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IN SCOPOLAMINE VERITAS

The Early History of Drug-Induced Statements

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Every man has reminiscences which he would not tell to everyone, but only to his friends. He has other matters which he would not reveal even to his friends, but only to himself, and that is secret; but there are other things which a man is afraid even to tell himself.—Fyodor Dostoevsky.

Possibly no part of Europe has as fascinating a topography as Carniola. The onetime Austrian duchy, perpetually deeply involved in the labyrinthic political intrigue of central Europe,¹ is bountifully endowed with caves, subterranean waterways, and some of the most colorful grottoes in the world.² Legend has it that Jason and the Argonauts passed through Carniola on the way from Colches, and during the centuries the area has borne successive onslaughts from foreign invaders.³

It was to the Carniola area, with its rich quick-silver mines, that the Austrian government in about 1750 dispatched Giovanni Antonio Scopoli, a physician with a catholicity of avocational interests that was to provide the background for his major contributions to science. Scopoli had been born in the Tyrol in 1723, and had received his medical degree at Innsbruck before his appointment to the Idria mines in Carniola.⁴ In his spare

¹ Cf., AMBLER, *BACKGROUND TO DANGER* (1937) for a fine description of the area, and a stirring tale of some of its intrigue.

² 5 *ENCYCLOPAEDIA BRITANNICA* 121 (5th ed. 1878).

³ BAKER, *AUSTRIA: HER PEOPLE AND THEIR HOMELANDS* 130 (1913).

⁴ The major biographical data is from 5 *BIOGRAPHIE UNIVERSELLE* 483 (1838). See also, *GENERAL BIOGRAPHICAL DICTIONARY* (Chambers ed. 1816); Newton, *Preface*, in *SCOPOLI'S ORNITHOLOGICAL PAPERS* (1882); 31 *ENCICLOPEDIA ITALIANA* 208 (1936-1940); 20 *ENCYCLOPAEDIA BRITANNICA* 134 (1958). Scopoli was finally appointed to a professorship of chemistry and botany at the University of Pavia, and became embroiled in an attempt to have a renowned colleague removed for robbery of the public museum. The Emperor, reports allege, was loathe to dismiss the famous aca-

time, Scopoli ranged over the mountains, making a painstaking collection and catalogue, published in 1760 as *FLORA CARNIOLICA*, of more than 1500 botanical specimens. It was four years later that Jacquin, in a massive effort to bring taxonomical order to botany, honored Scopoli by giving the name *Scopola carniolica*⁵ to the physician's major discovery, a 1-foot high, purple-flowered shrub which grew in calcareous soil in damp, stony, and hilly districts.⁶

Pharmacologists began intensive investigations of the properties of this and kindred plants toward the end of the nineteenth century, and eventually a German professor at the University of Marburg, Ernst A. Schmidt (1845-1921), isolated the principle constituent of the plant's dried rhizome,⁷ a drug which he named scopolamine (C₁₇H₂₁NO₄).⁸

demician, thief or otherwise, and publicly rebuked his accusers "in a manner which was supposed to have caused Scopoli's death" in 1788. *GEN. BIOG. DICT.* at 270.

⁵ JACQUIN, 1 *OBSERVATIONS* 20 (1764). Three years later, Linnaeus changed the name to *Hyoscyamus scopolia* (VON LINNÉ, *MANTISSA* 46 (1767), but Jacquin's designation prevailed. See also, HOLMES, *The Natural History of Scopola Carniolica*, *Jacq.*, 49 *PHARM. J. & TRANS.* 468 (1889); MAISCH, *Additional Notes on Scopola*, 42 *A. J. PHARM.* 107 (1890).

⁶ SCOPOLI, *FLORA CARNIOLICA* 288 (1st ed. 1760).

⁷ RUSBY, *Scopola*, in *REFERENCE HANDBOOK OF THE MEDICAL SCIENCES* 677 (Stedman ed. 4th ed. 1923) notes

... the rhizome of which the drug almost wholly consists is usually from 2-4 inches in length, as thick as the fingers, sympodial in development, shortly and sharply flexuous, and marked on the upper surface with rather closely set large shallow cup-shaped stem scars. The outer surface is gray brown. . . . Its fracture is accompanied by the emission of the same puff of dust that accompanies that of belladonna root.

⁸ SCHMIDT, *Ueber Scopolamin (Hyoscin)*, 230 *ARCHIV DER PHARMACIE* 207 (1892); SCHMIDT, *Ueber das Scopolamin*, 232 *ibid.* 409 (1894). See also, SHOEMAKER, *Practical Value of Some Old Remedies—Scopolamine Hydrobromide*, 82 *N. Y. Med. J.* 749 (1905); KREMERS & UNDANY, *HISTORY OF PHARMACY: A GUIDE AND A SURVEY* 472 (2nd ed. 1951); MCCLEAN & IIRNEX-

It was a drug which occurred either colorless, or in white crystals, or as a white granular powder. It was odorless and slightly efflorescent in dry air.⁹

Further chemical investigation quickly established the identical nature of scopolamine and hyoscine, a drug which had been extracted from the plant *hyoscyamus niger* about a decade earlier.¹⁰ It was this latter plant, known as henbane, which figured in numerous stories about poisoning from remote times,¹¹ being mentioned as early as 681 by Benedictus Crispus, the Archbishop of Milan.¹² The dancing frenzy and the witches' madness of the Middle Ages was supposed to be traceable in part to the use of Black Henbane; the inhalation of fumes of *hyoscyamus* was alleged to have provided the stimulation for the processions of the flagellants, and, before these, the Scythians were reported to burn the seeds of Black Henbane in order to put themselves into a state of manic intoxication.¹³ More classically, in *HAMLET* there appears the murdered king, telling his son that he had been poisoned "with juice of cursed henbane in a vial", a "leperous distillment" which "holds such an enmity with blood of man."¹⁴

The depressant effect of scopolamine was soon well known. Use of the drug was found to cause drowsiness, euphoria, amnesia, fatigue, and dreamless sleep,¹⁵ through depression of the psychic and motor centers of the brain, resulting in a hypnotic condition which passed into narcosis if the dosage was large enough.¹⁶ These characteristics inevitably

led to experimentation with the new drug as an anesthetic, and by 1900 Schneiderlin had suggested its employment in surgical operations.¹⁷

Two years later, other German doctors began experiments with scopolamine in obstetrical deliveries, soon developing a program of "twilight sleep" (*dämmer Schlaf*) that was to excite worldwide attention and produce heated debates on its merits. "It was about the only subject not smothered by the European war," one writer noted in 1915,¹⁸ while another, with some whimsy, recalled that "the first accounts of its use . . . were almost enough to make a man break down and weep because he would not have a baby."¹⁹ Advocates claimed that the new drug, combined with morphine as a birth anesthetic and analgesic, "abolished the primal sentence of the Scripture: 'In sorrow thou shall bring forth children.'"²⁰ Opponents pointed to lethal dangers, both to the mother and to the expected child, inherent in use of the drug,²¹ while careful scientists, attempting to evaluate the barrage of data published about the new procedure, generally decided that the evidence itself was contradictory and inconclusive.²²

¹⁷ SCHNEIDERLIN, *Ein neue Narkose*, 54 AERZTLICHE MITTEILUNGEN AUS UND FÜR BADEN 101 (May 31, 1900); SCHNEIDERLIN, *Die Skopolamine (Hyoszin) Morphium Narkose*, 50 MÜNCHENER MEDIZINISCHE WOCHENSCHRIFT 374 (1903). See also, VAN LEEUWEN & GYÖRGI, *On Scopolamine-Morphine Narcosis*, 18 J. PHARM. & EXP'L. THERAPEUTICS 449 (1921).

¹⁸ LEUPP & HENDRICK, *Twilight Sleep in America*, 44 McCLURE'S MAGAZINE 25 (April 1915).

¹⁹ RAPER, *MAN AGAINST PAIN: THE EPIC OF ANESTHESIA* 225 (1945). One company, advertising scopolamine pills, became completely rapturous:

Women are canceling their engagements with their old physicians to secure the attendance of those who employ the Hyoscin-Morphin-Cactin tablet. Men write to us that they are extinguishing the fear of child-birth, putting a stop to family quarrels, and one man goes so far as to predict an increase in the birthrate of the American women as a result.

Quoted (with disapproval) in 49 J.A.M.A. 2103 (1907).

²⁰ TRACY & LEUPP, *Painless Childbirth*, 43 McCLURE'S MAGAZINE 37 (June 1914).

²¹ HATCHER, *Scopolamin-Morphin in Narcosis and in Childbirth*, 54 J.A.M.A. 446 (1910). The disadvantages can be summed up as 1) needs constant supervision; 2) asepsis difficult to maintain; 3) increases incidence of operative deliveries; 4) neonatal mortality higher—operative and accumulative effect of drugs on child's respiratory system. GREENHILL, *PRINCIPLES & PRACTICE OF OBSTETRICS* 257 (10th ed. 1951). See also, 2 *OBSTETRICS & GYNECOLOGY* 281 (Adair ed. 1940); SCHWARTZ & KREBS, *Scopolamin-Morphin Seminarsis*, 81 J.A.M.A. 1082, 1088 (1923).

²² GRUBER, *op. cit. supra* note 16 at 635; HENDEE, *Review of the Literature of Scopolamin-Morphin Anesthesia*, 11 AM. MED. 216 (Feb. 10, 1906). The drug is still in decent favor today, with an estimated usage in

COOK, 2 TEXTBOOK OF THEORETICAL BOTANY 1899 (1956).

⁹ DISPENSATORY OF THE UNITED STATES OF AMERICA 221 (OSOL & FARRAR, JR. ed. 25th ed. 1955).

¹⁰ HENRY, *THE PLANT ALKALOIDS* 84 (1949); PETTY, *NARCOTIC DRUG DISEASES AND ALLIED AILMENTS* 168 (1913).

¹¹ FLÜCKIGER & HANBURY, *PHARMACOGRAPHIA: A HISTORY OF THE PRINCIPAL DRUGS OF VEGETABLE ORIGIN MET WITH IN GREAT BRITAIN AND BRITISH INDIA* 416 (1874); *Scopolamine: History, Pharmacological Actions, and Clinical Use*, 9 ROCHE REV. 229 (1945).

¹² DE RENZI, 1 COLLECTIO SALERNITANA 74, 84 (1852).

¹³ SCHENK, *BOOK OF POISONS* 37 (Bullock tr. 1956).

¹⁴ SHAKESPEARE, *Hamlet, Prince of Denmark*, in *COMPLETE WORKS OF WILLIAM SHAKESPEARE* 870, 877 (Craig ed. Oxford ed. 1943).

¹⁵ GOODMAN & GILMAN, *PHARMACOLOGICAL BASIS OF THERAPEUTICS* 544 (2nd ed. 1955).

¹⁶ GRUBER, *Scopolamine (Hyoscine)*, in 12 *CYCLOPEDIA OF MEDICINE, SURGERY, SPECIALTIES* 631 (rev. ed. 1957). The most famous lethal use of scopolamine was that in the Crippen case (TRIAL OF HAWLEY HARVEY CRIPPEN (Young ed. 1920). A fictional illustration is CHRISTIE, *Philomel Cottage*, in *WITNESS FOR THE PROSECUTION* 152 (1954).

Twilight sleep had begun its flamboyant obstetrical history at Freiburg when Richard von Steinbuechel conducted research into its efficacy as a general birth anesthetic.²³ Steinbuechel was attempting primarily to reduce pain rather than to induce a state of narcosis and therefore employed a dosage considerably under that which was eventually used in the "twilight sleep" program. Steinbuechel's work was later taken up and expanded by a corps of assistants, headed by J. Christian Gauss²⁴ and Bernard Krönig.²⁵

The particular parturient charm of twilight sleep was that it could produce, rather than merely a state of anesthesia, a state of complete amnesia, a state in which the emergent mother lost all recollection of the details of the birth process. To inveigh this attractive condition called for the use of some comparatively involved and intricate procedures. The patient would be kept in a darkened, quiet room. Her eyes were shaded and her ears plugged with cotton, and all extraneous disturbances were minimized. The mother-to-be required constant supervision—one of the drawbacks of the procedure—because the drugs occasionally made her confused and very restless.

Injections of scopolamine and morphine, which

blended together synergistically,²⁶ were begun when the patient started definite labor contractions. After the initial morphine-scopolamine shot, the patient was given repeated injections of scopolamine in dosages determined by her particular mental state rather than by any lapse of time. If all went perfectly, the patient would have no recollection of anything that took place after the second or third injection.²⁷

While scopolamine could blur and blunt memory for recent events to an "almost unbelievable degree,"²⁸ the difficult aspect of its use in twilight sleep lay in a determination of the moment when the optimum dosage had been administered, neither too much nor too little, so that no mnemonic Irish pennants—"islands of memory" one commentator labelled them²⁹—hung loose, nor, conversely, not too much drug had been given so that it might delay delivery or adversely affect the unborn child.

To calculate this moment with a precise nicety, Gauss, after much experimentation, developed a series of so-called memory tests, "elusive as they were decisive."³⁰ With watch in hand, the practitioner in attendance at the birth methodically requested the patient to recall and identify various items and events, repeating the experiment at half hour intervals until it became apparent that the drug had deadened powers of recollection.³¹ These tests were considered "the best and only means of gauging the consciousness of the patient,"³² and their routine employment was the key to the eventual use of scopolamine as a so-

60 percent of births in the United States. EASTMAN, WILLIAMS' OBSTETRICS 424 (10th ed. 1958). See also, KIRSCHBAUM, *Scopolamine in Obstetrics*, 44 A. J. OBST. & GYNEC. 664 (1942).

²³ VON STEINBÜCHEL, SCHMERZVERMINDERUNG UND NARKOSE IN DER GEBURTSHÜLFE (1903); VON STEINBÜCHEL, *Die Skopolamin-Morphium-Halbarkose in Der Geburtshilfe*, 1 BEITRAEGE Z. GEBURTSHULFE UND GYNAKOLOGIE FESTCHRIFT Z. RUDOLF CHROBAK 294 (1903); VON STEINBÜCHEL, *Vorläufige Mitteilung Über Die Anwendung Skopolamin-Morphium Injektionen in der Geburtshilfe*, 26 ZENTRALBLATT FÜR GYNAKOLOGIE 1304 (1902). The best summary is CLAYE, *The Coming of Twilight Sleep*, in EVOLUTION OF OBSTETRIC ANALGESIA 25 (1939). See also, Moore, *Contributions of Anesthesia to Psychiatry*, 19 YALE J. BIOL. & MED. 195 (1946); CASTIGLIONI, HISTORY OF MEDICINE 1063 (1947); GARRISON, INTRODUCTION TO THE HISTORY OF MEDICINE 739 (4th ed. 1929); KEYS, HISTORY OF SURGICAL ANESTHESIA 48 (1945); BECK & ROSENTHAL, OBSTETRICAL PRACTICE 978 (6th ed. 1955).

²⁴ GAUSS' major contributions are: *Die Anwendung Des Skopolamin-Morphium Dämmerschlafes in Der Geburtshilfe*, 2 MEDIZINISCHE KLINIK 136 (1906); *Geburten im Künstlichen Dämmerschlaf*, 78 ARCHIV FÜR GYNAKOLOGIE 79 (1906); *Bericht Über Das Erste Tausend Geburten im Skopolamin-Dämmerschlaf*, 54 MÜNCHENER MEDIZINISCHE WOCHENSCHRIFT 157 (1907); *Die Technik Des Skopolamin-Morphium in Der Geburtshilfe*, 31 ZENTRALBLATT FÜR GYNAKOLOGIE 33 (1907).

²⁵ KRÖNIG, *Scopolamine-Morphine Narcosis in Labour*, 2 BRIT. M. J. 805 (1908).

²⁶ KRANTZ & CARR, THE PHARMACOLOGICAL PRINCIPLES OF MEDICAL PRACTICE 835 (4th ed. 1958).

²⁷ ADAIR, *op. cit. supra* note 21 at 781; GODDARD, *How Science Solves Crime: "Truth Serum" or Scopolamine in the Interrogation of Criminal Suspects*, 10 HYGEIA 337, 339 (1932). The new development keyed a social novel by Edith Wharton, in which a character, installed in the "most perfect 'Twilight Sleep' establishment in the country . . . drifted into motherhood as lightly and unperceivingly as if the wax idol which suddenly appeared in the cradle at her bedside had been brought there in one of the big bunches of hot-house roses." WHARTON, TWILIGHT SLEEP 14 (1927).

²⁸ MUEHLBERGER, *Interrogation Under Drug Influence: The So-Called "Truth Serum" Technique*, 42 J. CRIM. L. 513, 517 (1951).

²⁹ ADAIR, *op. cit. supra* note 21 at 781.

³⁰ LUEPP & HENRICK, *op. cit. supra* note 18 at 34.

³¹ GRUBER, *op. cit. supra* note 16 at 635; CLAYE, *op. cit. supra* note 23 at 33; SOLLMANN, A MANUAL OF PHARMACOLOGY & ITS APPLICATION TO THERAPEUTICS & TOXICOLOGY 397 (8th ed. 1957); HARRAR & MCPHERSON, *Scopolamine-Narcophin Seminarcois in Labor*, 69 A. J. OBSTET. 621 (1914).

³² KNIPE, *The Freiburg Method of Dämmerschlaf or Twilight Sleep*, 69 A. J. OBSTET. 884 (1914).

called "police drug"³³ alleged to produce accuracy in responses to interrogation on criminal matters.

THE WORK OF DR. HOUSE

The central figure in this development was an American obstetrician who spent the better part of his professional life in the stereotypically bucolic role of a small-town doctor. Dr. R(obert) E(rnst) House stands unchallenged as the "father of truth serum," and in many ways he shows a considerable number of the traits often associated these later days with American male parents. He was exaggerative in regard to his scientific product, notoriously blind to its failings, grossly indulgent of its wayward behavior, and stubbornly proud of its minor achievements. He was also, unfortunately, not particularly intellectual, grammatical, or scientifically astute. On the other hand, House possessed superabundant quantities of sincerity, humanity, and integrity—rare enough qualities in early police work. A religious man, he felt impelled by what he considered to be a higher order of duty to carry on his work in the face of severe criticism, and many times expressed a deeply-felt belief in the ultimate vindication of the drug that he championed for scientific and humane police work.

House, a slightly built, partially bald man, standing about five feet, seven inches,³⁴ was born in Dallas in 1875, and spent two years as a student at the University of Texas before receiving his medical degree one year later—in 1899—at Tulane University. Soon after, he returned to Farris, Texas, a small farming and brick manufacturing community about one-half mile north of the Dallas county line, where he practiced medicine until his death from hemiplegia in 1930.³⁵ Perhaps the finest tribute to House after his death came from Dr. John A. Larson, inventor of the polygraph, and House's most discriminating critic. "When considering [House's] researches," Larson wrote, "too much credit cannot be given this energetic idealist who died in the midst of his

work, firm in the conviction that there was something very worthwhile in his method."³⁶

House published some eleven articles on scopolamine from 1921 through 1929, with a noticeable increase in polemical zeal as time passed and what had begun as something of a scientific statement turned into more of a dedicated crusade.³⁷

In his initial contribution, House outlined his personal experiences with the German *dämmer-schlaf*. He had, he wrote, traveled to New York to observe "twilight sleep" at first hand when the method came into controversy. On his return to Texas, he employed the technique in some 500 cases, with complete satisfaction.³⁸ House then proceeded to present a pioneering explanation of the potentialities of scopolamine as a police investigative weapon:

In my first cases I asked questions to see how much more medicine to be employed was required. I observed my patients always answered my queries correctly, so I carried my investigations further with the results sufficient to satisfy and prove to me that when any person is completely under the influence of the drug . . . with care in questioning . . . they will tell the truth relating to any question that they are asked so far as they know.³⁹

In this initial statement, House put forth the humane considerations that were incessantly to

³⁶ LARSON, LYING AND ITS DETECTION: A STUDY OF DECEPTION & DECEPTION TESTS 204 (1932). See also, MATTHEWS, *Narcoanalysis for Criminal Interrogation*, in *LEGAL MEDICINE* 945, 948 (Gradwohl ed. 1954).

³⁷ The articles by House that I have found are these: 1) *The Physiological Effects of Scopolamine—the Revised Method of 'Twilight Sleep'*, 30 *MEDICAL INSURANCE & HEALTH CONSERVATION* 391 (1921); 2) *The Use of Scopolamin in Criminology*, 18 *TEXAS ST. J. MEDICINE* 259 (1922), reprinted 2 *A. J. POLICE SCIENCE* 328 (1931); 3) *Scopolamin Anesthesia*, 30 *SOUTHWEST J. MEDICINE & SURGERY* 7 (December 1922); 4) *The Physician & the Criminal*, 42 *MEDICAL HERALD & ELECTROTHERAPIST* 25 (1923); 5) *Medico-Legal & Obstetrical Observations on Scopolamin Anesthesia*, 37 *A. J. SURGERY* 111 (ANESTHESIA SUPP.) (1923); 6) *The Drug Scopolamin*, 76 *NEW ORLEANS MEDICAL & SURGICAL J.* 431 (1924); 7) *Scopolamin—a Humane Third Degree*, 10 *POLICE J.* 4 (Oct.–Nov. 1924); 8) *Scopolamin-Apomorphia in Criminology*, 4 *CURR. RESEARCHES IN ANESTHESIA & ANALGESIA* 162 (1925); 9) *Why Truth Serum Should Be Made Legal*, 42 *MEDICO-LEGAL J.* 138 (1925); 10) *Truth Serum Can Aid Society By Making the Criminal Tell All He Knows*, *PROCEEDINGS OF THE ELEVENTH ANNUAL CONVENTION OF THE INT'L. ASS'N. FOR IDENTIFICATION* 143 (Stephens ed. 1925); 11) *Diagnosis & Treatment of Insanity by Detection of Delusion*, 25 *TEXAS ST. J. MEDICINE* 299 (1929).

³⁸ HOUSE, *Physiological Effects of Scopolamine*, *op. cit.* *supra* note 37 at 391.

³⁹ *Ibid.* at 392.

³³ The felicitous term is from an otherwise poor book, *ROLIN, POLICE DRUGS* (1956).

³⁴ These vital statistics were supplied by one of Dr. House's sons, both of whom are physicians in Dallas. Letter from Dr. Ford House, January 19, 1958.

³⁵ WEBB, *1 HANDBOOK OF TEXAS* 594, 842 (1952); *MEMORIAL & BIOGRAPHICAL HISTORY OF ELLIS COUNTY* 226 (1892); *16 WHO'S WHO IN AMERICA*, 1930–31, p. 312; *26 TEXAS ST. J. MED.* 395 (1930).

underlie his championing of scopolamine. "If my assertion is correct," he wrote, "there is no justifiable reason for any person to be convicted upon circumstantial evidence, nor any excuse for the brutal third degree methods, nor any excuse for the State to permit a suspect to turn State's evidence."⁴⁰

House's best-known statement on scopolamine came in 1922, when, in a widely-quoted and reprinted article, he presented in detail the chronology of his interest and experimentation with the drug in police work, and argued, with somewhat more enthusiasm than logic, that "if the use of bloodhounds is legal, the use of scopolamine can be made legal."⁴¹

The scent of forensic innovation had first presented itself to him, House related, during a twilight sleep delivery in late 1916. In the course of his work, House asked the husband for the location of the scales. The wife, presumably unconscious, answered clearly: "They are in the kitchen, on a nail behind the picture."⁴² House was taken aback by this information and, his curiosity aroused, further explored this serendipitous pathway by the use of a rather lively process of extrapolation which he described as follows:

The fact that this woman suffered no pain and did not remember when her child was delivered, yet could answer correctly a question she had overheard, appealed to me so strongly that I decided to ascertain if that in reality were another function of scopolamine. In a confinement case you find the dosage by engaging the patient in conversation to note the memory test. Hence, my investigation was a simple matter. I observed that without exception the patient always replied with the truth. The uniqueness of the results obtained from a large number of cases examined was sufficient to prove to me that I could make anyone tell the truth on any question.⁴³

⁴⁰ *Id.* House's venomous hatred for State's evidence witnesses blistered through his writings. At one time he noted: "The liar I have the most contempt for is the man who turns State evidence. I wish every one of them could be made to prove their contention under scopolamin anesthesia. Some of them I know are honest, but in my work I have my first one to meet." *The Drug Scopolamin, op. cit. supra* note 37 at 259.

⁴¹ *The Use of Scopolamin in Criminology, op. cit. supra* note 37 at 259. A somewhat garbled account of House's work crossed the ocean where a British medical journal heard "mysterious reports of a 'truth serum' which was apparently to take the place of the oath in American legal practice . . ." 100 LANCET 1082 (1922).

⁴² *Ibid.* at 261.

⁴³ *Id.*

"Under the influence of the drug, there is no imagination," House proclaimed. "They cannot create a lie because they have no power to think or reason."⁴⁴

Spurred on by this conclusion, House subsequently carried out two experiments in the Dallas county jail to test his findings in more realistic surroundings. In both cases, he obtained information which he declared had not been elicited by prior interrogations. In both cases, also, the subjects made statements under the influence of the drug which served to exonerate them. In one instance, the suspect had already been sentenced to a fifteen-year term, but, as a result of House's work, the prisoner's attorney now successfully contended that the conviction was the result of mistaken identity.⁴⁵ House apparently was not suspicious of the self-serving outcome of the pair of tests; rather he was delighted that his method had proved so efficacious in aiding the course of what he conceived to be true justice.

The daily newspapers had already begun a campaign of editorial overstatement—both for and against House's work—that was to continue for the next ten years and introduce a constant note of plaintiveness into House's writing, though, certainly in the later years, House's own rather flamboyant public exhibitions of scopolamine were to compound grossly any editorial sins that might originally have been committed against him.

Support for House against the harrassment of the newspapers came early from the Texas Medical Society which printed an editorial accompanying an article by House, noting first that the designation "truth serum"⁴⁶ was the "usual misfit newspaper appellation, arising from the desire of the

⁴⁴ *Id.*

⁴⁵ *Ibid.* at 260.

⁴⁶ This is the first printed use of the much, and correctly, maligned term "truth serum" that I have been able to find. [Cf., "the drug used is not a serum, and it does not always lead to the truth." MACDONALD, *Truth Serum*, 46 J. CRIML., C., & P. S. 259 (1955)]. House resisted use of the term for some time, but eventually came to employ it routinely. The only clue to its origin that he provides is the statement: "Scopolamin has been erroneously, though on his part honestly, termed truth serum by W. W. Ferguson of the Los Angeles Record." (*Medico-Legal & Obstetrical Observations on Scopolamin Anesthesia, op. cit. supra* note 37 at 113. I have checked the Record from the beginning of 1922 through June 26, 1923 (when House made the above statement) without any success in locating Ferguson's usage).

reporter to please the careless-minded, sensation lover,"⁴⁷ and then calling for a dispassionate consideration of House's claims. The *Journal* pointed out with considerable calm and fairness that:

The point to be considered in the whole question will probably be, if what is found leads to provable conclusions, all good and well; if not, the situation is where it was at the beginning of the experiment. Whatever else may be said, there certainly is room here for interesting study and experimentation.⁴⁸

A series of cross-country trips to present papers on scopolamine followed House's original announcement. The most significant probably was an appearance in San Francisco in June, 1923, where House disclosed that a few months previously he had been involved in what was likely the first courtroom use of material derived from scopolamine.⁴⁹ In the case of *State v. Head* in Dallas, House noted, he had secured information on the culpability of the State's leading witnesses which enabled him to feed key questions to Head's attorney and thus gain an acquittal for the defendant.⁵⁰

House summarized in his San Francisco talk some of his conclusions on scopolamine from "seven years of criminal research work":

1) Any person arrested as a suspect can be made to acquit or convict himself; 2) There would be no further necessity to grant immunity to a known criminal for the reason his evidence could be obtained and corroborated without his consent; 3) A perjurer . . . could be made to tell the facts; 4) In times of war a spy could be made to divulge his information before being tried; 5) Statistics say that only one person in ten who are tried is convicted. The nine who escape . . . would show under the influence of the drug those who are guilty; 6) Statistics compiled give over one-half of the expense of maintaining our government as being spent for the control of crime. If Uncle Sam could prove this theory . . . it would mean the savings of millions of dollars in a year; 7) Its adoption as legal . . . would do more than any one method to prevent robbery. Criminals

⁴⁷ *Truth Serum*, 18 TEXAS ST. J. MED. 231, 232 (1922).

⁴⁸ *Id.*

⁴⁹ The first use of drugs in American criminal investigation is generally considered to be that in a New York case in which a police officer admitted while under the influence of ether that he had faked insanity when accused of murdering his wife. Wagner, *Feigned Insanity: Malingering Revealed by the Use of Ether*, 61 A. J. INSANITY 193 (1902).

⁵⁰ *Medico-Legal & Obstetrical Observations on Scopolamin Anesthesia*, *op. cit. supra* note 37 at 114.

would soon learn the arrest of any one of them would mean the names of all of them; 8) . . . many would prefer to confess than to take the medicine; 9) If this method could be standardized it would clean every penitentiary of their innocent, and furthermore there would be no more innocent persons sent there.⁵¹

House by this time was somewhat on the defensive, aware of the opposition that his statements were arousing:

At first reading this all sounds as miraculous, absolutely impossible and like the hallucination of a diseased mind. If you will stop and reflect, with your knowledge of medicine, you will understand that all I have said as being possible represents only one simple function of the drug.⁵²

At the same time, House was backing down slightly from his original claims of infallibility, granting now that the drug would not be perfect unless the physician himself were "100 percent perfect" but still maintaining that "if scopolamine would prove reliable in only fifty percent of the cases it would be worth its weight in radium, and then some. I admit . . . that the testimony obtained would be worthless in a court room, but the evidence secured by any type of third degree must be corroborated."⁵³

House's most frank and emotional statement on his work was made in New Orleans, where he had graduated from medical school, and where he returned in late 1923 to address the medical

⁵¹ *Id.*

⁵² *Ibid.* at 115.

⁵³ *Id.* The San Francisco visit illustrated the variation between House's comparatively mild statements and the conclusions of the daily press. After House conducted a demonstration at San Quentin, the San Francisco newspaper headlined: SAN QUENTIN OFFICIALS STAND AGHAST AS EXPERT CONDUCTS DEMONSTRATION, and quoted House as saying: "I have yet to find a human being who could evade the truth when it was asked him under the influence of scopolamine." San Francisco Chronicle, June 27, 1923, p. 1 and 38a.

In a quick side trek to Los Angeles on his way home, House administered the drug to four suspects, all of whom confessed volubly to other crimes and sins, but steadfastly denied their guilt of the crimes with which they were being charged. LOS ANGELES RECORD, June 30, 1923, p. 1. In this connection, note the comment: "It is known that guilty suspects can condition themselves to withhold truthful responses to questions about the immediate case under investigation, although they freely admit other past crimes and indiscretions. HOUTS, FROM EVIDENCE TO PROOF 88 (1956). One witness to the Los Angeles demonstrations had his own idea about the reason for the outcome. "The instinct of self-preservation," he decided, "is the strongest one in life, being even stronger than the reproductive instinct." SACRAMENTO STAR, June 30, 1923, p. 8.

society. He admitted that his earlier physiological explanation of the action of scopolamine had been quite incorrect, complained that his work with criminals was "tedious, slow, and so tiresome" but held to the belief that when scopolamine is employed "you observe a child-like frankness and a child-like honesty, where the replies are given without guile, deceit, or fraud." House also maintained that chronic liars had proven his easiest subjects, because of their own confusion, and, armed with information he had discovered during his San Francisco trip, House now advocated the combined use of the lie detector and scopolamine. He also lashed out at those who opposed scopolamine on constitutional grounds, echoing the common police lament that "there is no provision in the Constitution for the protection of the law violator."⁵⁴

As was his practice, House conducted a number of intriguing experiments on prisoners during his New Orleans sojourn, experiments which stirred the local press to enthusiastic outbursts of astonishment at the powers of this new "veracity fluid." Local reporters first submitted to scopolamine injections, finding them highly effective. Then five prisoners in the parish jail were tested. Two of them proved rather recalcitrant, but the New Orleans daily newspaper had its own handy local explanation for this turn of events:

All in all, the tests were astonishingly complete. Practically every question was answered. Jesse Green, the great six-foot fourteen-year old negro gave the most trouble. Jesse is pure African, pure animal. Under the first dose of scopolamine he became excited, and a second injection was required. His answers were the least coherent. . . .

Emile Bland, who insisted on taking the test, denied stealing narcotics from the federal building, [Bland had previously confessed] but freely admitted stealing candy and other items. . . . a curious individual. Some doubt as to nationality. He insists he is white but is classified as negro.⁵⁵

⁵⁴ *The Drug Scopolamine, op. cit. supra* note 37 at 433-435. It was probably in connection with these experiments that Larson later made the comment:

I had occasion to see one of [House's] experiments during which a murderer definitely did lie throughout the whole test and have proof of this. It must be remembered that one cannot compare psychologically subjects who are volunteers for experiments for purely experimental purposes and actually guilty persons. (LARSON, *Comment*, 28 ARCHIVES OF NEUROLOGY & PSYCHIATRY 1223 (1932).

⁵⁵ NEW ORLEANS TIMES-PICAYUNE, NOV. 27, 1923, p. 1; NOV. 28, 1923, p. 1; NOV. 29, 1923, p. 8.

Further refinements and diverse philosophical conclusions came from House as he continued traversing the country. In Windsor, Canada, he paid tribute to law enforcement officers who, he said, he had previously regarded as a "bunch of licensed crooks" but had come to view now with "profound respect" since he had begun his work with scopolamine.⁵⁶ In a midwestern talk, House disclosed that he had once participated in a hanging. "The rope did not break," he recalled, "and neither did the man's neck." House connected this episode with his present work. "A state should only ask for a man's life and not reserve the privilege to strangle a man to death," he said. "After this man was strangled to death, evidence was found proving that he was innocent. Had this man taken scopolamine and his story or evidence been investigated the error might have been prevented."⁵⁷

In New York, House was still insisting, but in considerably shrewder language, that "there are no human minds capable of resisting the physiological effects of scopolamine any more than they could resist the effects of ether or nitrous acid" and claiming that "the framers of the Bill of Rights believed the rights of society were paramount to the rights of the criminal."⁵⁸ A year later, House was able to report that he had "saved 26 men from a conviction out of 86 criminal tests."⁵⁹ By now, he had considerably refined his feelings on the use of scopolamine and was calling for a licensing system so that no charlatan would be permitted to take advantage of it. He noted in this connection:

I would respect no physician's opinion who had not assisted in at least 100 tests. The best legal minds and judicial thought should co-operate with the medical profession to work out the details of safeguarding the purity of statements elicited under its administration. The technic is . . . a delicate piece of work requiring caution, and from three to six hours' time.⁶⁰

In his final article, House explored an avenue that was to represent, through the subsequently

⁵⁶ *How the Truth Serum Can Aid Society . . .*, pp. cit. *supra*, note 37 at 144. See also, FREE, *Strange New Crime Remedies*, 109 POPULAR SCIENCE 14 (December 1926).

⁵⁷ *The Physician and the Criminal, op. cit. supra*, note 37 at 27.

⁵⁸ *Scopolamin-Amorphia Amnesia in Criminology, op. cit. supra*, note 37 at 169. See also, NEW YORK TIMES, Oct. 22, 1924, p. 14.

⁵⁹ *Why Truth Serum Should be Made Legal, op. cit. supra*, note 37 at 140.

⁶⁰ *Ibid.* at 147.

elaborated technique of narcoanalysis,⁶¹ one of the most exciting uses of sedative drugs, that of dealing with mentally disturbed patients. At San Quentin, House noted, he had injected scopolamine into a convict who remembered nothing prior to the Argonne battle when a hand grenade exploded near his head. Questioned by House under the influence of scopolamine, the convict was able to recollect his earlier life. Excited by this discovery, House wrote to mental hospitals, asking them to test his new insight on drug therapy, but his request received scant attention.⁶² In this final article House, appropriately enough, presents a summary panegyric to the drug to which he had tied his professional star:

My paper is presented for several reasons: 1) In respect to the Creator who gave to mankind scopolamine; 2) it is the most useful drug for the control of the insane; 3) it ranks supreme in the humane treatment of all addicts; 4) in my opinion, it is God's greatest gift to the parturient woman; 5) it will serve more medical requirements than any one drug to be found in the U. S. Pharmacopeia; 6) it is the most abused and least understood drug which should be regarded as a friend to the physician.⁶³

CASES INVOLVING SCOPOLAMINE

Sporadic episodes, breaking out in various parts of the country, kept scopolamine in the public eye as a new and revolutionary form of psychological third degree, both during House's life and after his death. Some of the events were colorful, others garish, and all were inconclusive from any scientific viewpoint.

The first occurred in Birmingham in 1924 when five persons were announced to have confessed, while under the influence of scopolamine, to some two dozen axe murders over the course of three

⁶¹ See HORSLEY, *NARCO-ANALYSIS* (1943) for a general statement. A good English-language bibliography is LIPTON, *The Amytal Interview: A Review*, *J. AM. PRACTITIONER & DIGEST OF TREATMENT* 148 (1950), while an extensive international bibliography appears in GOMIRATO & GAMMA, *NARCOANALISI, PSICOFARMACOLOGIA E CLINICA DELLA SUBNARCOSI BARBITURICA* 213-256 (1958).

⁶² *Diagnosis and Treatment of Insanity by the Detection of Delusion*, *op. cit. supra*, note 37 at 300. The lone collaborator was P. R. Vessie of New York State. (VESSIE, *Scopolamin-Apomorphia Amnesia in Psychiatry*, *4 CURR. RESEARCHES IN ANESTHESIA & ANALGESIA* 170 (1925).

⁶³ *Ibid.* at 301.

years. The confessions were corroborated when the suspects come out from under the drugs.⁶⁴ Four years later, in Hawaii, scopolamine suffered a public setback that led to some brief scientific soul-searching. An Oriental chauffeur, suspected of a kidnap murder, was given a scopolamine injection and confessed to writing the kidnap note. Later, he repudiated the confession, and a second drug test yielded negative results. At this stage the drug questioning was abandoned—the murderer, another person, had been discovered.⁶⁵

Seattle was the scene of a third publicized use of the drug in 1931 when an attempt was made to give truth serum tests to Decasta Earl Mayer in order to learn the whereabouts of an alleged murder victim. An injunction halted this form of inquiry,⁶⁶ and also led the country's leading law review to note that truth serum tests probably violated the privilege against self-incrimination in criminal matters, and where the questioning concerned "irrelevant inquiries into private affairs" the procedure was also likely an "infringement on the essential underlying interest in privacy."⁶⁷

About the same year a case in Canada was reportedly cleared up through the use of truth serum, and two writers noted with approval that the suspect "paid the extreme penalty for the murder which would have gone unavenged were it not for this new and powerful instrument for the detection of crime—scopolamine."⁶⁸ Finally, in 1935 a Kansas City butcher submitted to the use of scopolamine, and was cleared of suspicion on a murder charge.⁶⁹

⁶⁴ BIRMINGHAM AGE HERALD, Jan. 7, 1924, p. 1; Jan. 8, 1924, p. 1; NEW YORK TIMES, Jan. 8, 1924, p. 1; WIGMORE, *2 PRINCIPLES OF JUDICIAL PROOF OR THE PROCESS OF PROOF* 610 (2nd ed. 1931).

⁶⁵ *Cross-Examined Under an Anesthetic*, 91 J.A.M.A. 2006 (1928), reprinted WAITE, *THE CRIMINAL LAW AND ITS ENFORCEMENT* 627 (3rd ed. 1947). The leading British medical journal, commenting on this case in an appalled tone, noted:

We cannot . . . accept a method which would negative [the caution] and which would trick a suspect. . . . It would be instinctively repulsive. . . . To dope a man into confession would be as distasteful as to extract evidence by torture. *Medicine & the Law: Cross-Examination Under Anesthetic*, 106 LANCET 990 (1928).

⁶⁶ CHAFEE, JR., POLLAK, & STERN, *The Third Degree*, in 4 REPORTS OF THE NAT'L. COMM'N. ON LAW OBSERVANCE & ENFORCEMENT 13, 149 (1931); MARSTON, *THE LIE DETECTOR TEST* 78 (1938).

⁶⁷ Note, *Methods of Scientific Crime Detection as Infringements of Personal Rights*, 44 HARVARD L. REV. 842 (1931).

⁶⁸ BAKER & INBAU, *Scientific Detection of Crime*, 177 MINN. L. REV. 602, 623 (1933).

⁶⁹ *Scopolamine Confession*, 26 TIME 54 (Nov. 18, 1935).

While these handful of cases represent virtually the total public notice of the use of scopolamine in police interrogation there exists some evidence that the drug was employed much more extensively by various police forces.⁷⁰ The Wickersham Commission, for instance, charged that between 1920 and 1930 suspects had been given "tear gas, scopolamine injections, and chloroform" for the purpose of securing confessions,⁷¹ while one police writer noted (apparently with disapproval) that "fear can be built up by suggesting the use of scopolamine" and went on to give an example:

One department demonstrated to suspects just how the drug was administered, and went on to explain just how it worked. A story was also told about the bank robber who was put under the drug and faithfully reenacted the whole crime, including the division of loot afterwards. If the suspect said that they couldn't force him to submit to the drug, it was pointed out that the drug also worked when the suspect was first rendered unconscious by chloral hydrate . . . placed in his coffee or drinking water. In many instances, the terrified suspect talked to avoid being tested with the truth serum.⁷²

Meanwhile, serious attempts to provide scientific material on the value of scopolamine in police work were being carried out by Goddard, Muehlberger, and Keeler at the Scientific Crime Detection Laboratory in Chicago. The experiments produced only "fairly satisfactory results,"⁷³ though a number of intriguing disclosures of information were reported, such as the admission of a prior traffic offense by a subject under the drug who himself had forgotten the incident when questioned prior to the test.⁷⁴

It was during this period also that the courts passed initial judgment on this new evidentiary technique, a judgment that was to stand as the

lone truth serum decision for more than a decade. The case involved George Hudson, a St. Louis man convicted of the rape of a 65-year-old woman. The defense attempted to introduce testimony that under the influence of truth serum Hudson had denied his guilt. Speaking for a unanimous court, however, Judge Robert Walker Franklin, a 76-year-old jurist known for the "liberality of his views and the frequency of his dissents,"⁷⁵ delivered a blistering indictment of truth serum in criminal prosecutions:

Testimony of this character—barring the sufficient fact that it cannot be otherwise classified than as a self-serving declaration—is, in the present state of human knowledge, unworthy of serious consideration. We are not told from what well this serum is drawn or in what alembic its alleged truth compelling powers are distilled. Its origin is as nebulous as its effect is uncertain. A belief in its potency, if it has any existence, is confined to the modern Cagliostros, who still, as Balsamo did of old,⁷⁶ cozen the credulous for a quid pro quo, by inducing them to believe in the magic powers of philters, potions, and cures by faith. The trial court, therefore, whether it assigned a reason for its action or not, ruled correctly in excluding this clap-trap from the consideration of the jury.⁷⁷

As scientific evidence and judicial vitriol accumulated, they were inevitably accompanied by general evaluations concerning the present utility and the future prospects of scopolamine. Such evaluations ranged from the wildly enthusiastic to the harshly condemnatory, sandwiching between them some milder judgments by less polemical, more cautious workers.

The major claim of those favoring expanded usage of scopolamine was that such usage would eliminate more barbaric police interrogation procedures and add an element of scientific certainty to court hearings. One writer believed that "the use of brutality by the police in securing confessions, the reception of flimsy testimony as to identity, and the ineffectiveness of circumstantial evidence may be curtailed by more reliance upon scientific data and less reliance upon individual

⁷⁰ The same seems true today. Note, for instance, BARKHAM, *Truth Drugs: The New Crime Solver*, 29 CORONET 72, 75 (Jan. 1951).

⁷¹ NAT'L. COMM'N. ON LAW OBSERVATION, *op. cit. supra*, note 66; HOPKINS, OUR LAWLESS POLICE: A STUDY OF THE UNLAWFUL ENFORCEMENT OF THE LAW 25 (1931).

⁷² KIDD, POLICE INTERROGATION 147 (1940). This was the approach used to produce a confession in the Applegate case in 1935. See, LEVIN, *The Slow Poison in Five Who Vanished*, 157, 178 (1959); and HOFFMAN AND BISHOP, THE GIRL IN THE POISON COTTAGE, 45 (1953).

⁷³ INBAU, *Methods of Detecting Deception*, 24 J. CRIM. L. 1140, 1155 (1934).

⁷⁴ MUEHLBERGER, *op. cit. supra*, note 28 at 515; GODDARD, *op. cit. supra*, note 27 at 339; MULBAR, INTERROGATION 102 (1951).

⁷⁵ ST. LOUIS GLOBE-DEMOCRAT, Nov. 20, 1930.
⁷⁶ Guiseppe Balsamo was the real name of Count Cagliostro, a notorious charlatan and swindler. For a chronicle of his deeds, see BOLITHO, *Cagliostro (& Seraphina)*, TWELVE AGAINST THE GODS 179 (1929).

⁷⁷ State v. Hudson, 314 Mo. 599, 602, 289 S.W. 920, 921 (1926); Noted, SHORT, *Evidence—Expert Testimony—Admission of Deception Tests*, 12 ST. LOUIS L. REV. 215 (1927).

'reasoning',⁷⁸ while another writer, of considerably more flamboyant nature, accused the courts of being "pitifully jealous of . . . prerogatives" and therefore "grimly hostile to the scientific invader" but predicted the continued assault of truth serum "until the last judicial periwig capitulates and the groans of the maimed and mishandled suspect is heard no more in the land."⁷⁹

Considerably more restrained was the pertinent observation of a leading authority on the law of evidence who pointed out that the major advantage of truth serum, "if valid," particularly in contrast to the polygraph, was that "it directly elicits truth, and not merely signalizes falsehood" and, even more important, that its results "are not dependent upon any question of interpretation."⁸⁰

This viewpoint was pushed to a more sophisticated level by Gault, who noted that the utmost that could be claimed for truth serum at that moment was that it might suggest lines of inquiry. He stressed that even the 'truth', as it might be elicited by scopolamine, was always only the truth as the person under inquiry saw or understood it.⁸¹

The most telling criticism against scopolamine, of course, related to its ability to provide accurate results, a fact questioned severely by many critics. Highly significant was an experiment with scopolamine conducted on medical and psychology students at the University of Wisconsin which found that "in general . . . the subjects who were resistant to suggestions in the normal state were also resistant when under the influence of the drug. There was a fairly marked tendency, however, for those who were susceptible in the normal state to be markedly more so when the under the influence of scopolamine."⁸²

The legal and scientific objections to scopolamine effectively barred its expanded usage in police work, particularly after House, with his crusading zeal and his ability to call public attention to his work, passed from the scene. By the mid-1930's scopolamine became passé as experiments demon-

strated that various derivatives of barbituric acid, such as sodium pentothal and sodium amytal, were safer for the interrogation of criminals.⁸³

Today, scopolamine still serves a good deal as an obstetrical aid, and has been found to be an excellent remedy for seasickness, probably because of its depressant and anti-spasmodic qualities. It is also used to control rigidity and tremors in Parkinson's disease, and employed somewhat to mitigate the severity of withdrawal symptoms in narcotic addicts. It was, in fact, in connection with this last usage that scopolamine figured most recently in court annals, as a suspect confessed to a crime and then later claimed—the appellate court disagreeing—that a scopolamine injection he had received in jail had illegally led to the confession.⁸⁴

Despite the passage of scopolamine itself from police interrogation, the groundwork had been firmly placed for subsequent scientific developments in the use of drugs for police work, developments which would occur with extreme rapidity during the second World War, and which would harass the courts with increasing regularity and intensity as science and the legal system vied, in terms of respective values, differing factual interpretations, and sometimes contradictory evidence, to find the most satisfactory niche for interrogation drugs.

periment, which used balance as the test of suggestibility, were these:

1. Some subjects apparently negative with the control show an unequivocal response to suggestions.

2. All slightly suggestible subjects . . . became more suggestible.

3. All subjects showing very marked suggestibility . . . show increased suggestibility with the drug.

4. Some subjects who are negative in the control remain negative to suggestion in the drug experiment, or so very slightly suggestible that the increase is not unambiguous (55 percent of all subjects on whom we have records were negative both with drug and without.)

5. No subjects who were negative with the drug were more suggestible in the control experiments. BAERNSTEIN, AN EXPERIMENTAL STUDY OF THE EFFECT ON WAKING SUGGESTIBILITY OF SMALL DOSES OF SCOPOLAMINE HYDROBROMID 54. Master's thesis: University of Wisconsin, 1929.

⁷⁸ The transition began with LORENZ, *Criminal Confessions Under Narcosis*, 31 WISCONSIN MED. J. 245 (1932).

⁸¹ *People v. Townsend*, 11 Ill.2d 30, 141 N.E.2d 729 (1957). The court felt that whatever effect the drug might have had had worn off by the time the confession was forthcoming. See COMMENT, *Admissibility of Confessions & Denials Made Under the Influence of Drugs*, 52 NORTHWESTERN U.L.REV. 666 (1957).

⁷⁸ BAKER & INBAU, *op. cit. supra*, note 68 at 628.

⁷⁹ ROBINSON, *SCIENCE VERSUS CRIME* 280 (1935). See also, HERZOG, *MEDICAL JURISPRUDENCE* §472 (1931).

⁸⁰ McCORMICK, *Deception Tests and the Law of Evidence*, 15 CAL. L. REV. 484, 493 (1927).

⁸¹ GAULT, *CRIMINOLOGY* 392, 393 (1932).

⁸² HULL, *HYPNOSIS & SUGGESTIBILITY: AN EXPERIMENTAL APPROACH* 99 (1933). See also, SHARPE, *Medication as a Threat to Testamentary Capacity*, 35 U. NO. CAR. L. REV. 380 (1957); BURTT, *LEGAL PSYCHOLOGY* 137 (1931). The precise results of the ex-

The rationale for this development had been clearly sounded by Wigmore who advised judges and lawyers to "watch for the chronicles" of the developments in interrogation drugs,⁸⁵ noting that "if medical science or psychic science, represented by an accord among the experts of the science, establishes the trustworthiness of a

confession induced by some artificial means known to such science, then a confession so induced should be admissible."⁸⁶ Wigmore's words provided both a goal and a caution, and as both they would pervade and stand in judgment through the subsequent history of the so-called truth serum drugs.

⁸⁵ WIGMORE, 3 EVIDENCE §998 (3rd ed. 1940).

⁸⁶ *Ibid.* at §841a.