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Police Science Notes

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POLICE SCIENCE NOTES

Criminal Confessions Under Narcosis—During the past three years, psychiatrists at the Wisconsin Psychiatric Institute (University of Wisconsin) have reported some interesting results of the intravenous administration of sodium amytal to criminal suspects. The moderate narcosis produced by this drug causes persons to give truthful answers when questioned. Since the success of the method depends largely upon the reaching of the proper depth of narcosis, methods of counteracting the depressant effect of sodium amytal by the administration of stimulant drugs are of importance. A review of this work may be of interest in connection with the so-called "truth serum" technique for detecting deception.

In an article entitled "Criminal Confessions Under Narcosis," published in the *Wisconsin Medical Journal* (vol. 31, pp. 245-250, April, 1932), Dr. W. F. Lorenz goes to great length to point out that the popular term "truth serum" has no foundation; that the drug administered is not a *serum* and that it does not necessarily and unfailingly cause the subject to tell the truth. He apparently is unaware of the previous experiments of Dr. R. E. House, reported in the *Texas State Journal of Medicine* for September, 1922, under the title of "The Use of Scopolamine in Criminology," or of any other previous work indicating the comparative truthfulness, candor, and naivete of a subject when in a state of semi-narcosis (from ether, alcohol, scopolamine or other drugs). Scopolamine bro-

mid is discussed in connection with its combination with morphine to produce the so-called "twilight sleep" and the author points out that scopolamine (or hyoscine) produces amnesia and may be classified as a delirifacient rather than a true hypnotic.

Lorenz reports that small doses produce hallucinations of sight and hearing as well as excitement. (This has not been seen with small doses of *fresh* scopolamine in the hands of the reviewer. Stimulation has only been observed from small doses of old or oxidized preparations, or from the too-rapid injection of large doses of the fresh drug.) The observer is confronted with the difficulty of separating truthful statements from the products of fantasy. Large doses of scopolamine produce a more profound reaction, often times resulting in coma. The permitted dose is given as from 1/200 grain to 1/50 grain. Because of the wide variation in susceptibility, it is difficult to select a proper dose to produce a definite intensity of action in any individual.

Lorenz feels that delirium should be avoided in questioning subjects. He has had better success with sodium amytal than with scopolamine, either with or without morphine. Sodium amytal is a true depressant, produces no delirium and is not subject to the same wide variation in individual susceptibility as is scopolamine.

In Lorenz's technique, one gram of the pure drug (sodium amytal) is dissolved in 20 cc. of freshly distilled water and injected into the

vein at the rate of 1 cc. per minute. This rate must not be exceeded. The injection is stopped as soon as the corneal reflex disappears. For the average individual of about 150 pounds body weight, this requires about 10 to 12 cc. of the solution. The subject is awakened in about five minutes by conversation or by wiping the face with a cold, wet towel. He is then interrogated.

The first questions are always simple, designed to test the degree of consciousness of the subject and his orientation to his surroundings. The subject of conversation is then brought around to the topic under investigation. The subject is usually loquacious and it is ordinarily sufficient to steer the flow of conversation into the proper channel by an occasional question or comment. Interrogation may usually be continued for two or three hours. There is no point in carrying it farther. The subject is then put to bed and usually sleeps for several hours more.

The subject should have an empty stomach to avoid the danger of vomiting. Blood pressure should be taken to discover arteriosclerosis if this condition is present. After his return to normal, the subject has a hazy recollection of what has transpired. He knows that he has been questioned but he does not have a clear or accurate idea of the questions asked, nor the answers given. Lorenz points out the moral obligation of the physician to see that the subject is not abused during the questioning and suggests the fairness of having a friend of the subject present during the interrogation. He feels that the chief value of the method lies in indicating the innocence of a person falsely charged with a crime. He has had less ex-

perience with the questioning of those guilty of the charges made against them. The necessity of having a medically trained person administer the drug is pointed out.

Brief reports of three cases are given—in all of which the subject was innocent of the specific charge placed against him.

In another article, entitled "A Method to Counteract the Narcotic and Intoxicating Effect of the Barbituric Acid Drugs," which appeared in the *Wisconsin Medical Journal* (vol. 32, pp. 530-532, Aug., 1933), Dr. H. H. Reese discusses the three hypnotic levels of Forel described by Lorenz resulting from intravenous administration of sodium amytal as being: *Stage 1*. Patient first is aware of unusual symptoms such as fatigue, dizziness, blurring of vision, diplopia, light headedness, etc.; *Stage 2*. He becomes euphoric or drowsy; *Stage 3*. Corneal (winking) reflex is abolished.

For purposes of psychiatric investigation, stage 2 is preferred because at this level (a) the undesirable rapport situation is gone; (b) the patient's inhibitions being removed, his conversation is free and unrestricted; (c) suggestive therapy is more easily assimilated; and (d) it permits questioning by others in cases of a criminal nature.

The use of hypnosis by sodium amytal injections is designated as "Lorenz's chemical psychoanalysis." Reese cites Killian's ("The Possibility of Interrupting Avertin Narcosis," *Klinische Wochenschrift* 31: 1446-1449—Aug. 1, 1931) use of coramine (pyridine β carbonic acid diethylamide) for abolishing the narcotic effects of avertin and pernocton. Reese states that the range of safety is large even with intravenous administration of coramine.

5 cc. of 25% coramine intravenously will bring a patient who is in profound narcosis (from 12 to 20 grains of sodium amytal intravenously) to normal in 5 or 10 minutes. In patients receiving 2 to 10 grains of sodium amytal intravenously (just sufficient to reach the hypnotic level), 2 to 3 cc. of 25% coramine intravenously brought them back to normal in 2 to 5 minutes. Intramuscular injections of coramine worked somewhat slower and 5 to 8 cc. of 25% solution was required. Reese has given up to 11 cc. of 25% coramine intravenously, but recommends 4 to 8 cc. to avoid excessive respiratory stimulation, overventilation or convulsive seizures. He recommends coramine in treatment of poisoning by the barbiturates.

In an article entitled, "Physiological Observations During Intravenous Sodium Amytal Medications," which appeared in the *American Journal of Psychiatry* (vol. 13, N.S., pp. 1205-1212, May, 1934), Drs. Lorenz, Reese, and A. C. Washburne briefly review the literature of the use of sodium amytal in psychiatry and point out that one of its chief dangers lies in the too-rapid intravenous administration of the drug. The rate should not exceed 1 cc. of 5% solution per minute and the patient should have no food for the preceding 4 to 6 hours to minimize the danger from vomiting and aspiration of vomitus. They selected 350 neuropsychiatric cases (half men) from the State Hospital for the Insane. After rest in bed and observation, each patient was given intravenously, a solution of 1 gram of sodium amytal in 20 cc. of water. The desired stage of hypnosis was reached with an average of 14.3 cc. of this solution (9.5 grains) and the average duration of undisturbed

sleep was 3 hours 50 minutes. On an average, the first stage is reached in 3 minutes, the second in 6 minutes and the third in 14 minutes. Fifty-four cases in third stage were given stimulants (5 cc. of 25% coramine, 7.5 grains caffeine benzoate or 0.5 cc. of 1:1000 adrenalin, all intravenously). All of these produced a temporary awakening but the patient tended to lapse back into a light sleep after the stimulant effect had worn off.

During the narcosis there was a slight falling tendency of systolic blood pressure but pulse and respiration were not materially altered.

The difference in response between various types of insanity cases was not very great; the functional group of diseases required a somewhat larger dose of sodium amytal than the organic group for the production of narcosis. Because of the great instability of blood pressure in the involuntal group, it was suggested that these be carefully watched during the testing.

C. W. M.

Forensic Microanalysis—An interesting case illustrative of the value of intensive studies of microscopic particles of evidence in the investigation of crimes of violence is described by Walter M. Else in a paper entitled "Crime and the Criminal" which appeared in the May 3, 1935, issue of *The Police Review* (England). It is related as follows:

"In a case of attempted murder the assailant attacked a woman upon a lonely road and dragged her into a spinney (thicket) adjacent to the highway, where he attempted to strangle her. The noise of the struggle attracted the attention of

two pedestrians upon the highway, upon whose approach the assailant made good his escape, leaving his victim in a semi-conscious condition. Later a suspect was interrogated and he emphatically denied the offense.

"The outer garments of the assailant and victim were submitted for examination, together with a few micro particles of fibrous matter taken from the broken branches of the hawthorn hedge dividing the highway and spinney. Wool fibres dyed in grades of red, blue, bronze, and undyed ones in grey similar to those composing the fabric of the trousers of the assailant were found in the same combination in those from the hedge and in those transported to the dress of the victim. Fibres of brown viscose silk resembling those from the coat of the victim were found transposed to the clothing of the assailant, and in addition several seeds of *Galium Aparine*—which in that locality was peculiar to the interior of the spinney—were found upon the clothing of each. Soil particles were found adhering to the welt of the right shoe and to the right knee of the trousers of the assailant, who in explanation stated that he had stumbled over a stile some three hundred yards distant from the scene of the offense. Samples of soil were obtained from the stile indicated, also from the place of the attempted murder in the spinney, four additional samples being obtained from a radius of half a mile north, south, east and west of the spinney.

"The result of the analysis disclosed that the soil from the right shoe of the assailant was a mixture of the soil from the bank entering the thicket and from its interior,

that from his trousers being identical in composition with that from the actual place of the attempted murder, each of the remaining samples of soil being entirely dissimilar in composition to that from the spinney. A committal and conviction resulted."—M. E. O.

The Use of Invisible Rays in Criminology—A valuable article by this title appeared in the January, 1935, number of *The Medico-Legal and Criminological Review*, being a reprint of a paper read before the Medico-Legal Society by C. Ainsworth Mitchell, the eminent analyst and criminologist. The author describes some of the uses of color screens, ultra-violet light, x-rays, and infra-red rays, and illustrates with a number of actual cases successfully investigated by these methods.

Reference is made to Plotnikov's work in which it was shown that printed documents or letters written in iron-gall ink could be photographed inside a closed envelope by means of transmitted infra-red rays; also the use of infra-red photography for revealing writing which has been blotted out with another ink.

Especially interesting is the brief description of a method for photographing sediment in ordinary ink writing, a procedure developed by Mr. T. J. Ward. A filter consisting of a glass cell containing diluted blue-black ink was used in making photomicrographs of the writing in two letters written at different periods, the blue-black ink in the writing being extinguished, suspended particles remaining on the paper showing as dark objects on a white background. A number of such unusual objects as potato starch, scales from

the wings of moths, particles of gypsum and spicules of asbestos were found in both letters, indicating that the ink in both came from the same source.—M. E. O.

The Analysis of Debris.—The July—September, 1935, number of *The Police Journal* (England) contains an article on "The Importance of Trifles," in which the author, Detective-Sergeant Harker of the Lincolnshire C. I. D. emphasizes the importance of collecting all traces, no matter how trivial, in searching over the scene of a crime. An interesting case is reported illustrating how careful collection and examination of minute bits of evidence may prove of great value in the investigation and prosecution of certain crimes.

A person suspected of committing two burglaries on succeeding evenings was arrested, but there was little evidence connecting him with the crimes. The police took pos-

session of the suspect's clothing and personal effects found in his home and these, together with a few fibers taken from a window frame of one of the houses were sent to an expert for examination. It was found that the scrap of fibers was composed of a number of different types of wool; a suit belonging to the suspect was made of exactly the same types, corresponding precisely in size and color. An examination of a pair of muddy shoes disclosed a number of wool fibers of eight different colors; wool fibers corresponding exactly in color were found in samples taken from a rug in one of the houses entered, from which fact the expert concluded that it was "very unlikely that the association of colors found in the fibers from the shoes could have originated from a source other than the rug in question." The testimony of the expert on this and other microscopic evidence played an important part in the prosecution of the accused.

M. E. O.