part:

Safety in the home, as elsewhere, is inseparable from first aid. The best agency for producing this is our public schools. Today the modern high school trains its students to meet effectively life's problems. Such a conception demands training in safety and first aid, especially in the rural schools, as many of these students expect to remain in their communities where the knowledge is badly needed. First aid helps in their vocational efficiency and as citizens.

Cuts and scratches are so common that it becomes necessary for the parent to prevent them as far as possible and to know what to do when they occur so as to prevent infection. All tools, especially sharp edged ones, should be out of reach of the small child and older ones taught how to properly use them. Children like to imitate larger structures by building in miniature. See that they are taught to build with boards without nails or splintered ends. These entering the body, make puncture wounds, sometimes causing lockjaw. These should receive first aid treatment immediately by putting directly into the cut something that will destroy any entering germs and yet not disturb our own tissue along the edge of the cut. There are many disinfectants on the market. However, the American Red Cross teaches the use of iodine, one-half strength, because it is effective, may be made by any reputable chemical laboratory, and is easily obtained. Whenever the area around a scratch or cut becomes inflamed it should at once receive surgical attention. Do not delay, for delay may mean blood poisoning.

Caution children against standing on insecure objects, window sills and the like, as a fall through broken glass may result in a cut artery or other serious injury. When an artery is cut we should know how to control bleeding with the use of our hands and nothing else; it is very important that we learn through first aid training the five main points of pressure in order to stop bleeding.

Orderliness and not allowing things to be scattered about may prevent many falls. When a broken bone results from a fall, straighten the limb affected and

keep it in a comfortable lying position, well covered and warm, so as not to prevent shock. If it becomes necessary to move the patient, always support the fractured part by splints and move in a horizontal position, keeping the head low. Shock is a condition brought about by an injury, seeing an injury, or even hearing bad news. The one who is shocked is pale, cold, clammy, mentally sluggish and has a fast, weak pulse, sometimes difficult to find. This case should always be put in a prone position, covered up warmly and if obtainable hot water bottles applied. A warm drink acts as a stimulant.

Prevent fires by keeping house free of rubbish. Train the child not to play with matches and to handle lamps carefully. Never pour kerosene or gasoline into a stove. Little blazes are easy to put out if we keep cool and use extinguishers or water, a little at a time. You may beat out a flame with a broom or a coat. If clothing catches on fire, wrap up in a blanket and roll over. If none is available, beat out the flames with your hands. For burns use a soda solution or epsom salts solution and cover with gauze. If a first aid kit is available, use a picric acid gauge found there.

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