

The Compulsory Use of Chemical Tests for Alcoholic Intoxication - a Symposium

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THE COMPULSORY USE OF CHEMICAL TESTS FOR ALCOHOLIC INTOXICATION — A SYMPOSIUM*

INTRODUCTORY REMARKS BY
RUSSELL S. FISHER, M.D.†

In the introduction of the subject of the use of chemical tests, I would like to make three points very briefly.

Of course, the Moderator is supposed, first of all, to introduce the speakers. However, I would like to point out that this is a current problem, that alcoholism is an every-day problem in our courts, in our medical profession, and in our legal profession.

To show some figures on the occurrence of this in automobile accidents and homicides, I would like to present very briefly some tables on the subject.

* On October 23, 1953, the Medical and Chirurgical Faculty of Maryland (the State medical society), in conjunction with the Maryland State Bar Association and the Bar Association of Baltimore City held its Sixth Symposium. Because its subject-matter, as above indicated, seems of particular interest to lawyers, doctors and laymen alike, the Bar Associations requested that it be published by the REVIEW.

Dr. Russell S. Fisher, Chief Medical Examiner of the State of Maryland, acted as Moderator, and the panel consisted of Dr. Lewis P. Gundry, Associate Professor of Medicine, University of Maryland Medical School, Dr. John C. Krantz, Jr., Professor of Pharmacology, University of Maryland Medical School, and George D. Solter, Esq., then Assistant State's Attorney for Baltimore City.

The stenographic transcript of the introductory remarks of Dr. Fisher, the individual addresses, and the question and answer period which followed is herewith reproduced, with only minor editorial changes by the staff of the REVIEW.

† B.S., Ch.E., 1937, Georgia School of Technology; M.D., 1942, Medical College of Virginia.

ALCOHOLISM IN VICTIMS OF HOMICIDE

MANNER	TOTAL CASES	ALCOHOL NONE	CONCENTRATION - PERCENTAGE		
			.01-.09	.10-.40	.40+
Shooting	25	5	4	15	1
Stabbing	25	7	1	17	0
Blunt Force ...	18	9	3	6	0
TOTAL..	68	21	8	38	1

This table will show some of the figures in a recent year on the presence of alcoholism, and the degree of alcoholism in victims of homicides in this City.

This is a group of some 68 people who died soon enough after they were assaulted so that their alcohol determination would be significant. If you realize that only 21 of the 68 showed no alcohol, and that 39, or 57 percent showed alcohol in concentrations which are probably significant, you realize that a large part of these cases, where there are prosecutions for homicide, are in fact caused or brought about by alcoholism.

ALCOHOLISM IN HIGHWAY VICTIMS
1950-1951 — BALTIMORE

TYPE OF ACCIDENT	TOTAL CASES	BELOW .04%	0.05%—	
			0.15%	0.15%+
Pedestrians	72	44	10	18
Drivers	52	20	13	19
Passengers	56	41	5	10
TOTAL..	180	105	28	47

A glance at the above table, which represents the alcohol levels of highway victims in the City of Baltimore over a two-year period, shows more or less the same thing; of the 180 persons who died promptly after the accident, 75, or more than 40 percent, showed significant amounts of alcohol in their tissues, and the 47 cases who were above .15 percent constitute 26 percent of the total. In summary, a large percentage of the people who died of violence of one sort or another, either by accidental or homicidal death, showed that part of the problem, or part of the cause of their death, was alcoholism.

Now, this is to be a discussion of the problem in Maryland, and a discussion of the application of this to your every-day work, and so I would like to call your attention

to the wording of Section 171 of Article 66½ of the Annotated Code of Maryland (1951). This, of course, is the Motor Vehicle Article, and it refers to driving while under the influence of intoxicating liquor. It says, and I quote:

“It shall be unlawful for any person who is an habitual user of narcotic drugs or any person who is under the influence of intoxicating liquor or narcotic drugs to drive or attempt to drive any vehicle, street-car or trackless trolley within this State.”

I think the significant part of that for the discussion tonight is that it says any person “under the influence”.

And the effectiveness of “under the influence” as a test depends entirely on the way it is interpreted or defined.

To get the definition of it, Black’s Law Dictionary¹ states this:

“The expression is said to cover not only all the well-known and easily recognized conditions and degrees of intoxication, but any abnormal mental or physical condition which is the result of indulging in any degree in intoxicating liquors and which tends to deprive the driver of that clearness of intellect and control of himself which he would otherwise possess.”

Now, this is a rigid definition. It says “to deprive the driver to any degree of that ability to operate a vehicle which he would ordinarily possess”.

This is a more rigorous definition than perhaps obtains in a place like California, where driving under the influence is interpreted, not in terms of impairment of one’s own ability, but rather in terms, let us say, that one shall be adjudged to be under the influence when he impairs his ability to a point below that of an ordinarily cautious and prudent individual. And in that state the ordinarily cautious and prudent man must be anyone licensed to drive. So in interpreting “under the influence” under such a statute, a person is entitled legally to drive, even though he may be the worst driver licensed in the state. Of course, that leaves a lot of leeway.

¹ (3rd ed., 1933), 1775.

There is one other question that I would like to raise, and that is just how well are we handling our "driving while under the influence" cases in this State?

There was a recent survey made, and it may interest you a little bit to see some of the figures that are shown on this.

In Baltimore County, where there were 237 arrests last year, there were 144 convictions. That is 60.8 percent.

In Baltimore City, where a vigorous effort is being made, it showed 64.3 percent of convictions out of 639 arrests. Not much better.

There are other communities, Frederick and Salisbury, where the percentage is 100 percent, or very nearly so.

The lesson, I think, to be learned from the fact that we convicted 60 or 64 percent of those arrested and charged is this, that somewhere between the two extremes lies the truth. These two extremes are, on the one hand, we are doing a very poor job of gathering, preserving, presenting and using evidence to indicate that an individual who was charged was, in fact, intoxicated, or we are unjustly charging a large number of people, and embarrassing them and costing them money and great effort to defend the charge which is unjustly laid.

As I say, the truth lies between the two, but the way it is now gives rise to a very bad situation.

So much for the background of our discussion tonight.

Our first speaker is Dr. Lewis P. Gundry.

Dr. Gundry received his A.B. at Johns Hopkins University, and his M.D. at the University of Maryland Medical School. He is at present Associate Professor of Medicine at the University of Maryland. He has been Secretary of the State Board of Medical Examiners for six years and since June of this year he has been President of the Board. He has a wide practice, and he has a wide experience in the field of treating patients to whom alcoholism is a problem. He is going to present to us the physiology of alcoholism, and he will indicate to some extent such facts as the absorption of the chemical, the effects on personality of alcohol, and to some extent the ability to relate the effects of alcohol to the chemical elements in the blood.

ADDRESS OF LEWIS P. GUNDRY, M.D.*

I wish to talk to you for a few minutes about the action of alcohol, and about the clinical significance of blood alcohol determinations in "alcohol-influence" or "drunken-driving" cases.

Ethyl alcohol has three principal actions. First, it acts as a local irritant; secondly, it is a food, or it has caloric value; thirdly, and most important, it is a depressant of the central nervous system.

It is this third action that we want to discuss principally this evening.

When an individual takes a drink of an alcoholic beverage, approximately 20 percent of it is absorbed in the stomach, and 80 percent in the intestines.

The rapidity with which alcohol is absorbed is increased if the person takes it on an empty stomach. Most of us have learned this at cocktail parties or on some other such occasion.

Rapidity of absorption is also increased if the alcohol is taken in concentrated form, such as straight whiskey, as contrasted to beer or wine.

Now, if, on the other hand, an individual has taken a large meal, alcohol would be absorbed more slowly. This is particularly true if he has ingested fat, such as cream. Some people take cream before they go out, because they think they can give a better drinking performance in that way. It is true that alcohol is absorbed more slowly under such conditions; but, nonetheless, it will catch up with you eventually, as we will try to show.

The concentration of alcohol in the blood reaches its maximum level in an hour and a half to two hours after ingestion, depending on the rapidity with which it is absorbed.

About 95 percent of this alcohol is broken down or oxidized in the body, and only five percent is eliminated by the kidneys and by the lungs.

However, there is a relationship between the amount of alcohol in the blood, in the urine, and in the expired air.

* A.B., 1924, Johns Hopkins University; M.D., 1928, University of Maryland Medical School.

Alcohol is often erroneously considered a stimulant, particularly by the laity, an idea which is entirely wrong. This mistake is probably made because alcohol in small or moderate doses depresses the higher centers and removes the individual's inhibitions, causing him to be more talkative, more lively and in general more of an extrovert.

However, the real character of alcohol reveals itself as the individual continues to drink; he becomes drowsy, lethargic, and finally passes into a state of unconsciousness, or coma, which may result in death. Therefore it should be borne in mind that alcohol is a depressant, rather than a stimulant.

I would now like to discuss briefly the question of tolerance to alcohol. People who drink regularly and to a considerable extent will develop an ability to oxidize alcohol more efficiently than the average individual. That is, they develop a tolerance for it. They can take more alcohol without becoming intoxicated, and they seem to be able to drink better than the occasional drinker.

There are also those with poor tolerance who become maniacal, psychotic and unmanageable on one or two drinks. These people are rare, fortunately. Their condition is known as pathological intoxication.

It must also be borne in mind, concerning the prolonged, heavy drinker, that after a number of years he will begin to lose his tolerance; after a certain period his tolerance declines and he may become intoxicated on only one or two drinks. This fact, I think, is important in relation to the subject we are discussing tonight.

Thus you see that capacity or tolerance will vary greatly in different individuals, or in the same individual under different conditions and at different times. The blood alcohol level, however, can be correlated more accurately with the degree of intoxication or alcohol-influence.

Muehlberger¹ states that while there is a wide range of tolerance to alcohol which is swallowed, there is very little difference in the reaction of various individuals to a given

¹ *Chemical Tests for Alcoholic Intoxication*, published in LEVINSON, A SYMPOSIUM ON MEDICO-LEGAL PROBLEMS (Lippincott, 1948) 219, 222.

level of alcohol circulating in the blood. In other words, all men with the same blood alcohol level are approximately equally intoxicated, within an error plus or minus of ten or fifteen percent.

I now would like to point out the blood alcohol level in terms of clinical intoxication.

A man who has a blood alcohol level between zero and .15 percent, is known as dry and decent, that is, subclinically intoxicated.

However, as I will show you in a few minutes, with some statements taken from experimental work, those people are not free from errors in driving automobiles, so that they are not quite as innocuous and debonair as they might appear to the public.

The next level is .1 to .2. And right in the middle of this second group comes the level of clinical intoxication, as given by most authorities on pharmacology; that is, .15. The man is called delighted, devilish, and there are emotionally instability signs of decreased inhibitions, slight muscular incoordination, and slight resistance to stimuli.

Then we go on to another level, from .15 to .3, which represents definite intoxication, in that he is dizzy and delirious; and he is confused, with disturbances of sensation, decreased pain sense, staggering gait, slurred speech, and so forth.

And then finally, at .25 to .4, he is very drunk. He is dejected, has marked decrease in response to stimuli, muscular incoordination, approaching paralysis, with complete unconsciousness.

And finally, between .35 and .5 (which has been given as a fatal level), he is in coma, with complete unconsciousness, subnormal temperature, anesthesia, and so forth.

And the last stage at .45 and above, is that level at which people frequently die. This table gives you an idea of the significance of various blood alcohol levels.

I would like you to keep these levels in mind.

.15 is the level at which a person is definitely considered by most pharmacologists as being under the influence of alcohol, or intoxicated.

Now, in the light of this table, let us consider the effects of various concentrations of blood alcohol on driving ability.

In a carefully controlled series of experiments Bjerver and Goldberg² tested 37 expert drivers. These men taught driving for a livelihood. They were, at least theoretically, the best drivers who could be obtained for this experiment.

These drivers were subjected to a series of driving tests, and I won't go into it in detail, but very sketchily. There were five or six tests. The tests consisted of backing a car in and out of a garage, parking it, backing it up onto a plank (getting two wheels on the plank), going around a curve and knocking over obstacles with the wheels on the left, and driving out of a sand pit, which necessitates starting off slowly and gradually to get out of the sand.

They divided the 37 drivers into two groups:

The first group we will call the control group; these drivers had no alcohol. They were tested, however, for alcohol, just to make sure that they had not slipped around the corner and obtained a drink beforehand. These drivers had no alcohol in their blood.

They did the above series of tests; waited two hours, and repeated the same tests.

In this control group, there was an improvement of 20 percent in driving ability on the second performance of the tests.

The drinking group was again divided into two classes: One class was given three or four bottles of beer over a period of ten or fifteen minutes, and the other class was given three or four ounces of whiskey, over a period of five or ten minutes (after they had done the tests the first time). About an hour or an hour and a half after they had been given the alcohol, they repeated the tests.

I do not want to bore you with too many figures, but the average blood alcohol level of those who had been drinking beer was .04. Now, remember that .04 is less than a third of the level (.15) for clinical intoxication. The average

² *Effect of Alcohol Ingestion on Driving Ability*, 11 *Quarterly Journal of Studies on Alcohol* (1950) 1-30.

blood alcohol in those who had been drinking whiskey was slightly higher; it was .06. In the two groups, it averaged .05.

In those who had been drinking beer, there was a deterioration in driving. Instead of improving 20 percent, they fell off 18.6 percent. In those who were drinking whiskey, there was a decrease in driving ability and skill of 32.7 percent.

This group with a relatively small amount of alcohol showed a very definite decrease in driving ability. And that was true in all individuals; it varied slightly, but they all showed impairment of driving ability and judgment.

Just as an example, one fellow tried the backing-up test and he attempted it thirty times without succeeding. He was still trying the same way at the end of the thirtieth time; this will give you an idea of what fine driving he was doing.

This series of tests seems to me to offer conclusive proof that even a low level of alcohol in the blood definitely impairs driving ability.

According to Sollman's³ text book of Pharmacology, .15 percent of alcohol in the blood is generally accepted — and I quote — “as the ‘critical concentration’ for the *chemical diagnosis of drunkenness*”, or alcohol influence, if you prefer that term.

Incidentally, I might tell you here, that to attain a level of .15 percent, a person has to drink six or eight bottles of beer, or six or eight ounces of whiskey; twice the amount which was used in the test.

The National Safety Council and the American Medical Association have made recommendations for legislation which utilize blood alcohol determinations. These recommendations are embodied in the statutes of Indiana, New York, Maine and Oregon (very similar in all the states), with the following three conditions:

1. With less than .05 percent alcohol in the blood or equivalent amounts in other body fluids, the subject will be considered not under the influence of alcohol.

³ A MANUAL OF PHARMACOLOGY (7th ed., 1948) 620.

2. When there is .15 percent or more alcohol in the blood or equivalent amounts in other body fluids, the subject is presumed to be under the influence of alcohol as far as the operation of a motor vehicle is concerned.

3. When there is between .05 and .15 percent alcohol in the blood or equivalent amounts in other body fluids, there is a question of alcohol influence. In other words, the blood alcohol is considered along with clinical observations or other tests.

The National Safety Council⁴ has reported that drivers with .15 percent or more of alcohol in the blood have an accident rate of fifty-five times that of non-drinkers.

There was a very similar Bill (which was reported unfavorably) brought up in the 1953 Maryland Legislature, House Bill 297.

I am not going to bore you with the details of this Bill, except to say that it had exactly the same three criteria that I read you for the four states of New York, Maine, Oregon and Indiana.

They have three blood alcohol levels. Below .05, you are not under the influence. Above .15, you are under the influence, and not fit to drive a motor vehicle. And between .05 and .15, it is questionable.

There was another paragraph in the Bill which I consider important. Paragraph 4 of this Bill reads:

“The foregoing provisions shall not be construed as limiting the introduction of any other competent evidence bearing upon the question whether or not the defendant was under the influence of intoxicating liquor.”

In other words, allowance was made for a clinical examination, and for any evidence that a person would want to produce in an individual case.

After careful thought about this matter, it is my considered opinion that we should have in Maryland some legislation which uses chemical tests to determine the degree of alcohol influence in drivers charged with motor vehicle violations. Let me hasten to add that I do not believe that

⁴ National Safety Council Bulletin.

the courts should decide any given case on the basis of chemical tests alone. They should utilize all other competent evidence bearing upon the question of whether or not the defendant was under the influence of intoxicating liquor.

ADDRESS OF DR. JOHN C. KRANTZ, JR.*

I do not believe there is any subject upon which there is more misinformation extant than that on the subject of alcohol.

It appears that an ardent prohibitionist, a well-meaning lady, was giving a demonstration one day to a group of children in school. She had a glass of water and a glass of alcohol. Into the glass of water she put several garden worms, and the worms remained viable. Into the glass of alcohol she placed several garden worms. They immediately died. Then she looked around the class, and there was little Billy sitting down there, and she asked for an interpretation of that experiment. Billy quickly answered and said, "Well, ma'am, that would indicate that if you have worms in the gastro-intestinal tract, you better take whiskey."

It has been pointed out that when alcohol is taken by mouth and ingested, it is rapidly absorbed from the gastro-intestinal tract. And this poses the very important question: Is alcohol normally in the blood of a person who has never imbibed alcohol? The answer to that question is yes. That food which we use for the body which is our greatest source of energy is glucose — $C_6H_{12}O_6$ — and when glucose is broken down in the body into carbon dioxide and water alcohol, C_2H_5OH is also formed. If one examines the brain of anyone in this room at the present time, the concentration of ethyl alcohol in it will be 0.0004 percent, and the alcohol in the blood is 0.004 percent.

What is more, in the pig, in the dog, in the bird and in the chicken, one finds alcohol normally in the blood, owing to the fact that in the oxidation or the burning of sugar in the body, alcohol is an intermediate product.

* B.S., 1923, M.S., 1924, Ph.D., 1928, University of Maryland.

Does this amount of alcohol produce symptoms of intoxication? Obviously not, or we would all be drunk at all times.

When the alcohol which is ingested by the individual passes out of the gastro-intestinal tract and into the general circulation, it is so uniformly and evenly distributed, that one might think of an individual as a sponge which has been dipped in alcohol, and he has absorbed the alcohol uniformly throughout. For example, if you set the amount in the brain at one, the amount in the blood will be 1.17, and the amount in the skeleton and muscles will be 0.90, and the amount in the liver will be 0.91.

This is important, because of the fact that one finds if one takes a sample of blood from an ear, or a sample of the urine, one can get a very good estimation of the amount of alcohol which is circulating through the brain, which is, in turn, the organ on which alcohol has its profound effect.

It has been pointed out by Dr. Gundry that when alcohol undergoes oxidation in the body, carbon dioxide and water are formed.

Let us ask ourselves this question: How about the curve of alcohol disappearance from the blood? This is important from a medico-legal standpoint. Let us plot here as ordinates on this curve concentrations of alcohol in the blood, as .05, 0.1 and 0.15 percent. And let us plot here the times in minutes. Let us say 30, 60 and 90 minutes. Immediately, five minutes after the alcohol has been ingested, it is rapidly absorbed, and the curve of ascendancy in the blood goes up very rapidly. As it is oxidized, the curve of disappearance comes down slowly. The period of the greatest intensity of symptoms in the individual is when this curve is on its ascendancy. For example, at this point, let us say that 0.75 percent, on the ascendancy curve, one individual will be far more under the influence of alcohol than if you consider him over here thirty minutes later, on the descendancy curve, even though the alcoholic blood levels are the same.

The reason for that is perfectly apparent. As the cells of the central nervous system are being acclimatized to the presence of alcohol, it has the greatest effect. After the

acclimatization has taken place, then there is a gradual wearing-off of the effect of the alcohol as it is metabolized.

Dr. Gundry has pointed out that alcohol is a food. If alcohol is a food, there are a few pertinent questions to ask about it. Is it a good food? Yes, it is a good food. Each gram of alcohol supplies seven calories of energy; a gram of carbohydrate, four; a gram of fat, nine; a gram of protein, four. Therefore alcohol is intermediate between carbohydrate and fat as a source of energy.

Is it a good source of food? No, it has to be burned immediately, or not used at all. We cannot store it in our liver and muscles as we can carbohydrate.

It is very interesting to note that when alcohol is burned in the body, the rate of burning of most individuals remains the same. If one takes the ideal man, of seventy kilograms, or 150 pounds, he can burn in the course of an hour 12 cc. of alcohol.

How much whiskey is that? That is 24 cc. of whiskey — two thirds of an ounce of whiskey.

If he gets his alcohol at that rate, he very seldom will ever exceed 0.04 percent in his blood, and his symptomatology will be very low. The alcohol will serve mainly as a food and not as a drug.

The amounts of alcohol in the quantities that are found in the blood after the ingestion of large quantities of alcohol in the form of beverages can be estimated very accurately by chemical methods.

If one places on the blackboard again the formula of alcohol, we know that in the human body alcohol is oxidized, and the products of metabolism are CO_2 and H_2O , identical with the products of metabolism of sugar.

Now, then, one may oxidize alcohol with chemical reagents. When one does this, by measuring the amount of reagent used by the alcohol, it is possible to tell how much alcohol is present in the blood, or in the organs, just as one can determine how much sugar is present in the blood.

Let us illustrate that. There is an instrument known as the "drunkometer". The drunkometer depends upon the use of a chemical known as potassium permanganate. As most

everyone knows, this is a chemical that is purple in color. This substance is an oxidizing agent. It will supply oxygen to the alcohol, convert it to carbon dioxide in water, and it will become colorless.

Now, for example, one may volatilize the alcohol out of the blood. By allowing the volatilized material, which is the alcohol, to come in contact with the potassium permanganate, a portion of the permanganate is decolorized. But one has found through very careful examination of many people who drink alcohol that some of it is eliminated in the exhaled air. The amount depends on the amount of alcohol in the blood. That relationship is this: The amount of alcohol in the blood is two thousand times the amount of alcohol in the exhaled air.

Now, let us think about that a moment. Why should it be so little in the exhaled air? Well, 95 percent of the alcohol is metabolized, about 3 percent of the alcohol is excreted in the urine, and about 2 percent of the alcohol is excreted in the exhaled air. Therefore, the relationship, which incidentally is a rather constant one, between the amount of alcohol in the exhaled air and the amount of alcohol in the blood is a reliable one.

Another device which is used for the determination of alcohol in the exhaled air is the "alcoholometer".

The principle is essentially the same. A material known as iodine pentoxide supplies oxygen to the alcohol and converts it to carbon dioxide and water. The iodine pentoxide is reduced by alcohol to iodine. The iodine reacts with a starch paste and sets up a blue color, the intensity of the blue color is picked by a photoelectric cell. From these data one can definitely determine the amount of alcohol in the exhaled air. This when multiplied again by our factor of two thousand gives the amount in the blood.

Now, one might ask the question, are these tests infallible? No. No chemical test is infallible. And the question can be asked, does one have to be very careful about conducting them? Yes, one has to be extremely careful, extraordinarily careful, but yet in the hands of a skilled technician, the test works out very well.

When the drunkometer was first developed, they used it to find out the condition of the operators of motor vehicles in and about the City of Chicago. They got a truck to go out on the roadside, with men dressed in white. Drivers were stopped and addressed in a very polite way, "Would you let me have a sample of your exhaled air?" Well, that is cheap. No one objected. They were rather proud to blow a sample of their breath into the container with the colored solution of potassium permanganate. When no decolorization occurred one was told to get back into the car, "You have no alcohol present in your blood."

Fifteen percent of the drivers had been drinking, two percent of those people had more than 0.1 percent of alcohol in their blood.

One of the first steps was directed toward determining when the drinking would take place. They found that of those driving at noontime only about two percent had been drinking. But between twelve Saturday night and two A.M. on Sunday, one finds that this goes up about twenty-five percent. So then you ask the question, "Well who are these people, anyway?" The age range falls between twenty-five and thirty, with equal distribution between the sexes. In other words, there are as many women as men drinking between the ages of twenty-five and thirty years and operating a motor vehicle while under the influence of alcohol.

Dr. Gundry and I discussed the tests that were carried out in the Caroline Institute in Stockholm, Sweden, which he so excellently delineated for you.

I would like to make one or two other comments with regard to these tests.

Those individuals, who were expert drivers, were shown to have an impairment of their driving ability under the influence of alcohol, and under the influence to the extent of about 0.04 percent. The same individuals were subjected to the so-called flicker fusion test, which represents the acuity of one's vision to watch a flicker of light fuse into one light as the intensity of the light is increased. These people under the influence of alcohol deteriorated thirty-seven percent in the flicker fusion test.

Again, they tried these people with the so-called "blink test". In this test there is a jet of air which is directed against the cornea. The degree of pressure which is required for the individual to cause blinking is determined.

These drivers again deteriorated to the extent of thirty-three percent in their performance after they had alcohol in their blood to the extent of 0.04 to 0.056 percent.

It seems to me that the evidence is quite clear that: One, we know where the alcohol goes in the body; two, we know that by chemical means the amount of alcohol can be determined with a fair degree of reliability, and, three, we are nearly certain that the symptomatology, the measurement of one's acuity of vision, of hearing, and so forth, parallels the alcohol concentration in the blood of those individuals who ingest it.

ADDRESS OF GEORGE D. SOLTER*

As Dr. Fisher has just told you,¹ I have been asked to give the lawyer's approach to this problem, and although I am at present and have been in the Prosecutor's Office, I will attempt to make my remarks applicable to both sides of the problem, that is, from both the defense lawyer's standpoint and the standpoint of the Prosecutor.

Of course, everything I say is based upon the assumption that everything these gentlemen have said is scientifically and medically correct. If what they have said is not, then anything I say on the subject is of little help, because we have to rely upon the accuracy of their studies, and the

* A.B., 1942, Johns Hopkins University; LL.B., 1949, University of Maryland School of Law.

¹ In introducing Mr. Solter, Dr. Fisher's remarks were in part as follows:

"I believe that the medical men have now established for us the background, insofar as the scientific part of the alcohol test is concerned. We are now going to turn to the other part of the problem, which is the application of the test to the situations that face us in court every day.

"Mr. Solter was the first State's Attorney to be assigned to the Traffic Courts last year, when it became evident that the real assistance of the State's Attorney's office was needed in the handling of drunken driving cases. He served for quite some months there, and I assure you he can talk from his experience there for a long time.

"I believe he is going to restrict himself to the legal questions, and the question of whether this is proper evidence, and what is apt to happen to such evidence here in Maryland."

studies of those who work with them in other states in the same field.

In recent years, the public has become increasingly aware of the menace of the driver of an automobile who is under the influence of liquor, or, as he is commonly known, the drunken driver. Fourteen states^{1a} have already placed upon their statute books new laws which finally put teeth into the law making it a crime to operate an automobile while under the influence of alcohol. These new laws have led to the introduction in the courts of the various chemical tests for alcoholic intoxication, which have just been described to you. In some states, the tests are compulsory. In others, the results of the tests are made admissible in evidence, if voluntarily given by the suspect. And in still others, the term "under the influence" is merely defined in terms of the tests in the event that a test was made and offered and accepted in evidence at a trial.

In 1952, the peak of public attention to the problem was reached here in Baltimore after a tragic fatal accident and the trial of the driver involved, who was charged with "operating under the influence". As a result of this, an Assistant State's Attorney was assigned to the Traffic Court by agreement of the State's Attorney of Baltimore and the Chief Magistrate of the Traffic Court, to prosecute all "under the influence" cases.

Now, I might say right there that the reason for that coming about is that a Traffic Court is a less formal court than the courts of the Supreme Bench of Baltimore City, and the Circuit Courts of the Counties, and there is a tremendous volume of traffic offenses that are handled there every day.

Under the normal situation, the police officer appears as the prosecuting witness and presents his own case. The Magistrate hears the evidence, and the defendant tells his story. Of course, if there are other witnesses for either side, they are brought in to testify.

It became apparent that these operating "under the influence cases" were serious matters, that in almost every

^{1a} Report of the Committee on Tests for Intoxication, National Safety Council (1952).

case the defendant was represented by counsel, and that the Magistrate was placed in a dual capacity of being the prosecutor as well as the sitting judge. This also placed a very heavy burden on the police officer, who had to present his own case.

In recognition of these factors, the triangle was completed by placing the prosecutor there to present the State's evidence, and to relieve the Magistrate of the dual function of having to try to direct the testimony out of the State's witnesses, and then in fact sit in judgment on the case.

Although this change helped the situation immeasurably, it was obvious that the law was not definitive on the question and must be changed in order to give the courts a scientific standard to help measure the term "under the influence", in addition to the other competent evidence to be presented.

In recognition of this need, House Bill 297 was introduced in the Maryland Legislature of 1953, but, unfortunately, and contrary to what Dr. Gundry said about the progress of the Bill, my information is that it died in committee, and never got out at all.

This Bill was, in the words of those who opposed the use of tests generally, the least obnoxious, in that it merely established certain presumptions, should a chemical analysis of the defendant's blood, urine, breath or other bodily substance be introduced in evidence. The three presumptions were as follows:

1. If the percentage was .05 or less, he is presumed not to be under the influence of intoxicating liquor.
2. If the percentage was in excess of .05 but less than .15, no presumption arises, but the presence of alcohol in the blood may be considered in determining guilt or innocence.
3. If the percentage was in excess of .15, he is presumed to be under the influence, but that, of course, is a rebuttable presumption.

The law made it clear that the test was not to be the sole measure, and its use was not to limit the introduction of other competent evidence bearing on the question of whether or not the defendant was under the influence.

Since this Bill never became law, today we are still faced with the same problem in court, and many dangerous drivers are acquitted, to return to their automobiles, perhaps to kill or maim; and occasionally an innocent person may be convicted. Perhaps at the next session of the Legislature, the Bill or a similar one, may pass, but until it does, the courts must continue to face the vague, biased, inaccurate and inconclusive evidence often placed before them by the witnesses.

Now, just to illustrate what I mean there, here are some typical bits of testimony that you will get in these cases.

You may have testimony to this effect, that at the scene of the accident one of the motorists is very irate and aggressive, and he protests to everyone, and when the police arrive he says, "Arrest that man, he is drunk."

The officer then goes about his investigation, and he may or may not feel the same way that the motorist does, but anyway, on the basis of that complaint, he places a charge of "operating under the influence" against this individual.

Well, a lot of things can happen between the time of the accident and the time that this case comes up in court.

One thing that can happen is that the irate motorist gets a nice check from the insurance company, or from the other party, for his damages, so that when he gets into court, the pressure is off, and he is satisfied, and under examination he will say, "Well, I am not sure, I did smell alcohol, but I could not be positive that he actually was under the influence." And so your testimony begins to fall apart.

Then you have the case where the motorist comes through with flying colors, backs up his statement that he has made at the scene, and so testifies in court. However, the officer may come in and say, "Well, I could not say that this man was actually under the influence from what I observed about him."

Thus you have a conflict in the State's evidence right there, raising a rather serious question of doubt in the mind of the Magistrate, and there is nothing else for him to do but throw the case out.

Then you have the injury alibi situation, where you establish your case all right, where everybody says the operator appeared to be well under the influence from all external things, such as slurred speech, staggering, bleary-eyed, and the odor, but the defendant then takes the stand and he says, "Well, there was an impact, my head bumped against the steering wheel, and I don't know, I don't remember too much about what happened." Of course, there is no physical evidence on the man that he was injured, but there you are. You don't know what to do with a thing like that.

These are just some of the things that we run up against in trying these cases strictly on the physical evidence that can be gathered from the people at the scene.

To point up the essential need for and the value of chemical tests of alcoholic intoxication, let me summarize a recent case in a state which had compulsory tests. There was an accident between two automobiles, one a sport model driven by a youngster, the other an expensive sedan operated by an elderly, well-dressed man. The youth staggered from his car, the odor of alcohol obvious from several feet away, his speech slurred, and at times unintelligible. From the crowd which had gathered came words such as, "He sure is plastered — hope he gets what is coming to him."

Then the other driver calmly surveyed the situation and with steady gait, approached the police who had arrived at the scene. The youth was unable to give his address, state where he was or the day of the week, but he steadfastly denied that he had had anything to drink. He was given the balloon test, one of these breath tests which have just been discussed. The older man, who admitted a drink or two several hours earlier, but who had no odor of alcohol on his breath, was given the balloon test also, "Just for the record."

Well, as a result of these tests, the older gentleman was later tried and convicted of operating under the influence, and the boy was sent immediately to the hospital for observation and was found to have a concussion. Much to

the amazement of all witnesses, and the police, the tests showed no alcohol present in the boy's blood and .25 percent in the older man's blood. The strong odor of alcohol on the youth was found to have come from a broken radiator and anti-freeze which had sprayed on his clothes at the time of the accident.

Can anyone doubt that the result of this case would have been the reverse if these tests had not been available and used? Perhaps a life as well as a reputation may have been saved.

Perhaps the most tenuous problem, from the lawyer's standpoint, will arise out of the question of the admissibility of the results of a chemical test where the test has been made compulsory by law. This problem can be broken down into two questions:

1. Does the taking of a sample of blood, breath, urine or other body substance for the test violate the constitutional right of the individual to refuse to testify against himself?

2. What expert testimony should be required to introduce the results of the test as competent evidence?

Dealing first with the question of constitutionality, we should examine the Maryland law and the cases that touch upon the point. There are two recent Maryland cases which may help us draw certain conclusions, but I do not feel that either settles the law, or would be controlling if applied to compulsory chemical tests for alcoholic intoxication. In *Shanks v. State*,² the Court of Appeals held that a test of blood found on the coat of the accused, who was charged with rape, was admissible against him, when this test was used for comparison with other tests of blood from the victim of the assault, blood from an alibi witness, and blood found at the scene of the crime. The Court distinguished this case from another in which it was held to be error to force an accused at his trial to try on a hat, which had been found at the scene of the crime. In that case, while the defendant was in court, in the progress of the trial before the jury, the State attempted, over the objection of the

² 45 A. 2d 85, 185 Md. 437 (1945).

defendant, to place a hat that had been found at the scene of the crime on his head, to see whether it fit or not, and the Court allowed it, but the Court of Appeals reversed the lower court and said that this was forcing a man to incriminate himself. The Court had this to say:

“The difference is this, . . . that when such comparisons and experiments are made outside of court, the evidence thereto falls from the lips of witnesses other than the defendant. The production of such evidence, therefore, and the testimony thereto, is not that of the defendant but of other witnesses; while, on the other hand, if the defendant is required against his objection in open court, in the presence of the jury, to make such experiments and comparisons, no extraneous evidence is required, and the constitutional prohibition is thereby violated.”³

It must be noted, however, that this case dealt with blood from the coat of the accused and not with a sample of his own blood taken from him. It, therefore, seems to be open to question as any precedent in the problem we are discussing.

The other case, which seems to me is a strong authority for the constitutionality of the compulsory tests, is *Davis v. State*.⁴ In this case a murder suspect had taken a quantity of iodine in an apparent attempt to take his own life. After treatment, he was placed in a cell in the County jail and treated by the County Medical Officer. The following day he was visited by another doctor, who took a specimen of the defendant's blood. The doctor said nothing of his reasons for taking the blood, except that it was at the request of the State's Attorney.

At the trial of the suspect, the results of a test made on this specimen of blood were introduced over objection of the defense, along with the results of tests of blood from the murder weapon, from clothing of the deceased, and from clothing of the accused, to show a comparison of the blood groups found. On appeal, the defense contended the blood from the defendant was taken from him by a sub-

³ *Ibid.*, 444.

⁴ 57 A. 2d 289, 189 Md. 640 (1948).

terfuge, and, therefore, violated his constitutional immunity to testify against himself. The alleged subterfuge was based on the defendant's belief that the specimen was being taken for use in connection with his own treatment for iodine poisoning, and, therefore, was not given with his consent for the purpose for which it was used at his trial.

In this case, the Court held, after stating that the question should be viewed as if the evidence had not been obtained by the completely voluntary action of the accused, that the case was one which fell into the class of cases where physical evidence had been obtained before trial and had been offered against him at the trial. In affirming the action of the trial court, the Court of Appeals said:

"We are unable to see where there is any constitutional question involved in this case. There is no substantial difference between obtaining a specimen of blood from an accused and obtaining his finger prints, or physical property, the possession of which by him is a pertinent question at issue in a felony charge against him."⁵

Now, for you lawyers who are present, it is perfectly true that this case involved the commission of a felony, whereas "operating under the influence" is made a misdemeanor. It would seem to follow, however, that if the blood test was admissible in a homicide case, which is a felony by common law, and involves the possible death penalty, it would be admissible in misdemeanor cases, where far less threat to life and property of the accused is present, even though the Maryland law does draw some distinctions between the admissibility of evidence in felony and misdemeanor cases.

That is a rather broad principle, which we do not need to go into here tonight, and which I am not going to go into. But for the purpose of this discussion I feel it would make no difference, and I feel definitely that the Courts would rule that since "operating under the influence" is a misdemeanor, and a lower grade of crime, they would follow the

⁵ *Ibid.*, 646.

other case, where they allowed such evidence to come in in a felony prosecution.

The argument of those who oppose the use of compulsory chemical tests, on the basis of unconstitutionality, centers on the theory that although the evidence or specimen has all the characteristics of physical evidence, it is still in the nature of something coming from within the accused himself and is, therefore, comparable to words of an incriminating nature either spoken or written by him.

Thus it seems to me that although the question is still not completely answered, the *Davis* case, which I have just discussed, appears to be a strong authority for the constitutionality of compulsory tests in Maryland. If you are interested in any further discussion on that point in other jurisdictions, where the authorities are divided, reference is made to the American Law Reports.⁶

Now, as to the question of expert testimony, some aspects of which have been dealt with by Dr. Krantz, the usual rules of evidence as to experts would prevail. The party offering the expert must show the qualifications of the expert as to training in the field, experience and general knowledge of the subject matter. His opinion concerning the results of the tests is admissible once he is qualified and once the proper foundation has been laid for the introduction of the results of the test. By the latter, I mean that the party offering the results of the test must show the conditions under which the test was made, prove that the chemicals were compounded to the proper percentage for use in the testing instrument, and prove the custody of the specimens from the time of taking to the time of calculation or analysis of the chemicals, showing thereby that the specimen was, in fact, taken from the accused and that it was not altered or otherwise changed between the sampling and the calculation.

Now, that is the burden that rests upon the State before it can even offer the tests at all, and before it gets the expert to tell what the tests mean.

⁶ 164 A. L. R. 952, and annotation beginning at 967.

As a practical matter, it is my opinion that once the practice of using the tests becomes general, the expert testimony itself will be replaced by a written report of the expert, providing the foundation for the introduction of the test results can be satisfactorily laid. Such is the case today in most homicide trials where counsel usually agree to submit the autopsy finding, without requiring the doctor to be present and testify as to the fact and accuracy as to the autopsy itself.

Of course, we have lots of cases where we call Dr. Fisher and his colleagues in, where the question of whether or not the wound could be caused by the alleged murder weapon is in dispute, and where the actual cause of death is in dispute. The defense counsel usually want him in there, to see if they can break him down, and they are not very successful.

There are many other facets of the whole question, which are too numerous to discuss at length. Most of these will resolve themselves after a determination of the constitutionality issue. I am referring to the need of advising the accused that the information derived from the tests may be used against him in court, the admissibility of the fact that an accused refused to submit to the test, and finally the validity of a penalty imposed by law on an accused who refused to submit to the test. There are some states that have that provision.

Obviously, if compulsory tests are held to be constitutional, then these other questions become moot, but if the compulsory feature of the law is not sanctioned, then it would seem that the introduction of the results of a test might be subject to some of the same requirements of evidence which now surround the introduction of an incriminating statement of an accused in any criminal proceeding.

Thus, after a review of the factors giving rise to a need for compulsory chemical tests of alcoholic intoxication, and of the law of Maryland and other jurisdictions on the question of admissibility of the results of such tests, it would seem to me, from the lawyer's standpoint, that a law based on the scientific approach, as given by Dr. Krantz, is highly

desirable and would accomplish the following objectives which are important to all of us.

1. The elimination of guesswork from the prosecution of driving under the influence cases.

2. The removal of the drunken driver from our streets and highways.

3. The protection of the occasional drinker, who may be competent to drive, but victimized by the circumstances surrounding an accident in which he may be involved.

4. The giving of prompt medical attention to persons who may be injured and at the time show the physical manifestations of alcoholic intoxication.

I think we are all seriously and sincerely dedicated to these objectives, not only those in the law enforcement field, but all concerned, and even defense counsel, who appear in Traffic Court frequently representing clients charged with this offense, should welcome it, because in many cases it will let their man out right off the bat, without any trouble at all, if he does not have enough on board to meet the requirement.

QUESTION AND ANSWER PERIOD

(Dr. Fisher) Among the questions that are immediately proposed is the following one, which is directed to Dr. Krantz.

What illnesses, injuries or other conditions of an individual can produce the outward appearance and symptoms of intoxication without any significant amount of alcohol being present in the system?

(Dr. Krantz) Without any alcohol being present in the system, one might consider the syndrome of diabetic coma, and its converse, because of the existence of too much insulin, both of which may produce a syndrome comparable to alcoholic inebriety.

What is more important, we find that a febrile condition can produce disorientation of mechanical action on the part of an individual. A volatile type of ammonia may do exactly the same thing. The administration of many drugs will produce a syndrome comparable to the condition of in-

ebriety. For example, the antihistamines, such as ephedrine and benzedrine, can produce drowsiness, inability to think quickly and alertly, the diminution of the acuity of vision, and the diminution of the acuity of hearing. And we find that with some old-fashioned drugs, as the excessive use of paraldehyde, or an excessive dose, in the neighborhood of 150 milligrams, and the old-fashioned chloral hydrate, which may produce a syndrome comparable to alcoholic inebriety. And we find that such drugs as atropine, when given in toxic doses, will produce hallucinations, disorientation and amnesia, which is again a syndrome comparable to alcoholic inebriety.

(Dr. Fisher) It appears that a good many medical conditions may confuse a physician, and it may be that too many questions may produce the same effect. But I hope not.

Here is a question directed to Dr. Gundry: Does an old toper absorb alcohol as fast as an uninitiated individual?

(Dr. Gundry) I think I may have partially answered that in my brief talk, but, as a general rule, when he is at the peak of his prowess as a drinker, he probably absorbs alcohol faster than the average or uninitiated drinker. However, after he passes the peak and begins to deteriorate, he does not absorb it as well. As I mentioned, he may develop high levels of blood alcohol with a relatively small amount of alcohol ingested.

(Dr. Fisher) Could we follow that up a little bit more? This old toper who absorbs alcohol rapidly, just where does he stand in respect to the fellow who drinks a quart a day, and yet who never appears drunk? How can he keep up with that situation, when you or I go out and have seven highballs and are not eligible to drive an automobile? What is the difference? Is there a difference of ability to tolerate the alcohol, or is it an ability to burn up the alcohol, so that we do not get a high level? This is an important question, Dr. Gundry.

(Dr. Gundry) That is a pretty hard question to answer, but I will stick to what I said, that I believe that two or three individuals, regardless of their experience and their

ability to drink, if you find them with the same blood alcohol, they will be about equally incompetent to operate a motor vehicle.

I think that is the important thing. Whether they absorb it rapidly or oxidize it quickly, or whatever they do with it, if they have a blood alcohol of .15 percent and higher, they are incompetent to operate a motor vehicle in an efficient and safe manner.

(Dr. Fisher) I think that is an important question that repeatedly occurs to those of us concerned with the problem.

Mr. Solter, I have one for you.

How does the law which utilizes blood alcohol tests work out in the fourteen states where they now have such a law? Can we learn now about some of the points in Maryland, in comparison with the other states?

(Mr. Solter) I am not going to answer that question on the basis of constitutionality, but rather on the basis of practicality.

From the literature that I have read on the subject, where these tests have been used in many other states, the most significant thing reached is that the conviction rate is up around 90 percent or better.

Now, there are a lot of reasons for that.

I think one significant reason is that by the use of the test at the scene, and a rapid calculation made, many people are never even charged, because the result of the test would indicate to the authorities that the person was not sufficiently under the influence to warrant even the issuing of a ticket. So you eliminate that group right at the source.

And then jumping to the other extreme, where you get a test that shows a high percentage, you get a high level of guilty pleas. And that helps a great deal. You save a lot of time, and it makes it easy for the Magistrate. But I think that the statistics do show that a far more effective enforcement situation exists where they do have the tests.

(Dr. Fisher) Here is a question which seems to be directed to me.

Of what particular value is such a test when there are different degrees of alertness by the driving public? In

other words, one person who may be alert and intelligent, even when under the influence of alcohol, would still be more alert than some dull-minded person who has never touched a drop of alcohol.

This, to be answered, involves saying simply that under the law of our State, "under the influence" is defined in terms of significant impairment of one's own ability to operate a motor vehicle. In other words, it is the presumption that each citizen has certain duties to the general public to maintain himself in his best driving capacity. And even though there may be a few dull drivers, who are very poor drivers, and who may even go around killing people, that does not allow the rest of us who are good drivers to get ourselves so tanked up that we become as big a danger as those very poor drivers.

Here is another question, one which I think one of the panel might answer. It gets down to the question of percentage.

What does the alcohol present in the blood of an individual represent in relation to the amount of alcohol actually consumed by the individual?

This has been touched upon, but I think it might be repeated, because it is the current belief that one can take a drink and still be a safe driver.

(Dr. Krantz) Dr. Gundry has touched on this problem this evening, but I want to give you certain percentages of alcohol that have resulted in the blood of individuals who have ingested definite quantities of alcohol.

Miles, in England, some ten or fifteen years ago, took a number of individuals and gave them 34 cc. of absolute alcohol. That would be 200 proof. This alcohol was diluted to 100 cc. which is 34 percent or 68 proof; a weak whiskey, in other words. And the individuals who took this had a concentration on the average of alcohol in their blood of 40 milligrams percent. And on the other hand, when the same amount of alcohol was diluted to a thousand cc. it was 3.4 percent instead of 34 percent. The concentration in the

blood was far less also, namely 30 milligrams percent instead of 40 milligrams percent.

There is another point that I would like to emphasize with regard to drinking, and the amount of alcohol in the blood.

This experiment has been repeated many times.

If you take a non-initiated individual and give that non-initiated individual this amount of alcohol, let us say 34 cc's, diluted to a hundred cc's — that is roughly three ounces of a 34 percent alcohol — the non-initiated individual, the occasional drinker, will have about that concentration in the blood, but you give it to an old toper, you will find that his concentration in the blood will be far less. It may be half as much.

And the reason for that is this, that by repetitious drinking, and the repetitious impinging of the particles of alcohol, the constituents of the drink, upon the mucosa of the stomach and intestines, this becomes indurated, and the alcohol is not absorbed as rapidly.

And this is a condition that is called a pseudo tolerance, not a real tolerance.

But this is the result of the constant effects of the alcohol that he is taking. He is getting the pleasure of drinking, if you can call it pleasure. But he is paying for it. He does not really get much of the effect, but he is simply taking pleasure in drinking it and taking it down the hatch.

(Dr. Fisher) Here is a question for Dr. Gundry.

Does alcohol increase the physical efficiency of an individual when taken in small calculated amounts?

(Dr. Gundry) No, it does not. I am sorry, but it does not.

All tests have been done with accuracy, like throwing darts, or playing baseball, or doing anything that requires ordinary physical coordination, even playing tennis, is not done as well under the influence of alcohol.

Now, people commonly think that they are doing better, because their inhibitions are removed, and they move around with seeming great facility and all that, but they do not do the tests better.

I have observed that for many years in treating chronic alcoholic addicts and watching them play pool. You will see him playing pool, and you know about how he plays, and he will go along in the game, and then you will see him miss two or three easy shots. And you wonder what his blood alcohol is. And very often, if you would check it, you would find that it was rather high at that time.

Now, there is another question here. Do you want me to answer that?

(Dr. Fisher) Yes, go ahead.

(Dr. Gundry) What effect does fatigue have on a person with alcohol in his system?

Well, I think it has about the same effect as on a person without alcohol.

That was brought out in those experiments of Bjerver and Goldberg,¹ in which two groups of drivers were exposed to exactly the same amount of fatigue, or boredom, or whatever else entered into it, and I think it was shown that they had about the same effect. But I think very often when you hear a person say that they are tired, I think that they should spell it differently, and I think that instead of t-i-r-e-d, it ought to be t-i-g-h-t, and they get confused at the time.

(Dr. Fisher) Here is a question for Mr. Solter.

Do you believe a blood test taken from an unconscious defendant would be admissible in court?

(Mr. Solter) Well, there are cases in other jurisdictions which have held on that question both ways.

That may sound like a typical lawyer's answer, but in law you can always find a case somewhere that is opposed to what you want, or what the professional view is.

It would seem to me that if the test were upheld on the question of self-incrimination, that is, if it could be taken from him when he is aware of what is going on, without violating his constitutional rights, that certainly it would be equally constitutional to do it when he was not. And I don't know whether that satisfactorily answers the question or not. But, on the other hand, I think that if it

¹ Dr. Gundry's Address, *supra*, p. 118.

were not constitutional to take it from him while he was aware of it, obviously it would not be the other way.

(Dr. Fisher) Dr. Krantz, here is one for you.

Would a high blood sugar give a false positive blood alcohol or a higher blood alcohol percentage in the iodine pentoxide starch² test?

(Dr. Krantz) No, it would not.

(Dr. Fisher) That disposes of that.

Here is another one for Dr. Krantz.

If the percentage of alcohol when ingested is known, and the base line time element at the base of your graph, would it not be necessary to know exactly when the driver began to drink his six beers, and to know how long he lingered at the bar to drink from his first to his sixth beer; and also would you not have to know the time of the accident when the test would be given, and how much time elapsed after the accident before the test was given?

This is a double question, actually, the first having to do with whether you can prophesy a blood level in terms of time spent in drinking it; and the second, what is the effect of delay after the accident on the picture of the individual at the time he took the alcohol.

(Dr. Krantz) No, you cannot prophesy a blood level in any individual from the amount of alcohol he has ingested, because so many factors are involved.

As has been pointed out this evening, one important factor is how much food is in the stomach during the time of ingestion. This will delay the absorption.

If the alcohol has been ingested in the malt beverages, such as beer, ale, and so forth, the colloidal matter will retard absorption of the alcohol. And the methods of the dilution of the alcohol is an important factor. And what is more, every individual will absorb alcohol to a different degree. The absorption of alcohol from the gastro-intestinal tract is absorption very much like a sieve. It is like a small particle going through a larger opening. And the absorption of certain other materials, like sugar, from the tract, is

² Dr. Krantz's Address, *supra*, p. 124.

a more definitely regulated process and it involves certain enzymatic reactions that one cannot go into here. So that the amount of alcohol can not be predicted in one's blood from the amount of alcohol that has been ingested, unless all the other factors are known. And then it would be nothing more than a speculation, and not an accurate estimation.

(Dr. Fisher) In other words, it is not so much to know how much he drank or when he drank it, but you would have to go back to some test to show what his blood level was at the time of the accident?

(Dr. Krantz) That would be my opinion.

(Dr. Fisher) Now, the other part of this question goes into the delay between the accident and the time the test is taken. And this is an important problem in the use of the test. Can you tell us something about that?

(Dr. Krantz) Well, the test, of course, will give you no indication as to when the alcohol was ingested. It will not tell you a thing, whether the curve was on its ascendancy or whether it was on its descendancy, which in turn may make a difference in the symptomatology of the patient, but, nevertheless, the test will tell you that he has or has not alcohol in his blood, that will influence the alacrity in his ability to handle various situations.

(Dr. Fisher) Here is one for Mr. Solter.

The license to drive being a privilege granted by the State, could it not be made a prerequisite in his application to get a driving permit that he agrees in advance that if he is ever accused of drunken driving in the future, he will submit to a chemical test?

(Mr. Solter) Of course, that goes back into this whole question that the license to drive an automobile is a privilege granted by the State rather than a right that exists in the individual as a citizen.

It would seem to me that under the present interpretation of licensing, that that condition would be valid, because now, today, even if a man is convicted in the Traffic Court, where the Magistrate has a right to suspend a driver's license up to ninety days for the conviction, the individual

is still subject to administrative review of his case by the Commissioner of Motor Vehicles.

And it frequently happens, that even after a man has been sentenced, fined, and his license revoked or suspended, or, rather suspended by the Traffic Court, for the maximum ninety days, he may go before the Commissioner on a hearing and have his license taken up permanently, indefinitely, or for a specific period of time.

So that points up the contention that it is still looked upon as a privilege rather than a right of the individual.

If it were a right, a lawyer might have a good argument when he went before the Commissioner of Motor Vehicles to claim that his client was being placed in double jeopardy, that he had already been tried and convicted for this offense at the Traffic Court, and his sentence had been meted out, and that any further action would place him in double jeopardy.

Lots of people have argued that, but nobody has ever taken it to the Court of Appeals. And I am not the Court of Appeals, and I do not know what the answer is.

(Mr. Wolfson) Well, Mr. Solter, I asked that question.

Now, isn't it true that in civil cases all non-resident drivers in effect subject themselves to having service of summons received for them — and whether they ever get them or not makes no difference — but you send the notice of summons, advising the disposition of the license with respect to the non-resident driver.

(Mr. Solter) That is right.

(Mr. Wolfson) Now, they are subject to judgment even if they never come into court, and that procedure is followed even when the registered letter is mailed out.

(Mr. Solter) That is right.

(Mr. Wolfson) To follow that out along the same line, there is the situation in Massachusetts, where the question was whether a policeman could insult a magistrate, and he raised the question, and he said, "You don't have a right to be a policeman." And in a situation of that kind, I don't know what would happen to the older drivers. At least, that could be made a condition precedent to their right to drive.

(Mr. Solter) Well, I think that is a very good analogy.

(Dr. Fisher) Here is one that has reference to the fact that our Maryland statutes provide for driving while under the influence of intoxicants as well as under the influence of drugs.

And I acknowledge that briefly by saying that is true. And yet the problem of driving while under the influence of drugs is almost negligible, in comparison with those persons that drive while under the influence of alcohol.

And here is one directed to Dr. Krantz, again getting down to where the chemical test is employed.

Will the presence of hydroxy butyric acid (as a part of acidosis) — can this alter the final result in a breathing test?

(Dr. Krantz) I cannot answer that question out of my own experience, except that my opinion would be that the amount of acidosis that might be present on one's breath would not influence the test with regard to the amount of alcohol that is present, owing to the fact that if alcohol had been ingested, the amount of alcohol would be so much greater than the amount of butyric acid that the amount of butyric acid would be negligible as influencing the test, if it did, and I am not sure that it would.

(Dr. Fisher) This has been confirmed many times, even diabetics of the worst type, and if he takes the chemical test, they will show a result of .01 or .02, and we know that we would not accuse them of drunken driving.

Here is one that could probably be put to all of you:

Would it be in order for this meeting to pass a resolution endorsing the use of chemical tests in drunken driving cases, and send such results to the proper authorities?

Now, I don't know how to answer that question. I am sure that it is in order for every one in here, both the physicians and the lawyers, and the other folks concerned, to work, and to work actively, at the Legislative Council level, and, more importantly, in Annapolis, when the opportunity arises to do something that will improve the way we are handling our drunken driving cases.

We know of some of the things that have happened in the way of handling these under the influence cases in

other places. And by a vigorous program of enforcement, they can show statistically that they have decreased deaths due to alcoholism.

In the City of Detroit, in a period of less than ten years, they have shown a decrease from ninety a year to ten a year.

If Detroit can do that, Maryland can do something good along this line.

And whether it is appropriate for this meeting here to pass a resolution, I do not know, but I am sure it is certainly proper for those of us here who are interested enough to come in here for such a discussion as this to continue to work for improvement in our problems along this line.

EDITOR'S NOTE

Shortly before the above Symposium was held, the State of Tennessee passed a statute establishing a rebuttable presumption of guilt if the blood of the accused, as shown by chemical tests of the blood, urine, or breath, was found to contain .15 percent (by weight) of alcohol. Those interested in the problem will find a Comment, *Chemical Tests for Intoxication in Tennessee*, 23 *Tenn. L. Rev.* 178-195 (1954) of great value, since it treats with all aspects of the problem, including the constitutional one.