

PROGRESS IN PROMOTING HIGHWAY SAFETY

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SYNOPSIS

The paper tells what has been learned about accident causes including factors in the vehicle, the highway, drivers and pedestrians. The driver can greatly decrease the probability of accidents if he has a combination of reasonably sound mind and body, skill and caution. Absence of these makes for a high accident rate. The number of accidents can be greatly decreased by group action of fleets, also of communities including cities and states. Study of groups that have reduced the accident rate shows similar patterns of activity including engineering enforcement and education.

The outstanding need to-day is to arouse individual and official interest in applying the remedies already proved by experience. A definite program must be organized in every state and city. Further research is needed to supply information on how accidents happen, especially on rural highways, and whether remedial measures are successful. Especially needed is research on human traits and habits that make drivers safe or unsafe.

A visiting traffic engineer from Mars, reading our current popular literature on highway accidents, might well infer that no one on this planet had ever thought of safety in traffic before the summer of 1935—that the welter of blood on our highways was exceeded only by the ignorance and indifference in our city halls, our state houses and our schools.

As a matter of fact, we do know a great deal and we have done a great deal, about traffic. We need to learn and to do a great deal more. The traffic picture is no dreary slough of lethargy and failure—it has its plateaux and its mountain peaks of success, as well as its dark valleys.

The first thing we have learned is that there is no one cause of accidents in traffic or anywhere else. If there were, these unhappy occurrences would not be accidents at all, and furthermore, if there were but one cause or even one main cause, it would have been discovered and corrected long ago.

What we call an accident is, in fact, an accidental coincidence of two or more

wrong things which in themselves are not accidental at all. Take the simple case of the motorist who drives through intersections at excessive speed, depending on others to keep out of his way. He may do this for a long time, and get away with it—until he happens to meet another driver doing the same thing. There is nothing accidental about the excessive speed, but the meeting of these two drivers, at the same instant in time and the same point in space, is an accident. It may occur tomorrow or next year, or never.

Take a more complicated case, but not unusual, where a car with faulty brakes, with a tipsy driver at the wheel, skids on a slippery pavement and hits a pedestrian with his head behind his umbrella. Here are four wrong things—the car, the highway, the driver and the pedestrian each contributed to the accident. Any three of them might have been wrong, and without the coincidence of the fourth at that particular time and place, there would have been no tragedy.

We cannot control nor predict these

individual coincidences but we can and do predict them in the mass, just as an insurance actuary can predict how many males of age 32 will die in the United States next year from tuberculosis. What is more important, we can find out and we *have* found out what are the wrong things which chiefly contribute to these coincidences—and we can remove or control them.

We know in great detail what are these wrong things, in the car or in the highway. They are most dangerous when unexpected. Generally speaking, one can drive a car with bad brakes, on a road with hairpin turns, if he knows what he is up against. But if the car develops brake or tire trouble suddenly, or a sharp curve appears without warning on an otherwise modern highway, then the driver is in a tough spot indeed. From the safety standpoint, the unexpectedness of the defect is more serious than the defect itself. That, incidentally, explains the discrepancy between the high percentage of vehicles that are found defective at testing stations and the low percentage of accidents that can be charged to such defects.

In the driver or pedestrian, the wrong things that contribute to death or injury on the highway are easily placed in three main groups. First are the serious defects of mind or body, such as epilepsy or poor vision. Second is the lack of skill—the inability instantly to do the right thing. Third is the faulty attitude—the taking of chances, the optimistic belief in good luck, the assumption that the other fellow will get out of the way. For details see the National Safety Council's Public Safety Memo No. 11, "A Schedule of the Personal Causes of Accidents," published six years ago. In practically every accident you will find one or more

of these factors. You will also find them in many persons who have never yet had a serious accident, simply because the accident has not yet caught up with them—the coincidence with other wrong things has not yet happened.

Secondly, knowing the things that contribute to accidents, we know how they may be avoided—simply by avoiding all of these wrong things. As to the car and the highway, this means building and maintaining them to a reasonably high standard and, above all, avoiding the unexpected and the unreliable. As to the individual, it means a combination of fairly good mental and physical health, a fair degree of skill, and also a fair degree of foresight, caution and consideration for others. Any one of these personal qualities may compensate for the others. A greater degree of caution may compensate to a large extent for lack of skill, or even infirmity.

An individual having these qualities of a safe driver, or a safe walker, can positively avoid any possibility of accident except those which result from other wrong things entirely outside of his control. The latter happens sometimes, as when a car hits a pedestrian peacefully standing on the sidewalk, or when two vehicles collide and are thrown into the path of a third—but not very often. The possibility of personally avoiding accidents is proved by the remarkable no-accident records that have been made by many drivers and by most of us pedestrians. The point is equally proved by the records of numerous high accident drivers—people who are so persistently wrong, in one or more of the ways I have mentioned, that they simply can't seem to keep out of trouble. On the other hand it is a mistake to believe that these relatively few high accident drivers are

responsible for most of our casualties. The fact is that a great many, probably a majority of drivers involved in accidents have had no previous accident record at all. They are drivers who are not bad enough to go looking for trouble but not quite good enough to keep away from it.

Third, we have learned that groups of people can by group action greatly reduce the sum total of wrong things in and around them, and thus greatly reduce the coincidences of these wrong things which we call accidents. A well known example is the group of children in our grade schools whose average level both of skill and of caution on the streets has been raised, with the result that the accidents to them have been reduced, even where the external hazards have remained the same. Another group is the drivers in numerous large fleets, where again the great improvement of both their skill and their attitude has almost eliminated the possibility of accident, other than those due to outside factors. The increasing safety programs of bodies like the American Trucking Associations, as well as the growing membership and activity of the National Safety Council's Vehicle Fleet Section, show that these employers have come to regard safety as good business, and as a practical and necessary feature of operation.

Still more important, certain states and cities have honestly and persistently tackled the job, simple in theory, difficult but not impossible in practice, of eliminating these wrong things in their streets and highways, in the vehicles on them, and in their drivers and their pedestrians. By so doing, year after year, they have lowered their deaths and their death rates far below the national average. Among many cities and states where this is true, in greater or lesser degree, I men-

tion only a few—Rhode Island, Massachusetts, Minnesota, Milwaukee, Rochester, Providence, Grand Rapids, Wichita, Evanston, and others which have won awards in the National Safety Council's annual Contest. If all states and cities had had as good a record as these scattered places did, not only this year but last year and the year before, do you know how many lives we would have saved? Nearly fifty per cent—between ten and fifteen thousand a year.

Fourth, we know *how* these states and cities, as well as these schools and these fleets have saved so many lives. Anyone who visits them, studies their activities, talks with their public officials and their safety leaders, finds at once the same basic pattern in each. It is the pattern of the three E's you have so often heard about—good Engineering of the streets and highways, honest and intelligent Enforcement, and persistent, constructive Education of all the people, young and old.

In no one of these places does one find a traffic paradise. In none has a new race of angels come down from Heaven to drive and walk upon the streets, to wear the blue uniform of the police department, to fill with sweetness and light the swivel chairs of statehouse and city hall. Each of them is a good ordinary American community. Each has its problems. None is free of ignorance and selfishness, in high places and in low, any more than the purest spring water is completely free of the germs of deadly disease. But in the city or state that is safer than its neighbors, just as in the water that is pure enough to drink, the germs of ignorance and indifference have been held in check, have been filtered out or neutralized to a level at which they no longer threaten the entire

body politic In every place I have mentioned, and in others which might well be added, the leaders of safety would be the first to disclaim perfection, they would be the first to insist that they have only made a beginning, that they are fighting every day to hold what they have won, that they have gone just far enough to know how much farther they can go and will go in the years to come, to remove the dangers that still threaten, and avert the tragedies that are still too many Through the Council's Street and Highway Traffic Section these community leaders are constantly exchanging information and helping one another to continued progress As in any other field, the more they know and the more they have done, the more anxious they are to learn still more and to do still better

I hope I have been able in this short time to convince you that we know how to greatly reduce accidents, both as individuals and as communities, if we really want to It follows that our greatest need today is to arouse all our public officials and other leaders, and all our people, to do these things that we already know To do this, we must touch the springs that make men act—the motives of self preservation, of preservation of one's family, the profit motive in the business man, and in the public official and public leader the ambition to win

public approval If there is any one thing, more than others, that we need today to bring this about, it is a definitely organized safety program, backed by the best official and civic leadership, in every state and every city We know enough already, to do this without fear of failure or of wasted effort

And in finding out these things that we now know, we have also found other things on which our knowledge is far too meager and where further research is a vital need We need a series of comprehensive case studies on how accidents occur on rural highways We need to study how various safety activities are working, in various places, to refine and sharpen our knowledge of just how to engineer our highways and vehicles, just how to enforce our laws, just how to educate our people Most of all, we need to study that all-important and elusive animal, the individual driver and pedestrian We need to put him under the microscope of psychological and physiological analysis—to learn more accurately just what he does when he drives his car, why he does it, what he ought to do, and how we can cause him to do it

Even as we strive better to apply what we already know, we must constantly extend the limits of our knowledge as the basis for further education, further organized effort

DISCUSSION ON PROGRESS IN PROMOTING HIGHWAY SAFETY

DR H. C. DICKINSON, *National Bureau of Standards*. Mr Williams has brought out in his paper some very pertinent points about the nature of highway accidents and their prevention He paints an encouraging picture of relative success in some cities and states in reducing accidents through better engineering enforcement and education.

There are a few points suggested in Mr Williams' paper which I should like to emphasize He points out that most accidents are preventable because they result from a variety of *wrong* acts Going a step further we may say that these wrong acts almost without exception involve "taking a chance" In his example of the car with faulty brakes,

and tipsy driver, the car skids on a slippery pavement and hits a pedestrian with his umbrella up, all sorts of risks were taken and taken with full knowledge that they were risks. The driver doubtless knew his brakes were bad, and "took a chance." If he did not know, he certainly was "taking a chance."

The driver took a drink or two, but every driver knows that it is risky to drive while tipsy.

If he was not too tipsy, he knew also that the road was slippery and "took a chance" on driving too fast or stopping too suddenly, and he knew he was taking a chance.

Even the pedestrian, if he was on the roadway, knew he was taking a long chance in being there in the rain, particularly when he added to that chance by hiding behind an umbrella.

Thus, each of these persons involved was taking chances on the natural conditions, on his ability to cope with them, and on what some one else would do.

Taking a chance is inherent in human nature. Risks of some sort are absolutely unavoidable. But some people are vastly more inclined to take chances than others. And the man who is prone to take chances in one matter is very likely to take chances in others. Even more certainly is it true that the taking of chances in any one respect is a habit. The chance taken will almost certainly be repeated and if he escapes he is likely to take larger and longer chances.

It is trite to say that all avoidable accidents are the result of taking chances by some one. Nevertheless, this means that all such accidents would stop if it were possible to prevent every one from taking chances. Obviously, this is impossible. Mr. Williams is not quite correct when he says that "there is no one

cause of accidents, and if there were one there would no longer be accidents." Fundamentally, there is *one* cause of accidents, "taking chances," and we shall never do away with it entirely.

However, we might do much more than we are doing toward removing the cause. We have heard much about the "accident prone driver." It is safe to say that he is always a "risk prone driver." Moreover, accidents are too few in any one man's record, and withal too deadly, to permit of checking his accident proneness soon enough to be effective unless he is very bad indeed. But being a risk prone driver he probably takes hundreds or thousands of risks before an actual accident occurs. Therefore, there is a much better opportunity to pick out the risk prone drivers than the accident prone ones.

Many of the risks that drivers take are obvious to any one who cares to note them. Some of them are

Too Fast past obstructions, past playing children or inattentive pedestrians, at crossroads, at hilltops, on sharp curves, or anywhere else in traffic where an unexpected move by some one else, or an unexpected obstruction may call for stopping of the car, when it can not be stopped. Any driver who has to slide his wheels in an emergency stop obviously was driving too fast and taking a chance.

Cutting in on another traffic lane, or drawing out from the curb into traffic so that some other driver must slow up or swerve to avoid an accident. Any driver who does this takes a chance that the other driver will watch out for him. Some time the other driver will not do his part and there will be trouble.

Dangerous Turn When turning across another lane of traffic or a crosswalk there is danger if any other driver or a pedes-

trian is required to dodge or make any unexpected move to avoid a collision. The man who so turns is taking a chance.

Wrong Side of the Road driving is a bad habit all too common. If a driver does so he takes a chance whenever his view ahead is limited. He may not be able to get back on his own side in time for safety.

Passing Stop Lights needs no comment. The man who does it usually is taking a chance. Even if he sees that the crossing is clear, still he is promoting the bad habit of chance taking.

Bad Driving The general bad driver or road hog possibly may not be taking a chance but generally he is. In any case he so pesters other people that they will take chances to get away from him, or to "get even" with him.

These six items include most of the chances that drivers take in traffic. They take other chances on mechanical conditions, brakes, tires, steering equipment, and headlights.

Pedestrians take all sorts of chances which are not so readily seen, and they do not wear number plates, hence they can not be reported.

Nearly 1000 reports of drivers who took some of the chances described above were handed in by some 20 volunteer observers in Northwest Washington in the past few months of 1935 with the following general result:

	Per Cent of Reported Chances
Too fast	6
Cutting in	27
Dangerous turn	16
Wrong side of road	15
Bad driving	27
Passing stop lights	9

This may not be an accurate estimate of how drivers take chances, but it certainly is indicative. The reports also showed some interesting facts about the classes of drivers who are most prone to taking chances.