Alcohol and Epilepsy: their Interaction, and Share in the Production of Dyspepsia and Mania (Causatoria).

by James Matthew Law

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Although very similar effects are produced by the use of alcohol, in the majority of individuals, there is yet a class of persons who are morbidly susceptible to its influence, and in whom alcoholic indulgence produces a more marked and pronounced derangement, such as is (more particularly, in their cases, fraught with danger), not only to themselves, but also sometimes to others.

This morbid susceptibility is not infrequently due to acquired causes: it may be, the mind of the person has become somewhat "shaken" by a reverse or shock, such as loss of fortune, bereavement or other mental trouble.

In other cases, the mental instability which is the cause of the susceptibility, has been occasioned by traumatic causes, such as, concussion, fall, or blows upon the head, etc.

Sometimes, however, this mental defect or idiosyncrasy, is inherent in the individual, a defect in his physical or nervous organization, which may be inherent or inherited. In such cases, as I will have afterwards to show, the mental instability is often associated with epilepsy, or with a family history of epilepsy.

In such cases, when the individual becomes under the influence of alcohol, the peculiar instability of mental or nervous temperament, is liable to be manifested as a sudden or gradual
more or less Complete loss of Self Control, rendering to a much greater extent, the subject of passion or inclination than his Calmness and more "long-headed" companions, and frequently giving rise to some mortified craving or propensity.

That is to say, that, given, such a case of mental instability as I have mentioned, and alcoholic indulgence acting upon it, the resulting loss of Self Control, or loss of inhibitions over thoughts and actions, will frequently be found to be manifested in one of the two following directions:

1st. The effect produced may be a more or less sudden temporary mental aberration, during which the individual may perpetrate acts of which he is afterwards completely unconscious, and during which he may be described as being in a state of Alcoholic Irritatory Mania.

or, 2nd, there may be manifested more gradually after one, or it may be, repeated libations, a marked proneness for him to become the slave of the habit of alcoholic indulgence, and the willing or unwilling victims of an insatiable craving for this special form of intoxicative stimulation, which in some cases of mental instability more particularly of an epileptic nature or associated with epilepsy, not unfrequently assumes the periodic form, known as Hypsomania.
It is impossible to define this Class, consisting as it does of individuals who differ widely in their physical, nervous, and physical constitutions, with any degree of precision much less to make it recognisable.

The most that can be observed in individuals of such mental instability, is a want of solidity, a frivolity of temper, or, a morbid volatility, which renders them prone to occasional extremes of conduct.

As I have afterwards to mention, also, proofs are not wanting of nervous disorder in the parent, especially epilepsy, being reproduced in the offspring, as a craving for ardent spirits, and vice versa, a fact which would lead us to suspect the children of epileptic parents liable to dysmancipal manifestation.

But, as a general rule, we can only conclude that an individual belongs to this special class, after we know, and have judged of the effects which is produced on him by alcohol: and indeed, it may be said, that were it not for the test, which is furnished to us by the use or abuse of alcohol, the existence of such a class would probably remain unnoticed.

In this paper, it is my object to trace as far as possible the relation and bearing, which the indulgence in alcohol, has to and upon persons of this unstable (mental or nervous) organisation.
more especially, those whose personal or family history gives evidence of an epileptic tendency. The question was first brought more particularly under my notice, when acting as secretary to a London Society, framed for studying such questions, and, since then as Assistant Medical Officer in a Metropolitan Luninary, I have had numerous opportunities of observing the correlation of these Conditions, and their mutual interaction, more especially among the working and poorer classes of the metropolis. Cases illustrative of my meaning will be given as I proceed with the subject, which will be treated as follows:

I. The effect of alcohol upon persons of unstable mental organisation, who are not personally subject to epilepsy.

II. The correlation of some Dementiacal and Epileptic manifestations.

III. The effect of alcohol upon persons who are subject to epilepsy.

IV. The influence of alcohol in the primary production of epileptic Seizures.

The Effect of Alcohol upon Persons of Unstable Mental Organisation, who are not Personally Subject to Epilepsy.

It is here desirable that a brief view be formulated concerning the effect which alcohol has upon ordinary nerve function and processes, as it is more particularly with the primary stages with which we have to deal.

† The Society for the Study and Care of Insanity
After a fairly large dose of alcohol, the quantity varying much in different individuals, according as they are weak or robust physically & mentally, or as they are habituated or not to the action of the drug, the following stages, which merge, however indefinitely into each other, may be recognised:

(A) Mental excitement and exaltation, with accompanying vivacity of thought and expression, due to three causes:—

1. The stimulus reflected from the stomach to the cerebral centre.
2. The increased rate and force of the heart's action, dilatation of the cerebral arterioles, and the consequent increased supply of oxygen etc. by the blood to the nerve cells.
3. The special action of the drug upon the cells of the central areas concerned in intellectual processes, alcohol having like morphia, chloroform and some other narcotics, a primary stimulant effect upon nerve function.

(B) Aberration of judgment with more or less loss of mental restraint over thoughts and actions, the individual becoming more subject to his lower natural impulses, such as passion and perversity. This is most probably due to the narcotic influence of the alcohol having affected the cells of those cerebral areas, which are concerned in the...
evolution of the higher and more subtle psychical moral processes, alcohol having a tendency to involve the cerebral functions in the order of their intellectual importance.

(C). If the dose be large or often repeated, inco-ordination of Motor Centres, followed by inco-ordination of Cerebellar Centres, and accompanied by a marked diminution of Sensations, giving rise to double vision, stammering Speech, fluttering gait etc. become manifested: a Comatose condition then ensues, with Stertorous breathing, and a tendency to paralysis of the Respiratory Centres. Should the dose be toxic, and death from the latter cause be prevented by means of artificial respiration, it may still follow from failure of the heart, incident on paralysis of the Cardio Centres in the Medulla.

It will be thus seen, that alcohol affects, with its narcotic paralyzing influence, the Nervous Centres in the following order:—1st The Centre Concerned in psychical processes, i.e. the frontal and more anterior lobes and Convolutions, 2nd The motor and Sensory Centres, i.e. the lateral Cerebral Convolutions and Basal Ganglia, 3rd The Co-ordinating Centres of the Corpora Quadrigenina and Cerebellum, 4th The Vital Automatic Centres in the Medulla. The first two stages, namely the stages of mental excitement and coincident with the alcoholic hallucination influence affecting the psychical Centres, are those
with which we have to deal with, more particularly, in this paper.

In all cases of drunkennes, to a greater or less extent, the witty Neapolitan proverb, is fairly characteristic of the effects of alcohol, "The first glass, that you drink are lamb's blood, they gently soothe; the next are tiger's blood, they drive to fury; the last are swine's blood, after them, man rolls in the dirt." More especially does this refer to the warm, excitable temperaments of the inhabitants of Southern Europe.

It is at the same time equally true, that the nervous and psychical manifestations, which persons under the influence of alcohol present, differ considerably in degree and kind. Some becoming furious, others melancholy, others affectionate and so on, so much being dependent on their physical and psychical temperaments, and so much upon the masting or prevailing ideas which may be present in their minds at the time.

In such cases, however, as I venture to place in the category of unstable mental organization, the tendency is not only to lose the mental inhibition over thoughts and actions, or, in other words, the power of self-control, more completely, but there is manifested, in addition, a morbid mental impulse or aberration: in one case, the individual may become suddenly oblivious to sense and reason, and the prey to some delusion, or manifesting  

"fixed" idea, or, in another case, the unbridled propensity is more gradual, and after one or several abstinence, he lapses helplessly (in these cases) into a state of chronic intemperance, often characterized in cases where the instability is more or less associated with epilepsy (Graves, motor, or Cerebral) by a tendency to dycromaniacal or periodic exaggeration, and constituting a distinct disease or departure from mental health. In both instances, the chief feature is the loss of self-control or mental inhibition, which in ordinary individuals is still maintained to a greater or less extent.

In the former case, where a temporary maniacal condition is established, the result is to a great degree, independent of the amount of alcohol consumed, a small and seemingly disproportionate quantity producing the same condition, which also occurs before any disturbance of the motor or cerebellar functions, that is to say, during either of the two first stages I have mentioned, which ended in such cases are combined and usually greatly exaggerated, viz: the stage of mental excitement plus exaltation.

The following case is illustrative of the effect of alcohol upon an individual, in whom the mental instability was due to a traumatic cause, namely, the kick from a horse upon the head, but in whom no epileptie symptoms were ever observable. When four from alcoholic indulgence he was pane though he could not quite
be called a man of good business habits.

Case 1. David B., aged 31, an industrious young farmer. Two years ago he sustained a trick from a horse upon the head, which has left a perceptible depression upon the right parietal bone. Since that time he has not been the "same man" not as intelligent, though his general health is excellent. Since then, also, he cannot indulge in any spirits, without becoming very excitable, and liable to the hallucinations that he has done some evil deed, for which detectives are on his tracks; on occasions when he has indulged in alcohol, he has fortuitously become suspicious of those around him, friends or acquaintance as the case may be, thinking them inclined to inform upon him. On this particular occasion he had requested to observe his sexual abstinence, and none of his companions having by some hasty words, helped to substantiate this morbid suspicious, he had drawn a large clasp knife which he had about him, and stabbed the man in the chest; the wound however not proving very serious. When I saw him the hallucination and fit of fury had passed off, and though still considerably excited, he was deeply repentant of his action, only pleading in extenuations that he had taken some drink and not being his own master was unconscious of what he had done.
In the next instance which follows, the mental instability is of a different kind, being inherent in the individual, one of whose sisters was found to be subject to occasional attacks of epilepsy (curent mal).

Case 2. Alfred M — aged 17. Barber's assistant, an intelligent looking youth, and the son of respectable parents, was admitted to the Woodwich Infirmary, suffering from a gunshot wound of the palate. He was not in the habit of indulging in alcohol, but had been drinking with some others on a Saturday evening. Somewhat freely and with unusual vivacity, but not showing to any extent signs of being much affected by the drink, when he had become more silent and morose and had risen up and left the house: he had thereafter purchased a small revolver, walked to his sweetheart's house, fired two shots at her, and finally shot himself in the mouth. He had parted with the girl two days before in a friendly manner, but it appears she had been inclined to be quit of him. She had not, apparently, thought much of it, nor laid it at all to heart. As far as was judged from his manner, when admitted, although he paid no attention to such stimuli, as pricking various parts with a pin, or scratching the soles of his feet, he was probably to some extent conscious of what was taking
place around him, for, when questions were
coldly spoken in his ear, and in an author-
itative tone of voice, an oscillation in the eyes
and a slight quivering of the eyelids could
occasionally be noticed, giving the idea that
he was in a more or less hysterical condition.
This state was not due to the effects of the
injury, for with the exception of a wound in
the soft palate he had no symptoms. And
soon recovered, the bullet, which was of
small size, having most likely become embed-
ded in one of the vertebral bodies, or after
having perforated the palate, dropped into
the pharynx and been swallowed. After remain-
ing about four hours in this above condition
on recovering, he showed great surprise on learn-
ing when he was and what had happened,
learning remembered nothing since before he
had risen up and left his companions. Though
he himself was never known to have had any
attack of an epileptic nature, the fact that
a sister was liable to such, indicated a family
tendency to that form of nervous instability. In
this instance the serious mental aberration could
only be due to the exciting influence of the
alcohol upon a mind, whose balance was unstable
and capable of being readily subverted by al-
coholic indulgence.
In other cases, as I have said, the effect produced
by alcohol upon minds of this unstable nature is a more gradual loss of control on the part of the individual, in the direction of inability to resist the craving for alcoholic stimulation. Not that such a craving is not very frequently engendered by the special habit of over-stimulation, and the subsequent desire for a renewal of the stimulus during the period of reaction and depression which follows; or, in other cases, induced by pain, bereavement or mental worry, bereavement, and such-like incidents; but there are also cases, where no such cause can be paid to explicit, and in which an inherent mental instability renders the person an easy prey to the vice of intemperance, though he may struggle against the destructive progress.

Habitual intemperance has three forms, which it is necessary to distinguish:—(a) Where the person drinks daily without being actually drunk and sooner or later falls a victim to chronic alcoholic poisoning and its train of maladies; (b) Where, for the same reasons, he becomes, in addition, subject to periodic attacks of delirium tremens; and (c) Where he becomes, or is, liable to periodic fits of hypomania, being sober and rational during the intervals between the attacks. The first (a) may be said to affect persons of the more stable type of mental organization; the second (b) individuals who are
less as: while the third (C) namely, the dyspeptics are truly referable to the class of unstable mental or nervous organisation, with which this paper is more particularly concerned. In relation to this last class more especially, it has yet to be proved, that a voluntary cure has been effected, and, indeed, months or even years of forced exclusion in a retreat such as are licensed under the Habitual Drunkards' Act, have sometimes no effect on the after conduct of such individuals, a fact which came particularly under my notice when associated with the Society I have mentioned. That such cases are sometimes in close relation to epileptic manifestations will afterwards be considered.

The following Case quoted by Casper as occurring in his own experience, shows forcibly the penitentiary effect for intoxication:

Case 3. A young and well-educated man enjoyed the perfect confidence of a grand-ducal house, amongst other departments was entrusted with the key of the wine-cellar. In this position he became accustomed to the use of wines, and as usual had gradually become addicted to the use of stronger spirits, and had at last fallen into dyspepsia. About every three months, this large, stout, and uncommonly powerful man of thirty, was seized with a frightful desire for drink. Thenceforth into his rooms, only his maid-servant and I, Casper, first entered.
His physicians, were allowed to enter, and he
then drank day and night continuously, without
ever coming out of his state of deep intoxica-
tion, till sickness and vomiting came on, and
then he drank not one glass of all the drink
which stood around him. Then, as if returned
from a short business journey, or as if Conv-
alescent from an attack of illness, he again
appeared in the house of the Prince, in which,
for years, his drunkenness remained a secret,
for, in the intervening periods, he never drank
more than a few glasses of wine at his master's
table. He died young, but I (Casper) shall
never forget the supplicating entreaties and tears
with which he brought me to free him from
his misery, and I can testify that he was
written devoid of the most earnest desire to reform
nor of disgust at himself.
Such cases as these are by no means rare, and
can be Culled from the experience of most
physicians. In the case of a Church officer whom
I had under treatment for a similar condition,
when the "drinking fit" came on, he would tear
his clothes, or beat his wife till she gave him money,
and, in fact, sacrifice all decency, and do anything,
whereby he might be able to satisfy his craving,
which happened at intervals of three or four months.
In the intervening periods, though of a sullen, obdurate,
"low" disposition, he was a quiet and sober man.
and respectfully filled the duties of parish head. In this case, also, the dyspeptic or alcoholic attacks terminated in a severe attack of sickness and vomiting. There is another form of Alcoholic Mania which is apt to be mistaken for Delirium Tremens, and which is simply a severe and protracted form of intoxication. It originates from a single fit of intoxication, or, at least, from a short course of intemperance, engaged in by persons of a peculiar mental constitution and temperament, commonly induced by some depressing emotion and which differs from Dyspepsia in not occurring periodically, and indeed may happen but once in a lifetime. The individual having the sense and retaining the power to refrain from alcoholic indulgence. It is marked by an uncontrollable desire for more drink, which, when gratified excites to further sanguinary demands, begetting insolent conduct, and engendering passions so wild and vicious, that when the previous moral habits have been loose and depraved, not infrequently lead to the perpetration of violent and criminal acts. Such cases occupy a position intermediate in character, between the former instance of Alcoholic Mania, which I have mentioned, and Dyspepsia, differing from the former in the morbid aberration assuming the mad dyspepticetical desire for more drink, and, from Dyspepsia, by the absence of recur-
The Co-relation of Some Hypomaniacal and Epileptic Manifestations.

In considering this part of the subject a distinction should be drawn, between Idiospathic and what may be termed Irritative Epilepsy. In the former case the disease is almost always, if not always, due to an inherited weakness, the result of the transmission of some nervous defect from the parents and frequently unassociated with a recognisable Cause or lesion: while the latter is due to some organic or Traumatic Cause, which produces the Seizure directly or reflexly, and is often associated with a discoverable Cause or lesion, which, however, may be situated in almost any part of the body and induce the Convulsion by primarily affecting some part of the peripheral, Spinal, or Central Nervous System.

Epilepsy further includes the forms known as the Grand or Hunt Mal, the Petit Mal, and the forms variously termed Cerebral, Psychical, Intellectual, Epilepsy, or Epileptic Insanity (Permanency).

The Hunt Mal has the following stages, which I give with the most probable explanations, as largely entertained by Hughlings Jackson, Brown-Segovia, and other Authorities.

1. Premonitory Stage or Aura. This, when present, usually takes the form of a transient abnormality of sensation, movement, or perception. A Common
premonitory symptoms is increased irritability of temper, which may be manifested for some time before the occurrence of the fit.

2. The face becomes blanched, the individual may give a loud cry, and become completely unconscious. This effect is probably produced by a sudden contraction of the cerebral arteries and their branches, and the consequent anaemia of the brain.

3. Vomiting, contractions of the voluntary muscles, due probably to the combined effect of the anaemia and the irritative stimulus upon the excitatory centres, the cells of which, from repeated attacks, or other causes, are in a morbidly susceptible condition, and more liable to give forth motor nerve discharge.

4. Clonic convulsions resulting most probably from a venous congestion of the brain, more especially the basal ganglia, which has been occasioned by the tonic spasm of the muscles concerned in respiration.

5. A subsequent period of quiescence, often bordering upon coma, and lasting a variable time during which the individual recovers consciousness, and from which he awakes usually feeling stupid and fatigued.

In the petit mal any spasmodic contractions which occur, are usually confined to the muscles of the face and neck, and those in connection with the
tongue, throat and eyes: the effect on the mind of the individual may be considered as ranging in severity from a slight interruption to the current of his thoughts, during which he may still continue at any mechanical work in which he may happen to be engaged, to a more or less profound perversion of perception, thought or action, or in other words, to well-nigh an eruption of transient Epileptic Insanity, or as it is more properly called Cerebral Epilepsy. The Petit, differs from the Haut Mal in the degree of involvement of the cerebral centres by the nervous excitement and discharge: that is to say, that while in the Petit Mal attack, the motor centres involved are few and less severely implicated, in the Grand Mal they give rise to General tonic Convolusions: and that while in the latter, complete unconsciousness is produced, in the former, if present it is very transient, or the intellectual centres may be so implicated in the discharge as to result in a profound modification and perversion of the individual's thoughts and consequently his actions, so much so that the attack sometimes tends to assume the character of a Transient Epileptic Insanity.

Epileptic Insanity and the question of the number and degree of involvement of the different areas of the brain by their discharging lesion opens up a wide and disputed field. It is sufficient for
my purpose, merely to quote the words of Chevallier: "Instead of attempting to establish an immediate relation between physical and psychical paroxysms; it is safer to regard epileptic insanity, or to use a more adequate term, Cerebral Epilepsy as a manifestation of the Spasmodie Neurally, recognizing its essential source in the patrognomic elements of the disease. Unconsciousness with an excessive reflex susceptibility, displays itself as the chief characteristic of Cerebral Epilepsy, capable of occurring either alone or coupled with any other form of the epileptic malady, preceded sometimes by an aura identical to that which may for some other attack." 

"Intermittent Cerebral Epilepsy occurring in no proximate relation to any fit of Grand or Petit Mal, corresponds to the "Larvated Epilepsy" of Morel, "Intellectual Epilepsy" of Maudsley, "Psychical Epilepsy" of Krafft-Ebing, and most cases of "Inceptive Mania" and "Manie Transitoria" belong to this category."

Having thus, to a certain extent, pointed out, what may with truth be included under the terms 'Epilepsy', we are in a position to consider the relation between it and some forms of Hypomania and alcoholism.

Dr. Lander in his writing on the Causes of Chronic Alcoholism stated that in some cases the tendency to drink appears to be epileptic in character. He

† Linniz's Guide to Insanity. † Pharmacology & Therapeutics p. 698.
makes mention of a case in which intermittent drunkenness was brought about by a fall from a horse which was associated with hallucinal attacks of epilepsy. The fit began with an intense craving for drink, and after one or two days drunkenness the convulsive seizure took place. On observation it was found that when the desire for drink was not gratified, the fit came on sooner after the commencement of the craving than it would otherwise have done; but that the seizure was in that case not so violent as it would have been had the desire for alcohol been gratified.

The following is a striking example of a similar association of epilepsy and dyspepsia.

Case 14. Arthur B. — Aged 39. Strong and robust man, engaged as foreman in Royal Arsenal, was admitted to Woodville Infirmary in a state of violent intoxication, and Cloudy Vordering on Acute Mania.

On three previous occasions he had been under treatment for a similar condition, all of which, as in this case also, the furious attacks had been followed by epileptic convulsions. On this occasion after two days' hard drinking and mad desire for intoxication, during which his wife had fled from his house with her children, in terror of his life, he had been arrested by the police, while he was tearing madly through the streets followed by an excited crowd, and apparently totally irresponsible for his actions. When admitted, he would writhe
allow any of the attendants to touch him, nor cease shouting, nor take medicine, and it being found impossible to do anything with him in the Ward, he was removed to a "padded room" and locked up for the night. Next morning being in a quieter condition, he was taken back to the "Lunatic Ward" and put to bed, where soon afterwards he had a severe epileptic fit, which was succeeded by two others at intervals of half an hour, after which he fell into a deep, almost Comatose Sleep, which lasted several hours. When he awoke he felt comparatively well and was quite sensible, feeling, to use Casper's words, "as if Convalescent from an illness". The fits did not recur, and he was discharged in possession of his senses, to whom he was much attached. For a great many years, this man had been an abstainer, but had lately broken through the Custom, after which the Dysomania and Epilepsy had become manifested Simultaneously.

It is well to note that in this and the case mentioned by Dr. Brunton, the Epileptic Convulsion succeeded the Dysomaniacal Condition, the latter appearing to take a place similar to an aura, or premonitory psychical Stage of Nerve Storm, ushering in the approaching Convulsion. Note also that on recovering from the effects of the latter, all desire for intoxication had ceased, and the man was restored to his usual Plain Sense and reason, and ashamed of his Conduct.
In most cases of dyspnoea, we fail to trace any sign of epilepsy or even convulsion, in the ordinary sense of the term, such as was present in these instances: it is a fact, however, which may be of great significance, that dyspnoeic attacks usually terminate in severe attacks of sickness and vomiting: after the occurrence of these also, as after the convulsions in the case mentioned, there is subsequent quick relief from the semi-manical excitement and desire, and the individual is restored to common sense, and generally experiences a feeling of moral disgust at his recent depraved condition.

Even if the convulsive seizures, in the case quoted, had been absent, however, all the symptoms would be accounted for by placing the case in the category of those styled "intermittent attacks of cerebral epilepsy." Indeed, it seems to me, very probable, that in all cases of severe dyspnoea, where the individual is periodically affected by the irresistible desire for alcoholic intoxication, there is a condition of mental instability closely analogous to cerebral epilepsy, or as Krafft-Ebing calls it, "Psychical Epilepsy," the morbid modification of intelligence in these cases being manifested as a mad desire for alcoholic intoxication.

This being so, the treatment of dyspnoea can only be based on absolute abstinence from all alcohol, if we are to attempt a cure, or prevent the disease from gaining a further hold of the individual. Absolute
abstention also, in cases which can be diagnosed, before alcohol has to any extent been indulged in, must be the only rule of treatment, and when the period of excitement and craving for intoxication, or some other forms of stimulation, occur, the most rational course to pursue, seems to be, to reduce the nervous excitement as much as possible by such comparatively innocuous remedies as the bromides of potash, soda, or ammonia, and if these be insufficient to have recourse to mechanical restraint. Opium, chloral, and other powerful narcotics should not be used in dyspnomania, since by doing so, we would only most probably succeed in substituting another form of narcotism in its stead, as harmful to the individual, if not more so, than dyspnomania.

Case 5. Mrs. C. — aged 42. Housekeeper. Was admitted to Woolwich Infirmary, in order that a report be made concerning her mental condition. On the previous evening she had been intoxicated, and had become greatly excited and apparently oblivious to her "environment." She kept on singing and laughing, making lewd remarks and gestures, did not recognize any of her friends and relatives, and seemed to be suffering from acute mania. For three days, she remained in this state, refusing all food, sleeping not at all, and requiring to be strapped in bed. Toward the morning of the day which had been fixed for her removal to an Asylum (Barming Heath) she had a
slight epileptic Convulsions. On awaking from her unconscious Condition, she was quite sensible, wondering where she was, and amazed at her surroundings. She had never had any attack of the kind before and was not known to have any dyspeptic maniacal tendency, and the alcoholic indulgence seems to have been to a great extent the cause of the epileptic and maniacal Conditions. The factor in the Case, viz., the Menopause must also be considered, as she afterwards stated she had been very irregular for some time past and had suffered considerable pains.

This may have tended to produce an epileptic mental instability, from the irritation reflected from the reproductive organs, which may also have borne some relation to the Macedon of her thoughts and gestures during the maniacal Conditions.

III. The effect of Alcohol upon Persons who are Subject to Epilepsy.

A priori, from what has been stated in regard to the effect produced by alcohol even upon the mind of ordinary individuals, it would follow, that in those Cases where there was a mental instability, or a tendency to morbid fits of insanity and aberrations, occurring either as a form of petit mal, or the premonitory stage of a grand mal attack, or as a mild form of Central Epilepsy, these mental symptoms would be much aggravated during the primary stage of alcoholic excitement and epilations, and this is undoubtedly what does occur. Not only is such a premonitory stage or attack, greatly prolonged and
aggravated by alcoholic indulgence, but in the case of the Habitual Seizure, the ensuing Convulsion is rendered much more severe.

This effect I found to follow in the case of a young girl who had suffered from epileptic fits from childhood, and in whom premonitory irascibility was a marked feature. In this case, the approach of a seizure was always preceded, for a considerable time beforehand, by the onset of angry excitement, during which she would jump out of bed and commence tearing things to pieces. On one occasion, while in this premonitory condition, a dose of brandy (about half an ounce) was administered for another purpose. Under its influence the excitement became semi-maniacal and it was necessary to retain her forcibly in bed. This condition lasted nearly two hours and was followed by a much more severe attack of Convulsion, than that which was, in this case, usual.

Closely analogous to such premonitory states are certain petit mal and mild cerebral epileptic seizures, and it is only reasonable to conclude that in such instances a similar exasperation of the condition would result.

I had under treatment a gentleman who had suffered from "Spinal Epilepsy" for well nigh twenty years ever since his boyhood. His general health is good and he is married with three of a family. The reflexes are normal, there is no ankle clonus, and the ophtalmoscope reveals no adequate sign of cerebral
tumour. On an average, about once a week, no matter on what he may be engaged, and sometimes during sleep (on which occasions he immediately awakens) he is seized with a sudden shock, which he describes as being like that of an electric battery, which affects the lower limbs and is sometimes induced while he is walking by the weight thrown on the ball of the left foot. He immediately and completely loses all power over the lower limbs which give two or three sudden and convulsive jerks, and if he is standing at the time of the attack he falls or is thrown to the ground. The whole duration of the fit is not more than twenty or thirty seconds and he is then, again in his usual condition. Consciousness remains entirely unaffected throughout the seizure. Being afraid of inducing attacks by throwing the weight of the body on the ball of the left foot, he walks, lamely on the latter. On the occasion when he has indulged in alcohol, he describes the effect to have been such as to give him the impression "that his legs are running away without him", and strength, under these circumstances, he has still the power of progression in walk develops into a run and he clutches at any support which is offered, being "afraid to trust himself to his legs". He finds, also, after having partaken of alcohol, that he is then, much more liable to the seizures, and that, should they then occur, they are of much greater severity.

The following instance, showing the fatal effect of a
heavy drinking bout, on a man who was subject to frequent haemorrhagic attacks, admirably demonstrates this part of my subject.

Case 6. William D — , Cartmawr, aged 38, was admitted to the Wootonch Infirmerry in an unconscious condition, having been found by the police in the early morning, lying outside a public house drinkable. He was known to be subject to epileptic fits and had been drinking very heavily. Shortly after having been put to bed he had a severe convulsion, with the body at first rigid in extreme opisthotonus, great protrusion of the eyeballs and lividity and congestion of the face, and he appeared about to succumb from apoplexy. This fit was succeeded by several others at short intervals, and he never completely regained consciousness. Once, however, in reply to a loudly asked question he was understood to mumble "who the h — are you!", but there seemed to be considerable aphasia, accumulation of saliva in the mouth giving rise to a spitting motion, and probably some paralysis of the tongue or buccinator.

There was no paralysis of the lower limbs. On post-mortem examination, the membranes were found to be adherent to the brain at the anterior surface of the right frontal lobe; there was a small recent haemorrhage in the right upper temporal sphenoidal convolution; the heart was healthy, but the other viscera showed the usual signs of chronic alcoholism. Thus the intensity of the tonic convolution, occasioned by the af-
The influence of alcohol on the primary production of Epileptic Seizures.

Though the foregoing cases are mainly illustrative of the action of alcohol upon Epileptic and allied conditions, and vice versa, one or two of them have a bearing upon this part of my subject, and tend to show that alcohol has a direct share in the production and is a primary cause of Epileptic Seizures.

For instance, in the case of the woman Marian C — it was pointed out how alcohol was the exciting factor in producing the maniacal condition and the subsequent convulsion, her mind, at the same time probably being in a more or less unstable condition from vitiation proceeding from the reproductive organs, thus probably also tending to render her more liable to epileptic manifestation.

In the case of J.B., the Aneural Foreman, also, drinks, if not the direct cause, was in close relation to the maniacal outburst and the fits which succeeded it. Since the epilepsy, in this case, only appeared after he had ceased being an abstainer, and had become addicted to the use of alcohol.

It is, however, chiefly in the result of chronic alcoholism that we see alcohol as the cause of epilepsy.

When the glands and viscera, have become fatty...
and Cirrhotic, by the constant circulation through their tissues, of the alcoholic poisons, waste products, and morbid tumours, from mal-assimilation and mal-elimination, become pent up in the blood, and thus as it circulates through the brain gives rise to, and is a common source of, epileptiform attacks.

The brain itself frequently becomes the seat of softening from atrophies and thrombosis of its arteries and arterioles; and a common pathological condition observed after death viz. adhesion of the meninges to the surface of the cerebral convolutions is, most probably, alone sufficient to produce convulsions from irritation.

The convulsions which arise from chronic alcoholism however, are better to be styled epileptiform, than epileptic, produced, as the majority of them are by the effect of the vitiated state of the blood upon the central centres involved.

True epilepsy, in such cases, is comparatively rare, and, when present, is, most probably the result of reflex irritation from visceral change, such as Cirrhotic or granular kidney, or, as I have stated, from adhesion of the meninges to the brain.

As a general rule, the epileptiform convulsions of chronic alcoholism are analogous to, and partake mainly of the character, of those which occur during the chronic stage of heart mal attacks, which, in all likelihood are due to
the venous congestion of the basal cerebral ganglia consequent on the tonic spasm of the muscles concerned in respiration.

The convulsions which sometimes take place after a single large dose of alcohol, such as is now and then taken for a wafer by drunken persons, are also observed during the stage of extenuation, when paralysis of the respiratory centre begins to be manifested, and are also most likely due to the venous congestion of the brain.

Such cases do not require illustration.

In connection with this division of the subject, the question of how far idiocy in the parents is the cause of its manifestation in their immediate descendants, may be considered.

It has already been shown that dyspepsia is, at all events, often, of an epileptic character, and that many forms of habitual idiocy are closely dependent on some mental instableness, acquired, inherent, or inherited. Knowing, how frequently epilepsy and mental peculiarities are transmitted from parent to offspring, we can readily conceive how in cases of dyspepsia and idiocy due to some nervous fault, may a similar disposition to the habit or maniacal desire may similarly be transmitted from parent to child.

There is little doubt, also, that the children of epileptics or rather dyspeptic-maniacal parents, frequently
are possessed of an epileptic tendency, a fact which is readily explained by the co-relationship of Dystonia and Epilepsy: and, vice versa it is as reasonable to believe that the children of epileptic parents, may show the tendency which they have inherited as a periodical morbid desire for intoxications.

That a simple habit of intemperance in the parents, however, apart from some inherited mental instability, and leaving external circumstances, such as the force of example, out of consideration, even where such a habit on the part of the parents has engendered chronic alcoholic poisoning and its train of maladies, should produce in their descendant a similar depraved habit, as appears to me as unlikely as, that a man, who had acquired Antinomia, or Silicon from the nature of his vocation, should transmit the same to his descendant.

The following conclusions may be drawn from what has been stated in this paper:

1. That there are individuals who are possessed of a certain mental or nervous instability, which may be inherent, inherited, or acquired, which renders them peculiarly susceptible to alcoholic intoxication.

2. That this mental instability, and susceptibility to alcohol, is sometimes due to an epileptic tendency in the individual, either expressed or latent.
3. That in such susceptible individuals, when under the influence of alcohol, the mental instability may be manifested, (a) suddenly as a sullen attack of morbid mental excitement and aberration, assuming in some cases, the form of an Alcoholic Transitory Mania; or (b) gradually, as a special liability for the individual to become the victim of habitual insecurity or dyssomania.

4. That dyssomania is sometimes closely related to short mal attacks of epilepsy, the mad desire for alcoholic intoxication, occupying the position of the preconvulsive or presymmetric stage of the short mal convulsions.

5. That in some cases of severe dyssomania, the fits terminate in sickness and vomiting, which may be analogous to the convulsion in the above mentioned cases; and that the symptoms manifested by dyssomanias are capable of easy explanation by referring dyssomania to the category of "mild attacks of cerebral or psychical epilepsy," in which the morbid aberration takes the form of a mad and insatiable desire for alcoholic intoxication.

6. That alcohol greatly aggravates epileptic attacks by producing, in the case of a short mal seizure, a greater duration of, and greater excitement in, the presymmetric stage, and also a Convulsion of greater Severity, while in
the case of some forms of petit mal, and Cerebral epilepsy, the interruption or modification of intelligence may be exaggerated into Transitory Manic by its influence.

7. That alcohol tends to produce epileptic seizures especially where there is a pronounced latent or expressed, to such manifestation: and that Chronic alcoholism is a frequent source of epileptic attacks.

8. That dyspepsia and neurasthenia, inasmuch as they are often due to a mental or nervous fault capable of being hereditarily transmitted, may be transmitted from parent to offspring: and that for similar reasons, epilepsy in the parents may give rise to dyspepsia in their immediate descendants; or, vice versa, that dyspepsia in the parents may appear in their children as a tendency to epilepsy or some such mental or nervous instability.