

- 2 The test was valid, reliable and objective
- 3 It may be used as a record
- 4 Alternate forms can be made to avoid coaching
- 5 Its use is justified in the initial selection of automobile drivers

A driver's reaction time, as measured by the Brown Chronoscope, probably has a definite relation to his ability to drive a motor vehicle safely. The driver whose reaction time is slow shows a tendency to have the most accidents. From the results thus far obtained it appears that reaction time is an important factor in the initial licensing of drivers and that this test should be used periodically, even on drivers who have been driving for years, especially if they have accidents.

Of 124 applicants whose average reaction time was 0.2 second, 78 were without a record. These 78 cases had an average reaction time of 0.18 second. Forty-six cases had a record, and these had an average reaction time of 0.225 second. Thirty-three, or 72 per cent, of those having a record had an average reaction time above 0.20 and 13 had an average reaction time below 0.20.

Of the 220 persons taking the short answer test, 144 had no record, and the average score was 38. Fifty-one of these were below average and only 10 were in the lower 25 per cent. There were 76 who had records. Their average score was 30. Thirteen, or 17 per cent, of the 76 had scores above the average and 63, or 83 per cent, were average or below.

PROGRESS IN STUDY OF DRUNKEN DRIVING

BY BURTON W. MARSH

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Last year Dr. W. R. Miles of the Yale Institute of Human Relations presented an excellent paper on Alcohol and Motor Vehicle Drivers.¹ Since that time we have seen Repeal go into effect and have had practically a year's experience with it.

Some months ago the American Automobile Association decided to institute a study of "Drunken Driving." The first part of the study was an analysis of penalties which may be imposed in the various states and a discussion of existing laws on the subject. It is interesting to know that fines for drunken driving may vary from one cent—assuming that to be the minimum assessable fine—to \$300, and jail sentences from one day—assuming that to be the minimum jail sentence—to five years.

This wide variance in penalties is but one indication of the fact that opinion on this important subject varies greatly. Our analysis of the laws brought out a number of other significant points, one of which was

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that in some places the states and the municipalities have differing laws on the same subject. In some states a jail sentence is mandatory for the first offense, and in some places a jail sentence is mandatory on the second and third offense.

The next step was an inquiry which was sent in September to motor vehicle commissioners, chiefs of police in cities over 50,000 population, traffic engineers and other interested persons.

In this inquiry we are seeking facts as to number of arrests, number of convictions, and the type of sentence imposed in drunken driving cases. We are also asking for similar information for other traffic violations (excluding parking, if possible) in order to have a measure of what the general trend has been in regard to enforcement activities.

We also asked what methods are generally used to determine whether or not the driver is under the influence of intoxicating liquor, about six methods have been reported, as follows:

1. The most generally used method is examination by a physician though the type of examination varies widely. In some instances the physician prepares a written certificate when the driver is intoxicated. In one or two cases there was emphasis on the importance of a written record of the driver's condition, prepared at the time of examination by the doctor. In the best instances a definite form is used and filled out by the doctor (except that in some cases the person being tested writes his name or is asked to fill out some part of the form).
2. Quite a number of replies indicated that statements from police officers formed the basis for the charge, and in a number of cities these are accepted by the court. In some cases the courts accept such statements if the officers have proven themselves to be expert witnesses. In other cases, however, replies indicated that this officer-decision method was not satisfactory.
3. Statements from witnesses. This may not be considered a separate method but it is sometimes the principal basis for the case. There is also reference to statements from the jailer. This method is apparently very little used alone and has very obvious flaws.

The following three bases of determination are founded on the fact that the amount of alcohol in the blood is a good measure of the degree to which an intoxicant affects the actions of the individual. They differ mainly in the *method* of determining what that proportion of alcohol is. A major difficulty with all three methods relates to the legality of forcing an apprehended person to cooperate.

1. A report from California mentioned the "Sousemeter," which determined the amount of alcohol in the exhaled breath. The popular idea that this is not a correct measure because it merely indicates how much alcohol is in the stomach is fallacious. The exhaled breath (if there be no hiccough) does contain alcohol.

which comes from the lungs and this alcohol has come from the blood stream. At least one reply indicated that the apprehended person would not take the "Sousemeter" test

2. Urine test. This is based on chemical examination of the amount of alcohol in the urine. Some very interesting experiments on this subject have been made by Dr Heise, especially when he was in the vicinity of Uniontown, Pa.
3. Chemical Test of the Blood. This method, which seems to be favored as the most accurate, has been used to considerable extent in Sweden. A Dr Larson in Honolulu has had considerable experience with it. Dr W. R. Miles reports it is now possible to make the test with a drop of blood from the lobe of the ear so that no hypodermic need be used. The difficulty of course, is that the apprehended person cannot be required to submit to the test.
4. What might be considered another criterion—at least a partial one—is the taking of motion pictures showing the actions of the person at the police station. The person is asked to do several different things and the motion picture camera—which is hidden—shows how he acts. This is being experimented with in at least one place. It is generally not used in court evidence but serves as a basis to discourage lawyers for the defendant from questioning whether the person was intoxicated.

Many replies indicated that present methods used in determining just when a person does come within the law, are unsatisfactory. We are, therefore, considering a plan for endeavoring to secure a greater degree of agreement among competent persons, such as doctors, psychologists, etc., as to what tests really are the best, and most practical.

In our study some other interesting points have come to light. We all know that some persons can drink quite a lot before we would call them drunk, while others become drunk on the first drink or so. This leads to a natural query as to whether different persons react in widely different degrees to a given amount of alcohol in the blood. We have been corresponding with some physicians who have specialized in this work and a reply from Dr Haven Emerson indicates that while there is considerable difference in the time of absorption of the alcohol by different persons, and while there seems to be some protective method or process on the part of habitual drinkers, the differences apparently relate to how fast the alcohol is absorbed into the blood stream, how much is actually absorbed, and what greater degree of control the person holds over himself as a defense.

Evidence which must only be considered as tentative so far is to the effect that a given proportion of alcohol in the blood and nerve tissues has rather closely the same effects on everyone. You can readily see the importance of this in relation to any blood, urine or breath tests.

Another question of considerable interest is, how quickly is alcohol

absorbed and how quickly is it disposed of? This has a very practical angle outside the realm of law. We know that there is a marked difference in the rate of absorption. Dr. Emerson states that "Alcohol absorbed into the blood in two hours usually requires 12 hours for its complete disposal." This is a point on which the public needs to be more widely informed.

Another very interesting point made by Dr. Emerson is that alcohol is really not a stimulant, but a depressant, he says

"Alcohol was formerly regarded as a stimulant by the medical profession and is still commonly so considered by the laity. We know this conception to be wrong. Modern methods of study of man and the lower animals prove unquestionably that the effects formerly thought to be evidence of a stimulant action of alcohol, are in fact evidences of exactly the opposite effect, namely, inhibition or depression."

Another interesting point is as to just what alcohol does to a person which affects his driving. Dr. Emerson says

"The chief effect of alcohol in whatever doses or concentration it may be ingested is upon the functions of the brain—those functions which express the will, the emotions, memory, attention, thought, intelligence, and judgment, as well as those which control muscular and sensory functions and the coordination of one with the other. The degree and character of the depressant or narcotic action of alcohol is determined by the percentage taken up by the tissues of the brain and spinal cord from the blood that supplies them and their enveloping membranes and fluids."

"Alteration in attention caused by alcohol is, together with a less trustworthy response to situations of danger or warning, the major difficulty shown by persons in charge of rapidly moving vehicles—motor-cars, speed-boats, or aeroplanes—when alcohol in but moderate amounts is circulating in their blood."

One very interesting comment was received in more than one reply. It is in effect that "apparently it is difficult for some motorists to understand that *the law has not been changed prohibiting the operation of a motor vehicle while the driver is under the influence of intoxicating liquor*."

Some of the problems which are being encountered are these

Records are not accurate because in many cases the fact that the man has been drinking is not included in the report.

Tests for determining when the man comes within the law are unsatisfactory in many cases. Where doctors are used, many times it is hard to get them. They often charge high fees. They don't like to appear in court to testify, and when seeking to correct this difficulty, police surgeons are used, there is always the question of politics.

There is considerable changing of the charge even by the court. This reflects in some instances the disagreement of the court or prosecutor as to the appropriateness of the law or the appropriateness of the severity of the penalties.

Leniency of courts was mentioned in several instances and a lenient attitude on the part of juries was also stressed, the point being made that the juries and even the court seemed to take a sympathetic attitude toward the defendant, minimizing the seriousness of his offense. Fixing also was mentioned in some replies.

There was a general realization of the seriousness of the situation and a general agreement that the matter must be handled in a more effective way. One reply indicated what is believed to be quite a familiar situation by stating that "*intoxicated pedestrians have become almost as much a worry for the State Department of Motor Vehicles as drunken drivers*."

The need of education was pointed out by several. We can all recognize the fact that the solution to the problem is not entirely a matter of laws and their enforcement, but is probably more a matter of proper informing of the people.

Assuming that statements by medical authorities are correct, few people realize for example, that a considerably smaller amount of alcohol than will cause them to be intoxicated, has a serious effect on safe and prudent driving.

MOTOR VEHICLE SPEED STUDIES

BY W G ELIOT, 3RD

U S Bureau of Public Roads

At the Highway Research Board meeting a year ago, Dean A N Johnson reported the results of a series of observations of motor vehicle speeds on Maryland highways¹. During the past year, largely through relief project traffic surveys, many more similar studies have been made in other States and cities, notably in Connecticut, Rhode Island, New Jersey and Massachusetts. Few of the results have as yet been reported, and it is too early to attempt comparisons or generalizations.

Most of these speed surveys have been made by use of the so-called Eno speed detectors (mirror boxes) and stop watches. Others have used photography, and still others "pacing" by traveling observers. In an effort to correlate speeds with fluctuating volumes of traffic, the Bureau of Public Roads during more than a month of the past summer used an electrical time recorder on a number of heavily-traveled roads, mostly in eastern Massachusetts. During the periods of observation, 7 or 8 hours daily, a 100 percent sample of passing vehicles was recorded and timed over a distance of one-fifth of a mile. The record taken permits a study of the exact time-spacing of the vehicles as well as of their speed. The record charts are now being analyzed and it is hoped that some interesting conclusions may soon be reported.

¹ Proceedings, Highway Research Board, Vol 13, p 351