

**Alcoholic drinks as diet, as medicines, and as poisons : the oration delivered to the Medical Society of London for the year 1878 / by Alfred Carpenter.**

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**Publication/Creation**

Croydon : Jesse W. Ward, "Advertiser" Offices, 1878.

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February 3



# ALCOHOLIC DRINKS:

AS DIET, AS MEDICINES, AND AS POISONS.

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## THE ORATION

DELIVERED TO THE

MEDICAL SOCIETY OF LONDON

FOR THE YEAR 1878,

BY

ALFRED CARPENTER, M.D.

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PRICE ONE SHILLING.

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CROYDON:

JESSE W. WARD, "ADVERTISER" OFFICES, KATHARINE STREET.

1878.



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## ALCOHOLIC DRINKS.

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I HAVE assumed that the establishment of an annual oration is not for the purpose of proclaiming some new discovery, or propounding some new theory, but rather for reviewing the evidence which has been obtained upon some given subject, and which has been more or less already submitted to the notice of the assembly to whom the oration is delivered.

From such a standpoint I propose to deal with "Alcoholic Drinks." The subject is one of vast importance to the medical world, whether it be considered from a therapeutic or from a sanitary point of view, and on that account no excuse is needed for taking it as the theme of this year's oration.

A review of the effects of Alcohol upon a healthy man, as well as of its therapeutic use, may be taken under different aspects, viz., as a diet, or as a medicine, or as a poison. They are intimately associated, and the reasoning which will apply to the consideration under the one head will, more or less, apply to the others.

The use of Alcohol as a diet has been strongly condemned, and indeed prohibited by influential leaders among us. Its usefulness as a medicine has been distinctly challenged, and it has been stigmatised as a poison under all circumstances by some whose professional opinion upon most matters usually commands respect. Others, again, of equal talent and experience, affirm that it is a food of great use, that disease cannot be so successfully treated without it as by its aid, and



both sides assert that the chemist and physiologist are able to show us how it acts, and how it is removed from the body.

I propose to review, in an unbiassed manner, some of the evidence which has been produced by these different schools of thought, and for this purpose to consider the action of Alcohol from a chemical and physical as well as therapeutical standpoint.

To do this with effect, we must clear away some of the difficulties which naturally arise from personal experiences and individual observations. It is not of much service in a scientific point of view for a man to determine that Alcohol is or is not of value from its effects upon himself. Such observations are useless for scientific purposes, because the instrument he is using is naturally disturbed by the re-agent he employs; it dims the object-glass through which the observer is looking, and for that reason his perceptions are necessarily inaccurate. If a man studies a given object through a microscope, the lenses of which are dimmed by an impurity in the atmosphere of the draw-tube, and which interferes with the rays of light between the object and the eye of the observer, the observation cannot be a good one. I take it, therefore, that personal experience of benefit or injury is not sufficient to enable us to draw a safe deduction. The instrument acted upon has to be a judge of the agent which is used, and it is more often upon the perceptive faculties than upon any other part of the machine that the agent immediately acts. Thus a serious error is possible to arise in all investigations in which personal experience is used.



There is another source of error which I will now refer to, although it is of a different character. It arises from the difficulty we have to contend with in obtaining correct information as to the quantity of Alcohol consumed in any single case. It is extremely difficult to get at a true version of the quantity really taken in daily life. Then, again, patients as well as their attendant nurses are eager to follow the directions of their medical adviser, and to exceed their instructions, so that unless the agent has been personally administered by the physician, he is not likely to know in a large moiety of instances how little or how much has been really taken, a glass more or less being considered of little account, whilst, as far as the general public are concerned, there is a hazy idea upon the subject. Many men assert that they are taking stimulants under the instructions of their family medical adviser. He has the credit of having persuaded his patient that it is a necessary of life, and that he cannot and ought not to do without it, when no such advice has been given. Much mental pain has been caused to most if not all of us by the unhesitating way in which the whole profession has been denounced by thoughtless and ill-natured people as having been mainly instrumental in causing the mischief which so arises from the abuse of intoxicating liquors. The accusation, unfortunately, has a slight modicum of foundation in consequence of the injudicious recommendations of routine practitioners. The easy-going general public, ever ready to follow the lead of enthusiasts when it costs them nothing to do so, throw the blame of any given mischief from



themselves as a whole to a defined class, because a few among that class have preferred their self-interest to their duty, and have kept silence when speech would have been golden. The charge is firmly believed by a large portion of the total abstainers as well as by the drunken classes of the community, who, glad of any kind of excuse, delude themselves into a belief that the condition into which they have fallen has been caused by circumstances over which they have had no control.

Fashion has done much more than the medical profession in promoting the extension of the evil. The public are too often the masters of the medical men, and have compelled the routine practitioner or the partially-educated medical man to do their bidding and to follow their lead. I do not ask you to plead guilty to the charge which is so often made against us by even notable men, but I conclude that we are no more responsible for the tide of drunkenness and consequent disease which now invades us, than we are for the absurdities of fashion in dress, or those follies of architectural design which daily give rise to serious evils, by means of which the promoters openly disregard common sense, and studiously ignore the laws of health. I ask you to rebut the evidence which is given against us, and openly and unreservedly to use all your personal influence to stem the torrent of evil which does result from the abuse of Alcohol.

I apply the term "Alcoholic Drinks" to all those liquors in common use as articles of diet in the composition of which Alcohol finds a place. The universal employment of this particular class of liquids indicates



a natural requirement of some kind. Their use may be condemned as unnecessary or even hurtful by sensible men as well as by enthusiasts, just as chimney-pot hats or stays may be condemned ; but the condemnation does not prevent their use by the public at large, because the general opinion is that they are necessities of life ; and this opinion is fostered among some of us because it entails no trouble to accept it as true. But that Alcoholic Drinks are not necessities of life is proved by the fact that millions of people do not use them, and as far as practical observation goes, those people do not suffer from their non-use. If a number of people are deprived of sugar, of fat, salt, vegetables, or water, the effect is soon manifest ; they are necessities of life, and if they are absent from the diet table, those omitting to use them as articles of food suffer sooner or later in their health from the exclusion ; but those who never touch Alcohol in any form never show any distinct signs of evil from its non-use. It is not, therefore, a necessary of life for ordinary people and for common purposes, and if used as an article of diet, it must be considered as a luxury and not as a necessity. It is possible that fluids containing Alcohol may be useful in the same manner as turtle soup or Stilton cheese are useful to those who like them ; it will be an advantage to the art and science of medicine if its professors always view them in that light rather than as things that are absolutely required for the ordinary production of chyle.

Some materials which were formerly thought to be luxuries are now considered to be necessities, such as tea and coffee ; it may be argued that Alcohol is one



of this class ; we can do without them, but they are very useful as articles of diet, and, unless it can be shewn that they are more injurious than useful, the argument is a good one. I have, therefore, to enquire in what way Alcohol may be beneficial when used as a luxury.

I will first dispose of some arguments which are employed both for and against its common use. It is sometimes said that it is an evil thing which should be put aside altogether, the advice being founded on the fact that animals will not touch it, and it is said that their example should guide us to reject its use. But are we prepared to be guided by animals in other matters? They never cook their food or make exchanges among themselves of one kind of food for another, or use artificial coverings. It would be quite as reasonable, on such foundations, to argue against cookery and barter, and to assert that milliners and tailors are unnecessary traders because animals never cook their food or put on other than their natural coverings. We must look deeper into the case, and get more certain proof against the use of Alcohol than this before we can justly decide that it is hurtful under all circumstances and ought to be dismissed from common use.

The evidence derived from its rejection by animals not helping us, we may look to its effect upon the human economy. There has been a conflict in all ages of the world as to the good or evil effects of wine and strong drink. It has been styled God's gift which cheers the heart of man, as well as the "Devil's draught" which steals away his intellect ; but so of sleep, "tired nature's sweet restorer," the author of



Proverbs says, "Go to the ant, thou sluggard, consider her ways, and be wise." Sloth is the result of excessive sleep, but we must not banish sleep because "some sleep their fill and take their soft repose." A late writer and noted chemist, wrote (in his Lectures on Food) that "the universal use of fermented liquors was the indication of their serving a profound physiological purpose, and supplying a common want. The fact," he says, "of their use from time immemorial, and that no fluid containing sugar, whether the juice of vegetable matter or the juice of fruit, can be exposed to the air without spontaneous or immediate fermentation, are evidences of useful purpose." This argument is as unsound as that which objects to stimulants because animals do not drink them. We might just as well assume that, as milk cannot be kept exposed to the air without rapidly changing, therefore the changed milk is "evidence of useful purpose," and that articles of diet, which, sooner or later, have become tainted, become so that they may "supply some common want."

The first question which we have to solve is, whether any force can be produced out of Alcohol *quâ* Alcohol, either as animal heat, muscular power, or nervous energy. Is it capable of being at all utilised in the animal economy? Dr. Henry Bennett says (Nutrition in Health and Disease, p. 64) that Alcohol feeds organic combustion, and creates heat, and even Dr. Richardson (Temperance Lesson Book, p. 182) says that "in its first action, it causes the warmth of the body to rise." But there is then a divergence of opinion: on the one hand, eminent men agree



with Dr. Bennett, and assert that Alcohol is rapidly decomposed, and heat disengaged. Dr. Parkes, from his practical observations, was satisfied that it did evolve heat, though it lowered the temperature for a short time after being taken ; whilst others, equally eminent, affirm that there is no utilisation in the ordinary sense, and some say that the whole of the Alcohol is passed through the body and is expelled without any of it being changed into force-producing matter. I cannot endorse this opinion, because it is contrary to almost universal therapeutical experience. Every medical man in extensive practice must have seen cases which, now and then, have fallen to my lot to witness, in which life has been prolonged for many months without any other nourishment than that which was contained in the spirituous liquors or wines which the patient would alone consume ; cases in which it was impossible for life to have been sustained upon the few grains of organic substances which were contained in the colouring matter or extractive of the liquor, or in the sugar which is sometimes given with the stimulant. It has been shewn that dilute solutions containing Alcohol of about the strength in which it is likely to be found in the body, viz., 1 in 1,000, if passed several times through six inches of a silicated carbon filter, metamorphosed the Alcohol into complex products non-volatile at the boiling point of water—the Alcohol being changed by this plan of proceeding into Glycol, which is considered one of the saccharine group. If this be a possible contingency, it may be transformed into force in the human



economy under certain unknown circumstances, and as such it may be useful without danger as a luxury. It may be argued by the austere ascetic that all luxuries are evil, and that they should not be used at all. I need not stay to consider this line of argument. To abolish all luxuries would be to bring enormous misfortunes upon the whole race of mankind for which there could be no excuse ; and I must assume that a luxury which is not immediately injurious may be fairly used by all who can afford it.

It is forcibly argued by some whose opinion is worthy of deep attention, that Alcohol is hurtful under all circumstances. They state that it is immediately injurious to those in health, and that there are other stimulants equally if not more useful which could be employed in disease. They contend that its ordinary sale should be prohibited on that account, in the same way that arsenic or strychnine is prevented from being a common article of merchandise. Let us now look into this view of the question, premising again that the individual experiences of those who have been accustomed to the use of stimulants are not in any way to be depended upon for an accurate estimate of their effects, and that their evidence is worthless for scientific purposes.

If Alcohol is exhibited in potent doses to one unaccustomed to its use, there is no doubt of its injurious and even fatal results ; but such would also be the effect of the exhibition of phosphorus, sodium, or potassium, and yet they exist as necessary elements in many foods, and are absolutely required to enable the body to be built up properly. Because, therefore,



a large dose of Alcohol, phosphorus, or calcium, is injurious, it does not follow necessarily that a small one is mischievous likewise. Indeed, if lime and common salt are withheld, the constitution is sure to suffer; we have rickets established in the one case, and in the other the body is tormented by parasitic life. We must not assume that because a large dose is injurious a small one is so also. Lime and salt are necessities of life, yet they are injurious in large doses, and it is not an argument against their use in small ones. Alcohol, like lime and salt, may be beneficial if used at the proper time, and it ought not, therefore, to be absolutely prohibited as a common article of commerce unless it can be shown that some injurious sequence is sure to follow sooner or later upon its use in small doses.

We must look a little closer into its action upon animal life before we can solve this point. The first deduction to be made from its continued use is, that the body after a short interval becomes very tolerant of its effects; and apparently, the more in moderation a man takes into his system, the more he can carry without apparent injury. Those accustomed to the daily use of Alcohol can take a much larger quantity with impunity than a teetotaller could. One man may take a bottle of wine and half a pint of brandy every day of his life, making 365 bottles of wine and nearly 100 bottles of brandy every year, whilst another man only takes a bottle on a given day once a week, or three or four glasses of brandy and water on Saturday night. The one may be of the race of "fine old English gentlemen," who never transgresses the rules of



propriety, and goes honoured sooner or later—generally sooner—to his grave with blessings on his head, whilst the other becomes an habitual drunkard, a transgressor of the law, and an outcast of society, although he does not consume one sixth part of the liquor which is taken apparently with impunity by the other. This result shews that conditions vary very much in different constitutions, according to the regularity with which the dose is taken, for Alcohol, or some of its constituent elements, collects much more rapidly in some habits of body than in others. It differs, within certain limits, from most re-agents, and helps to protect those using it regularly from its own evil effects. In this it appears to be allied with tobacco, and also with certain miasmatic influences which require some constitutions to be acclimatised before they can bear that which is manifestly injurious in its first effect, however they may be able to stand against its bad influence after a time.

It is stated by microscopical observers that Alcohol acts immediately upon the blood corpuscles as well as on the fibrine which is contained in the liquor sanguinis. It is said that one part of Alcohol, mixed with 500 of blood, interferes with the power of the corpuscle to absorb oxygen; it abstracts water from the blood discs and makes them adhere together in masses in the blood vessels; it also causes the plastic or fibrinous part of the blood to coagulate, which then collects in the capillaries, and the current may be thereby stopped.

From frequent observations I incline to believe that this is true, and that this result explains some of



those unfortunate cases which now and then occur to the obstetric practitioner. The free exhibition of Alcoholic stimulants to the weak and debilitated, especially when there has been hæmorrhage or long continued suffering, and perhaps too great dependence on stimulants, has led to the sudden development of embolism. A clot of fibrine has been deposited rapidly in the heart or large blood vessels, and the patient is dead in a very short time. I have also seen many cases of paralysis and epileptiform convulsion which had been caused by embolism, and which, in my opinion, had been promoted by Alcoholic saturation. Such cases have done well, and have ultimately recovered, if Alcohol has been superseded; but if it has been persevered in, in most instances which I recollect, there was a continuation of the disease. An excessive quantity of Alcohol does impede the purification of the blood and the elimination of carbonic acid, by obstructing endosmose and exosmose in the lung capillaries. The purple tint which pervades the skin of the regular toper is sufficient proof that this is true. Observation shows that the exhalation of carbonic acid is decreased in quantity after the imbibition of Alcohol.

Whilst these are undisputed facts as regards large doses of Alcohol, it has not been shown that a similar result follows from the smaller quantities which are found in the weaker drinks, such as natural wines, and weak beers.

Alcohol is not cumulative under ordinary circumstances, or the man who takes his bottle of wine daily, would suffer more and sooner than he who only takes



a bottle one day in the week; but it is cumulative under some conditions, at present unknown. It may be suggested as probable that the elimination or oxidation is interfered with, so that the toper, who could formerly take his bottle with ease, gets quite drunk by taking three glasses of his favourite liquor. One very eloquent writer and former orator of this Society says, that "we may trust a great deal to instinct," and that "tastes are, generally speaking, expressions of the wants of the system." I consider this a most dangerous argument to use, for no man, taking stimulants, can be himself aware of all the harm that they may be doing to his constitution, or know the time when they may become cumulative. All those who indulge in any kind of vicious practices would be glad to be able to rest upon such a dictum, and to affirm and excuse themselves by affirming, that their vicious tastes "were but the expression of the wants of the system."

It appears to be supported by a sufficient weight of evidence that, when once the system has been exposed to the full influence of Alcohol in such a way that a portion of the blood has been so acted upon that its discs have become corrugated and some of the fibrine coagulated by its action, a cumulative effect may begin; and, with that cumulative effect, there will be developed a taste for more which prevents the instinctive desires of the individual being any guide as to the real wants of the system so long as any altered material exists in the blood. The lightest kind of wines generally contain ten per cent. of Alcohol, so that they must be diluted with five times



their amount of water to reduce them to a harmless condition. The reduction is seldom effected in this country, although the general consumption at the dinner table of saline waters, which has lately come into fashion, is tending greatly in the direction indicated. Porter, stout, and ales, all contain at least double the amount of Alcohol beyond that which would make them safe for absorption at all times, unless freely mixed with other things. To take them, therefore, on an empty stomach, tends more rapidly to bring about the point of saturation than when food is taken with the drink.

Alcohol transudes most rapidly through membrane, the rapidity of transudation varying very much according to the stage of dilution, and in its transudation it acts upon the membrane, or is itself acted upon. It is quickly conveyed to all parts of the body, and we have no means of judging where it is likely to manifest its first effects, neither have we any means of knowing when the limit is reached beyond which it will not be safe to allow blood disturbance to proceed. The alteration in the shape of a few blood corpuscles, and interference with their diffusive power, the interference with the transudation power of membrane, or the coagulation of a few grains of fibrine, may be of comparatively little consequence, especially if the place is one of secondary importance; but when the number of altered corpuscles passes beyond a certain percentage of the whole volume of blood, evil must result. This percentage is much more rapidly reached in some habits of body than in others; it will depend very much upon the power of those



organs to do their duty, whose function it is to remove the altered fibrine and imperfect oxygen carriers from the circuit. If they are defective deterioration will be much more rapid. Thus, of two men, each taking the same quantity of liquor in the course of a month, one taking it only with food and the other on an empty stomach, the latter becomes rapidly saturated, the former escapes without serious damage.

If coagulated fibrine is not removed as soon as coagulation takes place, and it gravitates to some one organ and impedes circulation there, we have the commencement of those organic changes which are constantly found in the bodies of the intemperate classes, by means of which their habits are unerringly revealed to the pathologist. The fibrine may be removed at first without setting up mischief, but the altered blood corpuscles and interference with physical power of membrane increase the evils which arise from want of oxidising power, and fatty degeneration sooner or later follows.

Here is the great difficulty which meets the view of all those who have considered the action of Alcohol in an unbiassed manner, and which has led so many among us to become total abstainers. They refuse to take Alcohol as a luxury, and they determine that they will not in any way encourage its habitual use among the people. The evil is so great and the resulting good so small, that they prefer to do without the good and so avoid the evil; and as society is at present constituted they are probably right. Still, the lighter wines, if entirely unfortified, and the weaker



beers may be taken with impunity ; they may even assist digestion and be of advantage with, or immediately after, food. If taken with other food, when great exertions are being made, and when there is a call upon the stomach for fuel to supply waste of tissues, there is sufficient evidence to show that they enable the machine to obey that call with better effect than would be the case if stimulants were altogether withheld ; but if the effort is continued from day to day, beyond the ordinary capacity of the machine, and that effort is sustained by more fuel in the shape of stimulant, the human machine, like all others, must wear out sooner than it would otherwise do.

It follows, therefore, that the habitual use of strong drink even in a diluted form, for the purpose of enabling the receiver to do more work, is necessarily hurtful, unless that dilution is much less than it usually is ; whilst, if the exertion is not called for, the effect must still be hurtful by setting up organic changes in the tissues of the body itself, and laying the first foundations of disease.

Whenever, therefore, the consumption of Alcoholic drinks exceeds the quantity which gives rise to the probability that more than one part of Alcohol to 500 of water may exist in any part of the circulation, harm, in some form or other, must result. That harm need not necessarily be permanent, and its cause may be removed altogether from the system, or it may be partially removed, a particle of matter being left in situ, which will act as a foreign body when Alcohol is again taken, aggregating to itself fresh coagulated matter or freshly agglutinated corpuscles, by which



the symptoms of Alcoholic excess are rapidly induced, when those particles are situated in any of the primary nerve centres.

We may fairly assume that there are occasions in which stimulants may be useful, and even necessary ; but as habitual drinks they must be hurtful unless more diluted than we are accustomed to take them, and it appears to be our duty as physicians to forcibly state this fact to those consulting us, and to advise their non-use in daily life.

Having come to this conclusion as regards their use as common articles of food, we may now enquire when they are likely to be beneficial as medicines. To enable us to answer this question satisfactorily, we must study their effects a little more closely than we have yet done.

A stimulant in a moderate dose promotes the secretion of gastric juice ; it brings a flush of blood to the capillaries which surround the gastric follicles producing congestion. This is relieved by a free flow of gastric fluid, and the rapidity of digestion is promoted. But the action is followed by a re-action, and the next day there is a deficiency of gastric juice, and as a consequence a want of appetite. The deficiency may be remedied by another dose of the irritant. The dyspeptic symptoms are relieved, for the time being, by a "pick-me-up," and so each daily exhibition leads to increased dyspeptic disturbance, until the follicles are so altered that the whip no longer acts, and the general health fails. If an excess of stimulant is taken at any one time, it acts immediately on the pepsin in



the gastric juice, as well as on the lining membrane on the vessels, and destroys the power of digesting and re-arranging the materials which are contained in the food.

There is no difficulty in accounting for the anorexia of the drunkard, or for the temporary flash and power which another dose of his liquor provides for him.

The rapidity of the current of blood being delayed in the capillaries of the stomach, their tension is interfered with, they dilate, and a larger quantity of blood is present than is right; as a sequence, local warmth is promoted, and, in vulgar parlance, "coppers are hot." But it has been fully proved by accurate observers, that the quantity of heat in the body is not materially added to by Alcohol, but that, on the contrary, there is a reduction from the general amount in consequence of the loss which arises out of increased radiation from the surface of the body. The temperature of the "dead drunk" man is lower than that which usually marks the natural heat of the body. This rule does not obtain at all times, as there are exceptional conditions] which occasionally modify it. A dead drunk man often has some disease going on in his body which raises the temperature to above 98.5; but if there be no active disease, and if the temperature of the body of an insensible person is found below the natural standard without any evidence of collapse from any other cause, it may be safely assumed that he is drunk rather than that he is suffering from active cerebral lesion.

The peculiar way in which Alcohol transudes through membrane, its diffusive power as it is called,



enables it to reach all parts of the body in an extremely short space of time ; the result of which is that the picture which I have drawn of the gastric vessels, may be found in any other organ of the body. There is dilatation with reduced power of contraction. This vaso-motor paralysis, so to speak, is more continuous as well as more complete in some organs than in others, and some forms of Alcoholic drinks produce it much more certainly than others. This is the case if the Alcohol be impregnated with some of its allies, especially amylic Alcohol and fusel oil ; these latter are always more or less present in potato spirit, with which wines are commonly fortified. The influence of these Alcohols is very decided upon the nervous centres ; they immediately produce some of those exaggerated forms of drunkenness in which violent excitement and maniacal delirium are manifest. They make the fluid pleasanter to the taste ; and some of their forms are frequently added for the purpose of producing a so-called "bouquet." Their effects are far more serious and immediate than those which follow from the simple use of ethylic Alcohol. Time fails me to do more than allude to this important point. It may be that some conditions of the body, which arise from a continuous soakage with Alcohol, may enable it to change ethylic Alcohol into some of the heavier forms ; fusel oil may be manufactured, so to speak, in the human economy itself. The odour of the breath of a dead drunk man is often more than the odour of Alcohol, but upon this point chemists have not yet afforded any safe information.

It is uncertain whether the congestion arises from



an immediate action upon the tissue of the capillary, or whether the first effect of the Alcohol may not be on the nerve, or whether an effect upon the nerve centre may not also accrue, as well as a local effect be produced, before vaso-motor paralysis can arise. It may, like the blush of shame or the pallor of fear, arise from direct nerve influence, or it is possible that the blood, altered by the Alcohol, may be unable to affect the nerve centre so as to exert its controlling influence upon the particular set of capillaries more immediately concerned, or it may act in different ways according as the membrane is or is not altered by the Alcohol. Be it as it may, in its first origin the effect is to interfere with the proper renovation and nutrition of the part, and to commence a disease of the particular organ affected. Dyspepsia is the first outcome of the use of stimulants, and as a sequence to a common result, viz., inflammation of Glissons capsule, we may have so-called cirrhosis or fatty degeneration of the liver, and similar changes may take place in the kidney; the heart and large blood vessels may suffer directly or indirectly; the muscles may be destroyed; or the nerve tissue of the brain or spinal chord may be the parts which show the effect of the re-agent first. Our periodicals teem with cases of disease which are clearly traced to Alcohol as the exciting cause.

The fluids of the body may be very near to that point at which the specific action of Alcohol may be made immediately manifest by setting up some symptom of nerve irritation as soon as the vaso-motor paralysis subsides; just as in the case of water,



the rise or fall of one degree in temperature is physically of no moment unless it be at 32 degrees Fahrenheit, so a glass or two of Alcoholic drink is not immediately of serious import unless the stage of saturation has been reached. Then an action analogous to crystallisation commences; there is an aggregation of altered blood discs or of coagulated fibrine either in the nerve centres or glandular excretory organs, or the muscular tissue, or, indeed, in any part of the body towards which it may gravitate. The deposit sooner or later gives rise to a train of symptoms, some of which are always associated with the idea of over stimulation.

There is another class of disease not always so clearly identified with the exhibition of Alcohol. I seldom meet with acute neuralgia in the total abstainer, whilst hysteria is in a great measure absent in those families whose ancestors have been perfectly temperate people. I have traced back several cases of strongly marked hysteria, and in all I have found a certain dependence upon Alcohol, not only in the patient, but also in the patient's immediate ancestors. I have met with numerous cases of acute neuralgia in highly sensitive females; it is generally styled agony in those who are hysterically inclined; some declare that it is only relieved by Alcohol, or chloral hydrate, or some other narcotic. The medicine allays the pain if given in sufficient doses; but, as the effect of the dose goes off, the disease returns with still greater intensity, until, at length, the stomach rejects the remedy, or some other circumstance comes into play which causes it to be laid aside. The pain



has then to be borne with for a time, but after two or three days of comparative abstinence the pain subsides and the patient is in comfort. There is then, from some accidental cause a transient return of pain; the stimulant or the narcotic is again resorted to; it relieves for a short time, but that relief is purchased by a return of acute pain; there is soon afterwards another paroxysm, and the whole course is gone over again.

A close attention to numerous cases of this kind, both in high life and low life, has satisfied me that, so long as the Alcohol is given, sufficiently in excess to induce moderate vaso-motor paralysis, there is relief from the pain; but, as soon as that influence lessens, there is an aggregation of altered fibrine, microscopic in quantity, either in the capillaries which supply the sentient nerves, or in the nerve cell itself, which sets up an irritation, and is felt at the periphery of that particular nerve, neuralgia resulting as a sequence to that irritation.

Many kinds of so-called rheumatism have a similar origin. The imbibed Alcohol affects different parts of the cerebro-spinal nervous system, according as the result attaches itself, as altered matter, to one or other class of nerve-cell, and neuralgia or rheumatism, or rheumatic gout, as they are often called, or even gout itself, is the outcome of the action.

The cases of neuralgic disease, to which I more especially refer, occur in highly hysterical constitutions, and are not generally accompanied by any cutaneous capillary congestion, except when neuralgic pain is absent. There is sometimes great mental power in



this class of cases, a brilliant intellect or great genius, which only shews itself when the cerebral capillaries are congested, and the cutaneous system gorged with blood. These cases generally go from bad to worse, and end in suicide, or as general paralysis, or dementia, the tissue of the brain and spinal chord being subject to changes which correspond, in a great measure, with those diseases of liver and kidney which are induced by Alcohol, a low form of inflammation is set up first, and after that atrophy from impaired nutrition or fatty degeneration, ending in so-called white softening.

There is also a class of cases, not so generally attributed to Alcohol as a cause, that I believe to have their origin in its habitual use, which are due to spinal irritation, and are sometimes called spinal neuralgia.

If time would allow, I could detail to the Society numerous cases in which so-called rheumatic pains have continued month after month and year after year, apparently relieved for a time by the use of stimulants—the use being always followed a day or two afterwards by renewed pain and general distress; and yet the amount of stimulant taken has been in no way excessive. In such cases I have omitted the use of stimulants altogether, and, after a few weeks of further suffering, the pains have subsided, and there has been a fair recovery. Once or twice I have suspected locomotor ataxy, which developed when the patient has persisted in the use of stimulants, but it has not done so when they have been given up. Such cases are generally associated with a lithic acid diathesis. However much we may try to cure them,



we cannot succeed effectually unless we enforce total abstinence, even putting aside pharmaceutical tinctures. The plan is often given up by the patient too soon ; he finds that the pains are at first even more severe ; he becomes disappointed and low spirited ; then some acquaintance advises him that abstinence is doing him harm. He takes a stimulant unknown to his doctor, he feels renovated by it, his pains are eased, and he falls back into his old habits before there is time to effect the removal from his body of the remains of former doses of his favourite drink. He is then quite convinced that the treatment is wrong and he will not continue it, whilst, if he had persevered a few days or weeks longer, he would have found relief and been on the high road to obtain a perfect cure.

These cases are allied to those of the habitual drunkards and so-called dipsomaniacs — persons who have produced so much mischief in their nerve centres that they are unable to take even a moderate amount of stimulant without a catarrhal state of the stomach supervening, which at once gives rise to an irresistible drink craving from which they have no escape if they can obtain Alcohol. In such cases there is always an altered state of blood vessel or some interference with the nutrition of the cerebral organs, such as a varicose condition of the arterioles or small veins in the nerve structure, the result of Alcoholic excess, which is at once renewed by each application to the wine or spirit bottle. There may be a cirrlosed condition of some of the glands, or else a fatty degeneration which is incompatible with



healthy vigour. These conditions may be removed in their early stages, as well as all other morbid results which are not self productive, if proper measures are taken to promote their removal. The first and most important step is the immediate and total abstinence from all kinds of Alcoholic drink.

The principle upon which we propose to cure the habitual drunkard is to restrain him from the use of his liquor, so that he may entirely recover his health and his power of self-control. There are several stages in this process. First, his digestive power has to be restored, a very difficult and a very slow process. Then the deposits which have already taken place in his glandular system, his blood vessels and nerve centres, have to be removed, and altered membrane has to be restored. Simple food with healthy habits of body reduce the Alcoholic saturation to a minimum, and enable the patient to get healthy digestive power.

The dyspeptic state must be cured before the alterations in glandular organs can be removed ; the latter must do their duty properly before the nerve tissue can be renovated, and until the whole are restored, any return to Alcoholic diet is followed by relapse. It is only by long-continued self-denial that cure can be effected. That I have not overdrawn the picture as to the condition of the nervous system and the seat of disease in such cases, is shown very fully by Dr. Magnan in his work on Alcoholism, which has been translated by Dr. Greenfield. It abounds with instances which prove most clearly that the immediate action of Alcohol is to dilate the capillaries of the nerve centres, increasing them to three or four times



their ordinary dimensions, and thus paving the way for that atrophic degeneration which is frequently associated with other changes in advanced states of Alcoholism. The cases detailed by Dr. Magnan are very instructive, and if taken in conjunction with others, in which, with similar symptoms, the microscope reveals changes which were formerly unsuspected, we cannot doubt at all as to cause and effect.

The hallucinations and delusions which accompany excess of Alcohol even in young beginners, are associated with capillary dilatation, and, as a sequence, there is a pressure on nerve substance which cannot be repeatedly renewed without the risk of subsequent atrophy or degeneration of one part or another of the tissue immediately affected.

Is it to be wondered at that cure in such cases is only to be obtained by long-continued treatment? Is it a fair objection to take to long-continued treatment that relapses are common? Can relapse be considered a reason for not attempting cure, and is it to be endured that, with a knowledge of the capability of cure, we should not have power given to us to attempt it, because the disease is said to be the result of a vicious habit?

What would be thought of our profession if we declined to cure syphilis when our help was sought by those infected? We ought to have the power given to us to cure the habitual drunkard, especially in those cases in which the victim himself, conscious of his own weakness, implores us to take charge of him, and keep him from that which is certain to lead him on to hopeless ruin.



An opinion was expressed to the Lords' Committee on Intemperance that dipsomania is a kind of epilepsy, and that its attacks correspond with the latter disease. I cannot think that there is any foundation for this idea any more than that attacks of asthma or any other recurring disease may be epileptic. That dipsomaniacs often become epileptic is undoubtedly true ; but many diseases tend to set up epileptiform attacks before a fatal termination arises. Epilepsy will arise in any kind of constitution, but drink craving will only be induced in those who court its advent by taking excess of Alcohol.

Another eminent physician, who agreed in the main with Dr. Brunton, expressed an opinion that habitual drunkenness may be cured by punishment, and that if its victims were brought under the influence of good education, and some reasonable punishment inflicted, they might be trained to good habits. I do not think so unless Alcohol is rigorously withheld. Some of the worst cases of dipsomania that I have met with have occurred in highly educated individuals, and it is found, by overwhelming experience in the magistrates' court, that punishment has no deterring effect in preventing drunkenness in those who have been two or three times convicted, and who have lost their self-respect and power of self-control. The inconsistency of such an argument is seen at once, for such cases may be epileptic, and yet they are to be dealt with as criminals, and punished accordingly.

It is true that if the Alcohol be withheld, the so-called "epileptoid attack" will not come on, for,



like the so-called "sunstroke," it is in a great measure caused by the imbibition of the drink, but it is not consistent with our ideas of justice to punish a man because he has had either of the conditions mentioned, which are undoubtedly diseases. The frequency with which sunstroke is urged as a reason or plea for mitigation of punishment by the drunkard in the dock of a police-court is not a little remarkable, and although I have never myself allowed that plea to be used in arrest of punishment in those cases in which the free will of the individual was manifest beforehand, yet it did sometimes avail when the individual was not a free agent. The plea set up has satisfied me that there is an intimate connection between the embolism which causes the so-called sunstroke, and the Alcoholic soaking in which the victims indulged.

Like to outbursts of passion and to other vicious practices, there is an ability to exercise free will at first, but

*"Facilis descensus Averni,*  
*"Sed revocare gradum, superasque evadere ad auras,*  
*"Hoc opus, hic labor est."*

The work and labour required to return to the right path is greater than most men, unaided by restraint, are able to use. The battery of nerve force, in which free will and the higher orders of mental powers are produced, is damaged by the re-agent and is unable to set up those actions which are required for the production of self-control and self-respect. Thus that which was a vice in its early stages becomes a disease later on in life.

The man who refuses to exercise his own self



control when he has the power, after a time becomes a nuisance and a scandal to society at large. He is slowly committing suicide and is ruining the happiness and probably the worldly prosperity of his immediate relations. He ought to be deprived of his liberty to do wrong to himself and others, until such time as his tissues are restored to that state in which his power of self-control may be regained.

So far the effect of Alcoholic drinks seems to be for evil and not for good, and some persons ask very pertinently why they should be retained at all in the pharmacopeia as therapeutic agents, when other stimulants might be used with as much advantage in those cases in which they appear to be required. But so powerful a means for evil may be used beneficially if used aright. There are conditions of the body in which it performs a duty more satisfactorily than any other stimulant. It seems to preserve the body from decay, performing a vicarial duty, being sacrificed itself, and so saving the patient's life. It interferes with the normal changes which are required for the continuance of health, and retains the products of tissue change in the blood; but in certain forms of disease, when the blood is rendered impure by the retention of those matters which should be excreted, if the retention has not been caused by Alcohol, and if great heat is developed in consequence of the combustion or oxidation of such matters, Alcohol seems to take the place of those of the tissues which are oxidising; it lessens temperature and saves the fabric from death. This effect is seen most frequently in some zymotic forms of disease; there is



a great tendency to sloughs and bedsores, which tendency is materially diminished in those who have had Alcohol administered, as compared with those who have not.

The therapeutic effects of Alcohol, when exhibited in certain typical forms of fever, are most marked. The cases which require it are those in which there is a dry tongue and skin, no sickness and no indication of cerebro-spinal lesion. If there is any indication of the latter with a moist tongue, stimulants universally do more harm than good, because the tendency is then to increase the congestion upon which the lesion depends. When a case is benefitted by Alcohol, there is soon produced a lessened temperature, a slower pulse, a moister tongue, and a quieter condition of system generally.

The beneficent effect of Alcohol in such cases supports the theory which I hold that such fevers are the manifestation of an action which is taking place in the blood of a person who is not in a proper state of health. Some foreign material is retained, or some matter, which ought to have been excreted, exists there in excess of its proper quantity, a specific zymotic germ or some molecular matter, in a state of change, finds entrance into the circulation, and, finding a fitting pabulum, the specific substance is reproduced in quantity, being matured out of the impure material which ought not to be there, supplemented by some other tissues of the body. The growth of this produces more heat than is ordinarily developed, rising at times higher than that which is compatible with life. It is produced at the expense of retained excreta



combined with some part of the body which is necessary to support life. Alcohol in such cases comes to the rescue, interfering with the rapid tissue change, and is itself consumed, whereby temperature is lowered, and the morbid matter is not produced so rapidly as would have been the case if the Alcohol had not been exhibited; oxidation goes on at a lower temperature, there is a decrease of the production of carbonic acid, and less hurtful products result.

In these cases the effect of Alcohol has to be most carefully watched, and the moment there is evidence of cerebro-spinal lesion or of Alcoholic excess its use must be discontinued. I have seen patients in serious danger, which has been brought about by the wine and spirits which has been too freely exhibited, rather than by the disease itself. There is something so utterly repugnant to all moral feeling for a medical prescription to be the instrument by means of which a man is sent *drunk* out of the world, that I need hardly insist in this assembly upon the necessity of watching for the probability of such a result. But in those cases in which the remedy is beneficial, it may sometimes be freely pushed in a marvellous manner with most excellent results. In these cases no catarrh of mucous membrane is produced, such as appertains to the confirmed toper, and which in the latter case is only relieved by another dose, followed by renewed nausea and more dyspepsia.

The cases in which the temporary administration of Alcohol may be useful are those in whom the surface of the body has been chilled, and in which the powers of



life are weakened in such a manner that the heart is unable to do its work of propelling the blood to the capillaries with its usual ease. The action of Alcohol in these cases is like taking off the pendulum of a clock. The spring is able to work so much easier and to get over an extra amount of detail in the same space of time. Internal congestion, irregular circulation so to speak, fullness in one place, with unfilled cutaneous capillaries, are cases in which Alcohol may be exhibited with immediate advantage. The tension of the capillaries being overcome, there is a diminution of the impediment to the flow of blood and, as a sequence, a possible diminution of the internal congestion. So if the action of the heart itself is too weak to overcome the tension of vessels, we may induce a kind of paralysis to enable it to do its work more easily for the time being and get over a passing difficulty in that way. How far it is prudent to push this for any length of time is another matter, as a continuance of it must lead to the first stages of tissue change, which then becomes itself of primary importance.

It appears that we may use Alcohol with advantage, in moderation only, in cases of prostration from shock, and the prostration which follows acute diseases after such have expended their force, but that its continuance as a remedy is fraught with danger to those who take it.

There is a class of persons to whom Alcohol may be useful even in comparative health. When the powers of life begin to decay, when the force of the heart is not enough to transmit the blood to the extremities



of the body, the aged person easily feels the influence of cold. The blood scarcely passes through the unfilled cutaneous capillaries. By dilating them and diminishing their tension the heart is relieved and the functions of the skin and other organs are more efficiently performed. A moderate dose of Alcohol taken with food is always beneficial to an old person under such circumstances, and I cannot see any reason why it should not be administered. Again there are conditions sometimes present in youth, in which Alcoholic drinks also are useful; no other kind of stimulant acts so equally and so satisfactorily; there are a few cases, and a very few only, in which they may be administered in middle-age; taken as a whole, a weak heart with unfilled cutaneous capillaries will be always found in those cases in which it is likely to be beneficial. The stethoscope most clearly reveals them, the impulse of the heart and the general rythm of the pulse not at all corresponding.

So long as Alcohol is taken only in such quantities that it becomes utilized at once in the equalization of animal heat, no harm can result, but if there is more than sufficient to do this, and its specific action is produced on the blood itself, mischief sooner or later results. In this it differs from fat, with which it seems to be allied, which, if not used up, may be stored in its proper place out of the way, but the changed matter which arises from an excess of Alcohol is always deposited in the tissue of an organ. Thus its effects may find a home in the capillaries themselves, interfering with their elasticity, or it may be laid down in muscular tissue, and there is then a



decrease of power, and so-called rheumatic pains are produced. If nerve tissue is the seat, there is interference with the power of thought, with volition, self-control, and other mental actions, the effect of which is to render the patient a weak-minded and unstable character. In health it does not prevent the waste of tissue, whilst it does prevent the discharge of effete products. There is a decrease of the formation of carbonic acid, and in this is probably found the reason why there is a decrease of temperature. It stands in the way of more beneficial actions unless it be at once used up. If there is no muscular exercise going on, or no extra mental labour called for, and no action at all required except that which keeps up temperature to a normal standard, it is hurtful; work which is kept going by continual doses of Alcohol always ends in a break down. If it is taken for the purpose of increasing muscular exertion, ultimately there is great loss of muscular power, as athletes well know. If mental exertions are kept going by Alcohol, there is mental break down, as the lunatic asylums testify; whilst it is quite impossible for organic life to be performed in a healthy manner if Alcohol is habitually used to promote digestion. The evidence which was afforded by the Abyssinian and Ashantee campaigns, and the Arctic expedition, help to prove this, whilst the unanimous opinion of those who are competent to judge informs us that in the Russo-Turkish war the temperance of the Turkish soldiers enabled them to bear injuries with impunity, whilst similar injuries easily caused the Russians to succumb.



It has been argued by some experts that it is unwise to leave off Alcoholic drinks at once, that it is better to do it by degrees. I never could see any reason for this. The experience of all gaol surgeons is in accord with my idea, that no evil, but real good results from immediate and total abstinence. I am satisfied that when mischief is arising from its use, it is best to immediately desist from it. If mischief then results it is because it had already commenced, and not from the abstinence; although when a man has been accustomed to his daily dose of Alcohol for a long series of years, and his constitution has become acclimatised without evidence of tissue change, he should not abandon its use. I could not advise an old man to give it up; such a change would certainly do harm, not good.

I cannot leave the subject of nerve disturbances produced by Alcohol without referring to the connection which exists between intemperance and crime and lunacy. Statistics are not to be depended upon, because they are not drawn up with scientific accuracy, neither are they usually based upon similars. Yet there are some facts which are something more than coincidences. There is an undoubted increase in the consumption of Alcohol per head of the population. The report of the Select Committee of the House of Lords on Intemperance tells us that the consumption per head in the United Kingdom of the following articles in 1876, as compared with 1861, had increased:

	1861.		1876.
British Spirits ...	0.68 gals.	...	0.91 gals.
Foreign Spirits ...	0.18 „	...	0.35 „
Wine ... ..	0.37 „	...	0.57 „
Malt ... ..	1.61 bus.	...	2.02 bus.



The increase was progressive year by year.

The same progressive increase was observed with regard to crime :—

	1861.		1871.
Committals for Drunkenness ...	83,196	...	203,986
Committals for Assaults ...	85,448	...	122,913

There is also a rise in the number of lunatics which the increase of population does not account for. In 1861 there were 39,645 under the supervision of the Lunacy Commissioners, whilst in 1875 they had increased to 63,793; and out of 39 medical attendants of lunatic asylums who were consulted by Canon Ellison, 32 replied that, in their opinion, there was a distinct connection between an increase of drinking and lunacy as either cause or effect.

The Chief Inspector of the Metropolitan Police shews us that 251,125 persons were charged at the various Police Courts in the Metropolis with drunkenness in the ten years ending 1876. That more than a quarter of a million of persons had within ten years recklessly thrown away their liberty of action in public by rendering themselves slaves to a vicious habit, is a fact which must make men thoughtful as to the future of our people.

The poisonous nature of Alcohol in large and continuous doses has never been doubted, and no one can study its effects on the death-roll of this country or read Dr. Magnan's work on Alcoholism without being thoroughly satisfied on that point. Dr. William Farr, in his supplement to the 35th annual report to the Registrar-General, tells us that those who supply the community with drinks, food, and entertainment in inns and beerhouses are



shewn to suffer more from fatal disease than any known class. He says also that the majority of the publicans and the greater part of the wine merchants are comparatively temperate, yet, as the mortality of the whole trade is high, the mortality of the intemperate among them must be excessive. In the same report the deaths amongst those engaged in the sale of stimulants is returned at 2,538 out of 74,367 persons so occupied, which gives a death-rate of 30·4, whilst only 1,988 blacksmiths are registered out of a gross total of 108,939, a death-rate of 18·2 in the 1000; that of men in all industrial occupations was 19·9. The deaths of the publican class were 12·5 above the average. The report tells us, not only that the poisonous effect is undoubted, but that the effect is progressing in an increasing ratio. In the year 1857, 323 deaths were reported in which the verdict of a coroner's jury was death through excessive drinking; in 1875 the number had increased to 516. In 1857 294 deaths were directly attributed to intemperance, 569 were so registered in 1875. The deaths from *delirium tremens* also reached the number of 485. Thus in one year, 1875, we actually have 1,566 deaths, in England alone, directly caused by Alcoholic poisoning. These are not one hundredth part of those which are hastened by Alcohol. But supposing 1,566 deaths had occurred from hydrophobia or serpent bites, or had happened to passengers on the railways in the kingdom, commissions and edicts and proclamations from Privy Council would have been issued, and Acts of Parliament would have been



rapidly passed to provide against the continuance of this wholesale slaughter. Not so, however, with the poison of Alcohol: it works its way, in a great measure unheeded by the Legislature, except so far as it is made a means for increasing revenue by increasing the sale of the poison itself.

I have endeavoured to prove the truth of the proposition by statistical data obtained from the Registrar-General's publications, attested by the returns of the census commissioners; but, unfortunately, they do not refer to the same districts and are not based upon exactly the same foundations, so that the data do not correspond. There are, however, some striking points made out. Thus, taking the "England Tables," the mortality in the year 1871 among ministers of religion was 666, of these 464 lived to be over 45 years of age, or 69 per cent. The number of deaths among gardeners, men much exposed to vicissitudes of climate, 1,949 died, and of these 1,335, or 68·2 per cent., lived more than 45 years. Passing to the other end of the death roll, I find, out of 725 brewers who died in the same year, 294 or 41 per cent. only reached the age of 45, and of 2,728 publicans and eating-house keepers who died, only 49 per cent., or 1,330 were over 45. These facts show that occupations which bring men into contact with the sale of alcoholic drinks materially shorten their lives.

When we come to deal with the character of disease which causes death, statistics do not help us. I have waded through an immense mass of figures without satisfactory result; upon this point



statistics prove nothing. A reference to the physiological effect of Alcohol easily explains why this is so. Its effects may fall upon any one of the excretory organs, or upon any part of the nervous system. A large number of persons may die from disease induced by a too frequent application to Alcoholic drinks without the remotest suspicions in the minds of themselves or their friends that such is the case. Disease of brain, heart, lungs, kidneys, stomach, indeed of every organ of the body may have its first origin in alcoholic excess, although the person so affected may be considered a temperate man, and have never been drunk in his life. I have, been reluctantly compelled to put statistics aside. I have looked carefully into the reports of the National Temperance Hospital, and have compared it with reports of similar institutions in which stimulants are freely used ; but as the results, as based upon the reports, are fairly open to objection I do not use them here. The difficulty of obtaining the life history of a given case renders all hospital returns unsafe and unsatisfactory as bases upon which to found a basis for the treatment of disease. That temperance does promote length of life is a truism which even the intemperate are ready to grant, although we have not much statistical proof of its soundness. I may, however, support my statement by a return which has been kindly given me by a director of the Temperance Provident Life Office ; being a statement of mortality from 1866 to 1877. The insured lives are divided into two sections, teetotal and general. The temperance section gives, as the result of 12



years' working, 1,619 claims expected, the actual number made were 1,156, whilst in the general section 2,846 claims were expected, 2,807 were made. The claims in the temperance section were 28·5 per cent. below the expectation, whilst in the general section they were 1·4 per cent. below only. This is a clear proof of the commercial value of abstinence.

In concluding my subject, I have only to remark that Alcohol in any of its forms may be a good medicine, but is a bad diet, and that its action as a poison is visible among all ranks of society. It is our duty as medical men to advise our patients accordingly.