

Effects of narcosis and considerations relevant to its possible counterintelligence use.

“TRUTH” DRUGS IN INTERROGATION

The search for effective aids to interrogation is probably as old as man’s need to obtain information from an uncooperative source and as persistent as his impatience to shortcut any tortuous path. In the annals of police investigation, physical coercion has at times been substituted for painstaking and time-consuming inquiry in the belief that direct methods produce quick results. Sir James Stephens, writing in 1883, rationalizes a grisly example of “third degree” practices by the police of India: “It is far pleasanter to sit comfortably in the shade rubbing red pepper in a poor devil’s eyes than to go about in the sun hunting up evidence.”

More recently, police officials in some countries have turned to drugs for assistance in extracting confessions from accused persons, drugs which are presumed to relax the individual’s defenses to the point that he unknowingly reveals truths he has been trying to conceal. This investigative technique, however humanitarian as an alternative to physical torture, still raises serious questions of individual rights and liberties. In this country, where drugs have gained only marginal acceptance in police work, their use has provoked cries of “psychological third degree” and has precipitated medico-legal controversies that after a quarter of a century still occasionally flare into the open.

The use of so-called “truth” drugs in police work is similar to the accepted psychiatric practice of narco-analysis; the difference in the two procedures lies in their different objectives. The police investigator is concerned with empirical truth that may be used against the suspect, and therefore almost solely with *probative* truth: the usefulness of the suspect’s revelations depends ultimately on their acceptance in evidence by a court of law. The psychiatrist, on the other hand, using the same “truth” drugs in diagnosis and treatment of the mentally ill, is primarily concerned with *psychological* truth or psychological reality rather than empirical

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fact. A patient's aberrations are reality for him at the time they occur, and an accurate account of these fantasies and delusions, rather than reliable recollection of past events, can be the key to recovery.

The notion of drugs capable of illuminating hidden recesses of the mind, helping to heal the mentally ill and preventing or reversing the miscarriage of justice, has provided an exceedingly durable theme for the press and popular literature. While acknowledging that "truth serum" is a misnomer twice over—the drugs are not sera and they do not necessarily bring forth probative truth—journalistic accounts continue to exploit the appeal of the term. The formula is to play up a few spectacular "truth" drug successes and to imply that the drugs are more maligned than need be and more widely employed in criminal investigation than can officially be admitted.

Any technique that promises an increment of success in extracting information from an uncompliant source is *ipso facto* of interest in intelligence operations. If the ethical considerations which in Western countries inhibit the use of narco-interrogation in police work are felt also in intelligence, the Western services must at least be prepared against its possible employment by the adversary. An understanding of "truth" drugs, their characteristic actions, and their potentialities, positive and negative, for eliciting useful information is fundamental to an adequate defense against them.

This discussion, meant to help toward such an understanding, draws primarily upon openly published materials. It has the limitations of projecting from criminal investigative practices and from the permissive atmosphere of drug psychotherapy.

Scopolamine as "Truth Serum"

Early in this century physicians began to employ scopolamine, along with morphine and chloroform, to induce a state of "twilight sleep" during childbirth. A constituent of henbane, scopolamine was known to produce sedation and drowsiness, confusion and disorientation, incoordination, and amnesia for events experienced during intoxication. Yet physicians noted that women in twilight sleep answered questions accurately and often volunteered exceedingly candid remarks.

In 1922 it occurred to Robert House, a Dallas, Texas, obstetrician, that a similar technique might be employed in the interrogation of suspected criminals, and he arranged to interview under scopolamine two prisoners in the Dallas county jail whose guilt seemed clearly confirmed. Under the drug, both men denied the charges on which they were held; and both, upon trial, were found not guilty. Enthusiastic at this success, House concluded that a patient under the influence of scopolamine "cannot create a lie . . . and there is no power to think or reason."¹⁴ His experiment and this conclusion attracted wide attention, and the idea of a "truth" drug was thus launched upon the public consciousness.

The phrase "truth serum" is believed to have appeared first in a news report of House's experiment in the *Los Angeles Record*, sometime in 1922. House resisted the term for a while but eventually came to employ it regularly himself. He published some eleven articles on scopolamine in the years 1921-1929, with a noticeable increase in polemical zeal as time went on. What had begun as something of a scientific statement turned finally into a dedicated crusade by the "father of truth serum" on behalf of his offspring, wherein he was "grossly indulgent of its wayward behavior and stubbornly proud of its minor achievements."¹¹

Only a handful of cases in which scopolamine was used for police interrogation came to public notice, though there is evidence suggesting that some police forces may have used it extensively.^{2, 16} One police writer claims that the *threat* of scopolamine interrogation has been effective in extracting confessions from criminal suspects, who are told they will first be rendered unconscious by chloral hydrate placed covertly in their coffee or drinking water.¹⁶

Because of a number of undesirable side effects, scopolamine was shortly disqualified as a "truth" drug. Among the most disabling of the side effects are hallucinations, disturbed perception, somnolence, and physiological phenomena such as headache, rapid heart, and blurred vision, which distract the subject from the central purpose of the interview. Furthermore, the physical action is long, far outlasting the psychological effects. Scopolamine continues, in some cases, to make anesthesia and surgery safer by drying the mouth and throat

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and reducing secretions that might obstruct the air passages. But the fantastically, almost painfully, dry "desert" mouth brought on by the drug is hardly conducive to free talking, even in a tractable subject.

The Barbiturates

The first suggestion that drugs might facilitate communication with emotionally disturbed patients came quite by accident in 1916. Arthur S. Lovenhart and his associates at the University of Wisconsin, experimenting with respiratory stimulants, were surprised when, after an injection of sodium cyanide, a catatonic patient who had long been mute and rigid suddenly relaxed, opened his eyes, and even answered a few questions. By the early 1930's a number of psychiatrists were experimenting with drugs as an adjunct to established methods of therapy.

At about this time police officials, still attracted by the possibility that drugs might help in the interrogation of suspects and witnesses, turned to a class of depressant drugs known as the barbiturates. By 1935 Clarence W. Muehlberger, head of the Michigan Crime Detection Laboratory at East Lansing, was using barbiturates on reluctant suspects, though police work continued to be hampered by the courts' rejection of drug-induced confessions except in a few carefully circumscribed instances.

The barbiturates, first synthesized in 1903, are among the oldest of modern drugs and the most versatile of all depressants. In this half-century some 2,500 have been prepared, and about two dozen of these have won an important place in medicine. An estimated three to four billion doses of barbiturates are prescribed by physicians in the United States each year, and they have come to be known by a variety of commercial names and colorful slang expressions: "goofballs," Luminal, Nembutal, "red devils," "yellow jackets," "pink ladies," etc. Three of them which are used in narcoanalysis and have seen service as "truth" drugs are sodium amytal (amobarbital), pentothal sodium (thiopental), and to a lesser extent seconal (secobarbital).

As with most drugs, little is known about the way barbiturates work or exactly how their action is related to their chemistry. But a great deal is known about the action it-

self. They can produce the entire range of depressant effects from mild sedation to deep anesthesia—and death. In small doses they are sedatives acting to reduce anxiety and responsiveness to stressful situations; in these low doses, the drugs have been used in the treatment of many diseases, including peptic ulcer, high blood pressure, and various psychogenic disorders. At three to five times the sedative dose the same barbiturates are hypnotics and induce sleep or unconsciousness from which the subject can be aroused. In larger doses a barbiturate acts as an anesthetic, depressing the central nervous system as completely as a gaseous anesthetic does. In even larger doses barbiturates cause death by stopping respiration.

The barbiturates affect higher brain centers generally. The cerebral cortex—that region of the cerebrum commonly thought to be of the most recent evolutionary development and the center of the most complex mental activities—seems to yield first to the disturbance of nerve-tissue function brought about by the drugs. Actually, there is reason to believe that the drugs depress cell function without discrimination and that their selective action on the higher brain centers is due to the intricate functional relationship of cells in the central nervous system. Where there are chains of interdependent cells, the drugs appear to have their most pronounced effects on the most complex chains, those controlling the most "human" functions.

The lowest doses of barbiturates impair the functioning of the cerebral cortex by disabling the ascending (sensory) circuits of the nervous system. This occurs early in the sedation stage and has a calming effect not unlike a drink or two after dinner. The subject is less responsive to stimuli. At higher dosages, the cortex no longer actively integrates information, and the cerebellum, the "lesser brain" sometimes called the great modulator of nervous function, ceases to perform as a control box. It no longer compares cerebral output with input, no longer informs the cerebrum command centers of necessary corrections, and fails to generate correcting command signals itself. The subject may become hyperactive, may thrash about. At this stage consciousness is lost and coma follows. The subject no longer responds even to

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noxious stimuli, and cannot be roused. Finally, in the last stage, respiration ceases.^{10, 28}

As one pharmacologist explains it, a subject coming under the influence of a barbiturate injected intravenously goes through all the stages of progressive drunkenness, but the time scale is on the order of minutes instead of hours. Outwardly the sedation effect is dramatic, especially if the subject is a psychiatric patient in tension. His features slacken, his body relaxes. Some people are momentarily excited; a few become silly and giggly. This usually passes, and most subjects fall asleep, emerging later in disoriented semi-wakefulness.

The descent into narcosis and beyond with progressively larger doses can be divided as follows:

- I. Sedative stage.
- II. Unconsciousness, with exaggerated reflexes (hyperactive stage).
- III. Unconsciousness, without reflex even to painful stimuli.
- IV. Death.

Whether all these stages can be distinguished in any given subject depends largely on the dose and the rapidity with which the drug is induced. In anesthesia, stages I and II may last only two or three seconds.

The first or sedative stage can be further divided:

- Plane 1. No evident effect, or slight sedative effect.
- Plane 2. Cloudiness, calmness, amnesia. (Upon recovery, the subject will not remember what happened at this or "lower" planes or stages.)
- Plane 3. Slurred speech, old thought patterns disrupted, inability to integrate or learn new patterns. Poor coordination. Subject becomes unaware of painful stimuli.

Plane 3 is the psychiatric "work" stage. It may last only a few minutes, but it can be extended by further slow injection of the drug. The usual practice is to bring the subject quickly to Stage II and to conduct the interview as he passes back into the sedative stage on the way to full consciousness.

Clinical and Experimental Studies

The general abhorrence in Western countries for the use of chemical agents "to make people do things against their will" has precluded serious systematic study (at least as published openly) of the potentialities of drugs for interrogation. Louis A. Gottschalk, surveying their use in information-seeking interviews,¹³ cites 136 references; but only two touch upon the extraction of intelligence information, and one of these concludes merely that Russian techniques in interrogation and indoctrination are derived from age-old police methods and do *not* depend on the use of drugs. On the validity of confessions obtained with drugs, Gottschalk found only three published experimental studies that he deemed worth reporting.

One of these reported experiments by D. P. Morris in which intravenous sodium amytal was helpful in detecting malingerers.²² The subjects, soldiers, were at first sullen, negativistic, and non-productive under amytal, but as the interview proceeded they revealed the fact of and causes for their malingering. Usually the interviews turned up a neurotic or psychotic basis for the deception.

The other two confession studies, being more relevant to the highly specialized, untouched area of drugs in intelligence interrogation, deserve more detailed review.

Gerson and Victoroff¹² conducted amytal interviews with 17 neuropsychiatric patients, soldiers who had charges against them, at Tilton General Hospital, Fort Dix. First they were interviewed without amytal by a psychiatrist, who, neither ignoring nor stressing their situation as prisoners or suspects under scrutiny, urged each of them to discuss his social and family background, his army career, and his version of the charges pending against him.

The patients were told only a few minutes in advance that narcoanalysis would be performed. The doctor was considerate, but positive and forthright. He indicated that they had no choice but to submit to the procedure. Their attitudes varied from unquestioning compliance to downright refusal.

Each patient was brought to complete narcosis and permitted to sleep. As he became semiconscious and could be stimulated to speak, he was held in this stage with additional amytal while the questioning proceeded. He was questioned

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first about innocuous matters from his background that he had discussed before receiving the drug. Whenever possible, he was manipulated into bringing up himself the charges pending against him before being questioned about them. If he did this in a too fully conscious state, it proved more effective to ask him to "talk about that later" and to interpose a topic that would diminish suspicion, delaying the interrogation on his criminal activity until he was back in the proper stage of narcosis.

The procedure differed from therapeutic narcoanalysis in several ways: the setting, the type of patients, and the kind of "truth" sought. Also, the subjects were kept in twilight consciousness longer than usual. This state proved richest in yield of admissions prejudicial to the subject. In it his speech was thick, mumbling, and disconnected, but his discretion was markedly reduced. This valuable interrogation period, lasting only five to ten minutes at a time, could be reinduced by injecting more amytal and putting the patient back to sleep.

The interrogation technique varied from case to case according to background information about the patient, the seriousness of the charges, the patient's attitude under narcosis, and his rapport with the doctor. Sometimes it was useful to pretend, as the patient grew more fully conscious, that he had already confessed during the amnestic period of the interrogation, and to urge him, while his memory and sense of self-protection were still limited, to continue to elaborate the details of what he had "already described." When it was obvious that a subject was withholding the truth, his denials were quickly passed over and ignored, and the key questions would be reworded in a new approach.

Several patients revealed fantasies, fears, and delusions approaching delirium, much of which could readily be distinguished from reality. But sometimes there was no way for the examiner to distinguish truth from fantasy except by reference to other sources. One subject claimed to have a child that did not exist, another threatened to kill on sight a stepfather who had been dead a year, and yet another confessed to participating in a robbery when in fact he had only purchased goods from the participants. Testimony concern-

ing dates and specific places was untrustworthy and often contradictory because of the patient's loss of time-sense. His veracity in citing names and events proved questionable. Because of his confusion about actual events and what he thought or feared had happened, the patient at times managed to conceal the truth unintentionally.

As the subject revived, he would become aware that he was being questioned about his secrets and, depending upon his personality, his fear of discovery, or the degree of his disillusionment with the doctor, grow negativistic, hostile, or physically aggressive. Occasionally patients had to be forcibly restrained during this period to prevent injury to themselves or others as the doctor continued to interrogate. Some patients, moved by fierce and diffuse anger, the assumption that they had already been tricked into confessing, and a still limited sense of discretion, defiantly acknowledged their guilt and challenged the observer to "do something about it." As the excitement passed, some fell back on their original stories and others verified the confessed material. During the follow-up interview nine of the 17 admitted the validity of their confessions; eight repudiated their confessions and reaffirmed their earlier accounts.

With respect to the reliability of the results of such interrogation, Gerson and Victoroff conclude that persistent, careful questioning can reduce ambiguities in drug interrogation, but cannot eliminate them altogether.

At least one experiment has shown that subjects are capable of maintaining a lie while under the influence of a barbiturate. Redlich and his associates at Yale²⁵ administered sodium amytal to nine volunteers, students and professionals, who had previously, for purposes of the experiment, revealed shameful and guilt-producing episodes of their past and then invented false self-protective stories to cover them. In nearly every case the cover story retained some elements of the guilt inherent in the true story.

Under the influence of the drug, the subjects were cross-examined on their cover stories by a second investigator. The results, though not definitive, showed that normal individuals who had good defenses and no overt pathological traits could stick to their invented stories and refuse confession. Neu-

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rotic individuals with strong unconscious self-punitive tendencies, on the other hand, both confessed more easily and were inclined to substitute fantasy for the truth, confessing to offenses never actually committed.

In recent years drug therapy has made some use of stimulants, most notably amphetamine (Benzedrine) and its relative methamphetamine (Methedrine). These drugs, used either alone or following intravenous barbiturates, produce an outpouring of ideas, emotions, and memories which has been of help in diagnosing mental disorders. The potential of stimulants in interrogation has received little attention, unless in unpublished work. In one study of their psychiatric use Brussel *et al.*⁷ maintain that methedrine gives the liar no time to think or to organize his deceptions. Once the drug takes hold, they say, an insurmountable urge to pour out speech traps the malingerer. Gottschalk, on the other hand, says that this claim is extravagant, asserting without elaboration that the study lacked proper controls.¹³ It is evident that the combined use of barbiturates and stimulants, perhaps along with ataraxics (tranquillizers), should be further explored.

Observations from Practice

J. M. MacDonald, who as a psychiatrist for the District Courts of Denver has had extensive experience with narco-analysis, says that drug interrogation is of doubtful value in obtaining confessions to crimes. Criminal suspects under the influence of barbiturates may deliberately withhold information, persist in giving untruthful answers, or falsely confess to crimes they did not commit. The psychopathic personality, in particular, appears to resist successfully the influence of drugs.

MacDonald tells of a criminal psychopath who, having agreed to narco-interrogation, received 1.5 grams of sodium amytal over a period of five hours. This man feigned amnesia and gave a false account of a murder. "He displayed little or no remorse as he (falsely) described the crime, including burial of the body. Indeed he was very self-possessed and he appeared almost to enjoy the examination. From time to time he would request that more amytal be injected."²¹

MacDonald concludes that a person who gives false information prior to receiving drugs is likely to give false information also under narcosis, that the drugs are of little value for revealing deceptions, and that they are more effective in releasing unconsciously repressed material than in evoking consciously suppressed information.

Another psychiatrist known for his work with criminals, L. Z. Freedman, gave sodium amytal to men accused of various civil and military antisocial acts. The subjects were mentally unstable, their conditions ranging from character disorders to neuroses and psychoses. The drug interviews proved psychiatrically beneficial to the patients, but Freedman found that his view of objective reality was seldom improved by their revelations. He was unable to say on the basis of the narco-interrogation whether a given act had or had not occurred. Like MacDonald, he found that psychopathic individuals can deny to the point of unconsciousness crimes that every objective sign indicates they have committed.¹⁰

F. G. Inbau, Professor of Law at Northwestern University, who has had considerable experience observing and participating in "truth" drug tests, claims that they are occasionally effective on persons who would have disclosed the truth anyway had they been properly interrogated, but that a person determined to lie will usually be able to continue the deception under drugs.

The two military psychiatrists who made the most extensive use of narcoanalysis during the war years, Roy R. Grinker and John C. Spiegel, concluded that in almost all cases they could obtain from their patients essentially the same material and give them the same emotional release by therapy without the use of drugs, provided they had sufficient time.

The essence of these comments from professionals of long experience is that drugs provide rapid access to information that is psychiatrically useful but of doubtful validity as empirical truth. The same psychological information and a less adulterated empirical truth can be obtained from fully conscious subjects through non-drug psychotherapy and skillful police interrogation.

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Application to CI Interrogation

The almost total absence of controlled experimental studies of "truth" drugs and the spotty and anecdotal nature of psychiatric and police evidence require that extrapolations to intelligence operations be made with care. Still, enough is known about the drugs' action to suggest certain considerations affecting the possibilities for their use in interrogations.

It should be clear from the foregoing that at best a drug can only serve as an aid to an interrogator who has a sure understanding of the psychology and techniques of normal interrogation. In some respects, indeed, the demands on his skill will be increased by the baffling mixture of truth and fantasy in drug-induced output. And the tendency against which he must guard in the interrogatee to give the responses that seem to be wanted without regard for facts will be heightened by drugs: the literature abounds with warnings that a subject in narcosis is extremely suggestible.

It seems possible that this suggestibility and the lowered guard of the narcotic state might be put to advantage in the case of a subject feigning ignorance of a language or some other skill that had become automatic with him. Lipton²⁰ found sodium amytal helpful in determining whether a foreign subject was merely pretending not to understand English. By extension, one can guess that a drugged interrogatee might have difficulty maintaining the pretense that he did not comprehend the idiom of a profession he was trying to hide.

There is the further problem of hostility in the interrogator's relationship to a resistance source. The accumulated knowledge about "truth" drug reaction has come largely from patient-physician relationships of trust and confidence. The subject in narcoanalysis is usually motivated *a priori* to cooperate with the psychiatrist, either to obtain relief from mental suffering or to contribute to a scientific study. Even in police work, where an atmosphere of anxiety and threat may be dominant, a relationship of trust frequently asserts itself: the drug is administered by a medical man bound by a strict code of ethics; the suspect agreeing to undergo narcoanalysis in a desperate bid for corroboration of his testimony trusts both drug and psychiatrist, however apprehensively;

and finally, as Freedman and MacDonald have indicated, the police psychiatrist frequently deals with a "sick" criminal, and some order of patient-physician relationship necessarily evolves.

Rarely has a drug interrogation involved "normal" individuals in a hostile or genuinely threatening milieu. It was from a non-threatening experimental setting that Eric Lindemann could say that his "normal" subjects "reported a general sense of euphoria, ease and confidence, and they exhibited a marked increase in talkativeness and communicability."¹⁹ Gerson and Victoroff list poor doctor-patient rapport as one factor interfering with the completeness and authenticity of confessions by the Fort Dix soldiers, caught as they were in a command performance and told they had no choice but to submit to narco-interrogation.

From all indications, subject-interrogator rapport is usually crucial to obtaining the psychological release which may lead to unguarded disclosures. Role-playing on the part of the interrogator might be a possible solution to the problem of establishing rapport with a drugged subject. In therapy, the British narcoanalyst William Sargant recommends that the therapist deliberately distort the facts of the patient's life-experience to achieve heightened emotional response and abreaction.²⁷ In the drunken state of narcoanalysis patients are prone to accept the therapist's false constructions. There is reason to expect that a drugged subject would communicate freely with an interrogator playing the role of relative, colleague, physician, immediate superior, or any other person to whom his background indicated he would be responsive.

Even when rapport is poor, however, there remains one facet of drug action eminently exploitable in interrogation—the fact that subjects emerge from narcosis feeling they have revealed a great deal, even when they have not. As Gerson and Victoroff demonstrated at Fort Dix, this psychological set provides a major opening for obtaining genuine confessions.

Technical Considerations

It would presumably be sometimes desirable that a resistant interrogatee be given the drug without his knowledge. For narcoanalysis the only method of administration used is

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intravenous injection. The possibilities for covert or "silent" administration by this means would be severely limited except in a hospital setting, where any pretext for intravenous injection, from glucose feeding to anesthetic procedure, could be used to cover it. Sodium amytal can be given orally, and the taste can be hidden in chocolate syrup, for example, but there is no good information on what dosages can be masked. Moreover, although the drug might be introduced thus without detection, it would be difficult to achieve and maintain the proper dose using the oral route.

Administering a sterile injection is a procedure shortly mastered, and in fact the technical skills of intravenous injection are taught to nurses and hospital corpsmen as a matter of routine. But it should be apparent that there is more to narcotizing than the injection of the correct amount of sodium amytal or pentothal sodium. Administering drugs and knowing when a subject is "under" require clinical judgment. Knowing what to expect and how to react appropriately to the unexpected takes both technical and clinical skill. The process calls for qualified medical personnel, and sober reflection on the depths of barbituric anesthesia will confirm that it would not be enough merely to have access to a local physician.

Possible Variations

In studies by Beecher and his associates,³⁻⁶ one-third to one-half the individuals tested proved to be placebo reactors, subjects who respond with symptomatic relief to the administration of any syringe, pill, or capsule, regardless of what it contains. Although no studies are known to have been made of the placebo phenomenon as applied to narco-interrogation, it seems reasonable that when a subject's sense of guilt interferes with productive interrogation, a placebo for pseudo-narcosis could have the effect of absolving him of the responsibility for his acts and thus clear the way for free communication. It is notable that placebos are most likely to be effective in situations of stress. The individuals most likely to react to placebos are the more anxious, more self-centered, more dependent on outside stimulation, those who express their needs more freely socially, talkers who drain off anxiety by conversing with others. The non-reactors are those clinically

more rigid and with better than average emotional control. No sex or I.Q. differences between reactors and non-reactors have been found.

Another possibility might be the combined use of drugs with hypnotic trance and post-hypnotic suggestion: hypnosis could presumably prevent any recollection of the drug experience. Whether a subject can be brought to trance against his will or unaware, however, is a matter of some disagreement. Orne, in a survey of the potential uses of hypnosis in interrogation,²³ asserts that it is doubtful, despite many apparent indications to the contrary, that trance can be induced in resistant subjects. It may be possible, he adds, to hypnotize a subject unaware, but this would require a positive relationship with the hypnotist not likely to be found in the interrogation setting.

In medical hypnosis, pentothal sodium is sometimes employed when only light trance has been induced and deeper narcosis is desired. This procedure is a possibility for interrogation, but if a satisfactory level of narcosis could be achieved through hypnotic trance there would appear to be no need for drugs.

Defensive Measures

There is no known way of building tolerance for a "truth" drug without creating a disabling addiction, or of arresting the action of a barbiturate once induced. The only full safeguard against narco-interrogation is to prevent the administration of the drug. Short of this, the best defense is to make use of the same knowledge that suggests drugs for offensive operations: if a subject knows that on emerging from narcosis he will have an exaggerated notion of how much he has revealed he can better resolve to deny he has said anything.

The disadvantages and shortcomings of drugs in offensive operations become positive features of the defense posture. A subject in narco-interrogation is intoxicated, wavering between deep sleep and semi-wakefulness. His speech is garbled and irrational, the amount of output drastically diminished. Drugs disrupt established thought patterns, including the will to resist, but they do so indiscriminately and thus also interfere with the patterns of substantive information the in-

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terrogator seeks. Even under the conditions most favorable for the interrogator, output will be contaminated by fantasy, distortion, and untruth.

Possibly the most effective way to arm oneself against narco-interrogation would be to undergo a "dry run." A trial drug interrogation with output taped for playback would familiarize an individual with his own reactions to "truth" drugs, and this familiarity would help to reduce the effects of harassment by the interrogator before and after the drug has been administered. From the viewpoint of the intelligence service, the trial exposure of a particular operative to drugs might provide a rough benchmark for assessing the kind and amount of information he would divulge in narcosis.

There may be concern over the possibility of drug addiction intentionally or accidentally induced by an adversary service. Most drugs will cause addiction with prolonged use, and the barbiturates are no exception. In recent studies at the U.S. Public Health Service Hospital for addicts in Lexington, Ky., subjects received large doses of barbiturates over a period of months. Upon removal of the drug, they experienced acute withdrawal symptoms and behaved in every respect like chronic alcoholics.

Because their action is extremely short, however, and because there is little likelihood that they would be administered regularly over a prolonged period, barbiturate "truth" drugs present slight risk of operational addiction. If the adversary service were intent on creating addiction in order to exploit withdrawal, it would have other, more rapid means of producing states as unpleasant as withdrawal symptoms.

The hallucinatory and psychotomimetic drugs such as mescaline, marihuana, LSD-25, and microtine are sometimes mistakenly associated with narcoanalytic interrogation. These drugs distort the perception and interpretation of the sensory input to the central nervous system and affect vision, audition, smell, the sensation of the size of body parts and their position in space, etc. Mescaline and LSD-25 have been used to create experimental "psychotic states," and in a minor way as aids in psychotherapy.

Since information obtained from a person in a psychotic drug state would be unrealistic, bizarre, and extremely diffi-

cult to assess, the self-administration of LSD-25, which is effective in minute dosages, might in special circumstances offer an operative temporary protection against interrogation. Conceivably, on the other hand, an adversary service could use such drugs to produce anxiety or terror in medically unsophisticated subjects unable to distinguish drug-induced psychosis from actual insanity. An enlightened operative could not be thus frightened, however, knowing that the effect of these hallucinogenic agents is transient in normal individuals.

Most broadly, there is evidence that drugs have least effect on well-adjusted individuals with good defenses and good emotional control, and that anyone who can withstand the stress of competent interrogation in the waking state can do so in narcosis. The essential resources for resistance thus appear to lie within the individual.

Conclusions

The salient points that emerge from this discussion are the following. No such magic brew as the popular notion of truth serum exists. The barbiturates, by disrupting defensive patterns, may sometimes be helpful in interrogation, but even under the best conditions they will elicit an output contaminated by deception, fantasy, garbled speech, etc. A major vulnerability they produce in the subject is a tendency to believe he has revealed more than he has. It is possible, however, for both normal individuals and psychopaths to resist drug interrogation; it seems likely that any individual who can withstand ordinary intensive interrogation can hold out in narcosis. The best aid to a defense against narco-interrogation is foreknowledge of the process and its limitations. There is an acute need for controlled experimental studies of drug reaction, not only to depressants but also to stimulants and to combinations of depressants, stimulants, and ataraxics.

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