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The Function of Chemical Tests in Determining Drunkenness

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of governmental generosity toward tort claimants established by the Federal Tort Claims Act "should not be set aside or hampered by a niggardly construction based on formal rules made obsolete by the very purpose of the Act itself."⁵⁷ The trend has culminated in the recent Supreme Court decision of the *Aetna* case which repudiates the doctrine's application to the Tort Claims Act. The Court said it thought that the congressional attitude in passing the Act was more accurately reflected by Justice Cardozo's statement that "The exemption of the sovereign from suit involves hardship enough, where consent has been withheld. We are not to add to its rigor by refinement of construction, where consent has been announced."⁵⁸

With the exception of those cases denying joinder under the Act and those disagreeing as to Congress' intent as to servicemen's claims, the prevailing attitude of the courts is to describe the Act as being skillfully drawn in clear and unambiguous language and to give effect to the expressed intent of Congress that the United States shall be liable as a private person on claims within the coverage of the Act.

JOSEPH R. GERAUD

THE FUNCTION OF CHEMICAL TESTS IN DETERMINING DRUNKENNESS

The great increase in the number of motor vehicles on our highways in recent years¹ has been paralleled by an even greater proportionate rise in the consumption of alcoholic beverages.² In Wyoming, 463 drivers had their licenses revoked for drunken driving during the first ten months of 1949.³ It is safe to assume that for every arrest many violators went unpunished because no traffic violation or accident resulted from their intoxication.

What kind of evidence should convict or exonerate the defendant when he is charged with drunken driving? Should testimony of the arresting officer and casual witnesses be sufficient, or are more reliable results reached through using chemical tests? That tests are becoming more common is shown by the recognition in 1944 by the American Medical Association's Committee to Study Problems of Motor Vehicle Accidents of a standardized criterion of inebriation,

57. *Spelar v. United States*, 171 F. (2d) 208 (C.A. 1948), rev'd. 70 Sup. Ct. 10.

58. —U.S.—, 70 Sup. Ct. 207,216 (1949).

1. In 1947 there were 37,883,265 motor vehicles registered in the United States as contrasted with 25,163,789 in 1935, an increase of about 34 per cent, despite a halt in production from 1942-1945. Figures from *World Almanac 1949 Ed.*, 252.
2. In 1947 the total value of liquors, wines, and beers sold in the United States was \$3,469,000,000 as contrasted with a sale of but \$699,000,000 in 1935. While much of this difference can be traced to increased costs and excise taxes, the 1947 consumption was far in excess of that of 1935 per capita. Figures from *Economic Almanac, 1949 Ed.*, 335.
3. Associated Press release appearing in the *Rocky Mountain News*, Nov. 2, 1949.

and recommendation that it be used,⁴ and the prior adoption by four states of statutes with provisions similar to those found in the recommendation.⁵ Further indication that a knowledge of tests employed is important to the attorney is found in recent court decisions. Both blood⁶ and urine⁷ tests have been admitted as evidence to prove the defendant's intoxication, the blood test over objection that the defendant did not know for what purpose the sample was taken.

Chemical tests for determining drunkenness are predicated on the fact that shortly after alcohol is consumed, the body reaches a state of alcoholic "equilibrium," i.e., concentration of alcohol is one part of the body closely parallels that in another, so that by analyzing matter taken from a particular part of the body, the quantity of alcohol in other parts of the body, including the brain, can be predicted.⁸ Experiments have shown that the brain and blood reach equilibrium almost at once, while the muscles, the slowest parts to attain equilibrium, lag from one to two hours behind.⁹ Thus samples of blood, urine, saliva, breath, and lumbar spinal fluid have been used successfully in determining intoxication.¹⁰

1. *Blood tests.* As previously stated, the blood and brain reach speedy equilibrium. Because alcohol as a volatile substance evaporates thereby separating from the other constituents of the blood, it is not difficult to determine the percentage of blood which is alcohol.¹¹ Once that is determined, an interpretation of the discovered percentage is necessary, and it is here that the findings of the National Safety Council's Committee on etsts become pertinent.¹² The Committee advanced the following as a guide:

% OF ALCOHOL	RESULTING INFERENCE
Below 0.05	Subject not under influence within meaning of the law
0.05 to 0.15	Other evidence must be resorted to largely in determining intoxication.
0.15 and over	Prima facie evidence of intoxication

Before an arrived at percentage is accepted as correct and an inference drawn, however, areas of possible error should be explored to protect the defendant. If the blood contains volatile substances in addition to the alcohol, a false

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4. Report of American Medical Association's Committee to Study Problems of Motor Vehicle Accidents. *Jour. of Amer. Med. Assoc.* 124: 1290 (April 29, 1944).
 5. See Oregon Laws 1941, c. 430, Sec. 1; Laws of Maine 1939, c. 273; New York Laws 1941, c. 726, Vehicle and Traffic Law, Sec. 70, Sub Sec. 5; Indiana Laws 1939, c. 48, Art. V, Sec. 54 (2). The statutory criteria established by these states closely parallel the recommendations made by the Committee and those allowed in evidence by courts in states without such statutes, so that the general rules of law applicable to chemical tests for intoxication, except for comparatively unimportant details, are largely uniform in all states.
 6. *People v. Tucker*, 88 Cal. App. (2d) 333, 198 P. (2d) 941 (1948).
 7. *Ridgell v. United States*, 54 A (2d) 679 (D.C., 1947).
 8. "A Rapid Chemical Test for Intoxication Employing Breath," Harger, Lamb, and Hulpieu, *Jour. Amer. Med. Assoc.*, 110:779, (1938).
 9. See note 8, *supra* at 771.
 10. See note 9, *supra*.
 11. "Method for Determination of Ethyl Alcohol for Medico-legal Purposes." *Indust. and Eng. Chem., Analytical Edition*, 13:905-907 (1941).
 12. See note 19, *infra*, 411.

alcohol value will be obtained unless steps are taken to remove the foreign substances.¹³ Ordinarily, there is little danger that such substances will be present unless the subject is being treated for a malady like diabetes, which requires the administration of methenamine, or some other medicant producing formaldehyde, acetone, or additional volatile substances in the blood.¹⁴

Sterilization of the skin with alcohol before the blood sample is taken has been cited as a basis for possible error, and one chemist describes a test in which a 0.12 per cent error resulted.¹⁵ This suggests the importance of establishing that the test was conducted by expertly trained technicians using clean and adequate apparatus, since, for example, a small quantity of alcohol carelessly left in the bottom of a test tube could cause gross error.

When plasma (clotted blood) is used rather than whole blood, higher alcoholic percentages may be obtained if adjustments are not made to compensate for the difference in specific gravity between the two.¹⁶ A related problem arises when the blood sample is taken from a putrifying body, a not uncommon procedure when an automobile accident results in death. There is the likelihood that some of the products of putrefaction may react the same as would alcohol on the oxidizing solution, and thus make the alcoholic content figure too high.¹⁷

Another possible objection arises from the general acceptance of the proposition that individual differences in tolerance to alcohol exist,¹⁸ raising the question as to whether the same criterion of intoxication can justly be applied to all suspects. It has been suggested that to overcome this difficulty, chemical tests be used as a flexible, auxiliary aid only, and as the other evidence available directs.¹⁹

2. *Urine Tests.* An obvious advantage of urine over blood tests is that urine can be collected without the necessity for stabbing the subject with a needle. Nonetheless, although a correlation between blood and urine alcohol has been established,²⁰ more chances for error are present than when blood is

13. See note 11, *supra*. The method by which the interfering substances are removed from the blood is to pass the distilled vapor from an acid medium containing the sample through a solution of concentrated sodium hydroxide containing mercuric oxide.

14. See note 11, *supra* at 906.

15. I. M. Rabinowitch, "Medicolegal Aspects of Chemical Tests of Alcoholic Intoxication," 39 *Journ. of Crim. Law and Criminology* 225 (1948) 229.

16. See note 15, *supra*, and R. N. Harger, "Medicolegal Aspects of Chemical Tests of Alcoholic Intoxication," 39 *Journ. of Crim. Law and Criminology* 402 (1948) 402.

17. See note 15, *supra* at 230-231.

18. Dr. Raymond Pearl, John Hopkins Medical School, quoted in *Science Digest*, October, 1947, 50; R. N. Harger, Professor of Biochemistry and Toxicology, Univ. of Indiana School of Medicine, see note 16, *supra* at 408; Dr. I. M. Rabinowitch, Professor of Medicine and Lecturer in Medical Jurisprudence and Toxicology, McGill Univ., Montreal, see note 16, *supra* at 238.

19. C. W. Muehlberger, "Medicolegal Aspects of Chemical Tests of Alcoholic Intoxication," 39 *Journ. of Crim. Law and Criminology* 411 (1948) 413.

20. See note 8, *supra* at 779.

used. Because of the acidity of the urine, volatile reducing substances are present in varying amounts, even though the subject has not taken medicines containing them,²¹ and so again there is the danger that the alcohol content figure arrived at will be too high, unless the urine is rendered alkaline²² or subjected to the same process as blood containing foreign volatile substances.²³

Another interesting pitfall is reported concerning the finding of alcohol in the urine but none in the blood.²⁴ The subject had taken several drinks about ten hours before the test was conducted, but had not urinated until that time, so that the blood has completely oxidized all alcohol present.

3. *Saliva Tests.* Saliva tests have been approved by the Committee on Tests for Intoxication of the National Safety Council,²⁵ and their validity is widely acknowledged.²⁶ At least one authority contends that more oxidizable non-alcoholic substances are present in the saliva than the blood,²⁷ thereby again giving rise to false alcohol values. This may be a partial reason for the comparative rarity of the test.

4. *Breath Tests.* A marked advantage of the breath test is the ease with which the sample is obtained. There is no necessity for the presence of a doctor or laboratory facilities other than those needed to measure the alcoholic content of the breath.²⁸ Such apparatus is sold commercially under the name of the "Harger Drunkometer."²⁹ It has gained wide acceptance and use in certain parts of the country, especially by police stations.³⁰

Of interest to the attorney is a recent Michigan decision³¹ that overruled a conviction for negligent homicide when the proof of drunkenness was predicated on results reached by the Drunkometer.

The test is conducted by capturing a sample of the subject's breath,³² which is passed through a chemical solution. If alcohol is present, the solution will change color, the intensity of which depends upon the concentration of alcohol.³³ It is assumed that each subject's breath contains 5.5 per cent of carbon dioxide³⁴

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21. R. Bamford, "Poisons: Their Isolation and Identification," (1940), 34 as quoted by Rabinowitch, note 15, supra at 232.
 22. See note 15, supra at 232.
 23. The method is described in note 13, supra.
 24. See note 22, supra.
 25. "Chemical Tests Are Fair," leaflet published by the Committee on Tests for Intoxication, as cited by Rabinowitch, note 15, supra, 244.
 26. Jour. Lab. and Clin. Med., 23:1007 (1938).
 27. Jour. Biol. Chem., 115:47 (1936).
 28. See note 8, supra, 780.
 29. See article appearing in the American City, Feb., 1948, p. 123.
 30. See note 29, supra. The Drunkometer is used extensively by the Detroit Police Department. Officers are given six months training prior to their assignment to operate the machine. During a nine month period in 1947, 614 persons arrested were shown to be intoxicated, while the other 237 tested were declared sober.
 31. People v. Morse, 38 N.W. (2d) 322 (Mich., 1949).
 32. See note 28, supra.
 33. See note 28, supra at 781.
 34. See note 28, supra at 781.

in fixing the ratio between it and the alcohol. Herein lies a major criticism of the breath test, the argument being that the percentage of carbon dioxide in the breath varies from 4.7 to 6.8 per cent, and that as a result false alcoholic values will be found whenever 5.5 is the improper figure.³⁵ The importance of the objection has been minimized by the inventor of the Drunkometer, who states that variations in carbon dioxide are ordinarily slight, and that they may be largely eliminated by having the subject take a sitting or reclining position.³⁶

A distinct advantage of the Drunkometer is that it is not affected by the presence in the blood of non-alcoholic substances like acetone.³⁷

5. *Spinal Fluid Tests.* The lumbar spinal fluid has been found to supply a highly accurate index to the degree of intoxication.³⁸ Necessarily, this test is possible in unusual circumstances only, since spinal tests are delicately performed.

Once the test has been performed and its results are known, the question of admissibility in evidence arises. As previously indicated,³⁹ courts have held blood and urine tests to be admissible. It is obvious, however, that the person testifying as to the test must first be qualified as an expert witness, since technical skill is required in ascertaining alcoholic percentages, as well as in interpreting them. After the witness has qualified as an expert, a further objection that may be raised by the defense is that the defendant's privilege against self-incrimination will be violated by allowing evidence taken from his person to be used in proving his guilt. While duress in obtaining a test sample has been held to render the chemical test results inadmissible,⁴⁰ if the defendant has volunteered to submit to the test, courts uniformly have held that the self-incrimination privilege is not violated.⁴¹

Even when it has been proved that the test was valid and that there was no duress in its administration, the court may refuse to allow submission of the evidence to the jury on the ground that there is insufficient scientific knowledge or agreement concerning its reliability, as in the Michigan Drunkometer case.⁴² However, when the more widely accepted blood and urine tests are used, this objection has not prevailed, and courts have consistently ruled that the test results may go to the weight of the evidence, to be evaluated by the jury along with other evidence bearing on the question of intoxication.⁴³

Although as yet no test for the determination of alcoholic intoxication has been advanced that is completely accurate, it is submitted that chemical tests

35. See note 15, *supra* at 243.

36. See note 8, *supra* at 780.

37. See note 28, *supra* at 784.

38. See note 28, *supra* at 779.

39. See notes 6 and 7, *supra*.

40. *Apodaca v. State*, 140 Tex. Crim. Rep. 593, 146 S.W. (2d) 381 (1940).

41. *Touchnon v. State*, 154 Fla. 547, 18 S. (2d) 752 (1944); *State v. Haner*, 231 Ia. 348, 1 N.W. (2d) 91 (1941); *State v. Cash*, 219 N.C. 818, 15 S.E. (2d) (1941).

42. See note 31, *supra* at 324.

43. *Lawrence v. Los Angeles*, 53 Cal. App. (2d) 6, 127 P. (2d) 931 (1942); *Halloway v. State*, 146 Tex. Crim. Rep. 353, 175 S.W. (2d) 258 (1943); *Kuroske v. Aetna L. Ins. Co.*, 234 Wis. 394, 291 N.W. 384 (1940).

are making an important contribution in protecting society from the drunken driver, and likewise the sober driver from the indiscriminating police officer or other witness. Certainly they are useful in rebutting the almost inevitable, "I only had a couple of beers," or in sustaining the contention of the suspect who claims that he staggered away from his wrecked automobile not because he was drunk, but because the impact of the collision left him groggy.

RICHARD S. DOWNEY

THE DUBIOUS STATUS OF PEACEFUL PICKETING

The status of peaceful picketing is one of confusion when we consider the shifting views of the courts on the questions of what constitutes peaceful picketing, and who may participate in it. With respect to the former question, the suggestion has been made that picketing is illegal if it is assumed to be the exertion of an economic pressure, but on the other hand if picketing is only the exercise of the right of free speech, it is legal.¹

Distinctions have been made between the terms "picketing,"² which at first was presumed to be illegal, "patrolling,"³ and the use of "missionaries,"⁴ which were held to be within legal bounds.

There are certain important landmarks in the decisions of the United States Supreme Court on picketing. In 1921 the Court decided that strikers and their sympathizers should be limited to one representative at each entrance of an employer's plant, and all others should be enjoined from gathering or loitering at the plant or in the nearby streets. These representatives, or "missionaries," had the right to observe, communicate and persuade, but they could only singly approach persons willing to listen to their grievances. Furthermore, the Court was of the opinion that these "missionaries" could only come from the striking employees or from those hoping for re-employment in the plant.⁵

By 1937 the Supreme Court was beginning to inject the element of freedom of speech into the issue of what constitutes peaceful picketing. A Wisconsin statute⁶ permitted peaceful picketing and patrolling by a single person, or by many persons, as long as it was done without coercion, intimidation, or violence. A labor union, taking advantage of this statute, put an employer out of business because he refused to unionize his employees. In upholding the union's right to picket and publicize its dispute with the employer, Justice Brandeis spoke for

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1. 1 TELLER, LABOR DISPUTES AND COLLECTIVE BARGAINING 321 (1940).
 2. *American Steel Foundaries v. Tri City Central Trades Council*, 257 U.S. 184, 205, 42 Sup. Ct. 72, 77, 66 L. Ed. 189, 27 A.L.R. 360 (1921). "The name 'picket' indicated a militant purpose inconsistent with peaceful persuasion."
 3. *Sterling Chain Theatres v. Central Labor Council*, 155 Wash. 217, 283 P. 1081 (1930). Patrolling was held to be legal if the patrol remained more than 100 feet away from the place being patrolled.
 4. *American Steel Foundaries v. Tri City Central Trades Council*, note 1 supra.
 5. *American Steel Foundaries v. Tri City Central Trades Council*, supra.
 6. Wisc. Stat., sec. 103.53 (1935).