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## *Epilepsy and the Law*

Irwin N. Perr, M.D.\*

**E**PILEPSY IS A DISEASE WHICH HAS PLAGUED mankind from time immemorial, with the result that modern views of this formerly "sacred disease" have become encrusted with attitudes born of a more primitive age. Epilepsy also is one of the few medical conditions which have been singled out both in common law and in statutory law. In addition, epilepsy has become increasingly important as it may be a sequel to head injuries, and thus the lawyer dealing with personal injury cases must have some acquaintance with epilepsy and its problems.

The first part of this paper will be a simplified description of epilepsy with emphasis on those aspects which may be of some importance to the law. This will be followed by discussion of epilepsy in relation to various laws on marriage, sterilization, automobile driving, and workmen's compensation, and comments on the relation of epilepsy to criminal and civil responsibility, accompanied by illustrative actual cases. A subsequent article in another issue of this Review will deal with injury and epilepsy. It will become apparent, in the course of this article, that the medical aspects of epilepsy are extremely complex, and that therefore any attempt to cover this field briefly must be superficial. It probably is only fair to say that the more understandable the description becomes, the less accurate it may be.

### Definition of Epilepsy

Statutes regarding epilepsy do not define the term;<sup>1</sup> or if they do, it is only to state, for example, that an epileptic is one who has epilepsy.<sup>2</sup> A good definition of epilepsy is that of New York<sup>3</sup>—an epileptic is "a person suffering from epilepsy as de-

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<sup>1</sup> Lustig, A. E., Book Review. 7 Clev.-Mar. L. R. 563 (1957).

<sup>2</sup> Ohio Rev. Code, Sec. 5125.14. *Epileptic*, defined.

<sup>3</sup> N. Y. Mental Hygiene Law, Sec. 2.

fined in medical practice." Although ordinarily words used in law should be clearly defined, at times it is more helpful not to pin down a word with a rigid definition which soon becomes outmoded. Since concepts and knowledge of epilepsy have changed greatly in recent years, flexibility of definition in this specific case is realistic and useful. The word *epilepsy* is derived from the Greek word *epilepsia* meaning "a seizure," and "seizures" and "fits" are the most commonly used terms for epileptic reactions. Some laws now do not specify "epileptic," but instead use a more pertinent definition which includes epilepsy as well as other medical conditions.<sup>4</sup>

Epilepsy might best be described as a disease or symptom complex characterized by recurrent alterations in the state of consciousness with or without muscular movements, accompanied by an electrical discharge in the brain—with certain exceptions. As can be easily recognized, this is not a very exciting definition, but it is accurate. The important elements are the recurrent aspects, the change in consciousness, the electrical discharge, and the words "with certain exceptions." The last is most important, since certain other diseases may fit the rest of the description but are not considered to be epilepsy; conditions such as insulin shock, hysteria, alcohol or drug intoxication, or fainting are some examples. Merritt<sup>5</sup> defines epilepsy as a "functional disorder characterized by recurrent attacks of loss of consciousness, with or without convulsive movement." Most definitions in neurological textbooks are basically the same as those mentioned.<sup>6</sup>

The lawyer may come across arguments about whether epilepsy is a disease or a symptom. Actually it is both. If a person has a brain tumor causing seizures, he has epilepsy but the basic disease is the tumor. This will be discussed further in the next section.

<sup>4</sup> Ohio Rev. Code, Sec. 4507.08 (El) (1957 suppl.)—"any condition resulting in episodic impairment of consciousness or loss of muscular control."

<sup>5</sup> Merritt, H. H., *A Textbook of Neurology*, Lea & Febiger, Phila. (1955).

<sup>6</sup> One definition which utilizes different terms and is not exactly clinically accurate is that of Lennox who stated: "Epilepsy is simply a paroxysmal dysrhythmia of brain potentials." It is misleading and might be confusing if used in courts, since there can be paroxysmal dysrhythmia without epilepsy. Lennox, W. G., *Epilepsy and the Epileptic*. 162 J. Am. M. Assn. (2) 118 (Sep. 8 1956).

### Types of Epilepsy

There are several classifications of epilepsy, and these must be mentioned briefly if one is to have any understanding of the disease. These distinctions become quite important, as will be shown in the comments on heredity and marriage. First, epilepsy is traditionally divided into two main categories: "idiopathic" epilepsy and "symptomatic" epilepsy.

Until the last few decades, relatively little was known about the strange and frightening disease of epilepsy. Some cases were explained by the presence of other causes, and so left the physician fairly comfortable in his recognition of them. But the vast majority of cases defied study, and so were called by such names as "idiopathic," "cryptogenic," "genuine," or "essential" epilepsy. Briefly this meant that the specific cause was not known. Nonetheless, this group makes up seventy-eight per cent of all epilepsy cases. While the absolute cause of epilepsy is not yet clear, a tremendous amount of information has been acquired. Epilepsy is an electrochemical disease in which the brain cells show a massive electrical discharge. It is called functional because there are no definite changes that can be seen under a microscope (although some progress is being made in this field). Idiopathic epilepsy has a strong hereditary element. It usually arises in the first twenty-five years of life, and is a tremendous social problem as will be seen later.

"Symptomatic" or "secondary" epilepsy, on the other hand, is a condition where the seizures are the result of another basic disease, and hence the seizures are just a symptom. The course of the epilepsy, the treatment, and the social consequences all depend on the basic disease process and its treatment. Understanding of this type of epilepsy requires a knowledge of almost the whole scope of neurology. Alpers<sup>7</sup> in his textbook lists sixty-seven causes of symptomatic epilepsy, and undoubtedly this list can be expanded. Some of the conditions which might be found are: congenital malformations, birth injuries, brain tumors, infection, later-in-life head injuries, cerebral arteriosclerosis and various vascular diseases. The importance of this will become more apparent when post-traumatic epilepsy is discussed. In the third and fourth decades of life, injury and brain tumor are the most common causes (this means that the onset is during this period with no previous epilepsy). Seizures beginning in

<sup>7</sup> Alpers, B. J., *Clinical Neurology*, 3d edition, F. A. Davis, Phila.

late life are most likely due to arteriosclerosis and other vascular accidents and brain tumors. In childhood and in the 'teens, idiopathic epilepsy is the most likely type, followed by congenital malformations, brain injuries at birth, and tumors. These are important points to keep in mind, as there can be many causes for epilepsy aside from trauma, and it might be life-saving to determine, for example, that the cause was a brain tumor. Table 1 illustrates the distribution of the various types of epilepsy.

TABLE 1

Recurrent convulsive seizures in 2000 non-institutional cases of epilepsy at all ages, see n. 6, Lennox.

<i>Presumed causes of seizures</i>	<i>(after Lennox)</i>
None demonstrated	77.6%
Cerebral trauma	5.7
Birth injury or congenital defect	5.6
Brain infection	4.2
Brain Tumor	2.6
Cerebral circulatory defect	1.9
Extracerebral causes	0.9

Analysis of 689 Patients whose attacks began after 20 years of age.

*(after Livingston)<sup>8</sup>*

	NUMBER
Idiopathic epilepsy (78%)	527
Hypertension or cerebral arteriosclerotic	83
Alcohol	28
Post-traumatic	17
Neurosyphilis	11
Pregnancy	8
Cerebral birth trauma	4
Brain abscess	2
Brain tumor	2
Cysticercosis	1

The other classification with which there should be some passing acquaintance is that based on clinical manifestation, rather than on cause. Only a few common types will be mentioned here, as the list is long, the description of the types is complex, and the detail required far beyond the scope of this

<sup>8</sup> Livingston, S., *Etiologic Factors in Adult Convulsions*. 254 New Eng. J. Med. 1211 (June 28, 1956).

paper. "Grand mal" seizures are the type most commonly recognized by the layman, whose knowledge of epilepsy may be limited to this type. This is the classical epilepsy, the "big" seizure, in which the person cries out, falls to the ground, has various muscular movements, falls into a deep sleep and awakens in about five minutes, being rather confused for a variable period of time. This type, if seen by a physician, is diagnostic, as it cannot be malingered or faked and is different from fainting, hysterical attacks, tetany, etc. Grand mal seizures occur in most cases of epilepsy either alone or in combination with other types.

"Petit mal" or "little" seizures are restricted mainly to childhood and consist of lapses of consciousness for 10-15 seconds. They may occur very frequently—from ten to five hundred times a day. These almost always belong to the class of idiopathic epilepsy, and so are not found in symptomatic epilepsies. After an attack, the person carries on as before with no period of confusion.

Psychomotor seizures have also been called "temporal lobe" epilepsy since the electrical discharges here arise from a certain part of the brain. In these seizures, the person is involved in some apparently purposeful activity such as dressing or undressing, running, etc.; however, the person has amnesia for any actions during this period.

There are many characteristics of these seizures which will not be discussed here. The grand mal seizure and the psychomotor seizure are especially important from the standpoint of mental responsibility. Obviously, with a period of outright unconsciousness, such as in grand mal epilepsy, all kinds of accidents can occur. Sometimes an epileptic on awakening becomes violent (epileptic furor) and may become homicidal and destructive. In psychomotor epilepsy, the individual may also indulge in behavior with grave consequences. Petit mal does not usually have these consequences, since the seizures are so short. These types are not exclusive, and one individual may vary in the type of seizure from time to time. Very frequently a child will start with petit mal and later have grand mal seizures.

Another important class of seizure is the focal or localized seizure. Here the seizure starts in one part of the body; for example, it may start in the fingers and involve just one arm. Or it may start in one place and progress over the body, ending up in a generalized or grand mal seizure. This march of symptoms is typical of the "Jacksonian" seizure. The importance of

localized seizures is that they indicate a localized pathology in the brain and are associated with symptomatic epilepsy.<sup>9</sup>

Other types of epilepsy will not be discussed as they have no great relevance to this paper, but this point is repeated so that the reader may be well impressed that the types of seizures and characteristics of seizures go far beyond the meager information given here.

Something in which the reader might be interested is the fact that convulsions in children do not mean epilepsy.<sup>10</sup> Five to seven percent of infants have convulsions with high fever, and it has been reported that twelve per cent of children who have seizures with high fever develop epilepsy (Lennox). Since certain individuals have a predisposition to seizures, they are more likely to occur during high fever in these individuals.

### **Incidence and Course of Epilepsy**

These aspects will be further discussed under marriage laws and post-traumatic epilepsy. Epilepsy is quite common, and in examination of draftees the incidence was 0.5%, a figure which has also been found in Holland and Switzerland. It has been estimated that the number of epileptics in the United States varies from 800,000 to 1,500,000.<sup>11</sup> Epilepsy is not necessarily a lifelong condition. Lennox reports that 23% have a spontaneous remission in one to five years and 6% more have a cessation after five years.

Absolute numbers of treatment results are difficult to quote because of the many types of epilepsy and the many regimes. Probably about half of epileptics can eventually become seizure-free—either spontaneously or with treatment. Another large group will have the disease under fairly good control, so that the disease becomes more of an inconvenience than a disaster. About 10 to 20% remain severely handicapped.

<sup>9</sup> Livingston (see n. 8 above) found in 689 cases that 534 were generalized, 84 had a focal beginning, and 71 were completely focal.

<sup>10</sup> The following statistics are taken from Peterman's study on convulsions in childhood, as to cause:

acute infection	33%
idiopathic epilepsy	26
cerebral injury or residue	14
miscellaneous	13.1
infantile tetany	7.4
cause not established	5.6

<sup>11</sup> Fabing, H. D. and Barrow, R. L., *Medical Discovery as a Legal Catalyst: Modernization of Epilepsy Laws to Reflect Medical Progress*, 50 NW. U. L. Rev. 42 (1955-6).

Many years ago, with no treatment available, the fate of the epileptic was quite horrible. With constant seizures, he was frequently locked up in a state institution where he soon deteriorated mentally and physically. Throughout the country, epileptics were included with the insane and the mentally deficient in mental hygiene laws, and the country was dotted with institutions for epileptics. Treatment has so altered the picture that it has become more and more difficult to find patients for these institutions, and one by one these institutions are slowly disappearing from the scene. Usually they have been converted into regular psychiatric hospitals. Because of what happened in the past, certain ideas became prevalent and remain today, though reduced to the status of "old wives' tales." One is that the epileptic deteriorates intellectually and becomes mentally deficient. Lennox (see n. 6), in a study of 2000 patients (clinic and private), showed that 67% are mentally normal, 23% are slightly deteriorated, and 10% are definitely deteriorated. However, in the latter categories, the patients frequently had other organic diseases of the brain, and the deficiency could be postulated to be due more to brain damage than to epilepsy per se. Another common finding was the high incidence of mental disease and behavior disorders in epileptics. Today, many authorities feel that these are emotional reactions to the illness rather than to the epilepsy itself. Thus many epileptics are helped by psychotherapy, and sometimes the number of seizures is lessened by this type of treatment alone. Epileptics have been described as paranoid, withdrawn, hostile, irritable—the so-called "epileptic personality"—but this concept is slowly disappearing. Psychoses are now attributed more to organic brain damage or to the development of schizophrenic reactions. Obviously, being ostracized by society, unable to get a job and be self-supporting, limited both in heterosexual and general social contact, personality problems are frequent. Today in many cities, epileptics are forming clubs much as alcoholics do, called "Epileptics Anonymous." Lastly, it should be mentioned that many great men of history were epileptics and managed to function productively—Caesar, Napoleon, and Dostoevsky, to mention a few.

### **The Pathological Substrate of Epilepsy**

Seizures result from electrical discharges due to a low threshold of sensitivity, so that epileptics will react with seizures to various stimuli. The basic problem is an electrochemical one,



and thus epilepsy is, in a way, a metabolic disease.<sup>12</sup> This low threshold seems to be an inherited characteristic (heredity will be discussed in the section on marriage laws). In organic disease, such as injuries, there is an area of local damage where a scar forms. The area surrounding the scar becomes a focus of irritation, and it is from this area that the electrical discharge spreads.

### The Electroencephalogram

The lawyer interested in this subject must know some principles of electroencephalography—both in understanding and evaluating epilepsy and because of its frequent use as a tool in court cases. The brain has an electrical rhythm just as the heart does. An electriccardiogram (ECG) picks up these heart impulses, magnifies and records them; the electroencephalogram (EEG) does the same for the brain. However, the EEG does not have the same degree of specificity as the ECG. The EEG has been vastly misused, and is likely to be more misused in the future. It is not a magical tool, and does not give magical answers (medicine does not yet have an IBM machine to answer its problems). First and of most importance, the EEG does not usually make a diagnosis. It is used as corroborative evidence by physicians, and should be interpreted only by correlation with the clinical data. A history of the patient together with observation of the patient is of far greater value in diagnosing disease than the EEG, which by itself can be quite misleading. With this in mind, it must also be stated that electroencephalography has been a great advance in science, and as time goes on, should be the source of tremendous advances in medicine.

It is especially important that the records be read only by a physician qualified in electroencephalography.

What then are the findings on EEG? As mentioned, the EEG measures rhythm; there are great variations in rhythm and these are found in many different states. Periodic variations in rhythm are called "paroxysmal dysrhythmia." Certain of these patterns are compatible with epilepsy, but not diagnostic. Anywhere from 15 to 20% of normal people who never have a seizure show this pattern. On the other hand, about 5 to 10% of epileptics do not show any abnormal changes on EEG, though better techniques may lessen this number. Between attacks, 50 to 85% of epileptics show some deviation on EEG. If a person shows a

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<sup>12</sup> See n. 6 above.

typical grand mal attack observed by a reputable person, this is more important than any EEG finding. If a physician can observe an attack, he can make a diagnosis. Many factors affect the EEG—the emotions, drugs, the state of consciousness of the person, the age of the person, etc. The concept of “delayed maturation” of the nervous system has been postulated for many disorders which show EEG findings. It is well known that psychopaths and delinquents show various abnormalities on EEG.<sup>13, 14</sup> Thus, many findings of “abnormality” are of no clinical use at all.

Other findings are more useful. If a record can be obtained during a seizure, characteristic features are obtained. Grand mal, petit mal, and psychomotor seizures have rather characteristic findings. There is a fairly high correlation rate between petit mal and the EEG and psychomotor seizures and the EEG. Spiking found on EEG is a strong indicator. Since psychomotor seizures are attributed to temporal lobes, localized findings as well as characteristic rhythms are found. In post-traumatic epilepsy, EEG's are most helpful. Here the EEG's should be taken serially (repeated EEG's over a period of time). Since EEG findings are often present after a head injury, they must be followed over a prolonged period, since many of the findings disappear and since many of the abnormalities are *not* diagnostic of post-traumatic epilepsy (this will be discussed in greater detail in the subsequent article on post-traumatic epilepsy).

The other great asset of the EEG is the help that it provides in the recognition and localization of brain injury or brain pathology of any kind. Thus, when foci are picked up, this together with other findings may be of help; for example, in diagnosing a brain tumor. The EEG thus is a help often pre-operatively in defining location of a tumor and making brain surgery, which is delicate enough, easier.

The discussion of the EEG will be left with the following comments. It must be kept in mind that taking the EEG is a delicate technique and must be done with care and good routine,

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<sup>13</sup> Levy, S. and Kennard, M. A., *The EEG Pattern of Patients with Psychologic Disorders of Various Ages*. 118 *J. Nerv. & Ment. Dis.* 416 (Nov. 1953).

In this study of 1000 inmates with various psychologic disorders in four institutions, 50% of the children showed abnormal EEG's, 20-30% of those in their twenties, and an increase again after age 55.

<sup>14</sup> Ellingson, R. S., *Incidence of EEG Abnormality Among Patients with Mental Disorders of Apparently Nonorganic Origin—Critical Review*. 111 *Am. J. Psychiatr.* 263 (Oct., 1954).

Here again 50% of psychopaths and 20 to 33% of schizophrenics showed abnormal EEG's.

otherwise artifacts may develop which complicate the picture. Therefore, we must remember the words of Lennox,<sup>15</sup> who stated, "many a person has been pronounced 'epileptic' because he 'dozed off' unobserved or because an electrode was improperly applied."

### **Epilepsy, Heredity, and Marriage**

Epilepsy is a disease with a strong hereditary element. Around the turn of the century, over-recognition of this fact plus the interest in eugenics resulted in the passage of many laws regarding the marriage and sterilization of epileptics. Epileptics were freely included in the list of groups prohibited from marriage. For instance, the Ohio law<sup>16</sup> states that "no marriage license shall be granted when either of the applicants is a habitual drunkard, epileptic, imbecile, or insane person, is under the influence of an intoxicating liquor or narcotic drug, or is infected with syphilis in a form that is communicable or likely to become communicable."

The laws regarding marriage vary greatly and have been the subject of many articles<sup>17</sup> and have been most comprehensively reported in the book, "Epilepsy and the Law."<sup>18</sup> Seventeen states prohibit the marriage of epileptics, based on the premise that epilepsy is strongly hereditary. In various states the following are crimes—(1) for an epileptic to marry (in six states), (2) for a non-epileptic person to marry an epileptic knowingly, (3) for a license to be issued knowingly and (4) for the solemnizing official to perform knowingly. In four states, such marriages are void, in four others they are voidable, and in ten other states they are probably voidable, although most will uphold a marriage except where the epilepsy is fraudulently concealed by the party having it. In Michigan an epileptic can marry if two physicians will certify that there has been a "com-

<sup>15</sup> Lennox, W. G., *Marriage and Children for Epileptics*. 10 *Human Fertility Mag.* (1945).

<sup>16</sup> Ohio Rev. Code, Sec. 3101.06 (Denial of License).

<sup>17</sup> (a) Fabing, H. D. and Barrow, R. L., *Medical Progress in Treating Epilepsy and the Need for Reform of Laws affecting Epileptics*. 3 *Epilepsia* 92 (Nov., 1954).

(b) Friedman, G. A., *Epilepsy and the Law*. 84 *Med. Times* (12) 1359 (Dec., 1956).

(c) Smith, H. W., *Medico-Legal Facets of Epilepsy*. 31 *Tex. L. Rev.* 765 (1953).

<sup>18</sup> Barrow, R. L. and Fabing, H. D., *Epilepsy and the Law*, Paul B. Hoeber, Inc., N. Y. (1956).

plete cure" and that the condition will not be transmitted to offspring. In 1955 North Carolina changed its law to apply only to epileptics with uncontrolled seizures. Formerly in Connecticut and Wisconsin such marriages were null and void, the children were illegitimate, and the consequences terrible. In states without any statutes, fraudulent concealment of epilepsy is grounds for annulment.

In a Connecticut case<sup>19</sup> of 1905, the thinking of that period is clearly expressed: "That epilepsy is a disease of peculiarly serious and revolting character tending to weaken mental force, and often descending from parent to child, or entailing upon the offspring of the sufferer some other grave form of nervous malady, is a matter of common knowledge, of which the courts will take judicial notice . . . One mode of guarding against the perpetuation of epilepsy obviously is to forbid sexual intercourse with those affected by it, and to preclude such opportunities for sexual intercourse as marriage furnishes."

Other similar cases are given below.<sup>20</sup>

Sterilization laws exist in twenty-eight states. In 17 states they apply specifically to epileptics, and in another state the statutes have been construed to include epileptics. Fourteen of the eighteen states limit sterilization to epileptics who have been committed to an institution. None of the sterilization statutes define epilepsy.

This briefly summarizes some of the laws based on the so-called heredity of epilepsy. Our next task is to examine the scientific evidence concerning this topic in order to ascertain how realistic these laws are. It should be mentioned, on practical grounds alone, that the vast majority of epileptics can marry

<sup>19</sup> Gould v. Gould, 61 A. 604 (Conn., 1905).

One induced by fraudulent concealment to marry an epileptic, forbidden by statute to marry, is entitled to divorce on the ground of fraudulent contract.

<sup>20</sup> (a) Vendetto v. Vendetto, 161 A. 392 (Conn., 1932).

A party may be granted divorce if another induced marriage by fraudulent concealment of epilepsy. Here the defendant had epilepsy from childhood, married in 1914, with the plaintiff learning about it in 1915. The plaintiff continued living with his wife until she was confined to an institution in 1926, and it was then that he brought suit for divorce.

(b) Busch v. Gruber, 131 A. 101 (N. J., 1925).

A wife is entitled to annulment of marriage for fraud of the husband in concealing the fact that he was subject to epilepsy. The wife is entitled to have the marriage annulled notwithstanding consummation.

(c) McGill v. McGill, 163 N. Y. S. 462 (1917).

Here too epilepsy was sufficient ground for annulling a marriage for fraud (this case was later reversed for other reasons).

quite easily, either by denying epilepsy or by going across the state line into the majority of the states which have no such laws. As a result, the laws are basically useless.

Since epilepsy is not ordinarily defined in the law, no distinction is made in the law between idiopathic and symptomatic epilepsy. Thus, if an individual who has had a brain tumor removed has residual seizures twice a year, he is put in the same category as the epileptic who has had several seizures a week since childhood. It is apparent that the hereditary element in symptomatic epilepsy will be quite low; low enough to make statutory limitation on marriage ludicrous. Another aspect is that the laws do not make distinctions as to how long a person is an epileptic. If a person ceases having seizures, when is the date on which he ceases being an epileptic by law; or is he always an epileptic? How about the person who, under control of medication, has a seizure every two years? If a soldier has the top of his head blown off and has a few resultant seizures, should he be prevented from marrying despite the fact that there is no discernible hereditary element? In these cases, the answers seem obvious—legislative control here is not scientifically justified.

The next and more complex problem is that of the idiopathic epileptic, where there is no doubt of an hereditary relationship. First of all, natural selection cuts down on this problem. Three quarters of epilepsy cases begin in childhood and in the teen ages. These people, handicapped socially and occupationally, and unable to support themselves, do not marry even in the states where such marriages are allowed, because they are usually unable to find marital partners.

The influence of heredity has been vastly overstressed in the past. In one study of 138 marriages of epileptics with 553 offspring, a history of fits was found in only 10 or 1.8%, and in another study of 161 children of 144 epileptic mothers, there were only three cases of epilepsy.<sup>21</sup> Probably the largest study was that of Lennox,<sup>22</sup> where his statistics indicate that the child of an epileptic has 39 chances out of 40 of being normal, though

<sup>21</sup> Wilson, S. A. K. and Bruce, A. N., *Neurology*, 2d edition, The Williams and Wilkins Co., Baltimore, 1955.

<sup>22</sup> See n. 15 above.

This report was based on a study of 2000 patients and 12,119 relatives. This rate of 2.7% is about five times that of the general population, based on the statistics of draftees, but is based on "cerebral dysrhythmia" rather than epilepsy per se.

some dispute this figure. He comments: "In a few diseases (Huntington's Chorea, for example), the evidence of heredity is unmistakable and the prohibition of children is absolute. But for most disorders of body or mind, the evidence is fragmentary and controversial, and decision regarding childbearing may be grounded more on fear than on fact."

Conversely it has been shown that not one epileptic in twenty-five has an affected parent, so that prohibition of marriage would not be of much help in cutting down the incidence of epilepsy.

What seems to be inherited is not epilepsy itself but the tendency, as shown by the greater incidence of EEG variations in relatives although they do not have epilepsy. This predisposition is illustrated by the statement: "Among identical twins only one of whom has epilepsy and antecedent brain injury, the normal twin usually possesses an hereditary dysrhythmia of brain waves."<sup>23</sup> Lennox discusses in detail how to evaluate the tendency towards epilepsy when a doctor is consulted to advise potential parents whether or not to have children. His feelings may be summed up by his statement: "An undesirable inherited tendency to seizures may be outweighed by other desirable traits. Better an epileptic Caesar, Byron, or Van Gogh than a non-epileptic non-entity."

### Driving and Epilepsy

It is apparent that any individual who is subject to attacks of unconsciousness will be a menace behind the wheel of a car. As a result, numerous laws have affected the driving rights of epileptics (for a thorough discussion of this and other statutes regarding epilepsy, the reader is referred to the book by Fabing and Barrow).<sup>24</sup> In all states except South Dakota there are prohibitions and limitations on the rights of epileptics to drive. In 4 states, limitations are placed on "epileptics," in 12 states on "adjudicated" epileptics, and in 32 other states, the epileptic is not specified. However, each of the forty-seven states gives to the administrator of the driver's license law the right to deny a license to any person deemed to be an unsafe driver, the most common criterion being any physical or mental disease which would prevent a person's exercising ordinary and reasonable

<sup>23</sup> Slater, J. K., *Trauma and the Nervous System*. 53 *Edinburgh Med. J.* 623 (1946).

<sup>24</sup> See n. 18 above.

control over a motor vehicle. Information is obtained by questions on applications and reports from state institutions, and in seven states, cases of epilepsy must be reported by physicians (e.g., California and New Jersey require this). With the recognition that epilepsy can be controlled, licenses are now granted to epileptics under certain circumstances in at least 19 states, and in seven other states control is one of the factors taken into account. At least eleven states specify a definite seizure-free period before a license can be issued. This varies from one to three years in duration; other states individualize this period of time. The American League Against Epilepsy recommends one year as the basis for determining whether the controlled epileptic is a safe-driving risk. (Their recommended definition of epilepsy for legal purposes, by the way, is this: "Epilepsy is an episodic impairment of consciousness or loss of motor control, with or without convulsions and having the medical diagnosis of epilepsy").

In Massachusetts,<sup>25</sup> to obtain a license, the driver must be seizure-free for at least eighteen months, and other factors taken into consideration are the age of onset, type of epilepsy and frequency, presence of auras which may serve as a warning, the time of day that the seizures occur, the degree of abnormality of the EEG, and the veracity and sobriety of the individual.

Some states require that the person be seizure-free without medication; others permit medication as long as the person stays seizure-free. Wisconsin in recent years adopted the system that the licensing official can grant a license on the recommendation of the attending physician and certification that the applicant is under treatment and free of seizures (a period of two years is the rule of thumb). If an applicant is turned down, he can appeal to an administrative review board (composed of a licensing official and two physicians). He is granted a permit for six months and the case is then re-evaluated and further permits issued. The initial experience in Wisconsin has been excellent.<sup>26</sup>

<sup>25</sup> See n. 6 above.

<sup>26</sup> *Epilepsy and the Law*, by Fabing and Barrow, n. 18, above, p. 53—

"Statistics, as of August, 1954, on the issuance and denial of licenses under the Wisconsin procedure are as follows: The administrator has issued a license on the basis of a medical certification in 280 cases and denied a license in 296 cases. Of the 296 applicants who were denied a license, 129 appealed to the board. Of these, the board granted a license to 84 and denied it to 45. It is understood that none of the persons whose licenses were

(Continued on next page)

Ohio in 1957<sup>27</sup> adopted a similar rule. The seizure-free period must be for at least one year.

Actually, in terms of numbers, accidents involving epileptics are relatively rare. Alcoholics are responsible for hundreds of times as many automobile accidents as epileptics; yet alcoholics do not have to put alcoholism on their license applications nor are they reported to state authorities merely because of alcoholism.<sup>27a</sup> Epileptic attacks have been causative factors in automobile accidents and train mishaps, yet one study<sup>28</sup> indicates that diabetics receiving insulin and people with coronary artery disease are likely to have at least as many accidents, but few advocate the refusal of driving licenses to persons with coronary disease or to diabetics. One area where persons should be carefully screened is that of the driver of commercial vehicles. A British study<sup>29</sup> of professional drivers called for the draft showed that five of 1276 commercial drivers had epilepsy or periods of unconsciousness.

Some cases will be presented in order to illustrate the difficulties which arise in connection with driving and epilepsy.

In *Eleason v. Western Casualty and Surety Company*,<sup>30</sup> a truck driver became unconscious while driving, and injured the plaintiff. He did not know that he had "epilepsy," but he did know that he was subject to fifteen minute fainting spells. In the village where he lived, he had been known to have seizures for

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granted by the board under the Wisconsin procedure has been reported to have been involved in a motor vehicle accident."

They quote a letter from Dr. Schwade which reports, "Out of those persons who have been recommended for license by the board, only four have had their licenses again withdrawn and two of these were for conviction for operating a motor vehicle while intoxicated rather than for any recurrence of epileptic seizures."

<sup>27</sup> Ohio Rev. Code (1957 Suppl.) Sec. 4507.08 (C) and (E).

The word "epileptic" was dropped from the statute, being replaced by "any condition resulting in episodic impairment of consciousness or loss of muscular control"—thus also covering diseases other than epilepsy. The review board shall give due consideration "to the extent and duration of medical control of the condition, whether the person may be depended upon to continue medication if continued medication is prescribed and all other relevant, competent, and material evidence."

<sup>27a</sup> Lennox, W. G., *Social Therapy of Epilepsy*. 56 *Canad. Med. Assn. J.* 638 (June, 1947).

<sup>28</sup> Hierons, R., *The Epileptic Driver*. No. 4960 *Brit. M. J.* (Jan. 28, 1956).

He feels that professional drivers who have had even one epileptic attack should not drive public transport vehicles.

<sup>29</sup> Webb, J., *Standards of Fitness among Drivers of Commercial Vehicles*, 1 *Brit. M. J.* 515 (1955).

It also showed that the most common defect was poor vision.

<sup>30</sup> *Eleason v. Western Casualty and Surety Co.*, 35 N. W. 2d 301 (Wisc., 1948).



six years. The court ruled that driving a truck under these conditions, endangering the lives of others, was negligence per se. The fact that the driver did not know the technical name, epilepsy, was not controlling; the driver knew that he was likely to become incapacitated while driving. The employer was held free from negligence in hiring him, as he had made a reasonable investigation when hiring him and did not know of the driver's condition.

*People v. Freeman*<sup>31</sup> was a case in which the defendant, having a history of epilepsy, felt unwell while visiting, and on driving home zoomed through a stop sign at sixty miles an hour, with a resultant accident. He pleaded that he was unconscious at the time of the accident. The court stated that if the defendant knew of his past epileptic condition and was in normal mental condition when he left, driving a car constituted criminal negligence; but if he was already in an epileptic state when he left the house, he was not responsible for his actions. Thus the mental condition of the driver was a question of fact for the jury.

In *Commonwealth v. Irwin*,<sup>32</sup> an epileptic appealed a lower court decision suspending his driver's license. He had had no seizures in eight years. (Pennsylvania has required a seizure-free period of three to five years.) The court said, "There will, no doubt, be common agreement that a person afflicted with epilepsy is incompetent or unable to exercise reasonable or ordinary control over a vehicle on the public highway." The court indicated however, that with a doctor's certificate that the epilepsy was under control, the petitioner would be re-eligible for licensure. (Actually here his request was turned down on a technicality, as he had not made his appeal within the requisite thirty days.)

When a parent purchases a car for an adult epileptic son, the parent is liable for a subsequent accident.<sup>33</sup> The court held that it was negligent to endanger the lives of others by placing a potentially dangerous instrumentality in the hands of an epileptic.

In an action contra to the *Eleason* case above, a city was held liable for an accident caused by an epileptic ambulance driver employed by the city and which resulted when he lost control

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<sup>31</sup> *People v. Freeman*, 142 P. 2d 435 (Calif., 1943).

<sup>32</sup> *Commonwealth v. Irwin*, 29 A. 2d 68 (Penna., 1942).

<sup>33</sup> *Golembe v. Blumberg*, 27 N. Y. S. 2d 692 (1941).

of the ambulance during a seizure.<sup>34</sup> In another case,<sup>35</sup> it was a question for the jury whether a taxi cab company used due care in hiring its drivers, when one of them caused an accident during an epileptic attack. The taxi cab company was held not liable for the accident itself, as it was not an insurer of its passengers, and as there was no negligence on the part of the taxi cab company immediately connected with the accident.

In another action,<sup>36</sup> the defendant was held to be criminally negligent in operating an automobile with the knowledge that he was subject to epileptic seizures. During an attack, the car went out of control and killed four people. The defendant had had a long history of seizures (from 1950 to 1955), was on medication, and still had ten to twenty seizures a year. In this case, a decision for the defendant was affirmed on the ground that the doctor who had treated him could not testify as to diagnosis.

### **Epilepsy, Work, and Workmen's Compensation**

The problem of the epileptic at work is minimized because of one simple fact—it is almost impossible for an epileptic to obtain or keep employment. The usual story is that after one seizure at work the employee is fired. Practically speaking, it is true that epilepsy presents a menace in certain occupational situations, and for the protection of the epileptic and others, he should not work at heights, driving, or with moving machinery—unless the epilepsy is completely under control. Regardless of control, if a person mentions that he has had epilepsy, he usually cannot find work and so becomes a charge either on society or on his family. With all the money spent (and it is certainly not enough) on rehabilitation of the handicapped, the epileptic who is a basically able person can find little help. He is so stigmatized that all that he might find is sympathy, despite the fact that there are innumerable desk jobs or jobs involving manual labor of the fine variety in which he can perform as well as anybody. A United States Department of Labor study of 11,000 impaired workers (all kinds of physical impairments) and 18,000 matched unimpaired workers, showed no significant difference between the two groups either as to performance or accident experience. In eight years (1945 to 1952), the average number of closed cases

<sup>34</sup> *Lucas v. City of Juneau and Sears, Roebuck & Co.*, 127 F. Supp. 730 (Alaska, 1955).

<sup>35</sup> *Wishone v. Yellow Cab Co.*, 97 S. W. 2d 452 (Tenn., 1936).

<sup>36</sup> *People v. Decina*, 138 N. E. 2d 799 (N. Y., 1956).

per year involving epileptics before the Workmen's Compensation Board of the State of New York was ten cases per year, while the total number of cases averaged 100,000 cases per year, so that epilepsy played an especially insignificant role in these claims. The safety director of the Ford Motor Company reported that "accidents are so low among epileptics that it would not convey any data worth looking at. Out of 165 epileptics, over a period of many years, we do not have one accident case worth mentioning." Seizures did occur on the job, but none resulted in accidents. Another study of factory workers showed a slightly higher incidence of accidents in epileptic employees, but of no statistical significance.

Aside from the stigma of epilepsy and the fact that epilepsy makes certain jobs impractical (driving trucks, sales work, etc.), one great factor in maintaining unemployment is the Workmen's Compensation law. Employers do not wish to risk increased costs, yet there have been various methods of countering this—waiver clauses, secondary injury funds, etc.<sup>37</sup>

One problem facing compensation boards has been to decide on the compensability of an injury due to an epileptic attack which occurs while the employee is at work. In *Rockford Hotel Company v. Industrial Commission*,<sup>38</sup> it was stated: "But a majority of courts, American and English, hold that, if the injury was due to the fall, the employer is liable, even though the fall was caused by a pre-existing condition." A minority view states that, to be compensable, the injuries must result from the employment and not be caused by the seizure.<sup>39</sup>

Another example of the majority view is the *Stasel* case,<sup>40</sup> where an employee, unaware that he had grand mal epilepsy, was injured in a seizure and the Compensation Board declared that the injury was compensable.

The problem of compensation for post-traumatic epilepsy will be considered under that topic.

A case where damages were denied because of failure of the injured party to submit to examination was that of *Cole v.*

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<sup>37</sup> This is too complicated a topic to discuss here, and for a brief discussion, the reader is referred to the book by Barrow and Fabing (n. 18, above).

<sup>38</sup> *Rockford Hotel Co. v. Industrial Commission*, 132 N. E. 759 (Ill., 1921).

<sup>39</sup> *Andrews v. L&S Amusement Corp.*, 170 N. E. 506 (N. Y., 1930).

<sup>40</sup> *Stasel v. American Radiator and Standard Sanitary Corporation*, 278 S. W. 2d 721 (Ky., 1955). Accord: *United States Casualty Co. v. Richardson*, 43 S. E. 2d 793 (Ga. App., 1947).

*Town of Miami*.<sup>41</sup> There an award of the Industrial Commission denying compensation, on the ground that the claimant had failed to show that his Jacksonian epilepsy was a result of his injury, was not arbitrary and unreasonable, where there was testimony that his condition might have also been the result of a brain tumor or neurosyphilis, and claimant had refused to submit to a medical examination to determine the cause of his condition. The commission did not unreasonably ask that the claimant submit to an encephalogram and a spinal Wassermann, to clarify the cause of his Jacksonian epilepsy (he had had three seizures).

As will be seen in a fuller discussion of traumatic epilepsy, the essential testimony is that of the physician. Oftentimes the physician cannot definitely say "yes" or "no," but must evaluate the case according to probability and experience. An example compensation case is *Kennedy v. Holmes Construction Company*.<sup>42</sup>

Other cases to illustrate the relation of epilepsy to accidents and insurance are given below.<sup>43</sup>

<sup>41</sup> *Cole v. Town of Miami*, 83 P. 2d 997 (Ariz., 1938).

<sup>42</sup> *Kennedy v. Holmes Const. Co.*, 147 Pa. Super. 148 (1942).

The neurosurgeon stated that the most likely cause of the convulsions was a blow on the head, while the plaintiff's personal physician definitely affirmed that such was the case. The court said that "medical testimony is essential here; a causal connection between the original injury and the claimant's present disability must be shown by positive expert opinion and evidence of such quality and quantity as to amount to more than a probability, conjecture, or guess . . . The medical expert must testify, in effect, that in his professional opinion, the result in question came from the cause alleged." The court held that while the opinion of the expert alone might not be sufficient to support an award, the opinion of both physicians was ample.

<sup>43</sup> (a) *Puszkarewicz v. Prudential Insurance Co.*, 55 A. 2d 431 (Penna. Super., 1947).

This was a case involving a "double indemnity for accident" clause in an insurance policy. The deceased had an epileptic seizure in the bathtub and was found dead. One medical witness felt that epilepsy had caused a lung hemorrhage which was responsible for the death, while the opposing medical witness felt that it was more likely that he had drowned. The policy stated that for double indemnity, the death must be solely through accidental means and "independently of all other causes." Here it was obvious that the insured's death would not have occurred except for the epileptic seizure, and the court held that there was insufficient testimony to indicate death by accidental means.

(b) *Hochberg v. Travelers Ins. Co.*, 60 N. Y. S. 2d 630 (N. Y., 1946).

Here it was up to the jury, under a disability policy, to decide whether frequent seizures result in total disability; and lay opinion of past behavior is relevant as well as medical opinion.

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### Epilepsy in Criminal and Civil Cases

Various aspects of the relation of epilepsy to legal problems have been touched upon in the two outstanding books on psychiatry and the law.<sup>44</sup> The most fascinating aspects, of course, deal with the mental responsibility of the epileptic.

Davidson<sup>45</sup> states: "In itself, epilepsy cannot exculpate an offender. If a crime is committed during a psychomotor equivalent period or during an epileptic fugue, the patient's accountability is measured by determining whether he acted as if he knew he had done something wrong . . . Crimes committed in a postconvulsive confusional state are evaluated in terms of the patient's ability to appraise the wrongfulness of the act. If the confusion is great, it will be obvious that the offender did not know what he was doing. Accidental injuries inflicted to property or to bystanders are not criminally charged to the epileptic if the injury occurred during the acute phase of a convulsion, since obviously there was no intent to do wrong." As far as competency is concerned, epilepsy usually does not affect one's mental capacity to carry on his affairs. Exceptions occur when one is, in addition, mentally deficient or insane, and also when the epileptic transacts business in the midst of a confusional or psychomotor episode. Such occasions are difficult to evaluate and would depend on a thorough study of the circumstances plus a history of how prolonged and frequent the episodes had been previously and his behavior characteristically during these.

In any case, the behavior during the crime, past history, and electroencephalographic records would be the subject of study. Friedman<sup>46</sup> states that, for the epileptic to be not mentally

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(c) *McPartland v. State*; 98 N. Y. S. 2d 665 (N. Y., 1950).

A hospitalized epileptic, in a seizure, fell into a shallow tub used for watering cattle, and drowned. At the time, the deceased had improved and was under consideration for discharge from the state hospital. No recovery was granted since this was not an event which would have reasonably been anticipated by prudent hospital management.

(d) *Lipps v. Milwaukee Electric Ry. & Light Co.*, 159 N. W. 916 (Wisc., 1916).

Damages were refused to a child whose epileptic seizures were alleged to have been the result of prenatal injuries before the foetus could have been born viable.

<sup>44</sup> (1) Davidson, H. A., *Forensic Psychiatry*. The Ronald Press Co., N. Y., 1952.

(2) Guttmacher, M. S. and Weihofen, H., *Psychiatry and the Law*, W. W. Norton & Co., Inc., N. Y., 1952.

<sup>45</sup> See n. 44 (1) above, p. 20.

<sup>46</sup> See n. 17 (b) above.

responsible, it must be shown that the person had epilepsy, that he was under the influence of the seizure during the act and that the act must be a result of the seizure.

Thus, "epilepsy may be considered, while it lasts, as a state of insanity during which the patient is deprived of reason and judgment, and at the same time of sense and consciousness, and is wholly incapable of doing anything."<sup>47</sup> An epileptic is excused from criminal responsibility for an act done in violation of the law only when he is unconscious of the act which is committed.<sup>48</sup>

It must be kept in mind the epilepsy per se is not insanity.<sup>49</sup>

An extremely interesting case, discussed in full detail,<sup>50</sup> was that of infanticide related to psychomotor autism. Here the woman involved refused to plead "not guilty by reason of insanity," pleaded guilty and was given five years' probation.

An interesting case<sup>51</sup> was one where a defendant during a murder trial had repeated seizures during the trial, with recesses held after the attacks so that he might recover. On appeal for conviction for first degree murder, the court said that the evidence was not sufficient to support the contention that the defendant epileptic was not mentally competent at all times during the trial.

The question of civil responsibility for acts performed during seizures is answered by contrasting opinions. In *Sauers v. Sack*,<sup>52</sup> the defendant, in coming to from a seizure, committed an

<sup>47</sup> *Lawton v. Sun Mut. Ins. Co.*, 56 Mass. 517 (1, 2 Cushing) (1848) (epileptic whaling ship captain in the south seas—wonderful material for a play or novel).

<sup>48</sup> *People v. Magnus*, 155 N. Y. S. 1013 (N. Y., 1915).

Disorderly conduct conviction, when it is undisputed that the individual had an attack of epilepsy and does not remember committing the act charged against him, is unauthorized (with reversal of conviction).

<sup>49</sup> (a) *People v. Syjut*, 17 N. W. 2d 232 (Mich., 1945).

Evidence did not establish that a defendant who was subject to epileptic seizure was insane or feeble-minded so as to warrant an adjudication of insanity and that the defendant was unable to stand trial for murder.

(b) *Beattie v. Bower*, 287 N. W. 900 (Mich., 1939).

The difference between epilepsy and insanity is discussed.

(c) *Oborn v. State*, 126 N. W. 738 (Wisc., 1910).

Proof of epilepsy does not necessarily, directly establish insanity; as epilepsy is not, as a matter of fact or law, insanity, though evidence of an epileptic condition may bear, circumstantially, on the mental condition of the afflicted person to the extent of establishing insanity.

<sup>50</sup> In an article by Victoroff, V. M., *A Case of Infanticide Related to Psychomotor Automatism*, 16 J. Clin. Exp. Psychopath (3) 191 (July-Sep., 1955).

<sup>51</sup> *State v. Clark*, 286 P. 69 (Washington, 1930).

<sup>52</sup> *Sauers v. Sack*, 131 S. E. 98 (Georgia, 1925).

assault and battery for which the plaintiff sought damages. The court stated, "In a suit for damages occasioned by an assault, the fact that the defendant was in the throes of an epileptic fit and did not have intent is no defense to the action . . . In a tort by an incompetent upon a non-consenting plaintiff, intent is no ingredient of the tort; insanity or incompetency is no defense to a civil action for mere compensatory damages." This seems to be a minority view. Several American decisions *contra* have been reported,<sup>53</sup> and in a note discussing the above case,<sup>54</sup> it was stated: "no action in tort has been successfully maintained against a child or insane person, incapable alike of negligence and culpable intent, in England since 1456."

### Summary

This paper has presented some of the medical background of epilepsy, and an attempt has been made to correlate present medical knowledge with statutes and common law relating to epilepsy. Illustrative cases have been presented, where possible. The subject of post-traumatic epilepsy is such a large one, and the literature on the subject is so great, that it will be discussed in a separate article, to be published at a later date.

One principle becomes apparent in the investigation of epilepsy and the law, and that is, that neither law nor medicine is static. Medical knowledge concerning the etiology of epilepsy has multiplied, with resultant advances in detection and treatment. Correspondingly, these advances are slowly reflected in law, as restrictive statutes, like old soldiers, slowly fade away. And even that great inert mass called society, reflects this change, as is shown by the fact that doctors, lawyers, and citizens of all walks of life have joined forces to help the unfortunate and the handicapped.

<sup>53</sup> See, Note, 23 Mich. L. R. 9 (1924-5).

<sup>54</sup> 24 Mich. L. R. 866 (1925-6).