

Summer 1970

Criminal Responsibility and Competency As Influenced by Organic Disease

Earl F. Rose

Follow this and additional works at: <https://scholarship.law.missouri.edu/mlr>



Part of the [Law Commons](#)

Recommended Citation

Earl F. Rose, *Criminal Responsibility and Competency As Influenced by Organic Disease*, 35 MO. L. REV. (1970)

Available at: <https://scholarship.law.missouri.edu/mlr/vol35/iss3/2>

This Article is brought to you for free and open access by the Law Journals at University of Missouri School of Law Scholarship Repository. It has been accepted for inclusion in Missouri Law Review by an authorized editor of University of Missouri School of Law Scholarship Repository. For more information, please contact bassettcw@missouri.edu.

CRIMINAL RESPONSIBILITY AND COMPETENCY AS INFLUENCED BY ORGANIC DISEASE

EARL F. ROSE*

It is customary to classify diseases as either organic or functional. Organic diseases are those with demonstrable pathology, that is, with gross microscopic or biochemical abnormalities. These are associated with morphologic changes, disorders of energy utilization and metabolism, and interference with the organs' supply of oxygen and nutrients. In functional diseases there are no demonstrable anatomical, biochemical, or physiological abnormalities. It is the functional mental illnesses such as the neurosis, schizophrenia, and manic depressive psychosis that have been emphasized in the law and literature of criminal responsibility and competency, almost to the exclusion of the organic disease syndromes.¹

Organic disease as a cause of altered conduct is not a recent medical observation. As early as 1912, Karl Bonhoeffer² described reversible psychoses that he called "exogenous reactions" brought about by organic disease or exposure to toxic substances. Today, there are a number of such diseases which suggest that an affected person is more likely to react with criminal behavior when placed in a particular situation. Probes into these areas are evidenced by the recent medical literature and occasional judicial rulings concerning genetic defects in criminals. Genetic abnormalities and other organic disease conditions lend themselves to clinical evaluation, laboratory quantification, and scientific diagnosis to a greater degree than do the functional psychoses that psychiatrists are concerned with. However, this does not imply that functional psychoses are less real than organic disease. The finding of an organic disease that is capable of affecting

*B.A., Yankton College; B.S., University of South Dakota; M.D., University of Nebraska; LL.B., Southern Methodist University; Diplomate, American Boards of Anatomic, Clinical and Forensic Pathology; Associate Professor of Pathology, University of Iowa, Iowa City, Iowa.

1. The terms "disease," "insanity," and "mental illness" are difficult to define medically in a legal context, for in any given case they may mean whatever the expert witness says they mean. To quote Dr. Roche in the *Symposium on Criminal Responsibility and Mental Disease*, 26 TENN. L. REV. 221, 240 (1959):

I will say there is neither such a thing as "insanity" nor such a thing as "mental disease." These terms do not identify entities having separate existence in themselves. . . . "Mental illness," a medical term, borrowed from the mechanistic concepts of classical physical disease, refers to an altered internal status of the individual vis-a-vis his external world as interpreted by others. In a way the term is a misnomer, since the "mental illness" is not actually something limited to a place called the "mind," but rather is a changed interrelationship of the individual with his fellow creatures.

2. BONHOEFFER, *Die Symptomatischen Psychosen in Gefolge von akuten Infektionen und inneren Erkrankungen*, in HANDBUCH VON ASCHAFFENBURG, SPEZ. TEIL. LEIPZIG, FRANZ DEUTICKE (1912).

conduct could be of significance both in predicting the individual's potential for criminal behavior and, when considered from purely the legal standpoint, in determining criminal intent or competency and in assessing sanctions.

It is the purpose of this article to survey legally significant organic diseases that may be contributing factors in criminal conduct or lead to criminal incompetency. An exhaustive cataloging of diseases is not intended, but rather the goal is to create an awareness in the practicing attorney, who finds himself defending an individual of questionable mental stability, of the possible medical theories that may be argued in defending his client. It is hoped that the material presented herein will alert the attorney to the necessity of seeking an expert medical opinion whenever the attorney suspects that his client is suffering from some mental abnormality.

The organic diseases to be considered are: (1) metabolic and endocrine disturbances; (2) infections; (3) neoplasia (cancer); (4) senility; (5) genetic abnormalities; (6) alcohol, delirium tremens, and drugs; and (7) organic brain lesions, rage reactions, and seizures. Before discussing the individual organic disease syndromes associated with altered mental function and aberrant behavior, it may be useful to briefly review: (1) the concepts of criminal competency and criminal responsibility; (2) the applicable principles of criminal psychiatry; (3) the legal tests for competency and responsibility; and (4) the level of medical certainty necessary to establish organic disease and to demonstrate a causal-connection between the disease and the criminal act.

There is a clear legal distinction between criminal responsibility (insanity) and criminal competency. Criminal competency is related to the time period beginning after the act has been committed and ending with sentencing. The criteria of criminal incompetency are inability of the accused to understand the nature and purpose of the proceedings against him, inability to assist counsel in defense, and inability to understand the nature and purpose of a sentence upon conviction. Incompetence of the accused tolls the criminal proceedings, but it does not affect his ultimate criminal liability if he was sane at the time of his acts. If there is a question as to the accused's mental competence, a hearing³ will be ordered at the urging of either the defense counsel or prosecutor, or upon the court's own motion.⁴ This, however, does not preclude the offering of additional evidence of incompetency or lack of responsibility at the time of trial.

3. The proceeding is termed a hearing because it is conducted separately to determine the issue of criminal incompetency in addition to the trial to determine the issue of guilt. Unless waived by the defendant, a special jury is mandatory for criminal incompetency hearings in Alabama, Georgia, Idaho, Kentucky, Louisiana, Missouri, Montana, New Mexico, Illinois, Oklahoma, and South Dakota. Morse, *The Criminal Mental Incompetent*, 200 J.A.M.A. 233 (1967).

4. *Pate v. Robinson*, 383 U.S. 375 (1966), established the requirement of a hearing to determine the mental competence of the accused to stand trial. The defendant does not waive his right to a competency hearing by failing to request

In the United States the issue of mental disorder in criminal law has conventionally been associated with the defense of insanity. Lack of responsibility—the active doctrine of *mens rea* (guilty mind or criminal intent)—at the time of the commission of the act is a complete defense. This concept is based on the assumption that a person has a capacity to control his behavior and to choose between alternative courses of conduct. The plea of not guilty by reason of insanity, whether based on a functional psychosis or organic disease, puts in issue the existence of a particular mental condition essential to the commission of a crime.⁵ Although the precise test of insanity varies with the jurisdiction, two general requirements are evidence of mental disease or defect and evidence of a causal relationship between the mental disease or defect and the criminal act. It should be pointed out that the evidence necessary to establish either of the above requirements may not be sufficient to warrant commitment to a mental institution for treatment.

The oldest of the commonly used legal tests for criminal responsibility is the "right-wrong" test or *M'Naghten* rule.⁶ Under this rule if, at the time of the criminal act, the accused was either laboring under such a defect of reason from disease of the mind that he did not know the nature and quality of his act, or if he did know the nature and quality of his act he did not know right from wrong, he is legally insane.

In some American jurisdictions the *M'Naghten* rule has been supplemented by the "irresistible impulse" doctrine. This doctrine holds that even though one accused of a crime knows the nature and quality of his act and knows it is wrong, if he is compelled to do the act by an impulse which he is unable to control because of a disease of the mind, he is to be found not guilty.⁷ Some members of the medical community have cast doubt on the "irresistible impulse" doctrine by maintaining that if there is a mental disease which would cause an irresistible impulse, there would also be sufficient impairment to provide the accused with an adequate defense under the *M'Naghten* rule. (It is well documented that organic disease can and does on occasion precipitate rage reactions that are uncontrollable even though the individual is conscious at the time.)

The *Durham* rule,⁸ adopted by the Court of Appeals of the District of Columbia, proceeds on the assumption that there is no adequate legal test for insanity. Rather it is best handled as a question of fact as to whether the criminal act was the result or *product* of the mental condition. Under

it, for he is not competent to waive a hearing if he is not competent to stand trial. The court is required to order a competency hearing on its own motion if there is sufficient doubt as to the ability of the accused to be tried. *See also* Rhay v. White, 385 F.2d 883 (9th Cir. 1967) and United States v. Anderson, 280 F.Supp. 565 (D.Del. 1967).

5. Diamond, *Criminal Responsibility of the Mentally Ill*, 14 STAN. L. REV. 59 (1961).

6. *M'Naghten's Case*, 8 Eng. Rep. 718 (1843).

7. *Commonwealth v. Chester*, 337 Mass. 702, 150 N.E.2d 914 (1958).

8. *Durham v. United States*, 214 F.2d 862 (D.C. Cir. 1954).

this rule the question of whether the accused was insane at the time of his acts and whether his insanity caused the wrongful acts are left to the jury.

Finally, the *Freeman* rule, which is found in the Model Penal Code of the American Law Institute, provides as follows:

A person is not responsible for criminal conduct if at the time of such conduct as a result of mental disease or defect he lacked substantial capacity either to appreciate the wrongfulness of his conduct or to conform his conduct to the requirements of the law.⁹

This rule represents a softening of the stringent requirements of the *M'Naghten* rule by recognizing that total incapacity from mental disease or defect should not be a required minimum, but instead, substantial mental impairment is enough.

For the accused to escape accountability for his acts because of incompetency or insanity there must be specific medical testimony establishing lack of responsibility for the act, the defendant's inability to comprehend the nature of the charges against him, or his inability to effectively cooperate with counsel in his defense.¹⁰ These requirements must be met for organic diseases as well as for functional mental disturbances. However, as noted above, organic diseases more readily lend themselves to clinical evaluation, diagnostic procedures, and laboratory testing. Juries tend to accept laboratory results because of their ease of application, objectivity, and relatively high reliability. But the mere fact that there is an abnormal laboratory result, or that the accused suffers from an organic disease does not establish lack of responsibility or criminal incompetency. To testify as to criminal competency or responsibility, the physician need only be able to form the type of clinical opinion that he is accustomed to relying upon in the practice of his profession.¹¹ It need not consist of mathematically demonstrable certainties.

When it is claimed that there is an organic disease underlying criminal conduct or incompetency, there are two issues to be proven. First, it must be demonstrated by medical evidence that the accused suffers from an organic disease. As noted above, this is a relatively easy task. Second, a causal connection between the disease and the conduct at either the time of the alleged act or the mental condition at the time of the hearing must be shown. The mere fact that the client may have engaged in conduct that was offensive, repulsive, or objectionable is not a sufficient justification for ruling him incompetent or not responsible.¹² When the question of intent

9. Section 4.01 of the ALI Model Penal Code is often referred to as the "Freeman Rule." The name of the rule stems from the case of *United States v. Freeman*, 357 F.2d 606 (2d Cir. 1966), where the court gave strong endorsement to this rule and effectively swept away the *M'Naghten* rule within its jurisdiction.

10. *Illinois v. Brown*, 31 Ill. 2d 415, 201 N.E.2d 409 (1964).

11. *Wright v. United States*, 250 F.2d 4 (D.C. Cir. 1957).

12. *In re Sealy*, 218 So. 2d 765 (Fla. App. 1969).

or mental competency is in issue, it must be determined whether the objectives in the mind of the accused were the same as the act performed. The role of the disease in either attenuating control of action or influencing conduct must be critically evaluated and presented in the most favorable light, for the law assumes that the act bespeaks the mind. The fact that organic diseases frequently progress and are often easier to demonstrate than are functional disturbances may lighten the burden of the defense counsel to some extent. However, it should be remembered that the mere fact that an individual has a mental disturbance which is precipitated by an organic disease does not mean that he is incapable of functioning normally in society. For example, diabetes is considered to be an incurable disease but it can be controlled so that the patient can live a normal life. The same can be said for a variety of conduct-influencing organic diseases that can be linked with aggressive or criminal behavior.

I. METABOLIC AND ENDOCRINE DISTURBANCES

It is hardly an exaggeration to say that every disturbance of metabolism, whether it is a disease of the liver, intestinal tract, kidney, or lung, is reflected to some extent in the functioning of the brain. And it is true that a metabolic disorder with cerebral manifestations may be severe enough to cause either coma or death. Examples include diabetes and uremia which are both disorders of metabolism. Nevertheless, there are few legally significant metabolic disorders, for as a group they are seldom characterized by aggressive or hostile behavior or psychotic reactions. Frequently, when aggressive behavior does occur, it is in a hospital setting and consequently there is no prosecution for injury-producing conduct. The individual may become unable to cooperate with counsel or understand the nature of the legal proceedings as the disease becomes clinically apparent weeks, months, or even years following the prohibited conduct.

Disabling neurologic disorders frequently develop in patients with advanced liver disease. These disorders are characterized by recurrent disturbances of consciousness, impaired intellectual function, neuromuscular abnormalities, and a slowing of the electroencephalogram. Behavioral disturbances include irrational behavior, drowsiness, delirium, convulsions, slowing of thinking, and frank psychosis.¹³ In primary liver disease the cause of mental aberrations has not been established, but evidence suggests that they are due to abnormal concentrations of metabolites, particularly nitrogenous substances, accumulating in the body and affecting the nervous system. The brain is very susceptible to toxic substances and, in addition, when there is chronic liver damage, the cerebral metabolism is impaired. This explains the exquisite sensitivity of patients with severe liver disease to opiates, sedatives, lack of oxygen, and electrolyte imbalances. In some

13. Adams & Fowly, *The Neurological Disorders Associated With Liver Disease*, 32 A. RES. NERV. AND MENT. DIS. PROC. 198 (1953).

instances cerebral and hepatic damage are independent effects of the same agent. Dietary deficiencies such as beriberi and pallegra, or metabolic disorders such as Wilson's disease, may injure both the brain and the liver.¹⁴ Anatomic changes of the central nervous system may on occasion occur in liver disease and are a manifestation of irreversible lesions.

Either a deficiency or excess of functioning insulin constitute metabolic disorders of the type predisposing to aberrant behavior. Diabetes mellitus, a genetically determined error of carbohydrate metabolism, is characterized by an insufficient amount of functioning insulin resulting from a disproportion between the requirements of the body for insulin and the ability of the islets of the pancreas to meet the demand. When the need for functioning insulin is not met, fats and proteins are used instead of the normally metabolized sugars, and toxic substances and metabolic acids accumulate in the body. Behavioral changes frequently accompany the accumulation of these acids, a phenomenon that was claimed to have caused criminal incompetence in the case of *Featherston v. Clark*.¹⁵ In this case the defendant in an income tax evasion prosecution claimed that he had blackouts lasting from 48 to 72 hours. During these blackouts he would transact business and behave normally, but would not be fully aware of what he was doing. Later, he could not remember what transpired during the blackouts. These periods would come and go with no outward warning, and they could not be detected without chemical tests even by a physician. The court found that the accused should be committed to a governmental facility for an examination as to his mental competence, and that when the case came to retrial, it might be necessary to take a blood test of the accused every morning and to keep him under the constant supervision of a physician.

An excess of insulin, hyperinsulinism or insulin shock may result from an overdose of insulin used in treating diabetes, from benign or from malignant tumors of the pancreas, or from insulin-like material that on occasion is liberated from tumors in other parts of the body. The excess insulin causes the level of the blood sugars to fall, resulting in hypoglycemia with symptoms of faintness, incoherent speech, irritability, hostility, and the outstanding characteristic of hypoglycemia (aggressiveness).¹⁶ Complete and prompt relief of the hypoglycemic attack can be obtained by the administration of sugars, but if the cause of the hyperinsulinism is not treated the attacks will recur.

The porphyrias are a group of metabolic disorders characterized by episodic abdominal pain, sensitivity to sunlight, and intermittent bouts of behavioral disturbances similar to toxic psychosis with symptoms varying

14. Victor, Adams & Cole, *The Acquired (Non-Wilsonian) Type of Chronic Hepatocerebral Degeneration*, 44 *MEDICINE* 345 (1965).

15. 293 F. Supp. 508 (W.D. Tex. 1968).

16. Podolsky, *The Chemical Brew of Criminal Behavior*, 45 *J. CRIM. L.C. & P.S.* 675 (1955).

from irritability and a demanding attitude calculated to arouse hostility in others to aggressiveness, delirium, and hallucinations. Porphyrrias result from an error of metabolism in which heme (blood) synthesis regulation is disturbed and there is an overproduction, accumulation, and excretion of the porphyrin and porphyrin precursors. The disease occurring in adolescents and young adults is usually genetically determined although acute intermittent porphyria can skip generations and some genetic carriers show no abnormality in porphyrin excretion.¹⁷ Symptoms of abdominal pain, drowsiness, hysteria-like behavior, and depression may manifest early in life with more severe character changes developing in later adulthood. The various psychotic symptoms occur in over 50 percent of individuals with the overt disease.¹⁸

In a series of cases involving individuals with acute intermittent porphyria the legal dispositions included institutionalizing 20 percent for mental illness.¹⁹ The same author that reported the above cases noted a frequent preoccupation with suicidal thoughts and cited one verified attempt to commit suicide. Degenerative changes throughout the nervous system may render the individual permanently damaged. Unfortunately, the porphyrias are difficult to diagnose and, in addition, acute attacks producing personality changes, agitation, and mood disorders may be precipitated or aggravated by drugs or other illnesses. Barbiturates, sulfa drugs, estrogens, anticonvulsants, pregnancy, acute infections, and the ingestion of alcohol present particular dangers to people with porphyrias. The true incidence of porphyrias in the mental hospital population has not been determined because the excretion of the abnormal substances evidencing the disease are also found during remissions.

Hormones, substances produced by the endocrine glands, are important in influencing behavior and modifying brain function. Although the interaction between the endocrines and the nervous system is complex and poorly understood,²⁰ behavioral disturbances due to endocrinopathies are probably due to influences upon brain metabolism. The basis for this view is best illustrated by hyperfunction of the thyroid gland, a condition called hyperthyroidism or Graves' disease. People with hyperthyroidism tend to overreact to external stimuli by developing anxiety, apprehension, irritability, and manic excitement. Hallucinations and a paranoid state with systematized delusions may also exist. However, there is relatively little basic scientific information to explain why this may on occasion lead to aggressive, antisocial, or criminal behavior. It has been suggested that although these are somatic psychoses, they are also psychogenic in an individual with a pre-existing mental disturbance.

17. Chisolm, *Porphyria in the Adolescent: Diagnosis and Treatment*, 62 SO. MED. J. 713 (1969).

18. Peters, *Porphyric Psychosis and Chelation Therapy*, 4 RES. ADV. BIOL. PSYCHIAT. 204 (1962).

19. A. GOLDBERG & C. RIMINGTON, *DISEASES OF PORPHYRIN METABOLISM* (1962).

20. R. MICHAEL, *ENDOCRINOLOGY AND HUMAN BEHAVIOR* (1969).

Postpartum psychosis and postpartum depression may also be explained by rapid hormonal fluctuations. Despite the gratification a woman usually experiences after the birth of a healthy infant, there is statistically a four to five-fold increase of transient psychosis immediately following the birth of a child²¹ which may be attributable to hormonal fluctuations. English law has recognized that the mother of an infant is vulnerable to killing the infant (infanticide) by treating a woman with leniency if she kills her child prior to its attaining the age of one year.²² This would seem to lend legal credence to the concept of altered responsibility resulting from metabolic disturbances. However, because of the medical uncertainties involved, one cannot form an opinion as to the competency of a woman committing infanticide that would be admissible in a court of law.

II. INFECTIONS

Mental aberrations and behaviorial disorders can result from either a direct invasion of the brain or meninges by infectious organism or from an infection located elsewhere in the body accompanied by fever or a toxic-infectious type of reaction. The infectious diseases most frequently affecting cerebral function include influenza, typhus fever, meningitis, encephalitis, rabies, infestations, and neurosyphilis. The affected cerebral function during the acute phase of the disease is referred to as a febrile delirium. Occasionally the delirium may develop during the prodromal period before there has been a rise in temperature. The spectrum of mental changes ranges from irritability and agitation to a full-blown psychosis including hallucinations, delirium, and delusions. There may be periods of lucidity and calmness alternating with rapid shifts to fear and terror accompanied by retrograde amnesia.²³ During a terror period a patient may do great harm to another or himself, but obviously, a person with this type of reaction is incapable of forming the intent to purposefully harm another or commit suicide.

It is in this context that the physician or hospital may be found negligent in failing to provide adequate protection for the patient. In the recent case of *Lord v. United States*²⁴, involving a suit brought under the Federal Tort Claims Act, a judgment against the hospital was settled for \$75,000. In this case a patient hospitalized for an infectious asthmatic condition took his own life by jumping from a ninth-floor hospital window. The suit alleged the hospital was negligent in leaving the patient unattended when it was known or should have been known that there was a significant risk of self-

21. Pugh, *Rates of Mental Disease Related to Childbearing*, 268 NEW ENG. J. MED. 1224 (1963).

22. *Infanticide Act of 1938*, cited and discussed in SIMPSON, *Infanticide Criminal Aspects*, in 2 TAYLOR'S PRINCIPLES AND PRACTICE OF MEDICAL JURISPRUDENCE, c.12 (12th ed. 1965).

23. Gooddy, *Disorders of Time Sense*, in 3 DISORDERS OF HIGHER NERVOUS SYSTEM c.13 (P. Vinken & G. Bruyn ed. 1969).

24. Dist. Ct. N.J., Docket No. 966-66 (D.C., N.J. 1970).

injury. Malpractice liability may also arise where an alcoholic or drug user arrives at a hospital suffering with a toxic bacterial psychosis and no tests are conducted to discover this condition.²⁵

Psychosis is not uncommon with the various forms of viral encephalitis, a disease that may occur sporadically or in epidemic proportions. Rabies encephalitis is associated with lesions primarily of Ammon's horn and is characterized by marked aggressive behavior which often begins as a hallucinatory experience or delusional distortion of the environment.²⁶ However, because rabies is uniformly fatal, the issue of criminal responsibility for aggressive behavior does not arise. Other encephalitides may not be fatal and the mental symptoms may be either acute during the infectious stage of the disease or chronic due to residual injury to the brain. During the acute phase of the encephalitis, there is often depression of cortical function with lethargy, stupor, slowness of intellectual function, and coma. Symptoms include irritability with restlessness, excitability, and delirium. Behavioral changes following the disease are attributable to cortical pathway injury rendering the cerebral cortex unable to exert an inhibitory effect on aggressive drives. Fortunately, the disturbances following these diseases are usually confined to motor function.

The effect of syphilis on the nervous system is too well recognized to warrant an extended discussion. Suffice to say that this disease has not been conquered and that the progressive degeneration of the brain becomes manifest many years after the primary disease. Early symptoms of central nervous system syphilis consist largely of exaggerations of previous personality traits. An individual whose previous life was exemplary may on occasion cease to conform to social norms. He may be unkempt, inconsiderate, lacking in social amenities, and quarrelsome. There may also be a breakdown of higher ethical and cultural sentiments and standards. The moderate user of alcohol may become dissipated and his sexual activities may become excessive. Later, delusions of a grandiose nature develop which either may reach the height of absurdity or become persecutory or depressive. Progressive dementia ultimately follows.

III. NEOPLASIA

Neoplasma (new growths or cancers) of organs other than the brain may lead to disorders of the nervous system with resulting behavioral aberrations—symptoms not due to the presence of metastasis or pressure from the neoplasm. It is only within the past twenty years that these types of neurological disorders have been clearly defined and classified.²⁷ Their incidence has been estimated from slightly over one percent to five percent of

25. Teitelbaum, *Misdiagnosis of Drug Abuse*, 210 J.A.M.A. 2092 (1969).

26. Geataut & Mileto, *Interpretation Physiopathogenique des symptomes de la rage furieuse*, 92 REV. NEUROL 5 (1965).

27. Brain, *The Neurological Complications of Neoplasms*, 1 LANCET 179 (1963).

those persons with a cancer.²⁸ The highest incidence of altered behavior is associated with carcinoma of the lung.²⁹ Neurological syndromes associated with tumors may take several forms and involve any level of the nervous system.³⁰

When these syndromes occur, the patient may show dementia of varying severity, progressive deterioration of the intellectual function and memory, or severe disorders of mood with agitated depression and anxiety. The reason for these symptoms is puzzling for in most instances no pathologic or morphologic changes can be demonstrated to account for the altered behavior and mental symptoms. The tumor appears to intoxicate the host in a subtle way and the existence of a number of *neoplasticae noxae*, toxins arising in the neoplasm, have been postulated. Although the presence of such a single "cerebral toxic agent" has not been established this is the simplest explanation. The nervous system is very sensitive to abnormalities of hormonal secretion and hormones or substances with a wide spectrum of hormonal activity have been isolated from primary tumors of practically every organ in the body.³¹ These tumor-hormone-secretions can produce a wide range of metabolic abnormalities. An example of this is the production of insulin-like material with activity leading to a hypoglycemic (low blood sugar) state evidenced by abnormal electroencephalography.³² This is more than an academic medical exercise since some of these tumors grow slowly thereby permitting surgical resection which can produce long-term remissions and occasionally a cure.

IV. SENILITY AND CEREBRAL ARTERIOSCLEROSIS

Senility consists of progressive mental deterioration with brain atrophy and loss of memory. In many instances arteriosclerosis is a causal part of senile dementia. Senility begins gradually and is progressive in character. In its gradual advance to incompetency it embraces a wide range of infirmities.

The occurrence of a criminal act by one over sixty years old, particularly a first offense, should bring to mind the possibility of an organic degenerative mental disease, for aggressive criminal behavior in those past

28. Henson, *et al.*, *Carcinomatous Neuropathy and Myopathy: A Clinical and Pathological Study*, 77 *BRAIN* 82 (1954).

29. Charatan & Brierley, *Mental Disorders Associated With Primary Lung Carcinoma*, 1 *BRIT. MED. J.* 765 (1956).

30. Brain & Henson, *Neurological Syndromes Associated With Carcinoma*, 2 *LANCET* 971 (1958).

31. Greenberg, *et al.*, *A Review of Unusual Systemic Manifestations Associated With Carcinoma*, 36 *AM. J. MED.* 106 (1964); See also LIPSETT, *Hormone Syndromes Associated With Neoplasia*, in 3 *ADVANCES IN METABOLIC DISORDERS* 112 (R. Levine & R. Luff ed. 1969).

32. Lebovitz, *Endocrine-metabolic Syndromes Associated With Neoplasms*, in *THE REMOTE EFFECTS OF CANCER ON THE NERVOUS SYSTEM*, c.11 (L. Brain & F. Norris ed. 1965).

sixty is unusual.³³ Aggressive behavior, loss of emotional control, and failure to grasp concepts are patterns to be noted during the earlier phases of the cerebral aging process. As the degenerative process progresses, there is a decline in awareness of the surroundings and aggressive tendencies subside resulting in affectlessness and ultimately in a state of apathy.³⁴ Although there may be fluctuations on a daily basis, the course is usually progressive. Sexual offenses by the elderly can frequently be attributed to senile degeneration of the brain or to an arteriosclerotic insufficiency of the cerebral vessels. These conditions may deprive the patient of control of sexual desire, while not infrequently, increasing the desire itself. This results in a breach of decorum and sometimes attempts at crime, especially upon children because they are physically weaker than the assailant. Mental impairment may be slight at this stage of the disease. More violent acts in aged men, such as attempts to kill a spouse or other relatives, often arise in a setting of mental disorder and may be perpetrated in a most brutal manner. But what may seem to be a crime directed against a person or property or an accident, often on closer inspection may prove to be a suicide attempt.

The excitement surrounding an investigation of criminal activity may further confuse the individual who has the early manifestations of senility. Although there may be no loss of intellect with the criminal behavior, the offender may become incompetent to stand trial because of a deterioration of his mental competency between the time the act was committed and trial. This deterioration itself is evidence that degenerative cerebral disease was a factor in the original act. In these subjects life expectancy is reduced and frank dementia, with overt pathological changes of the brain, is usually manifest within a short time after the prohibited act.

V. GENETIC ABNORMALITIES

Inherited constitution has an important role not only in predisposing man to disease but in producing disease. The role genetically determined diseases play in personality and conduct, particularly in provoking anti-social or criminal activity, is not yet understood. That these conditions may be of legal significance is demonstrated by recent legal and medical publications which have implicated inherited diseases with chromosomal abnormalities as being a causal factor in criminal conduct.³⁵ In order to anticipate current and future developments the attorney needs some familiarity with the basic principles of genetics.

33. ROTH, *Cerebral Disease and Mental Disorders of Old Age As Causes of Antisocial Behavior*, in *THE MENTALLY ABNORMAL OFFENDER* 35 (A. deReuck & R. Porter ed. 1968); See also Moberg, *Old Age and Crime*, 43 *J. CRIM. L.C. & P.S.* 764 (1953).

34. Larsson, et al., *Senile Dementia: A Clinical, Sociomedical and Genetic Study*, 39 *ACTA. PSYCH. SCAND. SUPP.* 167 (1963).

35. Comment, *The XYY Chromosomal Defense*, 57 *GEO. L.J.* 892 (1969).

Basic to all of the living world and the science of genetics is the concept of heredity information carried by genes. Many thousands of these genes are arranged in linear order along the lengths of the chromosomes. Normally there are 46 chromosomes in the cell of each human, one-half of this number, or 23, are inherited from each parent. Some of the genes are responsible for the synthesis of a particular enzyme or protein, others regulate the control of protein production, while still others determine the chemical and physical attributes by which the individual is known.

Of immediate medical-legal significance are the sex chromosomes. The sex chromosomes of the human female, a pair of equal size, are called X chromosomes (XX). In the human male there is one X chromosome which is paired with a smaller Y chromosome (XY). During the division of the chromosomes from either parent, the sex chromosome may fail to divide causing either the ova or the sperm, as the case may be, to contain an abnormal chromosome pattern. These chromosomal abnormalities are not limited to the sex chromosomes, but may also affect the somatic tissue. A common example of somatic chromosome defect is the so-called Down's syndrome, the trisomy 21, or Mongolism.

Criminals and mentally defective men with an XYY chromosomal pattern (karyotype) have provoked a great deal of current medical-legal interest. This abnormality was first reported in 1961,³⁶ followed in 1965 by the discovery of a high prevalence of XYY among men with criminal records in a maximum security hospital.³⁷ This finding has been confirmed by studies done in prisons, mental hospitals, and male juvenile delinquency centers.³⁸ The incidence of this condition in criminal offenders is approximately eight times that of a comparable group of mentally deficient males and approximately 89 times the incidence in the general population.³⁹ There is an association of the XYY phenotype with aggressive or antisocial behavior and, on occasion, mental impairment. The incidence of the syndrome approaches that of mongolism, which occurs once in every 600 births.

Why the extra Y chromosome affects conduct is yet unknown; however, experimental work with certain fish has shown that it is possible to breed male fish with two Y chromosomes and no X chromosome.⁴⁰ These fish demonstrate physical superiority, undue belligerence, and unusual sexual prowess. It has been postulated that the Y chromosome acts as a mediator for the production of testosterone and the presence of an excess of this male hormone in the circulation primes the developing central nervous system to

36. Sandberg, *et al.*, *An XYY Human Male*, 2 LANCET 488 (1961).

37. Jacobs, *et al.*, *Aggressive Behavior, Mental Subnormality and The XYY Male*, 208 NATURE 1351 (1965).

38. Marinello, *et al.*, *A Study Of The XYY Syndrome in Tall Men and Juvenile Delinquents*, 208 J.A.M.A. 321 (1969).

39. Melnyk, *et al.*, *XYY Survey in Institution for Sex Offenders and Mentally Ill*, 224 NATURE 369 (1969). See also Sergovich, *et al.*, *Chromosome Aberrations in 2159 Consecutive Newborn Babies*, 280 NEW ENG. J. MED. 851 (1969).

40. Abdullah, *et al.*, *The Extra Y Chromosome and Its Psychiatric Implications*, 21 ARCH. GEN. PSYCH. 497 (1969).

its greater aggressive tendencies. The presence of an extra Y chromosome can thus precipitate the chain of events leading to the development of excessively aggressive individuals. An elevated level of testosterone has been demonstrated in some, but not all persons with an extra Y chromosome.

Obviously it cannot at this time be conclusively shown that the XYY syndrome causes criminal behavior. The limited data does not permit an unqualified assertion that the XYY chromosomal defect, although found many times more frequently in a criminal population, is the cause of anti-social behavior. Given our present level of medical knowledge all that can be said is that an extra Y chromosome (karyotype) may have an effect on the susceptibility to abnormal behavior which becomes apparent only on exposure to adverse environmental circumstances. The legal question is whether individuals with these abnormal sex-chromosome complements can be held to suffer from *diminished* or lack of responsibility. At trial the evidence dealing with the chromosomal defect would be admissible only if medical experts could establish with a reasonable degree of medical certainty that there was a causal link between the abnormality and the individual's conduct. However, even if lack of responsibility cannot be proved, the showing that the XYY defect makes it difficult for a person to restrain his aggressiveness may be of value in mitigating punishment.⁴¹ It can be said that research in medical genetics must progress a great deal before this information can be used in the courts to show lack of criminal responsibility.

VI. INTOXICATION, DELIRIUM TREMENS, AND DRUGS

Instances of the deliberate or unwitting use and abuse of alcohol, chemicals, and drugs are probably far more prevalent than is commonly recognized. Industrial or other environmental exposure to toxic substances is also possible. Hydrocarbons and halogenated hydrocarbons such as are found in glue, gasoline, or cleaning fluids are usually sniffed with the deliberate intent of inducing a "high". Inhalation of these toxic substances, particularly gasoline, leads to aberrant behavior during intoxication, and if used repeatedly mental deterioration may result. Fainting, stupor, dream-like states, twilight states, and depersonalization are results of drug usage; and toxic psychosis that first appears as simple intoxication may progress to delirium, schizophrenic and paranoid reactions, or hallucinotoxic psychosis. In some instances the psychotic state may persist for long periods of time independent of the etiology. Although it might be said that all depressive and hallucinatory drugs are poisons of consciousness causing intoxication, the courts have not been particularly sympathetic to the plea of criminal incompetency or lack of responsibility due to the influence of chemicals, drugs, or alcohol.

A. Intoxication

For intoxication to constitute a defense to the commission of a crime

41. Comment, *The XYY Chromosome Defense*, 57 GEO. L.J. 892 (1969).

there must be proof that the accused was so intoxicated as to be unable to form the specific intent required.⁴² Where intoxication is so extreme and permanent as to amount to delirium tremens, it may be treated as a form of insanity.⁴³ On proper showing that there is a question of criminal responsibility, the court should order a hearing if significant evidence has come to its attention which indicates that the accused is currently using drugs or narcotics.⁴⁴

Controversy presently exists as to the legal status of the chronic alcoholic. Some consider chronic alcoholism as a disease while others, equally authoritative, believe it to be a behavioral aberration with an addiction overlay. The issue of punishment of an alcoholic for public intoxication is not to be confused with the issue of criminal responsibility for conduct while under the influence of alcohol.⁴⁵ In the case of *Vick v. Alaska*⁴⁶ the court in dictum points out that to permit chronic alcoholism as a defense to the crime of public drunkenness, thus holding a person unaccountable for his acts, would logically require extending the defense to other crimes such as murder, rape, assault, and battery whenever the defendant could show that he was a chronic alcoholic. However in disallowing this defense, the court noted that among members of the medical profession, there is disagreement as to whether alcoholism is a disease. In summary, it may be said that chronic alcoholism as a defense for criminal responsibility is too tenuous to be granted legal recognition, and therefore the chronic alcoholic is not to be relieved of accountability for his acts because of his drinking habits.

B. *Delirium Tremens*

Delirium tremens, one of the forms of alcoholic psychosis, has fared somewhat better in the courts as a defense for prohibited conduct than has the claim of chronic alcoholism. Delirium tremens is an acute mental disturbance marked by delirium with great excitement, anxiety, and mental distress. An episode of delirium tremens may occasionally occur spontaneously in the chronic alcoholic or it may be precipitated by withholding alcohol from the individual. It is clearly accepted by physicians that this syndrome obliterates comprehension, and therefore, a person suffering from delirium tremens is not responsible for the consequences of his conduct. Physicians traditionally have considered delirium tremens to be more serious in its effects than has the law. The medical viewpoint is summarized in a

42. *People v. Conley*, 64 Cal. 2d 310, 411 P.2d 911, 49 Cal. Rptr. 815 (1966). Such a defense is not available in the states of Missouri and Vermont.

43. *Horn v. Kentucky*, 292 Ky. 587, 167 S.W.2d 58 (1942).

44. *Grennett v. United States*, 403 F.2d 923 (D.C. Cir. 1968).

45. *Powell v. Texas*, 392 U.S. 514 (1968). In Watson, *Chronic Alcoholic Court Offenders: An Alternative To The Drunk Tank*, GEO. L. REV. 54 (1968) there is a discussion of legislation for replacing the present criminal method of handling "chronic alcoholic court offenders" with a treatment oriented program.

46. 453 P.2d 342 (1969).

statement by Doctor Henry Davidson. "In delirium tremens . . . the patient is clearly in no condition to plan, deliberate, weigh consequences, evaluate the wrongfulness of the act, or understand its quality."⁴⁷ On the other hand, the law holds that delirium tremens *may* obliterate comprehension of conduct and the likely consequences of particular conduct. This position is typified by the case of *Horn v. Kentucky*,⁴⁸ where the court stated:

If the temporary insanity produced by delirium tremens is not to the degree or extent of temporarily depriving the accused of knowledge of right from wrong, or the ability to comprehend the effects of his act in committing the crime, then his condition would not furnish a total defense.

C. Drugs

The extent of adverse reactions and toxic psychosis due to sedatives, tranquilizers, and depressants in the total prevalence of abnormal conduct and mental illness is unknown.⁴⁹ These drugs are not only obtained by prescription or through illicit sources, but in addition, there are proprietary medications obtainable without a physician's prescription. The use of these drugs alters the state of consciousness and, on occasion, may lead to psychosis. Bromide provides the classic example of a medication which is rarely administered by the medical profession but which is capable of causing rapid deterioration and frank psychosis when taken excessively as self-medication. As for the legal implications of sedatives, tranquilizers, and depressants in regard to criminal competency and responsibility, there is judicial acknowledgement that these drugs are capable of producing an unnatural impact on the mental, physical, and emotional structure, and may cause deterioration.⁵⁰ The competency of an accused may be compromised by tranquilizers, for they may affect his attitude, appearance, and demeanor⁵¹ and similarly a plea entered under medication by tranquilizers is subject to being set aside or withdrawn if it can be shown that the plea was improvident.⁵²

1. Amphetamines

Of particular note are amphetamines which are used in large amounts for weight reduction, by truck drivers and night-shift workers to stay awake on their jobs, and by many students and executives to meet every day stresses. Psychological sequelae among abusers are frequently misdiagnosed

47. H. DAVIDSON, *FORENSIC PSYCHIATRY* 17 (2d ed. 1965).

48. 292 Ky. 587, 167 S.W.2d 58 (1942).

49. Hollister, *Psychopharmacological Drugs*, 196 J.A.M.A. 125 (1966).

50. *Schulz v. Feigal*, 273 Minn. 470, 142 N.W.2d 84 (1966).

51. *Murphy v. Washington*, 56 Wash. 2d 761, 355 P.2d 323 (1960).

52. *Goldman v. California*, 51 Cal. Rptr. 835 (Cal. App. 1966).

as transient de nova psychosis.⁵³ Although disorientation is noted at times, there is usually no clouding of the sensorium unless drugs, particularly barbiturates or alcohol, are taken concomitantly.

Amphetamine psychosis usually appears as an acute paranoid phase in a setting of clear consciousness. Auditory and visual hallucinations are often present. Most patients show distractibility, flight of ideas, pressured speech, and hyper-alert sensitivity to environmental clues.⁵⁴ After withdrawal of the drug there is a period of lassitude, sleepiness, and depression which usually clears within five to ten days but may take longer. Chronic use of amphetamine derivatives may lead to demonstrable brain lesions that will clinically present as a form of dementia.⁵⁵

2. *Marihuana Psychosis*

Considering the widespread usage of *Cannabis* derivatives, there is a relative paucity of reported adverse reactions to smoking marihuana.⁵⁶ Adverse reactions to marihuana are varied but the experiences are said to be generally unpleasant, threatening with anxiety, fear, depression, suspicion, depersonalization, disorientation, confusion, paranoid ideation, delusions, and auditory hallucinations. There is impaired cognitive function including impairment of orientation, memory, intellectual functions and judgment. Because of its ubiquity, marihuana smoking should be considered as a casual or precipitating agent whenever a young person presents an acute psychosis having paranoid features.⁵⁷

3. *LSD and other Hallucinogens*

Lysergic acid diethylamide (LSD) is one of several hallucinogens which have lately become prominent as psychedelic drugs. LSD is similar in its effect on the individual to drugs such as mescaline found in peyote cactus, harmine found in vines, bufotehine found in mushrooms, and the more recently developed synthetics such as spycybin and dimethyltryptamine. LSD is the most popular and easily obtainable of the hallucinogens. In a review of the pertinent medical literature, Smart and Bateman⁵⁸ listed the main features of the adverse reactions to LSD, which include along with

53. Breitner, *Appetite Suppressing Drugs as an Etiologic Factor in Mental Illness*, 5 *PSYCHOSOMATICS* 327 (1963).

54. Beamish & Kiloh, *Psychosis Due to Amphetamine Consumption*, 106 *J. MENTAL SCI.* 337 (1960); Bell & Threthowan, *Amphetamine Addiction*, 133 *J. NERVE. MENT. DIS.* 489 (1961); Bell, *Comparison of Amphetamine Psychosis and Schizophrenia*, 111 *BRIT. J. PSYCH.* 701 (1965).

55. Lemere, *The Danger of Amphetamine Dependency*, 123 *AM. J. PSYCH.* 569 (1966).

56. Talbott & Teague, *Marihuana Psychosis*, 210 *J.A.M.A.* 299 (1969).

57. Milman, *The Role of Marihuana in Patterns of Drug Abuse in Adolescents*, 74 *J. PEDIAT.* 283 (1969).

58. Smart & Bateman, *Unfavorable Reactions to LSD: A Review and Analysis of the Available Case Reports*, 97 *CAN. MED. ASSOC. J.* 1215 (1967).

142 reported cases of prolonged psychotic reactions, eleven spontaneous recurrences of delusions, nineteen attempted suicides, four attempted homicides, eleven successful suicides, and one successful homicide. The self-destructive impulse occurring shortly after taking LSD is illustrated by one case report of a 20-year-old student, who had frequently taken LSD with friends, suddenly disrobing and jumping from a window.⁵⁹

For unknown reasons, frightening delusions of hallucinations have reappeared weeks or months after the last LSD ingestion and after an interval of apparent normality. One such spontaneous recurrence of a frightening experience took place four weeks after the hallucinogen was taken and resulted in self-destruction.⁶⁰

It appears that the LSD releases psychopathic personality trends and makes social, self-destructive, sociopathic, or criminal behavior possible in some individuals. There is one reported instance of a homicide occurring after the accused had ingested LSD—that of a 25-year-old woman who murdered her boy friend several days after taking the hallucinogen.⁶¹ The homicide was not committed during the time the accused was experiencing the acute effects of the LSD and because she was also a chronic alcoholic with a prior diagnosis of psychopathic personality, the causal connection between the LSD and the criminal acts is uncertain. (The judicial disposition of this case is not available).

VII. ORGANIC BRAIN DISEASE AND SEIZURES

A. Organic Disease

Any organic disease of the brain, particularly lesions of the temporal lobe, frequently forms an organic basis for violence with the host being predisposed to antisocial conduct or criminal behavior. The conduct may vary from the so-called "dyscontrol syndrome" with irrational temper fits, manifesting themselves in a variety of ways from wife and child beating, to multiple auto accidents, frank psychosis, and criminal episodes. Profound social and psychological influences also exist between temporal lobe dysfunction and criminal sexual activities ranging from exhibitionism to extreme perverse behavior.⁶² The underlying causes of the organic brain lesions may vary from encephalitis, involving the limbic system of the temporal lobes, to tumors which may be primary in the brain or metastatic from other organs. On occasion, lesions of parts of the brain other than the

59. Keeler & Reifler, *Suicide During an LSD Reaction*, 123 AM. J. PSYCH. 884 (1967).

60. Cohen, *Suicide Following Morning Glory Ingestion*, 120 AM. J. PSYCH. 1024 (1964).

61. Knudsen, 40 ACTA. PSYCH. SCAND. SUPP. 389 (1964).

62. Hooshmand & Brawley, *Temporal Lobe Seizures and Exhibitionism*, 19 NEUROLOGY 1119 (1969); Taylor, *Sexual Behavior and Temporal Lobe Epilepsy*, 12 ARCH. NEUROL. 510 (1969).

temporal lobes are associated with aggressive behavior, dementia, or hallucinations.⁶³

Pathologic rage due to organic brain disease is characterized by excitement and indiscriminate attacks against anyone who happens to be present. The rage has excessive proportions, its course is aimless, and it cannot be interrupted. Patients describe their condition as "a feeling as if the rage builds up in spite of themselves until it has conquered their thoughts and left them no choice but to let it freely run its course."⁶⁴ The mere appearance of a person, a gesture, noise, or tactile stimuli may elicit the massive outburst of rage. Cases have been reported where patients would grasp objects that happened to be near and hurl them blindly to the ground or against people in the vicinity. Serious attacks against nursing personnel and visiting relatives have been described.⁶⁵

The possibility of a brain tumor as a cause of homicide should be considered in the case of Charles Joseph Whitman, the sniper who in August, 1966, shot 44 persons and killed 14.⁶⁶ A highly malignant tumor found in Whitman's brain may have contributed to the shooting of these 58 people. A task force appointed by Texas Governor John Connally to investigate this possibility reported,

The relationship between the brain tumor and Charles J. Whitman's actions on the last day of his life cannot be established with clarity. However, the highly malignant brain tumor conceivably could have contributed to his inability to control his emotions and actions. Without a recent psychiatric evaluation of Charles J. Whitman, the task force finds it impossible to make a formal psychiatric diagnosis.⁶⁷

B. Seizures

Seizures, along with automatism and somnambulism are usually classified as disorders of consciousness with or without uncontrollable motor activity. Some authorities classify these three disorders under the common title of epileptic or epileptiform attacks; epilepsy being defined either as a condition not in itself a disease entity, but rather a symptom of disordered cerebral function with persistent liability to occasional seizures or as a symptom complex characterized by episodic variations in the state of

63. Zeman & King, *Tumors of the Septum Pellucidum and Adjacent Structures with Abnormal Affective Behavior; An Anterior Midline Structure Syndrome*, 127 J. NERV. MENT. DIS. 490 (1958); Bingley, *Mental Symptoms in Temporal Lobe Epilepsy and Temporal Lobe Gliomas*, 33 ACTA. PSYCH. SCAND. SUPP. 120 (1958).

64. Lechner, *Der Lobus limicus und seine funktionellen Beziehungen zur Affektivitat*, 16 WIEN. Z. NERVENHEILK 281 (1959).

65. Poeck, *Pathophysiology Of Emotional Disorders Associated with Brain Damage*, in 3 DISORDERS OF HIGHER NERVOUS SYSTEM 343 P. Vinken & G. Bruyn ed. (1969).

66. *Governor's Committee Recommends Health, Safety Measures For The University of Texas Campus*, 62 TEX. MED. 120 (1966).

67. *Id.* at 123.

consciousness, with or without convulsive movements, somatic sensory symptoms, visceral motor or sensory symptoms, and abnormal speech or behavior.⁶⁸ In approximately one-third of the individuals experiencing seizures there are definable antecedent causes including head trauma, brain tumors, malformations, chronic meningitis or encephalitis, and cerebrovascular lesions;⁶⁹ however, in the majority of instances the cause of the symptom complex remains unknown.

Four main categories of seizures are based on their clinical manifestations. The first category is the *grand mal* or major motor seizure. This seizure is characterized by a warning or aura, involuntary cry, loss of consciousness, a tonic phase and a clonic phase, followed by a period of unconsciousness with urinary or rectal incontinence or seminal emission. The second major category is the Jacksonian seizure which is a focal seizure, usually with motor (occasionally only sensory) or with both motor and sensory components. The seizure begins in one part of the body such as the thumb, foot, or angle of the mouth, and may spread to involve the entire extremity or face and other parts of the body. The third major category is the *petit mal* seizures or absences. These seizures, which almost always begin in childhood, last for less than a minute and are characterized either by the cessation of all activity accompanied by staring (absence), by a single or few involuntary jerking movements, or by a short period of unconsciousness and falling. The fourth major category is the psychomotor seizure and/or automatism which is characterized by psychic or motor activity, or both, continuing for longer than a minute, none of which the patient remembers. These four main categories of seizures contain only a few sub-varieties or variants such as hallucinatory seizures (uncinate fits), status epilepticus, tonic or cerebellar attacks, and seizures evoked by sensory stimuli like music or running water.

The courts have been reluctant to accept the defense of inability to form criminal intent or of the presence of an irresistible impulse to excuse sudden misbehavior based upon seizure episodes⁷⁰ even in the presence of abnormal electroencephalograms.⁷¹ Although there is demonstrable organic brain damage and uncontrollable rage reactions, the defendant has the burden of showing that the mental defect affected him *on the day of the crime* and that he lacked the capacity to form the intent to commit the crime.⁷² It appears that the law regards this type of misbehavior as psychogenic and not based upon primary brain pathology over which the individual can exert little or no control.

68. Ajmone-Marsan & Abraham, *Epilepsy*, in *PROGRESS IN NEUROLOGY & PSYCHIATRY* (E. Spiegel ed. 1963).

69. Freytag & Lindenberg, 294 *Medicolegal Autopsies on Epileptics: Cerebral Findings*, 78 *ARCH. PATH.* 274 (1964).

70. *Taylor v. United States*, 7 App. D.C. 27 (1895); *Smith v. Kentucky*, 268 S.W.2d 937 (Ky. App. 1945).

71. *Armstead v. Maryland*, 227 Md. Rep. 73, 175 A.2d 24 (1961).

72. *Coogler v. California*, 77 Cal. Rptr. 790, 454 P.2d 686 (1969).

C. Automatism

Automatism, a variant of seizures, is the performance of nonreflex acts without conscious volition. Individuals can carry out complex automatic activity while in this state of impaired consciousness. Automatism may be classified as normal (hypnosis), organic (temporal lobe epilepsy), psychogenic (dissociation fugue), or feigned. Extensive and painstaking investigation is necessary to clarify the diagnosis.⁷³ Jurists have rarely accepted automatism as a defense except to help substantiate a plea of insanity.⁷⁴

D. Somnambulism

Homicide committed in a somnambulistic trance (sleep-walking) is uncommon and is rarely used as a defense. Although a number of foreign cases indicate that such a condition will remove the necessary element of mens rea from the homicide,⁷⁵ the somnambulistic homicide defense has not fared as well in the United States. As can be attested to by August Schwartz who was convicted of murder and sentenced to life imprisonment, lack of proper intent and the defense of somnambulism do not always provide an adequate defense.⁷⁶ However, in one Kentucky case involving a sixteen-year old girl who was said to have dreamed that robbers were in the house attacking her family, and then killed her father, her six-year old brother and injured her mother with two guns, the defendant offered evidence that she has suffered previous nightmares and was a confirmed somnambulist. This evidence plus the prosecutor's inability to establish the proper intent resulted in the girl's acquittal.

VIII. A CASE IN POINT—JACK RUBY

The author of this Article performed the autopsy on Jack Ruby, assassin of Lee Harvey Oswald. The assassination of Oswald took place on November 24, 1963, three years, one month and ten days prior to Jack Ruby's death on January 3, 1967. The trial of Jack Ruby for homicide took place in February and March of 1964, two and one-half years before the develop-

73. McCaldron, *Automatism*, 91 CAN. MED. ASSOC. J. 914 (1964).

74. Williams, *Automatism*, in *ESSAYS IN CRIMINAL SCIENCE* 12 (G. Mueller ed. 1961).

75. In the Scottish case, *H.M. Advocate v. Fraser*, 4 Couper 70 (1878), a man was acquitted of the killing of his son during a dream in which he believed himself to be struggling with a wild goose. An Australian case, *The King v. Cogdon*, Supreme Court of Victoria 1950 (unreported), from Morris, *Somnambulistic Homicide: Ghosts, Spiders, and North Koreans*, 5 RES JUDICTA 29 (1951), involved the successful use of the somnambulistic homicide defense where a mother killed her 19 year old daughter with an axe alleging she dreamed that soldiers were in her daughter's room attacking the daughter. The story was supported by her physician, psychiatrist, and psychologist. In *R. v. Boshears*, an unreported English case, from Simpson, *Mental Disorder and Responsibility*, in 1 TAYLOR'S PRINCIPLES AND PRACTICE OF MEDICAL JURISPRUDENCE 486 (12th ed. 1965), the jury accepted a defense plea that homicide was committed during sleep.

76. *Schwartz v. North Dakota*, (unreported) from Polodsky, note 16 *supra*.

ment of symptoms heralding a lung cancer that led to his death. With the benefit of the knowledge of his disease gained through the autopsy and with the prior discussion in mind, conjecture as to the effect of organic disease on Jack Ruby's criminal competency and responsibility can be discussed.

In brief, the autopsy findings included carcinoma of the lung with local spread and metastasis to bone, lymph nodes, and brain. In addition, there was an occult primary carcinoma of the prostate gland totally distinct from the tumor of the lung; this was noted only microscopically and was not significant in his death. The terminal event was a blood clot arising in a leg vein and embolizing to the lung, a not uncommon event in people who have cancer or are confined to bed. Death was due to "pulmonary emboli secondary to carcinoma of the lung," the lung tumor being the direct cause of Jack Ruby's death.

Bundles of newsprint, articles and books have been written about the defendant, the defense strategy, and the trial.⁷⁷ The issue upon which the defense based its case was lack of consciousness at the time of the killing and the inability of Ruby, whom the defense claimed had a type of seizure, epilepsy, or epileptic variant (psychomotor epilepsy), to form the proper intent.

The biological behavior of tumors, particularly Ruby's lung tumor, represents a partial affirmative answer to the question, of "could the primary lung tumor have been present at the time of the assassination?" Although X-rays of the lungs taken in 1964 failed to reveal the presence of the tumor, it is doubtful that the diagnosis would have been made with even the most sophisticated diagnostic procedures available, for in order to be demonstrable by X-rays tumors must be quite well developed in their growth. Nevertheless, from our knowledge of the biological behavior of tumors, it must be concluded that the tumor antedated both the trial and the criminal act.⁷⁸ Similarly this tumor could well have been the source of *neoplasticae noxae*, toxins arising in tumors.

Cancers of the lung are those most often associated with systemic effects, including aberrant behavior, not attributable to tumor metastases or pressure on the brain. Tumor metastases to the brain of Ruby were demonstrated at the time of the autopsy. This is significant because electroencephalographic (EEG) abnormalities, a subject of controversy among batteries of experts, were confined to the side of the brain opposite the tumor metastasis which makes it most unlikely that the EEG abnormalities

77. An unabridged transcript of the medical, psychological and psychiatric testimony given at Ruby's trial entitled *State v. Jack Ruby* is found in 6 TRAUMA 5 (1964). A quotation from the introduction is germane to this discussion. "The psychiatric and psychological testimony in the Ruby transcript fails to disclose the slightest thread which will support a valid finding that Ruby was criminally insane either at the time of trial or at the time he shot Lee Harvey Oswald." *Id.* at 6.

78. S. ROBBINS, PATHOLOGY 99 (3d ed. 1967).

were attributable to tumor spread. Suffice it to say, the localization of the EEG abnormalities, if they did indeed exist, were not at a site of demonstrable tumor metastasis or gross abnormality. Thus, based upon this author's knowledge of medicine in general and pathology in particular, it is impossible to express a categorical scientific opinion as to the causal relationship between the lung neoplasms, the tumor spread, tumor hormones, constitutional background, and/or EEG abnormalities and the murder of Lee Harvey Oswald by Jack Ruby.

It is difficult to correlate organic disease to criminal behavior, for the causal relationship may be quite subtle. Proof might be possible if a particular type of action were relieved by the removal of a tumor or the curing of the organic disease, but this type of scientific investigation is not available to the trial court. At the time of Ruby's trial there was no suspicion of an organic disease, aside from the belabored EEG's. Indeed, this issue could not have been raised at the time of the trial, for it was not until his terminal illness that an autopsy was performed and the presence of the organic disease was discovered.

A question still unanswered is why organic disease causes aberrant behavior in one person and not in another? There are disturbances that are sufficiently characteristic to permit the diagnosis of an affective or cognitive disorder of organic etiology. This leads to the concept of what has been called "vulnerable individuals" who are especially susceptible to pathological influences. From a brief sketch of Ruby's background one can conclude that he was a "vulnerable individual."⁷⁹ He grew up in a Chicago ghetto; he was known for his aggressive posture and flare ups that earned him the nickname of "Sparky;" he was emotion-ridden, violent, and had a personality beset by impulsive outbursts. Emotional tensions and limited control characterized his tenure as a nightclub proprietor. It is known that in a person of such background, who also suffers from an organic disease, there is a predisposition to inhibit or even eliminate emotional controls and to discharge behavior at a primitive level without regard for normal considerations. Such organically determined outbursts are characterized by inability to establish controls, an absence or clouding of memory of the act, inability to change the direction of the outburst until it is completed, and lack of any demonstrable feeling afterward. Ruby did exhibit these symptoms. By reason of the organic defect, it is possible for the sufferer to commit an aggressive or criminal deed of which he might not be capable in his normal state.

IX. CONCLUSION

There is very limited medical insight into those aspects of human existence which are essentially correlated with consciousness such as perception, learning and memory (knowledge), and the forming of intent. Yet, the

79. G. WILLS & O. DEMARIS: JACK RUBY c.1 (1967).

basic premise of the law is that without knowledge there can be no intent and without intent there can be no crime. We tend to regard the problems of consciousness as those of behaviorism, and the rules of knowledge and intent about which we know so little form the basic rules for determining criminal culpability.

The factors which interest the medical man are not necessarily the same factors which concern the trier in disposing of the controversy before him. However, it is the duty of law as well as of medicine to continue to seek answers for the fair handling of criminal conduct; lawyers must present new theories to the courts even in our present imperfect state of knowledge. It is far more reprehensible for society to punish the organically diseased individual for conduct over which he can exert no control than is any crime which he could commit. For indeed, he is punished for our ignorance of his disease, and will continue to be punished until the disease is fully understood and translated into legal practices.