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POLICE SCIENCE

INTERROGATION UNDER DRUG INFLUENCE

The So-Called "Truth Serum" Technique

C. W. Muehlberger

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It has long been known that certain drugs which have a depressing effect upon central nervous system function, also produce a remarkable candor or freedom from inhibition in the subject, which causes him to give truthful answers to questions. The oldest of these drugs is alcohol. For centuries investigators have realized that one method of loosening the tongue and eliminating repressive influences in an uncommunicative subject is to ply him with liquor. This well-known effect of alcohol has given rise to the time-honored aphorism "*in vino veritas*"—in wine there is truth.¹ With the advent of anesthesia about a century ago, it was observed that during the induction period and particularly during the recovery interval, patients were prone to make extremely naive remarks about personal matters, which, in their normal state, would never have been revealed.

Probably the earliest direct attempt to utilize this phenomenon in criminal interrogation stemmed from observations of a mild type of anesthesia commonly used in obstetrical practice during the period of about 1903-1915 and known as "twilight sleep."² This anesthesia was obtained by hypodermic injection of solutions of morphine and scopolamine (also called "hyoscine") followed by intermittent chloroform inhalations if needed. The pain-relieving qualities of morphine are well known. Scopolamine appears to have the added property of blocking out memories of recent events. By the combination of these drugs in suitable dosage, morphine dulled labor pains without materially interfering with the muscular contractions of labor, while scopolamine wiped out subsequent memories of the delivery room ordeal. The

1. Pliny, the Elder, who lived during the first century A.D. states "It has become quite a common proverb that in wine there is truth." (Natural History, Book XIV, section 141.)

2. Schneiderlin. *Ärztliche Mittheilungen aus-und-für Baden*. May 1901. Cited by B. Korff. *Münch. med. Woch.* 48:1169 (1901).

technique was widely used in Europe but soon fell into disrepute among obstetricians of this country, due largely to overdosage.

During the period of extensive use of "twilight sleep" it was a common experience that women who were under drug influence, were extremely candid and uninhibited in their statements. They often made remarks which obviously would never have been uttered when in their normal state. Dr. Robert E. House, an observant physician practicing in Ferris, Texas, believed that a drug combination which was so effective in the removal of ordinary restraints and which produced such utter candor, might be of value in obtaining factual information from persons who were thought to be lying. Dr. House's first paper³ presented in 1922 suggested drug administration quite similar to the standard "twilight sleep" procedure: an initial dose of $\frac{1}{4}$ grain of morphine sulphate together with 1/100 grain of scopolamine hydrobromide, followed at 20-30 minute intervals with smaller ($\frac{1}{200}$ - $\frac{1}{400}$ grain) doses of scopolamine and periods of light chloroform anesthesia. Subjects were questioned as they recovered from the light chloroform anesthesia and gave answers which subsequently proved to be true. Altogether Dr. House reported about a half-dozen cases, several of which were instrumental in securing the release of convicts from State Prisons, he also observed that, after returning to their normal state, these subjects had little or no recollection of what had transpired during the period of interrogation. They could not remember what questions had been asked, nor by whom; neither could they recall any answers which they had made. The entire period was simply a blank in their recollection.

Naturally such a paper, with its recommendation that the technique be made legally obligatory, aroused a storm of protest.⁴ Undaunted, Dr. House continued to press for the adoption of his technique into medicolegal practice.⁵ It was during this controversy that newspaper writers coined the colorful term "Truth serum"—one which Dr. House himself adopted, in spite of the fact that it was patently misleading. The drug is not a *serum* and, as subsequent investigation disclosed, it

3. House, Robert E. "The Use of Scopolamine in Criminology." *Texas State Journal of Medicine* 18:256-263 (Sept. 1922). Reprinted in the *Amer. Jr. of Pol. Sci.* 2:328-336 (Jul-Aug. 1931).

House, Robert E. "Scopolamine-Apomorphia Amnesia in Criminology." *Anesthesia & Analgesia* 4:162-9 (June 1925). House's experiments critically discussed by Dr. John A. Larson in "Lying and Its Detection," Univ. of Chicago Press, 1932, at pages 204-220.

4. "Does Scopolamine Make Criminals Tell the Truth as Declared." *Current Opinion* 75:344-5 (Sept. 1923).

5. House, Robert E. "Why 'Truth Serum' Should be Made Legal." *Medico Legal Journal* 42:138-148 (1925).

does not invariably lead to the truth. Nevertheless, common usage⁶ has caused the term to remain in our popular vocabulary.

As indicated in the preface to the reprinting of Dr. House's paper in this Journal,³ the staff of the Scientific Crime Detection Laboratory of Northwestern University Law School conducted a series of experiments⁷ in an attempt to duplicate and evaluate Dr. House's technique. It was particularly desired to arrive at some indication of the degree of accuracy which might be expected from such interrogation.

Subjects who volunteered for this study consisted of adult graduate or professional students as well as some of our own staff members. Because the subject, during the period of drug action, was largely at the mercy of the experimenter, a close personal friend of the subject was selected to be present throughout the interrogation procedure to see that confidences were not violated. Each subject was asked to prepare a list of 20 questions which could be briefly answered. Typical questions were:

- 1) What was my mother's maiden name?
- 2) In what town or city was I born?
- 3) From what high school did I graduate?
- 4) Have I ever been swimming in the Pacific Ocean?

It was agreed in advance that only the questions on the list, or questions closely associated with them, would be asked. The subject's private affairs would not be pried into. Thus if the subject said that he *had* been swimming in the Pacific Ocean, we might inquire as to where, when, and under what circumstances this had occurred. In some instances we requested the subject to lie to the best of his ability, and to school himself in the lies that he would tell. "My mother's maiden name wasn't Jones, it was Smith; Smith is my story, and I will stick to it in spite of anything which might happen!"

The subject, accompanied by his friend, would present himself early in the evening after a very light meal. The drug combination was administered, and when the proper condition of nervous disorientation had developed, he was subjected to questioning from the prepared list.

Early in the experimental series we discovered that morphine and chloroform added little to the questioning procedure. All they seemed

6. "Truth Serum—a drug administered to induce temporary truthfulness." Webster's New International Dictionary—2nd Edition.

7. These tests were undertaken by the late Mr. Leonarde Keeler and the present writer under the direction of Col. Calvin Goddard. They were detailed in part in Col. Goddard's paper "How Science Solves Crime: III 'Truth Serum' or Scopolamine in the Interrogation of Criminal Subjects." *Hygeia* 10:337-40 (Apr. 1932).

to accomplish was to increase the feeling of nausea in the subject and to make him more drowsy and incapable of replying to questions.⁸ Our best results were obtained by giving an initial subcutaneous injection of 1/100 grain of scopolamine hydrobromide, followed at 20-minute intervals with subsequent doses of 1/200 grain each. This slow and progressive administration of the drug resulted in considerable delay for it ordinarily required three to six of the 1/200 grain injections in order to reach the stage required for interrogation. This meant that from one to two hours would be consumed simply in arriving at the desired degree of scopolamine influence. Inasmuch as there is a wide variation in individual susceptibility to scopolamine, this slow and cautious building up of scopolamine dosage was chosen in order to avoid the hazard of poisoning in an unusually susceptible subject. It should always be remembered that scopolamine is an exceedingly potent drug, and overdosage is to be rigorously avoided. We also felt from our experiments, that freshly prepared scopolamine hydrobromide solutions made from fresh stock of drugs gave better results than older (and possibly oxidized) preparations.

As the scopolamine takes effect, it will be noted that there is some slight acceleration of the pulse rate from a normal 70 or 80 beats per minute up to 100 or 110. If the pulse speeds up to more than 120 or 125, it is a signal for withholding further administration of scopolamine. The respiratory rate likewise is slightly increased. Pupils are dilated, speech becomes a bit thick and the skin (particularly the face) is slightly flushed, warm, and dry.

Early during the induction period the subject is shown some common object such as a watch or a key, and told to remember what was shown him. At intervals thereafter, he is asked concerning the nature of this object. At first he will remember clearly and respond at once. As the scopolamine effect progresses, a point will be reached where he has no clear recollection of what was shown him. At this time, one will find that the subject exhibits other signs of scopolamine effect such as a general disorientation. He will have lost much of his ability to judge distances and will grope for articles which are patently out of reach. He will have mild hallucinations—will brush imaginary flies off his clothing or pick things out of the air. These are all signs that the time for interrogation is at hand.

Questions are then asked, and the answers which are given *immediately thereafter* are set down. Because scopolamine increases the sub-

8. Panse, F. "Dangers of Scopolamine-morphine Administration and Advantages of Pure Scopolamine Medication." *Munch. med. Woch.* 74:453-4 (1927).

ject's suggestibility, questions must be asked in such a way that they do not indicate the answer. If you state "You shot John Jones, didn't you?" you may get an affirmative answer from an innocent person. One should ask "Who shot John Jones?" Likewise questions should be briefly phrased, so that the subject will not have forgotten the first part before the last part is given him. Scopolamine shortens the memory for recent events to an almost unbelievable degree. By the same token, the answers should be brief. Oftentimes the subject will start to answer the question and then wander off onto some entirely irrelevant subject—the pretty girl he met on the bus last night, or the trouble he has been having with the carburetor of his automobile. This may mean that the question has to be repeated over and over again at intervals before consistent answers are obtained. Only answers which are consistently adhered to should be treated as significant.

In order to lie successfully, it is imperative that one's memory of recent events be good. During an interrogation, a liar must construct a mythical situation, and in order to be consistent, he must remember accurately all phases of the "fairy story" which he has constructed. He must literally construct a whole fabric of lies, each one based upon the preceding ones. And if he is not to be tripped up by glaring inconsistencies, he must remember accurately each detail of that fabric. Under scopolamine influence he cannot recall the lies he previously told and therefore is unable to present a consistent story. As a result of this inability he takes the easy way out—he tells the truth.

It is well to question the subject intermittently until he returns to normal. In fact, it is extremely difficult to say just when a return to normal has been made. Oftentimes the most pertinent information is obtained from persons who appear to have returned completely to their normal state. And a subject should be kept under surveillance by his friend for hours after he appears normal, in order to make certain that no harm comes to him.

In twenty-five subjects, this type of questioning brought forth 75-85% of factual answers. Some almost unbelievable results were obtained. In one instance a staff member who volunteered as a subject, set down the question "Have I ever been arrested for an automobile traffic violation?" Under scopolamine influence he admitted that he had. We made further inquiry as to when, where and under what circumstances and were told the following story: The subject, together with three fellow students at Virginia Military Institute, had taken his old Ford touring car and driven to Morgantown, W. Va. for a celebration. When he returned to his parked car in order to go back to campus,

he found a policeman ticketing the car for parking in a prohibited zone. It took the last dime that the four students could scrape up between them to pay the fine so they could get out of town.

The following day when we were checking the accuracy of our interrogation, we came to this particular question and informed our colleague that he *had* been arrested for traffic violation. He laughed and replied, "I thought I would fox you on that one! You'd certainly think that anyone who had driven a car as much as I, would have been ticketed at some time or other. But I never have!" Then we recounted his story of the Morgantown celebration, and as we did so, the subject's face became pink and then scarlet. He said, "That's true—but I had forgotten all about it." And I am of the opinion that he was telling the truth.

In another instance, a medical student whose home was in New York City suggested the question: "What is my father's telephone number in Manhattan?" Under scopolamine he gave us the exchange "Gramercy" and then five digits. This question was asked repeatedly, and the same answer invariably received. On checking our score the next day, the subject said that he didn't really remember his father's telephone number. He knew it was a Gramercy exchange, but was not certain of the number. A check with the Manhattan telephone directory indicated that the number given under scopolamine influence was the correct one. In both of these instances, we were able to withdraw from the subject information of which he was not consciously aware. The whole thing sounds so incredible that I hesitate to mention it. Apparently scopolamine enabled us to delve down into the unconscious mind and bring hidden data to light.

In these experiments it must be borne in mind that we were dealing with subjects of better-than-average mental capacity, probably having I. Q. ratings well over 100. With the average criminal suspect, the intellectual caliber is much lower, and it is not surprising to find that one's "batting average" is far below the 75-85% which was observed under controlled conditions with university personnel. In this writer's experience in 40 criminal cases one may feel grateful if he obtains useful information in half of them.⁹ This is not always the fault of the technique—as will be illustrated by the two following instances.

(A) A middle-aged safecracker was interrogated by the lie detector technique concerning his knowledge of a certain burglary. While he insisted that he had no knowledge of the crime, his lie detector records gave definite evidence of deception. Nevertheless, he maintained his innocence and said he was

⁹ Similar experience was reported by Charlin, M. A. "The Problem of Narco-analysis in Forensic Medicine." *Ann. med. legale* 29:161-66 (1949).

willing to do anything in his power to prove it. A scopolamine test was arranged, and he was given the drug to the point where he was properly dis-oriented. However, when questions were asked, he replied with the most peculiar combination of sounds, entirely unintelligible. It happened that the subject had an upper dental plate which fit rather loosely but which could easily be controlled by the subject when normal. Under scopolamine this control was lost, and the teeth did a beautiful tap dance—but no understandable words came forth.

(B) In another case, two Sicilians were accused of shooting a rival boot-legger. The lie detector records indicated that both men had knowledge of the crime in spite of their protestations of innocence. When asked if they would submit to a scopolamine test, only one of them agreed. Although this man spoke somewhat broken English with an evident foreign accent, he was quite readily understandable. Under the influence of scopolamine, he spoke volubly in reply to questions—but the answers were in some foreign tongue. We scoured the city for Italian and Sicilian interpreters who could tell us what this fellow was saying, but to no avail. Under scopolamine, the speech is always a little "thick" just as it is in persons who are moderately "drunk." Furthermore, each locality in Sicily has its own local dialect, and unless one finds a person from the same region, he will have difficulty in understanding and interpreting.

Subjects under scopolamine may be somewhat difficult to handle. They are likely to develop ideas that they want a drink, or they wish to void urine or they would like to go out for a walk. When one attempts to gratify their desires, it is found that the whole idea was just a hallucination. Nevertheless, it may require considerable physical persuasion to keep a powerfully-built subject from carrying out his idea that he wants to go out to the corner drug store for a pack of cigarettes.

As has been pointed out previously, truthful answers are not always forthcoming when the scopolamine test is applied.¹⁰ Thus any information which one received in a criminal interrogation must be carefully scrutinized to see if supporting physical evidence can be obtained. Nevertheless, where lie detector tests or other circumstances indicate that a subject is withholding information, even though he protests his innocence, the "truth serum" technique will oftentimes provide information which is of the utmost value. For example, a suspect in a shooting case may be questioned (under drug influence) as follows:

- Q. After the shooting, what did you do with the gun?
- A. I threw it in the river.
- Q. What river did you throw the gun into?
- A. The Chicago River.
- Q. Where did you throw the gun into the Chicago River?
- A. Off the Halsted street bridge.
- Q. Off which side of the Halsted street bridge did you throw the gun?
- A. Off the East side.

10. Editorial "Cross Examination under Anesthetic." *Lancet* 275:990 (Nov. 10, 1928).

With this information a magnetic drag or a diver might very well locate the gun.

During the interrogation it might be advisable to take recordings with a portable microphone so that after he has returned to normal, the subject can be confronted with his own statements.

Although the percentage of cases where helpful information is received is not too high, the extent of help sometimes borders on the miraculous. The following case is illustrative.

(C) The treasurer of a large women's organization had collected several hundred dollars in cash dues at an evening meeting and, in company with another member, had stopped at a tavern for refreshment on her way home. The refreshment apparently was considerable, and both she and her companion showed evident effects of liquor. A taxicab was called for them, and the two women were taken home. The following morning the treasurer called the cab headquarters to report that her purse with the collected dues had been left in the cab the previous night. By checking the cab dispatcher's record, the proper driver was found, but he denied any knowledge of the purse. When given a lie-detector test the results furnished good evidence of deception in spite of the driver's vehement protests that he was entirely innocent. When asked if he would submit to a scopolamine test, he grudgingly gave permission. Under the influence of the drug, the cabby told a very different story. When he called for the two women at the tavern, they were patently drunk. After managing to find out just where they wanted to go, he took the companion home and then the treasurer. In fact, he had to help the treasurer out of the cab and up the steps of her home. When he returned to his cab he found that the purse had been forgotten. So he took the purse home with him, placed it in a coffee can, and buried it in the garden plot at the rear of his home. He felt that the women were so drunk that they wouldn't know where they had left the purse and that after the matter had cooled down, he would be able to spend the money gradually without arousing any suspicion.

Investigators were immediately dispatched to the cabby's home. There they found freshly-turned earth in the garden plot and digging down found the coffee can with the purse. These were brought back to the interrogation room while the cabby was still under the drug influence. Hours later, after he had returned to normal, the cabby was confronted with the evidence. Having no recollection of having told the story, you can imagine his consternation at seeing the coffee can and purse.

One of the advantages of the scopolamine technique is that, although the period of recovery is protracted and often lasts for six or eight hours, the subject has no recollection of what transpired during the questioning period. He does not know what questions were asked nor what answers were given. After the proper stage of disorientation has been reached, one can bring in a whole group of investigators and even informers ("stool pigeons") who are personally known by the subject, and they can participate in the interrogation. The subject will recognize them at the time and will talk with them. If they are removed before the subject is too far out of the scopolamine influence, he will

not know that they had been around. This is particularly helpful in preserving the usefulness (and health) of informers.¹¹

One type of mental derangement which had long puzzled medical scientists was a form of dementia praecox (catatonia) in which the patient was entirely unresponsive to his environment. These patients do not seem to see or hear anything which transpires and are as helpless as babies. In early experiments, first with injections of small amounts of sodium cyanide and later with inhalations of carbon dioxide, Loevenhart and his co-workers¹² found that such patients were restored to normal mental activity for very brief intervals. After Loevenhart's death, this type of research was carried forward by his associates¹³ with remarkable results. The drugs which were found to be most effective were the injectable barbiturates, notably sodium amytal.

Lindemann¹⁴ observed that when comparatively small doses of sodium amytal (3 to 4½ grains) were injected into the blood stream, the slight nerve sedation was sufficient to produce a psychological release in the subject, who would then speak with the utmost candor concerning past behavior, thoughts, and experiences.

Carrying his own researches on sodium amytal injections further, Lorenz¹⁵ found that not only would schizophrenics become temporarily lucid and capable of conversation under the effects of the drug, but criminal suspects would lose their ability to lie successfully. To secure the proper stage for interrogation one gram of sodium amytal is dissolved in 20 cc. of sterile distilled water and injected intravenously at the rate of 1 cc. per minute. The subject relaxes, becomes drowsy, and falls asleep. Injection is continued until the corneal (winking) reflex disappears, which usually requires 10 to 12 cc. of drug solution. The subject is then allowed to sleep for at least 10 or 15 minutes and then aroused by applying cold wet towels to the face. Questioning is continued throughout the recovery period. Whenever it was considered

11. An incident of this type involving a gang member under investigation by the Chicago Crime Commission's "Secret Six" was reported with some embellishments in *Liberty Magazine*, July 15, 1939, in an article entitled "G-Woman."

12. Loevenhart, A. S., Lorenz, W. F. and Waters, R. "Cerebral Stimulation." *Jour. Amer. Med. Assoc.* 92:880-883 (March 16, 1929).

13. Bleckwenn, W. J. "Narcosis as Therapy in Neuropsychiatric Conditions." *Jour. Amer. Med. Assoc.* 95:1168 (October 18, 1930).

Lorenz, W. F. "Some Observations on Catatonia." *Psychiatric Quart.* 4:95-102 (1930).

14. Lindemann, E. "The Psychopathological Effect of Sodium Amytal." *Proc. Soc. Expt. Biol. and Med.* 28:864-6 (1931). See also *Amer. Jour. Psychiatry* 11:1083-1091 (1932).

Lindemann, E. and Malamud, W. *Amer. Jour. Psychiatry* 13:853 (1934).

15. Lorenz, W. F. "Criminal Confessions under Narcosis." *Arch. of Neurol. and Psychiat.* 28:1221-22 (1932).

Lorenz, W. F., Reese, H. A. and Washburne, A. C. "Physiological Observations During Intravenous Sodium Amytal Medications." *Amer. Jour. Psychiatry (n.s.)* 13:1205-1212 (May 1934). Abstracted in this *Journal* 26:449-51 (1935).

desirable to lessen the amytal effect, stimulant drugs such as coramine or caffeine were injected.

While the first use of scopolamine was in obtaining a desirable anesthesia, particularly in obstetrical cases, its ability to remove inhibitions and to penetrate deeply into one's consciousness has long been recognized by psychiatrists.¹⁶

During World War II, this general technique of delving into a subject's inner consciousness through the instrumentality of narcotic drugs was widely used in the treatment of war neuroses (sometimes called "battle shock" or "shell shock"). Fighting men who had been through terrifically disturbing experiences oftentimes developed symptoms of amnesia, mental withdrawal, negativity, paralyses, or many other mental, nervous, and physical derangements. In most instances, these patients refused to talk about the experiences which gave rise to the difficulty, and psychiatrists were at a loss to discover the crux of the problem. To intelligently counteract such a force, it was first necessary to identify it. Thus the use of sedative drugs, first to analyze the source of disturbance (narcoanalysis) and later to obtain the proper frame of mind in which the patient could and would "talk out" his difficulties, and, as they say "get them off his chest"—and thus relieve himself (narco-synthesis or narco-therapy)—was employed with signal success.¹⁷

In the narcoanalysis of war neuroses a very light narcosis is most desirable. With small doses of injectable barbiturates (sodium amytal or pentothal sodium) or with light inhalations of nitrous oxide or somnoform, the subject pours out his pent-up emotions without much prodding by the interrogator. In persons accused of criminal acts, such light narcosis brings forth continued lies or a refusal to talk at all. This difference in productivity under light narcosis has been recommended by Ludwig¹⁸ as a means of differentiation between true neurosis

16. Vessie, P. R. "Scopolamine Sleep in Psychiatric Work." *Anesthesia and Analgesia* 4:170-181 (June 1925).

Mosier, M. M. and Hames, E. R. "The Identification of Amnesia Victim by the Use of Scopolamine." *This Journal* 26:431 (Sept. 1935).

17. a) Sargant, W. and Slater, E. "Acute War Neurosis." *Lancet* II:1 (1940).

b) Wilde, J. F. "Narco-analysis in the Treatment of War Neuroses." *Brit. Med. Jour.* II, page 4-7 (July 4, 1942).

c) Horsley, J. S. "Narco-analysis." Oxford University Press, London, 1943. 134 pp.

d) Grinker, Roy R. "Treatment of War Neuroses." *Jour. Amer. Med. Assoc.* 126:142-45 (September 16, 1944).

e) Kelley, D. McG. "Use of Somnoform as an Aid in Narco-analysis and Narco-hypnosis." *Amer. J. Psychiatry* 106:692-696 (March, 1950).

(NOTE: These are merely illustrative papers in the extensive published literature of narco-therapy).

18. Wagner, Charles G. "Feigned Insanity; Malingering Revealed by the Use of Ether." *Amer. Jour. of Insanity* 61:193-8 (Oct. 1904).

and malingering. Failure of psychiatrists to realize this difference may account for many of the reported failures of the "truth serum" technique [Redlich].¹⁹ *Unless the subject is brought to a deep grade of narcosis¹⁵ his ability to lie successfully will remain unimpaired.*

The same techniques employed in getting to the root of the disturbing influence in war neuroses have also been used in modified form for obtaining facts pertaining to an alleged crime. The removal of inhibiting influences results in more truthful responses to questions. Applied to problems of malingering and feigned amnesia¹⁸ the techniques have proven to be of great value.

As might well be expected, measures which proved so fruitful in wartime, might find extensive use in peacetime problems of arriving at the truth. These same techniques are slowly being adapted to the problems of law and justice.¹⁹

Many questions and objections have been raised concerning the utility, legality, and reliability of so-called "truth serum" tests. At the present time the test results would not be admissible as evidence, since the technique is not generally recognized as possessing "a reasonable measure of precision in its indications." The legal problem is further complicated by the fact that a suspect could not be compelled to submit to the test, because to do so would violate his privilege against self-incrimination.²⁰

Lennox, W. G. "Real and Feigned Amnesia; Scientific Proof and Relations to Law and Medicine." *Amer. Jour. Psychiatry* 99:732-45 (March 1943).

Ludwig, A. O. "Clinical Features and Diagnosis of Malingering in Military Personnel; Use of Barbiturate Narcosis as an Aid in Detection." *War Medicine* 5:378-82 (June 1944).

Morris, D. P. "Intravenous Barbiturates; an Aid in the Diagnosis and Treatment of Conversion Hysteria and Malingering." *Military Surgeon* 96:509-13 (July 1945).

Ollivier, H. "Medicolegal Value of Psychosomatic Narcoanalysis in its Military Application." *Ann. med. legale* 27:154 (Aug.-Sept. 1947).

19. Heinrich, A. "Attempts at Obtaining Confessions Under Effects of Anesthesia; Experiments with Ether and Evipan-sodium." *Schmerz, Narkose-Anesth.* 11:78-82 (Aug. 1938).

Adatto, C. P. "Narco-analysis as a Diagnostic Aid in Criminal Cases." *Jour. Clin. Psychopathology* 8:721-5 (April 1947).

Palmieri, V. M. "Pharmacodynamic Exploration of Mind and Nervous System (Especially with Anesthesia and Mescaline) for Medico-legal Purposes. *Giorn. Med. Mil.* 94:181-191 (May-June 1947).

Senigaglia, V. "Use of Narco-analysis in Psychiatry and Legal Medicine; Preliminary Report." *Arch. Antropol. Crim.* 68:15-22 (1948).

Gerson, M. J. and Victoroff, V. M. "Experimental Investigation into Validity of Confessions Obtained under Sodium Amytal Narcosis." *Jour. Clin. Psychopath.* 9:359-75 (July 1948).

Gagineur, J. P. "The Judicial Use of Psychonarcosis in France." *This Journal* 39:663-6 and 40:370-80 (1949).

Redlich, F. C., Ravitz, L. J. and Dession, G. H. "Narcoanalysis and Truth." *Amer. Jour. of Psychiatry* 107:586-593 (Feb. 1951).

20. Herzog, A. W. "Scopolamine as a Crime Detector." *Medico-Legal Journal* 40:62-3 (1923).

Inbau, F. E. "Scientific Evidence in Criminal Cases. II Methods of Detecting Deception. B. The Truth Serum." *This Jour.* 24:1153-6 (1934); also, Inbau, Self-Incrimination: What Can an Accused Person be Compelled to Do? (1950), at pp. 68-69.

A second objection concerns the reliability of the results obtained in "truth serum" interrogations. Because the answers obtained are not invariably true, some persons insist that the procedure is worthless. By the same token, eyewitness testimony is equally suspect, for, as so frequently happens, people are inaccurate in reporting what they see, or think they see. Nothing which depends upon human observation or interpretation can ever be entirely infallible. As has been pointed out, "truth serum" is only recommended as a means of last resort, when other methods have failed. And its results are only of value insofar as they lead to the discovery of other tangible evidence, which may be admissible. Unless supporting evidence is obtainable, the reliability of results of "truth serum" tests are open to serious question.

If the prosecution is debarred from presenting testimony concerning a "truth serum" test at the trial of a criminal action, to what extent may the respondent utilize such testimony in his defense? It would seem that if the results of a "truth serum" test are not sufficiently reliable to be admissible as prosecution evidence, they are equally unreliable for the defense. Nevertheless, on a few occasions *trial* courts have allowed accounts of so-called "truth serum" tests to be presented by defendant's medical witnesses.²¹ Such a procedure seems grossly unfair, particularly where there was no opportunity for the prosecution to be represented at the test. If the results of truth serum tests are to be introduced in court, either of two procedures should be employed: (a) The court should appoint its own medical expert to conduct the test and afford opportunity for representatives of both defense and prosecution to be present throughout the test or (b) The defense should give the prosecution ample notice of their intent to conduct a "truth serum" test and permit the prosecution to have its own expert witness the test.

This latter method is somewhat akin to the procedure in some jurisdictions wherein the defense is required to give ample advance

Evidence Obtained under the Influence of Drugs or Hypnosis. (Editorial.) *Medicolegal and Criminological Review* 10:66-7 (1942).

Despres, L. "Legal Aspects of Drug-Induced Statements." *Univ. of Chicago Law Review* 14:601-16 (June 1947).

Richtet, C. and Desoille, H. "Investigation of Subconscious Mind of Suspect by the Aid of Modern Pharmacodynamic Methods Is Inadmissible." *Annales de med. legale* 26:27-28 (1946).

21. In the investigation of an alleged murder in Wisconsin, a judge ordered a psychiatrist to see the defendant and to "make whatever examinations that were considered to be advisable and necessary." In that instance, Dr. W. F. Lorenz, Director of the Wisconsin Psychiatric Institute, in conducting his psychiatric examination administered sodium amytal and questioned the subject while under drug influence. At the insistence of defense counsel, testimony concerning this interrogation was admitted over objection at the trial. (*People v. Harold Best*. Crawford County Circuit Court, Prairie du Chien, Wisconsin, March, 1938.)

notice of intention to present an alibi defense and to state the elements of the alibi and the names and addresses of the alibi witnesses.

Until such time as the techniques of "truth serum" testing have been developed to the point where the results are more reliable than they are at present, it seems a very questionable practice to admit testimony concerning them. The likelihood of a gross miscarriage of justice through undue dependence upon unreliable statements is entirely too great.

Can a person, under the influence of narcotic drugs, be persuaded to confess to crimes which he did not commit? In other words, under "truth serum" might an innocent person be convinced that he committed a certain crime? This same question has come up with reference to hypnotism. Since du Maurier's "Trilby" appeared in 1894, fiction writers have outdone each other in hypothecating all manner of involuntary actions taken under hypnotic influence. Bizarre stories of crimes committed involuntarily by persons under hypnotic influence make interesting reading, but have never been substantiated by factual evidence. In fact, the only experimental attempt to substantiate this thesis²² has yielded entirely negative results.

Concerning the possible use of narcotic drugs to obtain fictitious confessions, may I quote the eminent British psychiatrist Dr. J. Stephen Horsley: "I have used narcotic hypnosis successfully as a means of eliciting confessions of guilt of all degrees. I have also used it experimentally in an attempt to obtain confessions of guilt in innocent persons. The results of these experiments have convinced me that narcosis cannot be used in this manner to make an innocent person admit anything which would not be admitted in the fully conscious state."²³

What degree of reliability may be expected from the use of "truth serum?" As has been pointed out, our experiments have yielded very encouraging results. Various reports obtained through newspaper accounts paint a rosy picture of this technique as the key to truth and honesty.²⁴ Naturally, unsuccessful applications of "truth serum" are not news and consequently are not reported. The experience of Prosecuting Attorney James G. Davis of Birmingham, Alabama, in January, 1924, is illustrative.²⁵ Twenty-five axe murders had occurred over a

22. Haupt, J. "Possibility of Committing Criminal Acts Under the Influence of Hypnotic Suggestion." *Zeitschr. f. d. ges. Neurol. u. Psychiat.* 159:767-8 (1937).

23. See footnote 17c.

24. N. Y. Times, Nov. 28, 1923, page 4. "Scopolamine tried successfully on New Orleans reporters who tell the truth despite efforts to lie."

25. N. Y. Times, Jan. 8, 1924, page 1. "Under Truth Serum Five Birmingham Negroes Confess Committing Axe Murders," also see Robinson, H. M. "Science Gets the Confession." *Forum* 93:15-18 (Jan. 1935).

period of time, and no solution had been forthcoming. Finally, about a dozen suspects were rounded up, questioned, and submitted to "truth serum" tests. As a result, the killers were discovered, confessed, and the whole matter cleared up. The test is not only of value in convicting the guilty; it is even more important in exonerating the innocent suspect. In November, 1935, it proved of value in uncovering evidence which exonerated two convicts of a murder committed 28 years earlier.²⁶

The truth serum technique has been employed repeatedly in criminal interrogation by investigators of the Kansas City Police Department [Barkham].²⁵ The most recent report of its successful use comes from the University of Minnesota.²⁷ Dr. James H. Matthews of the University Medical School's Department of Anesthesiology collaborating with the Department of Protection and Investigation, utilized a combination of scopolamine and intravenous sodium pentothal injections to secure the degree of nerve depression required for questioning. The period of narcosis lasted from two to six hours, and in the ten cases studies, useful results were obtained in 100% of them. It is suggested that techniques where narcosis is of such depth and duration require the services of an experienced anesthesiologist, if serious and embarrassing accidents are to be avoided.

One would expect that the "truth serum" technique would be ideally suited for the interrogation of prisoners in wartime. However, military regulations²⁸ forbid this practice in accordance with provisions of the Hague and Geneva Conventions.

Much unreasonable, and to some extent, unfair criticism of narcosanalytic procedures has resulted from their employment in forensic psychiatry. In the *Heirens* case,²⁹ defendant, at the time of his apprehension, received a blow on the head from a flower pot. It was contended that the brain injury thus received resulted in an amnesia and possibly some mental derangement. To determine the mental condi-

Barkham, J. "Truth Drugs: The New Crime Solver." *Coronet* 29: (No. 3) 72-76 (Jan. 1951).

"Scopolamine Confession." *Time Magazine* 26:54-55 (Nov. 18, 1935).

"Truth About Truth Serum; An Unethical Trick . . . or an Aid in Diagnosis?" *Science Illustrated* 2:62 (January 1947).

26. *N. Y. Times*, March 10, 1935, page 16. "Newly Developed Truth Serum Clears Two Murder Suspects at Bellefonte, Pa."

N. Y. Times, Nov. 29, 1935, page 3. "Truth Serum Proves Two Innocent of Murder Committed 28 Years Ago. Arnett, Oklahoma."

27. Matthews, J. H. "Narco-Analysis for Criminal Interrogation; a Preliminary Report." *Journal-Lancet* 70:283-289 (Aug. 1950).

28. *Rules of Land Warfare*, War Department Field Manual, FM 27-10, Section 78.

29. Grinker, Roy R. "Modern Methods of Crime Detection: Truth Serum." A paper read at a joint meeting of the Institute of Medicine of Chicago and the Chicago Bar Association on November 9, 1948.

tion of the defendant, the court appointed a board of qualified psychiatrists and gave them authority to conduct an examination. As a part of their endeavor to differentiate between real and feigned amnesia, they administered sodium pentothal intravenously. While under the drug influence, it was not only established that defendant's memory was quite clear, but also that he had committed the murder with which he was charged, as well as numerous other offenses. After defendant had recovered from the drug effect, these statements were called to his attention, and a complete confession resulted.

A somewhat similar case in Paris stirred up sufficient furor to cause the Council of the Paris Bar Association to pass a resolution against any use of drugs during interrogation.³⁰ Raymond Cens, charged with traitorous collaboration with Nazi occupation forces, appeared to have suffered an apoplectic stroke which rendered him incapable of recalling past events prior to the time of his trial. The French court authorized a board of eminent psychiatrists to conduct an examination for the purpose of evaluating defendant's reported amnesia. In the process of conducting their examination they employed the narco-analytic technique. Defendant did not offer objection to the administration of the drug and even held out his arm for the purpose of receiving the injection. As a result of this test it was established that defendant's memory was unimpaired and that his amnesia was feigned. At the trial, testimony on this point was admitted in evidence over vigorous objection, and probably was partly responsible for conviction.

Subsequently, defendant Cens instituted a civil suit against the psychiatrists of the board, alleging assault and illegal search. At the trial of this action it was established that the board had only employed routine psychiatric procedures necessary for answering the question put to them by the court—namely, whether or not defendant was, in fact, suffering from amnesia. Since the actual physical damage to the defendant, if any, was nominal, an acquittal of the psychiatrists was ordered.

The Cens case aroused considerable controversy throughout Europe³¹ and even produced repercussions in the Assembly of the United Nations.³² The French opinion concerning the legality of these procedures is perhaps best summarized by the well-reasoned critiques of

30. N. Y. Times, July 8, 1948, page 6.

31. Between 1945 and 1950 a wave of medicolegal discussions, apparently provoked by the Cens case, appeared in European journals. Of some 35 papers on the subject, two-thirds were by French authors.

32. N. Y. Times, April 1, 1950, page 3, Resolution offered by the Egyptian delegate against the use of drugs during criminal interrogations.

Dr. Louwage and Prof. Donnedieu de Vabres.³³ The latter drew the following conclusions:

- (1) As they develop, scientific advances must be taken up by courts in consideration of their merit.
- (2) In this [Cens] case, the nature of the examination ordered by the court was to determine whether or not there was simulation by the defendant. Under the circumstances testimony bearing on this subject is admissible. To compulsively search for confessions by such interrogation is wrong.
- (3) If a psychiatrist who is directed by the court to make an examination of a subject, finds that he cannot proceed without resort to narcoanalysis, he should obtain a specific court order for this test.

While too much confidence should not be placed upon the results of "truth serum" tests unless amply corroborated by other evidence, the procedure nevertheless furnishes a very useful avenue for ascertaining facts, particularly when other methods of interrogation have failed. Perhaps in succeeding years, further study will increase the degree of precision which may be expected from the so-called "truth serum" technique.

33. Louwage, F. E. "The Use of Barbiturates in Medicolegal Expert Examination." *Internat. Crim. Police Review* (English edition) 4:(No. 30) 2-7 (Aug. Sept. 1949).

Donnedieu de Vabres, H. "French Justice and the Use of Pentothal." *Internat. Crim. Police Review* (English edition) 4:(No. 29) 2-9 (June-July 1949). Also see Gagnieur, op. cit. *supra* note 19.